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COORDINATOR Prof. Erminio Monteleone

**Enhancing agricultural research for rural
development:
The role of territorial approaches**

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Doctoral Candidate

Dott.ssa Sara Gabellini

Supervisor

Prof. Silvia Scaramuzzi

Coordinator

Prof. Erminio Monteleone

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“We should continue to use simple models where they capture enough of the core underlying structure and incentives that they usefully predict outcomes.

When the world we are trying to explain and improve, however, is not well described by a simple model, we must continue to improve our frameworks and theories so as to be able to understand complexity and not simply reject it.”

Elinor Ostrom (2009)
"Nobel Prize Lecture", December 8.

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Extended Abstract

In the last years, agricultural research and institutions operating in agriculture, at the international and national levels, extended their scope to include new goals of sustainable and inclusive development.

In the fields of economics, agricultural research opened its confines and extended its priorities, from agricultural production to new economic, social, and environmental issues, affecting food and non-food agricultural systems.

Within this framework, rural development acquired growing attention. The international scientific and institutional debate are increasingly valuing the adoption of a new territorial approach to the development of rural areas, where supply chain operators, public authorities, and local communities are supposed to recognize their specific identity, interconnect their knowledge and capabilities, and collectively decide and operate, for the activation and sustainable valorization of valuable local specific resources.

Considering these issues, this thesis aims at enhancing the characterization and analysis of new territorial approaches to agricultural and rural development.

To that end, specific research objectives are identified, highly interrelated, and building on each other. The latter include: a) improving the conceptualization of territorial approaches to rural development; b) exploring how and to what extent the enhancement of valuable systems of local specific resources can work as a lever of inclusive and sustainable rural territorial development; c) identifying adequate governance settings and management mechanisms for collaborative valorization strategies, combining public policies with private action; d) understanding the role of territorial actors' empowerment, and the potential of capacity-building approaches, bridging scientific with territorial-specific knowledge.

Accordingly, the Ph.D. Research process involved the analysis of different territorial contexts, as well as diverse valuable resource systems protection and valorization dynamics.

Specifically, five publications were realized to fulfill the identified research objectives.

Publication 1 provides a broader conceptualization of rural territorial development with (bio-)cultural identity and validates the potential of capacity-building approaches. To that end, a new conceptual model is identified and applied to the illustrative and representative case of the Garfagnana territory, a rural area of Tuscany (Italy). The study highlights

the new model validity for the identification and construction of quality virtuous valorization circles of local biocultural resources. Likewise, it highlights the new model potential for detecting the critical aspects, needs, and gaps, affecting the realization of effective governance settings and management approaches. To that end, the fundamental role of innovative capacity-building approaches is evidenced, in expanding key human resources capabilities and sustaining the empowerment of local actors for territorial dynamization. Besides that, a new educational profile of “Territorial Enhancer” is also identified, to respond to different territorial context demands, towards the inclusive and sustainable mobilization of biocultural heritage.

In Publications 2 and 3 a specific focus is made on the relevant case of agrobiodiversity valorization for rural territorial development and global sustainability.

Publication 2 characterizes agrobiodiversity as a valuable system of local genetic and cultural resources, and analyses virtuous initiatives intended for their conservation and territorial valorization. The study focuses on the analysis of the illustrative and representative case of the Valtiberina Red Onion (Cipolla Rossa della Valtiberina), a threatened plant genetic resource of Tuscany (Italy). A participatory action research (PAR) approach is adopted. The publication outlines the distinctive qualities that characterize agrobiodiversity resources and the related multiple value potential for inclusive and sustainable agriculture and rural development. The opportunity of recognizing, conserving, and valorizing the local specific genetic and cultural diversity is seen as linked to the possible adaption, integration, and better coordination of both public policies and private strategies. To that end, new action directions are identified by the study. The latter supports the identification of adequate governance and management solutions, intended to the realization of multi-stakeholder strategies, aiming at the qualification and marketing of agrobiodiversity products, and territorial development.

Building on the findings of Publication 2, Publication 3 aims at understanding how the restoring and valorization of agrobiodiversity resources, and particularly of underutilized or neglected landraces, can act as a trigger of sustainable territorial development. A new socio-ecological systems (SES) approach is adopted, to design a holistic model for the characterization and analysis of agrobiodiversity-oriented food systems. The model was tested on the Valtiberina Red Onion case. The paper proves the new model validity to classify the assets, drivers, human action processes, and generated benefits, concerning the realization of landrace-

based quality virtuous valorization circles, and to evaluate their performance of sustainability and rural development. In addition, the model favors the identification and implementation of effective combinations of public and private action, fostering a balanced satisfaction of all the interests at stake.

Besides that, Publication 4 and 5 intend to explore the role of new strategic industries - other than food -, that are acquiring a growing market consideration, social appreciation, and public recognition, for their specific sustainability potential, and possible contribution to higher human well-being. Specifically, the representative case of ornamental horticulture is analyzed.

Hence, Publication 4 intends to fill the gap in the availability of integrated data sources and structured theoretically sound studies on new consumption trends, marketing strategies, and governance settings, characterizing the European ornamental market context. Accordingly, an integrative grey literature review is carried out, using a comprehensive approach. Relevant changes in socio-ecological determinants are highlighted, driving local resources valorization to become a key solution in combining new differential advantages, with wider social, and environmental goals. A new action-research agenda is identified, for the advancement of market research, and the improvement and coordination of public and private action. Accordingly, the evolution of policies, programmes, and legislation, and the enhancement of private actors' collaboration, is considered to furtherly boost ornamentals market attractivity and social recognition, and to sustain a necessary reorganization of production and trade.

Lastly, in Publication 5 a virtuous multi-stakeholder initiative is analyzed, intended to the requalification and territorial valorization of the localized floriculture system of Tuscany (Italy). Based on a PAR approach, the study evidences how the evolution of flower consumption trends and the emergence of new high-value market niches, demanding for origin and sustainability attributes, represent significant opportunities for differentiation and sustainability transformation for local high-cost supply systems. Therefore, the essential role of innovative win-win qualification strategies and luxury marketing approaches is considered, involving the collaboration of supply chains operators and other territorial actors, for the dynamization, and virtuous valorization, of local flower agrobiodiversity and related territorial capital (social, human, natural). Hence, relevant product innovation policies and place branding strategies are identified. The latter sustain the construction of high-value

positionings and territorial valorization paths, based on a wider recognition, and fairer remuneration of local flowers' biocultural and sustainability content. In that regard, the fundamental role of cooperation and networking is also outlined. An innovation multi-stakeholder platform (IP) is characterized as an effective governance model, enabling local actors' collaboration, self-leading, and self-organization.

Considering all the described contributions, this thesis is expected to provide researchers, businesses, and institutions with relevant insights, new concepts, and innovative analytical models, sustaining the validation of territorial approaches characteristics and potential. Consequently, the consolidation and implementation of new development paradigms will renovate the role of agriculture and rural areas for the benefit of present and future generations.

Keywords:

Territorial approaches; rural development; agricultural sustainability; territorial cohesion; local specific resources; agrobiodiversity; biocultural heritage; multilevel governance systems; collective management mechanisms; PAR methodology.

List of Publications

This thesis is based on the following Publications:

1. Belletti, G.; Ranaboldo, C.; Scarpellini, P.; Gabellini, S.; Scaramuzzi, S.; Redes y dinamización territorial, factores clave para la valorización sostenible e inclusiva del patrimonio biocultural rural: un análisis desde el territorio de Garfagnana (Italia). In *Bio-cultural Heritage and Communities of Practice. Participatory Processes in Territorial Development as a Multidisciplinary Fieldwork*; Bindi, L., Ed.; Perspectives on Rural Development. 2022.
2. Scaramuzzi, S.; Gabellini, S. La Cipolla Rossa della Valtiberina. In *Tutela e valorizzazione dell'agrobiodiversità vegetale e animale in Toscana: analisi e indicazioni di policy*; Belletti, G., Conte, G., Marescotti, A., Mele, M., Scaramuzzi, S., Serra, A., Eds.; Università degli Studi di Pisa e PIN Polo Universitario Città di Prato - Servizi didattici e scientifici per l'Università degli Studi di Firenze, 2019 DOI 10.13131/978889444300; ISBN 9788894443004. Available online <http://germoplasma.arsia.toscana.it/Download/pubbAgrob2019.pdf>
3. Scaramuzzi, S.; Gabellini*, S.; Belletti, G.; Marescotti, A. Agrobiodiversity-Oriented Food Systems between Public Policies and Private Action: A Socio-Ecological Model for Sustainable Territorial Development. *Sustainability* 2021, 13, 12192. <https://doi.org/10.3390/su132112192>.
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5. Gabellini*, S.; Scaramuzzi, S. Luxury strategies for agricultural products: a new sustainable governance model for the valorisation of the Tuscan flower supply chain. In *Green metamorphoses: agriculture, food, ecology: Proceedings of the LV Conference of SIDEA Studies*; Torquati, B., Marchini, A., Eds.; Wageningen Academic Publishers, Wageningen, The Netherlands, 2020, 409-419. https://doi.org/10.3920/978-90-8686-898-8_38.

Additional Contributions

Peer-reviewed Book Chapters

- Beruto, M.; Scaramuzzi, S.; Gabellini, S.; Borsotto, P.; Manzo, A. Il comparto economico e il settore produttivo. In *Florovivaismo. Principi e Tecniche*. Scariot, V.; De Pascale, S.; Ferrante, A.; Romano, D.; Eds.; Accepted for publication. *Università & Formazione*, Edagricole, Milano, Italia, 2022, 26-36.
- Scaramuzzi, S.; Gabellini, S.; Borsotto, P.; Manzo, A.; Arimondo, O. Domanda, offerta e mercato. In *Florovivaismo. Principi e Tecniche*. Scariot, V.; De Pascale, S.; Ferrante, A.; Romano, D.; Eds.; Accepted for publication. *Università & Formazione*, Edagricole, Milano, Italia, 2022, 37-71.
- Borsotto, P.; Gabellini, S.; Manzo, A.; Scaramuzzi, S. L'impresa florovivaistica e il marketing. In *Florovivaismo. Principi e Tecniche*. Scariot, V.; De Pascale, S.; Ferrante, A.; Romano, D.; Eds.; Accepted for publication. *Università & Formazione*, Edagricole, Milano, Italia, 2022, 73-141.
- Scaramuzzi, S.; Gabellini, S. Competere sul mercato: sfide, opportunità e nuovi approcci, In *Florovivaismo. Principi e Tecniche*. Scariot, V.; De Pascale, S.; Ferrante, A.; Romano, D.; Eds.; Accepted for publication. *Università & Formazione*, Edagricole, Milano, Italia, 2022.

Peer-reviewed Conference Proceedings

- Scaramuzzi, S.; Gabellini*, S. Floriculture and Floral Design. New high added-value markets and innovative origin-based qualification strategies for a sustainable revival of the Tuscan floriculture system. In *Proceedings of the 13th European IFSA Symposium*, 2018. Available online http://ifsa.boku.ac.at/cms/fileadmin/Proceeding2018/Theme5_ScaramuzziGabellini.pdf

International conferences

- Gabellini*, S; Belletti, G; Marescotti, A; Scaramuzzi, S, GI Products Based on Agrobiodiversity Resources: Which Quality Signs?. Scientific Contribution accepted for presentation at the co-organized *FAO and CIRAD conference "Worldwide Perspectives on Geographical Indications"*, Montpellier, France, 5-8 July, 2022.
- Scaramuzzi, S.; Gabellini*, S.; Arcuri, S.; Belletti, G.; Marescotti, A. From protection to valorization of local agrobiodiversity products. Integrating public policies and private strategies. Scientific Contribution presented at the *EAAE SEMINAR 174*, Matera, Italy, 10-12 October 2019.
- Scaramuzzi, S.; Gabellini*, S. Floriculture and Floral Design. New high added-value markets and innovative origin-based qualification strategies for a sustainable revival of the Tuscan floriculture system. Scientific Contribution presented at the *13th European IFSA Symposium*, Chania (Crete), Greece, 1-5 July 2018.

National conferences

- Gabellini*, S; Belletti, G; Marescotti, A; Scaramuzzi, S. Agrobiodiversity-oriented food systems between public policies and private action: a new socio-ecological model for landrace-based territorial development. Poster Contribution presented at the *LVII Conference of SIDEA Studies*, Bologna, Italy, 16-17 October 2021.
- Scaramuzzi, S.; Gabellini S. La valorizzazione dell'agrobiodiversità in Toscana. Quali strategie?. Contribution presented at the Conference "*Tutela e valorizzazione del patrimonio di razze e varietà locali di interesse agrario, zootecnico e forestale: un caso di studio la Cipolla Rossa della Valtiberina*", Istituto Omnicomprensivo "Fanfani-Camaiti", Sez. Banca Regionale del Germoplasma, Pieve Santo Stefano, Italy, 20 May 2019.

- Scaramuzzi, S., Gabellini S. La valorizzazione dell'agrobiodiversità in Toscana. Quali strategie?. Contribution presented at the Conference “*Agrobiodiversità in Maremma: Esperienze ed Opportunità*”, Cinigiano (Grosseto), Italy, 13 April 2019.
- Scaramuzzi, S., Gabellini S. La Cipolla Rossa della Valtiberina. In Marescotti A., Belletti G., Scaramuzzi S., *Agrobiodiversità e produzioni vegetali*. Contribution presented at the Conference “*Tutela e valorizzazione dell'agrobiodiversità in Toscana: spunti di riflessione verso un sistema nazionale. Analisi e indicazioni di policy nei casi studio*”, Firenze BIO 2019, Florence, Italy, 15 March 2019.
- Ferretti, R., Scaramuzzi, S., Gabellini, S. Vivaismo pistoiese nel contesto internazionale. Contribution presented at the I Conference “*Le Buone Pratiche per lo Sviluppo Sostenibile del Vivaismo*”, Pistoia, Italy, 14 September 2018.
- Scaramuzzi, S., Gabellini*, S. Luxury Strategies for Agricultural Products: a New Sustainable Governance Model for the Valorisation of the Tuscan Flower Supply Chain. Scientific contribution presented at the *LV Conference of the SIDEA Studies*, Perugia, Italy, 13-15 September 2018.

Invited speaker

- Gabellini, S. Invited speaker at the Round Table “*La commercializzazione delle vecchie cultivar, prospettive di sviluppo e valorizzazione*”, Istituto Omnicomprensivo “Fanfani-Camaiti”, Sez. Banca Regionale del Germoplasma, Pieve Santo Stefano, Italy, 20 May 2019.
- Gabellini, S. Invited speaker at the Round Table “*Flower Farms, Grandi Produzioni e Floral Design: mutamenti di prospettive economiche e nuovi valori*”, Sant'Angelo Vico l'Abate, 30 aprile 2019.

Project reports

- Roigé, X.; Mármol, C. D.; Canals, A.; Belletti, G.; Scaramuzzi, S.; Scarpellini, P. Arcuri, S.; Gabellini, S. Análisis de la demanda de formación y la oferta educativa e identificación de brechas en España e Italia. In Proyecto SUS-TER. Paquete de Trabajo 1 (PT1) Necesidades educativas en el campo de la valorización del patrimonio cultural, productos de origen y biodiversidad. Informe final, Universidad de Caldas. 2019. Proyecto SUS-TER Networking Knowledge, Skills and Competencies for an Inclusive and Sustainable Territorial Valorization of Cultural Heritage, Origin products and Biodiversity.

Manuscripts (under submission)

- Belletti, G., Gabellini*, S., Ranaboldo, C., Scarpellini, P., Scaramuzzi, S., Enhancing territorial development with (bio)cultural identity. A capacity-building approach. Under submission to the Journal Agriculture and Human Values, Springer.

List of Acronyms

| | |
|--------------|---------------------------------------|
| B2B2C | Business-to-business-to-consumer |
| CAP | Common Agricultural Policy |
| EU | European Union |
| IP | Innovation Multi-Stakeholder Platform |
| PAR | Participatory Action Research |
| ROs | Research Objectives |
| RTD | Rural Territorial Development |
| SES | Socio-ecological Systems |
| UN | United Nations |

I - INTRODUCTION

1. Evolving agricultural research for rural development

In the last years, agricultural research and institutions operating in agriculture, at the international and national levels, extended their scope to include new goals of sustainable and inclusive development (EU Commission, 2016; EU COM (2020)381; EU COM (2008) 862; UN 2015 A/RES/70/1; EU Sustainable Agriculture in the CAP).

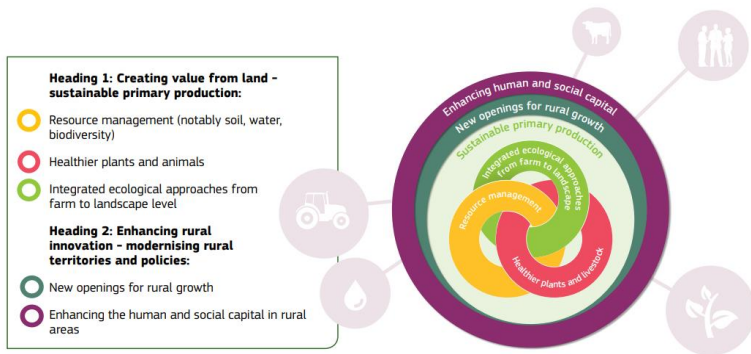


Figure 1. Priority areas of agricultural research and innovation in the EU. Source: EU Commission, 2016, p. 6.

Therefore, as is the case of the EU, agricultural research opened its confines and extended its priorities, from agricultural production, to new economic, social and environmental issues, affecting food and non-food agricultural systems e.g., global food and nutrition security, environment and climate change, growth and quality of life in rural territories, and human well-being (AREPO, 2015).

Within this framework, rural development acquired a growing importance, with a view to identify and support the factors and dynamics capable to activate and enhance a synergic combination between new goals of competitiveness, vitality and sustainability of both agri-food systems and rural territories (Mihai and Iatu, 2020; Boru et al., 2017; D’Souza and Gebremedhin, 2020).

In line with that, rural development definition is transforming, according to a new territorial perspective (Chapter 1.1) that looks at

agricultural supply chains and food systems as an integral part of wider territorial environments, characterized by a specific combination of human, natural, and cultural resources, as well as specific productive and institutional challenges and sustainability issues (EU Commission, 2016; Lamine et al., 2012).

In this perspective, agricultural economics is paying a growing attention to: on the one side, characterize the possible economic, social, and environmental benefits that can be produced by agri-food systems and rural activities (Belletti and Marescotti, 2021; Belletti et al., 2017); on the other side, support the enhancement and synergic combination of these benefits, by favoring the realization of effective governance and management solutions, providing for higher sustainability and territorial cohesion (Demeterova et al., 2020).

In spite of that, more efforts are required to enhance the debate and sustain stakeholders' action towards a better conceptualization and effective actualization of territorial approaches to agricultural and rural growth and sustainable development.

To that end, some relevant issues can be identified for the advancement of the economic debate in the field. The latter are presented in the following chapters (Chapter 1.1 – 1.4), thus evidencing the relevant matters and related needs for in-depth literature analysis and investigation. Accordingly, Chapter 2 describes the Research aim and the specific objectives addressed by this thesis. Lately, Chapter 3 and 4 present respectively the adopted Methodology and the Summary of Publications. The latter evidences also how each of the conducted studies specifically contribute to respond to the thesis goals.

1.1 Conceptualizing territorial approaches to rural development

The international scientific and institutional debate are increasingly valuing the adoption of a new territorial approach to the development of rural areas, based on the sustainable and inclusive valorization of local specific resources (Ruperti Cañarte et al., 2021; Capello, 2017; Alburquerque, 2013; Costamagna and Perez Rossi, 2015).

As a matter of facts, the concept of rural development was critically revised at the beginning of the 21st Century, leading to the identification of a new territorial approach, able to describe and afford the major socio-economic changes characterizing and transforming agricultural and food systems, rural environments, and surrounding contexts (Chiriboga, 2003; Schejtman y Berdegué, 2004; Veiga, 2002).

During last years, both researchers and institutions paid a growing attention to the analysis and characterization of territorial approaches to rural development, aiming at valuing and supporting their potential for the realization and reproduction of more inclusive and sustainable food and non-food agricultural systems, and the enhancement of territorial cohesion¹ (Forster et al., 2021; FAO, Inclusive and Sustainable Territories and Landscapes Platform; Ranaboldo and Arosio, 2017).

According to the valuable definition by Schejtman and Berdegué (2004, p.26), rural territorial development experiences are characterized as processes of “simultaneous productive transformation and institutional change” aiming at “reducing poverty and inequality in rural areas”.

In line with that, the adoption of territorial approaches to rural development allows to both consider and synergically combine the two essential aspects of productive and institutional transformation (Abramovay et alii, 2006; De Janvry and Sadoulet, 2007; Schejtman and Berdegué, 2004; Cazzuffi et al., 2013; Ranaboldo and Arosio, 2017; Forster et al., 2021) described as follows:

- I. *Productive transformation.* It concerns the connection and articulation of rural areas economies with dynamic markets, in a competitive and sustainable way. This process implies relevant changes in the management mechanisms of local specific resources, and specifically in the planning and implementation of production systems, qualification strategies, and marketing approaches. The aim is to provide for the enhancement, renewal, and reproduction of different territorial resources, as bio-cultural heritage, agrobiodiversity, and human and social capital.
- II. *Institutional transformation.* It concerns the structuring of public with private action, emphasizing the central role of territorial actors. The latter should start to operate as capable and co-responsible agents, and promote concertation among themselves and with relevant external agents. Accordingly, relevant changes

¹ To illustrate, territorial cohesion can be considered as the combination of three meta-dimensions: economic cohesion, well-being, and environmental sustainability (Demetrova et al., 2020, p.11, on Pye et alii 2008). Although there is no a common understanding of this concept, the three dimensions are capable to represent well the integrated articulation of economic efficiency, social cohesion, and ecologic balance that should be targeted in different territorial systems (Buitelaar et al., 2015; Silva Lira et al., 2014).

are needed for both the empowerment of local stakeholders, and the enhancement of governance. In particular, the role of multi-level and collaborative settings should be considered, in avoiding exclusion of marginalized and poor people.

In line with the above, territorial approaches are valued as capable of balancing competitiveness, well-being, and environmental sustainability goals in agriculture and rural development.

Despite of that, the understanding and support of the abovementioned transformations require deeper and broader economic research towards the following directions:

- i. a further conceptualization of new territorial approaches is needed, also considering the design or adaption of innovative holistic and systemic models (EU Commission, 2016; Colding and Barthel, 2019; Rounsevell et al., 2021);
- ii. research priorities need to be shaped to the real needs of involved agri-food systems and rural territories;
- iii. the role of action-research and participatory methodologies need to be validated and fostered, favoring the combination of scientific with practical knowledge and empower territorial actors (Congretel, 2020; Pretty, 1995).

1.2 Enhancing territorial resources: a SES approach

According to the definition of Forster et al (2021, p. 19, on CIRAD, 2019), a territory can be identified as “a space of governance for human activities, on a scale that includes the local community/village/ town and the province/nation-state”, in which “local interventions should be conceived, adapted, and implemented, and where development strategies can be anchored in territorial/landscape/ecosystem assets”.

Anchoring rural development strategies to the enhancement of territorial resources implies a fundamental change in the cognition, governance, and management of the different components of the rural territorial capital – i.e., natural, human, social, cultural, and manufactured –, and of the related economic, social, and environmental values (Ortiz et al., 2021; Maréchal et al., 2016; Brunori et al., 2018).

Accordingly, more efforts are needed to identify and assess territorial resources characteristics and potential, and to manage their synergic organization, conservation, and valorization, for the benefit of agriculture and food production, as well as for the one of the society and ecosystems.

Therefore, the realization of new territorial strategies and models of planning can sustain the conservation, enhancement, and renewal of territorial resources, making them working as vectors of higher agricultural sustainability and rural cohesion (Cazzuffi et al., 2013; Buitelaar, 2015; Podadera Rivera and Calderon Vazquez, 2019).

With a view to identify and sustain these innovative strategies, it is important to provide a better understanding of valuable local resources systems, and to support a conceptualization of the factors, dynamics, and effects, underlying their possible conservation and sustainable valorization (Bastiaensen et al., 2021).

In that regard, the evolving debate considers the essential role of new holistic and systemic approaches (European Commission, 2016; Knickel et al., 2009), with particular reference to the one of socio-ecological systems (SES) (Rounsevell et al., 2021; McGinnis and Ostrom, 2014; Maréchal et al., 2016; Dwyer et al., 2015).

Despite the lack of a unifying SES definition, relevant literature recognizes the added value of SES frameworks in supporting the explanation and systematization of the different social and biophysical aspects concerning local resources valorization as a lever of rural territorial development (Morales-Velasco, 2021; Colding and Barthel, 2019; McGinnis and Ostrom, 2014; Folke, 2006).

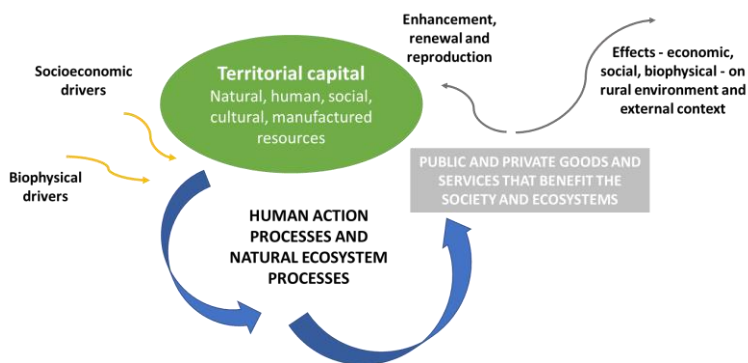


Figure 2. Enhancing territorial resources for rural development: a socio-ecological systems approach. Source: our elaboration on Maréchal et al., 2016, Dwyer et al., 2015.

Building on the SES baseline categories shown in Figure 2, new research advances are needed to improve the understanding of the complex of resources, drivers, action processes, and beneficial effects, characterizing the development of inclusive and sustainable agri-food chains and territorial systems, and the transformation of the surrounding natural and sociocultural contexts (Lescourent, 2017; Moraine, 2016; Carrosio, 2020).

In light of the above, the provision of new reviewed integrated definitions and conceptual models could favor the detection and clarification of both important properties and critical aspects, determining territorial approaches success. From an economic perspective, this implies a further analysis and characterization of the major issues concerning the following SES components and interaction dynamics.

1.2.1 Territorial capital

In rural areas, territorial capital is constituted by the complex of local natural, social, human, cultural, and manufactured resources, feeding ecosystem processes, and managed by humans for advantaging agricultural and other productive activities, and responding to the needs of the society and the environment.

Among the different components of the territorial capital, the economic debate is focusing its attention on the specific cases of agrobiodiversity and biocultural resources, with a view to the potential role they can have in alimending processes of sustainability transformation and territorial development (Mulvany, 2021; Chable et al., 2020; Labadi et al., 2021; Ortiz et al., 2021).

In that regard, agrobiodiversity is identified as the variety of local genetic resources and related traditions, that originated and/or evolved in a specific territory, and that show a (current or future) value for agriculture and food (FAO, 2019). Among these resources, particular consideration is given to the potential of underutilized or neglected landraces. Indeed, providing for their identification, agricultural restoration, and territorial valorization can contribute to, on the one hand, preserve local biodiversity and its natural functionality for farming activities; on the other hand, support the joint provision of differentiated quality products and services, together with social and environmental benefits (Oehen et al., 2019; EU Commission, 2020).

In a territorial perspective, agrobiodiversity can be also considered as an integral part of a larger biocultural heritage, identified as the complex of knowledge and practices of local communities and indigenous

people, and biological resources, held collectively, and transmitted and innovated from one generation to the next (IIED, 2015; Cocks, 2010).

In Europe, rural areas share a very important biocultural heritage, based on tangible and intangible resources. Some successful approaches, such as endogenous and neo-endogenous local development (van der Ploeg and Marsden, 2008) and multifunctionality (Van Huylenbroeck and Durand, 2003), have been adopted to address the strategic role of biocultural resources and territorial identity, for effective rural territorial development approaches.

Despite of the growing relevance of these two topics, more efforts are needed for the understanding and support of the role of biocultural heritage, as well as local specific agrobiodiversity, as valuable common territorial assets, to be collectively recognized, preserved, and valorized for the benefits of the society and ecosystems (Labeyrie et al., 2021; Ruperti Cañarte et al., 2021; Mantino et al., 2018; Timmermann and Robaey, 2016; Maffi, 2018). To illustrate, among the very focuses of the debate, (agro-) biological diversity, landscapes, culture, and territorial identity are analyzed, conceived, and promoted as the possible foundation of new paradigms of rural cohesion and sustainable development (Rivera, 2021; Ranaboldo, 2018; Zimmerer et al., 2019).

1.2.2 Socioeconomic and biophysical drivers

They include the factors inherent to the general and specific social and ecological contexts, that trigger the evolution of territorial development processes, involving agri-food systems and rural areas.

Whereas the critical natural influences (e.g., geomorphology, soil, water, climate, and weather, etc.) appear to significantly affect the evolution of production and institutional systems in rural territories, economic research poses its attention on the comprehension of the main social determinants.

Accordingly, evolving market institutions, policies, legal frameworks, socio-cultural values, and organizational culture acquired consideration as key driving factors of rural territorial development.

Indeed, the latter appear to work as effective triggers in stimulating public and private action for the recognition, conservation, and enhancement of valuable territorial resources, and the realization of inclusive and sustainable agri-food chains and territorial systems (Smale et al., 2004; Galli et al., 2020).

On the market side, the affirmation of neo-luxury and sustainability-oriented consumption patterns, together with the effects of globalization,

urbanization, climate change, and digitalization, are driving the emergence of new high-value consumer profiles and the evolution of consumption trends in agri-food and other rural-related markets (e.g., tourism, culture, etc.). Consequently, products characterized by distinctive origin and sustainability attributes, and promoting multifunctionality and transparency are increasing their attractiveness and value (Mattia, 2013; Borsellino, 2020; Łuczka and Smoluk-Sikorska, 2017). Also, these trends are confirmed by the effects of the ongoing COVID-19 pandemic, due to people reaction to solitude, lockdown, smart working, and fear of new calamities (Elleby et al., 2020; Phillipson et al., 2020).

In line with that, informed, ethic, and responsible consumption choices make new opportunities arise for different supply chains operators, in order to differentiate their offer based on the valorization of local specific resources and related multiple value potential (Isaak et al., 2020; Escobal et al., 2015; Brunori et, 2018). Therefore, the increase in consumer demand and willingness to pay, for products characterized by distinctive symbolic attributes, multiple ecological, and well-being functions, incentivize the activation and collaboration of farmers and other territorial actors. As a result, the realization of collaborative production systems, marketing strategies, and territorial valorization initiatives can lead to the qualification and fair remuneration of products territorial linkages, social, and environmental qualities.

On the side of public action, the evolution of policies, legislation, and institutions seems to be directed to sustain the recognition, product qualification, and territorial valorization of local resources, by the means of collaborative multi-actoral approaches. In that regard, specific policy goals and legal measures have been established, at both international and EU level, to direct and stimulate the integration and harmonization of policies, programmes, and regulations, intended to combine new rural development goals with emerging social and environmental provisions (e.g., EU Biodiversity Strategy for 2030; Europe 2020 strategy for sustainable, smart, and inclusive growth; EU CAP evolution, Rural Development Policy; EU Green Deal, etc.).

Significantly, within this framework, the protection and valorization of the elements of territorial capital, as agrobiodiversity and larger biocultural heritage, are recognized as a self-standing objective, as closely related to rural territorial growth and sustainable development issues (Hodge et al., 2015; Sirsi and Brunori, 2019). At the same time, the realization of individual and collective quality and origin strategies is

incentivized (AREPO, 2015), considering their role in favoring the conservation, sustainable use, and equitable sharing of benefits of local genetic and cultural resources, even the underutilized or neglected ones.

Lastly, the presented evolution of consumption trends and policy framework goes hand-in-hand with the affirmation of new models of life (nature, proximity, well-being, business ethics), valorizing an indissoluble link between rural development, and the well-being of present and future generations (Saquet, 2016). Accordingly, an increase in social demand is occurring, valuing the new role of agri-food productions and rural systems in enhancing planet health and people quality of life.

As a result, further efforts of research are needed to detect and face major social changes, and catch the opportunities arising for food and non-food chains, and rural communities.

In this direction, an important aspect to consider is the necessity of widening the scope of research to include new strategic industries - other than food -, that are acquiring a growing market consideration, social appreciation, and public recognition, for their specific sustainability potential, and possible contribution to higher human well-being. A representative case to this respect is represented by ornamental horticulture.

As a matter of facts, flower and plant market demand is expanding, based on a growing consumer need for life greening, and desire of using ornamentals as essential products for qualifying living spaces, and preserving ecosystems (Löbke, 2022; van Horen, 2022; AREFLH, 2020; Sharathkumar et al., 2017). At the same time, the ongoing political debate, concerning the implementation of the EU Green Deal strategy, and related Biodiversity 2030 directions, is fostering a new strategic role for the industry, supporting its capability to combine new goals of competitiveness, with wider social, and environmental outcomes.

In light of that, new studies should be developed in the field, to fill the significant gap of economic research, and identify favorable action solutions to sustain a further expansion of demand, and an adequate qualification, and sustainability transformation of production and trade (Bruns, 2020; Wani et al., 2018).

1.2.3 Human action and natural ecosystem processes

This category includes the combinations of public and private action, or the complexes of public and private decisions and practices, affecting

the management of territorial resources and natural ecosystem processes within agri-food systems and rural areas.

This topic is one of the very focuses of research in the fields of agricultural economics and rural development. The aim is to acquire a better understanding of the role of territorial (and non-territorial) stakeholders, in the planning and implementation of effective public-private mechanisms, enabling the enhancement of local resources, and the equitable sharing, and fair distribution of the generated benefits.

These mechanisms include public, private, or collective strategies, intended to:

- i. identify and protect territorial resources, related market and social values, and specific property rights;
- ii. support a sustainable use of identified resources, for the creation of food and non-food products, both goods (e.g., fresh produce, food preparations, arts and crafts products, by-products, etc.) and services (e.g., visits, tours, events, accommodations, didactic activities, etc.);
- iii. provide for the qualification, marketing and territorial valorization of created products specialty, sustainability, and distinctive territorial linkages (Belletti et al., 2017; Isoni et al., 2018; Amblard et al., 2018; Schejman and Berdegué, 2004).

In line with that, the possibility to realize competitive and sustainable agri-food chains, protecting and valorizing territorial resources, and to integrate them synergically in cohesive territorial systems, lays on increased levels of social learning and cognition, and consequent improved public and private action and coordination (Jørgensen et al., 2020; Boucher et al., 2018; Ranaboldo and Arosio, 2017).

This aspect will be outlined in detail in Chapter 1.3. Specifically, the SES category of human action can be opened to a wider perspective and consideration of the role of governance settings and management approaches in sustaining the activation and reproduction of quality virtuous valorization circles of local resources (Belletti and Marescotti, 2021). Accordingly, further studies are needed to understand and support such as virtuous circles functioning and potential, considering different kind of resources and agricultural products, and also referring to the particular case of bicultural and agrobiodiversity assets (Peano et al., 2021; Basile and Cavallo, 2020). In addition, the fundamental complementary aspects of human development and territorial actors'

empowerment should be furtherly analyzed and sustained (see Chapter 1.4).

1.2.4 Generated public and private goods and services and related benefits

This category aims at evidencing how the development of agricultural and food systems as well as territorial paths based on the virtuous valorization of local specific resources can combine the production of private goods and services (e.g., access of businesses to genetic material and other provisioning ecosystem services, supply of agri-food and other traditional and cultural products, etc.) with the one of public goods and services (e.g., biodiversity and rural culture preservation, provision for food security and safe nutrition, contribution to social education and leisure, enhancement of rural landscape and other social and environmental goods and services, etc.), and generate benefits for both the society and ecosystems (Cooper et al., 2009; Jongeneel, 2010; AREPO, 2015).

The latter can be identified as the beneficial effects stemming from the several stages of virtuous valorization processes, and sustaining the inclusiveness and sustainability of agri-food chains and rural systems. Specifically, they could be analyzed in light of the changes processes of local resources valorization induce in the economic, social, and environmental dimensions, at a territorial level and in a wider global perspective, e.g., higher income and competitiveness of local farmers and agricultural food and non-food chains, growth of local economies, protection of the environment and the ecosystem, enhancement of social and cultural capital and human well-being, etc. (Knickel et al., 2021; Paudyal et al., 2016; Maréchal et al., 2016).

The extent to which rural territorial approaches can join the production of private goods and services with the one of social and environmental benefits need to be furtherly investigated. In that way, all relevant stakeholders can be supported with both specific knowledge and possible action solutions, favoring the adaption and innovation of management mechanisms and governance settings (Ostrom, 2010).

1.2.5 Governance settings: a cross-category

In light of the presented SES framework, the characteristics and fundamental role of multi-level institutions and governance settings are considered as a cross-cutting topic. Accordingly, governance settings are not graphically represented in Figure 2, but they are analyzed as an

overridden cross-category, which transversely affects the structure and functionality of all the other identified SES classes.

Based on SES approach, governance settings are defined as the specific systems of (formal or informal) rules, institutions, and principles (e.g., property rights), underlying and determining the structure and beneficial effects of the interactions between territorial resources and human action, within the processes of local resources quality virtuous valorization. Herein, public policies, legal regimes, and market institutions are also taken into consideration.

How governance is shaped is a key determinant for the possible production of private and public goods and services, by the realization of inclusive and sustainable agri-food systems and cohesive rural territories valorizing local resources (Lamine et al., 2012; Belletti et al., 2015). At the same time, the interaction between actors and the functioning of the virtuous valorization dynamics can transform existing institutions and governance settings - and/or generate new ones -, based on long-lasting multi-actoral processes of local resources values acknowledgement and actualization (Belletti et al., 2017).

1.3 Combining public and private action

Regarding the categories described in Chapter 1.2, a particular focus of economic research is posed on the analysis and characterization of the human action processes and the governance settings, capable to provide for a sustainable and inclusive valorization of local specific resources.

Accordingly, more efforts of research are needed for supporting public and private action enhancement and coordination, in different agricultural and rural-related sectors, to turn valuable territorial resources into active assets, preserving and managing them, so that they can receive society recognition and be fairly remunerated in markets (Belletti and Marescotti, 2021).

To that end, an essential aspect is to improve the understanding of the specific role and possible combinations of both public policies and private strategies, for the activation, feeding and reproduction of multi-actoral processes, leading to different local resources multiple values recognition and coherent management.

Significantly, aiming at a better characterization and support of most effective public-private action and interaction dynamics, these processes can be conceived and analyzed within the frame of a quality virtuous valorization circle of local specific resources (Figure 3).

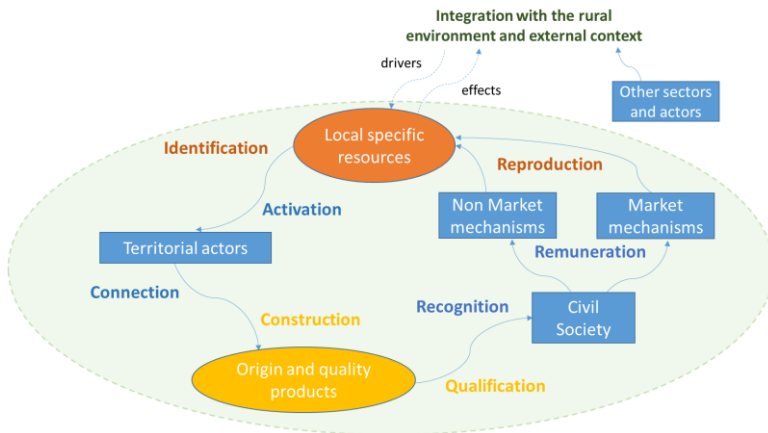


Figure 3. Combining private with public action in territorial approaches to rural development: the quality virtuous valorization circle model. Our elaboration on: Vandecandelaere et al., 2010; Scaramuzzi et al., 2016; Belletti and Marescotti, 2021.

In that regard, Figure 3 represents a useful baseline model, built on the origin-linked quality virtuous circle concept by Vandecandelaere et al. (2010), Scaramuzzi et al. (2016), and Belletti and Marescotti (2021). The model can work as a conceptual roadmap, supporting the outlining and analysis of the key steps and enabling public and private efforts, underlying the realization of effective management and governance solutions for the inclusive and sustainable valorization of territorial resources.

Therefore, new research contributions can take advantage from an adaption or focalization of the different categories constituting the quality virtuous valorization circle, with a view to enhance the understanding and support of rural territorial development experiences. To that end, the following paragraphs present the specific action steps and interaction dynamics that characterize the model.

(i) Identification of valuable territorial resources and territorial actors' activation and connection

This stage implies the identification of local specific resources, that show a (current or future) value for the development of inclusive and sustainable agri-food systems and territorial paths. It consists of mappings, preliminary studies, and co-learning activities, intended to the characterization of resources distinctive qualities, market potential, social reputation, and both synergic or conflictual interactions with the other components of the local territorial capital.

By these activities, territorial actors can become aware of the identity and potential of the specific resources they dispose, and take action for their activation, product qualification, remuneration, and reproduction. Accordingly, they can play as pivot agents of sustainable valorization processes (van der Ploeg and Van Dijk, 1995; Cejudo and Navarro, 2020), being the only ones capable to mobilize local resources and provide for an equitable sharing and fairer distribution of generated benefits.

In light of that, supporting the creation of network relationships and coordination mechanisms between empowered local agents, and between them and other agents outside the territory (van der Ploeg and Marsden, 2008), is fundamental to overcome the obstacles derived from the possible small size of local companies, supply chains, and communities, and generating a variety of collaborative advantages.

(ii) Qualification of territorial resources, quality, and origin products

Private and sometimes public stakeholders work, individually or collectively, for the unanimous characterization of identified valuable resources, their utilization for the construction of differentiated products, and the marketing and social recognition of created products distinctive qualities and multiple social and environmental advantages.

At this stage, territorial identity, together with multifunctionality, transparency, and sustainability can become determinant attributes for the construction and qualification of quality and origin products, capable to satisfy the needs of consumers and citizens, and obtain a fair remuneration, by both market and non-market mechanisms (Borsellino et al., 2020; Saitone and Sexton, 2017; Maffi, 2018; AREPO, 2015).

Therefore, local enterprises and other territorial actors should clearly identify and qualify on market distinctive products qualities (e.g., morphological, nutraceutical, historic, organoleptic) and territorial linkages, together with the sustainability characteristics of implemented production processes (e.g., low environmental impact, biodiversity and ecosystem preservation and renewal, social fairness, typical of methods,

etc.). In that regard, further studies should support the detection of effective innovation and marketing strategies, sustaining high-value product positionings. At the same time, even non-market mechanisms should be enhanced, to compensate the eventual lack of remuneration for the social and environmental functions provided by production activities (De Janvry and Sadoulet, 2007; Tregear et al., 2007; Sgroi, 2021).

As a relevant example, among the focuses of agricultural economics and rural studies there is the creation and qualification of high-value products, based on the valorization of local specific (agro-)biodiversity and cultural heritage (e.g., typical production and processing techniques, landscapes, art and rituals, etc.). To this regard, a growing attention is posed on evaluating the opportunity to adapt or innovate effective signaling tools, as are the cases of public schemes, collective marks, denominations of origin (e.g., PDOs, PGIs, PAT), and other forms of presidiums (Belletti et al., 2017; Lalitha and Vinayan, 2018; Santilli, 2012; Kruijssen et al., 2009; Valverde, 2015).

(iii) Remuneration of territorial resources, quality and origin products

Individual and/or collaborative strategies can be realized by local producers, traders, and other territorial actors, for the marketing of quality and origin products, valorizing local resources, and the sustainability of productions.

The effective marketing and communication of products unique characteristics and multiple social and environmental advantages can get a market extra-price, remunerating higher cost of production and contributions to the preservation of resources (AREPO, 2015; Vandecandelaere et al., 2010; Maréchal et al., 2016). Therefore, marketing strategies should sustain the realization of specific product, placement, price, and promotion policies, intended to provide local suppliers, with sustainable differential advantages and fairer profits.

To that end, more efforts of research are needed to identify and support new competitive orientations and marketing approaches, based on the identification and targeting of attractive market segments, and the realization of high-value positionings (Blakeney, 2021; Bastiaensen et al., 2021). In that regard, the collaborative planning and implementation of multi-actoral strategies can lead to: i. enhance product innovation; ii. sustain (ingredient) branding; ii. adopt existing or new claims and certification schemes; iii. improve distribution networks and strategic

communication, also considering the emerging role of digitalization and artificial intelligence. As a result, the realization of competitive and transparent supply systems, can be tailored to the specific potential of utilized territorial resources, realizing alternatively up-scaled integrated chains or added value niche markets.

On the contrary, when products providing for the protection and valorization of local resources cannot find a specific or satisfying market, the adoption of existing or innovative non-market remuneration mechanisms should be considered (Bliss and Egler, 2020). These mechanisms primarily consist of government interventions (e.g., assistance, training, payments, etc.), implemented to substitute or integrate the inadequate compensatory role of the market for the remuneration of different products public and private functions (Piñeiro et al., 2020). These mechanisms are of particular relevance for remunerating and incentivizing farmers and other supply chains operators, involved in the conservation of endangered no-marketable (agro-) biodiversity and cultural resources, and the marketing of low-potential biocultural-oriented products (Smale and Bellon, 2004; Bellon, 2004).

The scope of the remuneration stage is leading society to pay for the total value of public and private goods and services, produced by agricultural and other rural activities, involved in the protection and valorization of valuable territorial resources.

(iv) Reproduction of territorial resources, and integration with the rural environment and external context

The abovementioned stages of the virtuous circle generate economic payoffs, together with other sociocultural and environmental benefits, that - if equitably shared, and fairly distributed, among different public and private stakeholders – make it possible to close the circle, thus reproducing and improving the activated territorial resources themselves.

Further horizontal results and major impact can be reached through the implementation of extended territorial strategies, intended to integrate activated local resources with other activities, characterizing the territorial context, even beyond their current economic importance (Bérard and Marchenay, 2007).

The scope of these strategies is to enhance the recognition and actualization of activated resources multiple value potential, and improve their individual and combined contribution to agricultural transformation

and rural territorial development. To make an example, research should evaluate and sustain development opportunities deriving from the realization of new territorial strategies, based on the collective valorization of (agro-)biodiversity and other biocultural resources (Peano et al., 2021; Turner et al., 2018). Particular consideration can be given to the adoption or innovation of existing collective territorial marks, public valorization tools, and mechanisms of access to public funding.

According to the above, the extent by which public and private goods and services are produced, and benefits are generated for the society and ecosystems, determines the degree of sustainability and competitiveness of realized food and non-food supply chains, and the achieved level of territorial cohesion (Ortiz et al., 2021; Demeterova et al., 2020; Dwyer et al., 2015).

(v) Shaping of effective governance settings

As described in stage (iv), the capacity of supply chains and evolving territorial systems to realize a joint production of public and private goods and services depends on stakeholders awareness of the value of territorial resources, and the coherence of implemented management mechanisms.

In line with that, the structuring effects of institutions and governance settings must be considered as a key determinant in providing adequate conditions, enabling processes of social learning, and supporting public and private stakeholders' cognition and coordinated action towards rural territorial resources valorization (Shand, 2016; Melchior and Newig, 2021). Accordingly, more efforts of research are needed for understanding how to shape effective governance settings, favoring territorial approaches to inclusive and sustainable agricultural and rural development.

In that regard, the advancement of the debate should sustain the enhancement and coordination of public policies and private strategies - within and among different institutional levels -, allowing for a better recognition, integration, and balanced satisfaction of all the interests at stake, both public (e.g., optimization of the socio-environmental performance of territorial assets) and private (e.g., diversification of rural incomes, increase in local products and supply chains positionings, etc.) (Forster et al., 2021; Rounsevell et al., 2021; Belletti et al., 2017).

To that end, a determinant research step should be the analysis of different experiences of territorial resources valorization, involving agri-food chains and rural systems, in order to detect the main public and

private interests involved, and identify adequate governance solutions, leading to enhance the synergies and reduce the trade-offs arising between them. As a result, research findings should be translated into new policy directions, advances in legislation, and private actors' mobilization, sustaining the realization of effective governance approaches – both on private and public sides -, capable to adapt to the specific necessities of different contexts, and optimize territorial resources economic, social, and environmental potential.

To illustrate, on the private side, the investigation of new (formal or informal) governance solutions should support an increase in the (horizontal, vertical, and wider territorial) collaboration of supply chains operators, and other local and non-local stakeholders (e.g., associations, industry organizations, territorial bodies, etc.), to jointly plan and manage win-win product qualification, marketing, and territorial valorization strategies, leveraging on local resources (Flor et al., 2016; Mur et al., 2014). To that end, particular consideration should be given to the creation of stable multi-actor networks, capable to sustain the enhancement of stakeholders' capacity of self-management and self-organization, and to assure an equitable sharing, and fair distribution of generated multiple benefits (Khilelu, 2011; Thiele, 2011).

Besides that, on the public side, more attention should be given to the understanding of how and to what extent policies, standards, and regulations should be improved, innovated, and harmonized (O'brien et al., 2015). In particular, the ongoing evolution of the EU and national policies and legislation is showing a new path, considering territorial approaches as a fundamental lever for higher agricultural sustainability and rural cohesion. Accordingly, the evolving institutional debate is fostering an integration of policies and programmes, combining different goals of agricultural growth, rural development, social welfare, and environmental protection.

In line with that, the creation of new joint strategic orientations, the harmonization of concurring jurisdictions, and the supply of new specific valorization tools, are expected to furtherly sustain territorial actors' cognition and co-responsible action, towards the conservation and sustainable use of local specific human, natural, and cultural capital (Ambrosio-Albalá and Bastiaensen, 2010; Cairol et al., 2009). Therefore, territorial actors should be provided with a preferential access to dedicated financial measures and funds, and participated action-research projects. In addition, they should be incentivized by new non-market

remuneration mechanisms, as for example, technical assistance, payments, and professional training (Piñeiro et al., 2020).

In regard to this topic, a particular focus should be made on providing specific measures and tools, dealing with the case of common territorial assets, as the one of agrobiodiversity and biocultural heritage. In this sense, providing a public support is fundamental to synergically combine the respect of common property regimes, with the possibility of using these resources for the creation, marketing, and territorial valorization of differentiated origin and quality products (Ostrom, 1990; Tittonell, 2014; Tschopp et al. 2018; Timmermann and Robaey, 2016; Mazè et al., 2021).

To synthesize, the above-described evolutions of private strategies, policies, and legal orientations are evaluated by literature, with a view to the realization of effective multi-level or polycentric governance settings (Ostrom and Janssen, 2004; Penker et al., 2022; Di Gregorio et al., 2019). In that regard, further analysis and conceptualization are needed for the validation of the role and potential of these kinds of governance solutions in sustaining new territorial approaches.

Specifically, on the one hand, multi-level governance settings should be investigated, considering their specific potential in creating synergic and coordinated linkages between local governance systems, and the ones organized at a wider regional, national, and international level. Accordingly, the latter are essential to provide for a fairer spreading of power among all relevant stakeholders, both: vertically, among the many levels of government; and horizontally, across multiple public and private actors (Lamine et al., 2012; Pollermann et al. 2014; Cairney et al., 2019). On the other hand, polycentric governance settings should also acquire a growing attention, in particular, when considering the organization and management of common territorial assets (Carlisle and Gruby, 2019; Secco et al., 2010; Kliem and Sievers-Glotzbach, 2021). To illustrate, polycentricity implies the development of multiple centers of semiautonomous decision making, at both vertical and horizontal level, capable to jointly interact, and coordinate their action, both in a competitive and cooperative way.

As a result, these kinds of governance structures can lead to a fairer representation, equal protection, and balanced satisfaction of all the interests at stake, thus advantaging local businesses and communities, as well as the wider society and ecosystems.

1.4 Empowering territorial actors

A territory is characterized and influenced by a community of public and private actors (e.g., farmers, peasants, artisans, processors, traders, territorial bodies, associations, etc.) that explore opportunities, pursue different interests, address common challenges and determine actions and policies (Forster et al., 2021).

Actually, the realization and reproduction of virtuous valorization circles of local specific resources for sustainable agriculture and rural cohesion require territorial actors to enhance their knowledge, identify feeling, action, and coordination, towards the realization of enabling institutional architectures (Winkel et al., 2016; Ortiz et al., 2021; Olazabal Arrabal et al., 2021).

As a matter of facts, very often agri-food systems and rural territories have been unable to sustainably manage and appropriately valorize local specific resources, due to relevant institutional weaknesses. The latter have been characterized as the presence of cross-cutting coordination failures; the persistence of old conceptions of rural life; and the difficulty in generating institutional arrangements that balance bottom-up and top-down actions (Berdegué et al., 2020). Significant sustainability and social inclusion gaps are caused by the latter, including either the underutilization or the over-exploitation of valuable resources, as well as the inequitable distribution of generated benefits, that negatively affect their reproduction.

To overcome these bottlenecks, one of the focuses of research is the understanding of the role of human development (Albuquerque, 2013; Alkire, 2002; Abramovay et al., 2006) and localized social capital (Penati and Buttari, 2007) in sustaining the empowerment of territorial actors for the enhancement of relevant governance settings (Ruperti Cañarte et al., 2021; Albuquerque and Perez, 2013; Costamagna et al., 2013).

Accordingly, human development can be conceived as essentially based on the expansion of capabilities of human resources, and analyzed and sustained for its role in improving the power of action, freedom of choice, and propensity to collaboration of both local people and organizations, activating for the planning, synergic combination, and successful actualization of policies and multi-actoral strategies (Costamagna et al., 2013).

Therefore, creating the conditions for enhancing individuals' sense of agency and territorial identity feeling, should acquire a growing importance for researchers and institutions, to foster territorial actors'

empowerment and mobilization, for the activation and coherent management of local resources multiple values, throughout inclusive and sustainable rural territorial development paths (Narayan, 2002; Barboza-Arias, 2021; Penati and Buttari, 2007).

The activation and accompanying of these processes ask for the investigation and validation of new strategies and approaches of territorial dynamization (Boucher and Riveros-Cañas, 2017; Olazabal Arrabal et al., 2021; Molano, 2006; López-García et al., 2015). The aim of the latter should be to support individuals becoming conscious, autonomous, and co-responsible agents, and acting for the coordination and organization of different territorial actors' intents and action, towards a balanced satisfaction of goals of productive competitiveness, economic cohesion, environmental sustainability and individual and collective life quality and well-being (Ranaboldo and Arosio, 2017; Alkire, 2002; Frison and Coolsaet, 2018).

To that end, the relevant debate poses the attention on the important role of capacity-building approaches in sustaining contextualized and collective processes of learning, leading to the enhancement of human resources capacities, and the consequent expansion of their capabilities (Barboza-Arias, 2021; Boucher et al., 2018; Walker, 2015). In light of that, a growing consideration is acquired by the themes of education and training, with reference to the essential contribution that the adaption and innovation of programmes, profiles, and methodologies can give to the effective capacity building of students and practitioners in different territories (Schejtman and Berdegué, 2004; Costamagna et al., 2013).

Accordingly, more efforts of research should validate and support the potential of action-research initiatives, participated by local and non-local institutions and territorial stakeholders, for: i. the identification of local specific gaps and needs of knowledge, skills, and competences, related to the inclusive and sustainable valorization of the agricultural and wider rural territorial capital; and ii. their generation, enhancement, and diffusion, at a territorial level, by the tailoring of education programs and training methods, bridging scientific with practical knowledge and experiences (RIMISP, 2016). Significantly, the latter can contribute to the creation of co-learning communities, and the training and interconnection of new dedicated professional figures, acting as facilitators for territorial dynamization processes (Aguilar, 2019; Rivera, 2021).

Co-learning communities and possible new professional figures need to be characterized and investigated, in light of their capacity to feed the dialogue among multiple actors, inhabiting rural and inner areas, as well

as the sharing and networking of resources and capabilities (Penati and Buttari, 2007). Likewise, they should be evaluated for their potential in accompanying the realization and enhancement of genuinely local, bioculturally appropriate, and long-lasting solutions for development, grounded in local knowledge, ingenuity, and self-reliance (Aguilar et al., 2019; Fonte and Ranaboldo, 2007; De Janvry and Sadoulet, 2007).

In light of the above, the advancement of economic research in this field should sustain rural territories and communities in abandoning a logic of compensation, and activate to autonomously organizing, and collaboratively operate towards a sustainable agricultural transformation and higher rural cohesion (Demeterova et al., 2020; Sánchez-Zamora et al., 2020; Shejtamn and Berdegué, 2004).

2. Research aim and objectives

This thesis aims at enhancing the characterization and analysis of new territorial approaches to agricultural and rural development, and fostering their sustainable implementation.

Therefore, this research wants to give an innovative contribution to the classification and evaluation of territorial development processes, involving agri-food systems and wider rural environments, and to the understanding and support of enabling social and ecological factors, human action dynamics, and generated (social, environmental, and economic) beneficial effects.

At the same time, innovative holistic approaches and new conceptual models are provided, for both descriptive and analytical purposes.

To that end, the analysis is focused on different territorial contexts, as well as diverse valuable resource systems protection and valorization dynamics.

In light of the above, on the basis of the major issues described in Chapter 1, the following research objectives (ROs) can be identified for this thesis:

RO1 – Improving the conceptualization of territorial approaches to rural development (**Publications I, III**);

RO2 – Exploring how and to what extent the enhancement of valuable systems of local specific resources can work as a lever of inclusive and sustainable rural territorial development (**Publications I-V**);

RO3 – Identifying adequate governance settings and management mechanisms for collaborative valorization strategies, combining public policies with private action (**Publications I-V**);

RO4 – Understanding the role of territorial actors' empowerment, and the potential of capacity-building approaches, bridging scientific with territorial-specific knowledge (**Publication I**).

The identified ROs build on each other and are highly interrelated. They were pursued all along with the Ph.D. Research process and addressed by the included publications, as shown in the following Sections 3 (Methodology) and 4 (Summary of publications and contributions to ROs).

3. Methodology

In terms of methodology, this thesis is based on four case study analyses (Publications 1, 2, 3, and 5), conducted by the means of participatory action-research approaches (PAR), and an integrative grey literature review (Publication 4). Accordingly, qualitative methods of research and analysis were adopted.

Table 1 reports an overview of the methodology and the methods adopted in the different Publications.

Table 1. Overview of the methodologies and methods used in this thesis

| | Methodology | | Research and Analysis Approach | |
|----------------------|---------------------|--|---|--|
| Publication 1 | Case study analysis | Illustrative and representative case of the territory of Garfagnana, a rural mountain area of the Tuscany Region (Italy), and activated experiences of local biocultural heritage valorization | PAR approach Qualitative methods of data collection and analysis | <ul style="list-style-type: none"> • Literature review and secondary data collection (purposeful sampling) • 10 in-depth interviews with key informants (semi-structured form, purposeful snowball sampling) • Narrative Framing and Conceptualization • Final focus group for sharing, validation and future planning |
| Publication 2 | Case study analysis | Illustrative and representative case of the Valtiberina Red Onion (<i>Cipolla Rossa della Valtiberina</i>), a threatened plant genetic resource of Tuscany (Italy), and the public-private initiatives implemented for its protection and valorization | PAR approach Qualitative methods of data collection and analysis | <ul style="list-style-type: none"> • Secondary data collection (purposeful sampling) • 11 in-depth interviews with key informants (open ended form, purposeful snowball sampling) • Narrative Framing • Final focus group for sharing, validation, and future planning |
| Publication 3 | Case study analysis | | PAR approach Qualitative methods of data collection and analysis | <ul style="list-style-type: none"> • Literature review and secondary data collection (purposeful sampling) • 19 in-depth interviews with key informants (open ended form, purposeful snowball sampling) • Narrative Framing and Conceptualization |

| | | | | |
|----------------------|------------------------------------|--|--|---|
| | | | | <ul style="list-style-type: none"> • Final focus group for sharing, validation, and future planning |
| Publication 4 | Integrative grey literature review | Wide and most reliable grey literature and statistics concerning European ornamental horticulture industry and market | <p>Purposeful sampling approach (inclusive selection of material)</p> <p>Qualitative review method</p> | <ul style="list-style-type: none"> • Definition of the research topic (key terms identification) • Online research (Google Search engine) • Selection of 10 reliable institutions providers of relevant grey literature and identification of their official websites • Gathering of relevant documentary materials and statistics (browsing of the official websites) and definition of the purposeful sample (58 secondary data sources) • Narrative Framing |
| Publication 5 | Case study analysis | Bottom-up collective initiative intended to the inclusive and sustainable requalification of the Tuscan flower supply system | <p>PAR approach</p> <p>Qualitative methods of data collection and analysis</p> | <ul style="list-style-type: none"> • Literature review and secondary data collection (purposeful sampling) • Initial focus group for the co-design of the PAR process • 15 in-depth interviews with key informants (open ended form, purposeful snowball sampling) • Narrative Framing and Conceptualization • Final focus group for sharing, validation and future planning |

According to Table 1, the following Sections 3.1 and 3.2 give specific insights on the adopted methodologies.

3.1 Case study analyses and PAR methodology

This thesis includes the analysis of three relevant case studies referred to territorial approaches (Table 1). In the fields of agricultural economics and rural development, case study methodology is of particular relevance for the understanding and support of key factors and

dynamics affecting the enhancement of valuable systems of local specific resources (Yin, 2012; Poteete et al., 2010).

The case studies considered in this thesis were identified within the ambit of both national and international action-research projects. Specifically, they were selected on the basis of processes of literature and documentary analysis (e.g., including reports, fact sheets, official and non-official statistics, legal documents and regulations, media sources, etc.). For the case study selection, we adopted the following inclusion criteria:

- i. the case demonstrated an illustrative capacity and well representation of the investigated factors and dynamics (Seawright and Gerring, 2008);
- ii. research could access suitable and reliable secondary and primary data and information;
- iii. there was sufficient availability of key informants, willing and able to actively participate in the research process.

We analyzed case studies according to participatory-action research approaches (PAR), by actively involving private and public stakeholders operating at different institutional levels, e.g., local, national, and international (Chambers 1994; Baum et al., 2006).

PAR approach draws on the paradigms of critical theory and constructivism and as a methodology refers to how research is done and how knowledge is gained, using a broad range of qualitative and quantitative methods (Ammentorp et al., 2018). In recent years, PAR has been gaining ground as a new methodology in social and environmental sciences and in economics, taking many forms depending on the specific context and the issues involved (Kindon et al., 2007; Pretty, 1995; Eden, 1996; Coughlan and Coughlan, 2002). Noteworthy, participatory methods of inquiry play a fundamental role within processes of sustainability transformation and rural territorial development, dealing with contexts where uncertainty is high and problems are not well defined and agreed upon (Emery, 2013; Whyte, 1991; Pretty, 1994; Saarelainen et al., 2011; Padilla and Ramos Filho, 2012).

In light of this research, we consider PAR approaches to be consistent with the requirements of socio-ecological systems (SES) analytical frameworks (McGinnis and Ostrom, 2014; Dwyer et al., 2015; Kumaraswamy, 2012), as well as with the relevant debate on agrobiodiversity and rural biocultural heritage protection and valorization.

Therefore, PAR can support transdisciplinary research and the co-production of agroecological knowledge, based on the realization of multi-actoral collaborative projects (Kliem and Tschersich, 2017; Coolsaet et al., 2015; Cooper et al., 2009; Kindon et al., 2007; Pretty, 1995; FAO, 2019). Accordingly, academic researchers can collaborate with, and accompany, relevant stakeholders throughout collective and self-reflective processes of research and action, supporting the understanding and effective transformation of specific contexts or experiences (Baum et al., 2006; Carlsen and Larrea, 2014). Significantly, the activated dialogue between theoretical and local practical understandings can strengthen endogenous potential and combine scientific production with applicable solutions to the problems identified in considered chains, territories and initiatives (Padilla and Ramos Filho, 2017; Emery, 2013; Pretty, 1995).

In accordance with that, we also consider PAR a fundamental methodology for the support of capacity-building approaches to human development and territorial actors' empowerment (Frediani, 2010; Walker, 2005; Boucher et al., 2018). Indeed, this approach can sustain the realization of collective learning processes and the fostering of local actors' responsibility, capabilities, and power of action (Kindon et al., 2007; Kindon et al., 2009; Padilla and Ramos Filho, 2012). In that sense, the production of plural and shared knowledge among stakeholders can work as an instrument of social capital enhancement and institutional transformation (Baum et al., 2006; Greenwood et al., 1993).

As a result of the above, in this thesis, the adoption of PAR approaches to the analysis of the selected case studies, allows the realization of co-learning processes and the collaborative identification of effective public and private actions. Specifically, academic researchers, territorial actors, and other stakeholders could jointly analyse different contexts and experiences, collectively plan and organize contextualized action solutions, and identify new policy and strategic directions, with a general validity and applicability. As a result, PAR showed to give a relevant contribution to fill the main gaps of scientific and practical knowledge, and make the debate to support stakeholders in the catching of emerging sustainable development opportunities (Herr, 2007; Saarelainen et al., 2011).

3.2 Qualitative methods of data collection and analysis

The PAR processes were conducted by the means of qualitative methods for data collection and analysis (Pretty, 1995; Bergold and Thomas, 2012). Qualitative research is retained ideal for participatory approaches, aimed at exploring local and community systems, characterized by complex emerging phenomena and potentially sensitive human interactions (Bergold and Thomas, 2012; Patton, 2002; Pretty, 1995).

A case study protocol was designed for each of the conducted analyses, and discussed among all the researchers involved (Yin, 2012; Baškarada, 2014). In particular, we combined participatory field research activities, with a prior detailed desk research process on scientific literature, grey institutional sources, official statistics, legal documents and regulations.

As a first step, within the different conducted analytical processes, the realization of literature reviews, together with the collection of secondary data, led to the identification of respective institutional and theoretical backgrounds, and to the characterization, and assessment of relevant case studies contextual frameworks.

In the second phase, primary data were collected for all of the considered cases, by the means of in-depth interviews with selected key informants (Wang et al., 2017; Patton, 2002). To that end, both local and non-local stakeholders were recruited according to a purposeful snowball sampling (Palinkas et al., 2015; Patton, 2002; Bergold and Thomas, 2012). The latter aimed at gathering and selecting information-rich cases, related to the different phenomena of interest, based on the following criteria (Palinkas et al., 2015; Bernard, 2001; Creswell et al., 2011):

- i. stakeholders' availability and willingness to participate;
- ii. their ability to communicate experiences and opinions in an articulate, expressive, and reflective manner.

The recruitment and data collection were conducted until achieving saturation (Saunders et al., 2018). The interviews were conducted in person during all the Ph.D. Research period (2018-2022). In most of the cases, interviews were scheduled in presence, in interviewees' offices and during field visits, thus opening also space for direct observation.

The interviews' structure was both semi-structured (Publication 1) and open ended (Publication 2,3, and 5). Accordingly, specific research topics were identified as guidelines for the interviews. On the one hand, semi-structured format allowed to maintain control on the identified

interviews' topics, at the same time as leaving room to the interviewers for broader arguments and reflections. On the other hand, the unstructured format was appropriate in order to gather as much in-depth and detailed information as possible, allowing participants to express themselves freely without restrictions (Rubin and Rubin, 2011; Chilisa, 2012; Babbie, 2011).

In each of the conducted studies, the collection of literature and data was followed by a qualitative text analysis. The intent was to triangulate the results of interviews with the literature review and documentary analysis, in order to enhance the validity of the results (Patton, 2002). Accordingly, both primary information and secondary qualitative and quantitative data and literature were integrated, elaborated, and synthesized, based on the new conceptual models applied (Publications 1, 3), or the identified narrative and theoretical frameworks (Publications 2, 4). Accordingly, a basis was created for discussion.

Lastly, a particular reference should be made to the adoption of the focus group method. As a matter of facts, multi-stakeholder focus groups were organized for the aims of the different conducted case study analysis, both at the beginning (Publication 5) and at the end (Publications 1,2,3, and 5) of the participatory action-research activities.

Considering Publication 5, an initial focus group was organized by researchers and local actors, involving all the main partners of the considered multi-actor collaborative project. The latter was intended to co-design the PAR activities, and specifically to discuss preliminary desk research findings, and agree upon research and sampling methods (build-up phase) (Herr, 2007). At the same time, for the case analysed in Publication 5, and also for the other cases considered in Publication 2,3, and 5, final focus groups were organized by projects partners at the end of the action-research activities, involving all the interviewees, other key territorial actors, and stakeholders. In all the cases, the objective was to participatively discuss, enrich, and validate research findings, evaluate any major research limitations, and identify desirable future action-research goals (Herr, 2007; Cook, 2012).

3.3 Integrative grey literature review methodology

With reference to Publication 4, an innovative integrative review analysis was conducted, concerning the wide and most reliable grey literature and statistics on the world and European ornamental industry (Snyder, 2019; Torraco, 2016). Here, grey literature is considered as a

non-systematic aggregate of material and research, produced by different organizations outside of the traditional academic or commercial publishing and distribution channels (Farace and Schöpfel, 2015).

This methodology was adopted with a view to: i. overcoming the limits posed by the significant lack of economic literature on the European ornamental industry; and ii. dealing with the chronic outdatedness and fragmentation of relevant data and information, that negatively affect the availability of official statistics and institutional sources (Cardoso et al., 2017).

Innovatively, Publication 4 aims at filling the gap in the availability of structured and theoretically sound market studies and integrated data sources on new consumption trends, evolving marketing strategies, and governance settings, characterizing the evolution of a new scenario in ornamental horticulture.

Accordingly, in light of the above-described limiting conditions, grey literature was considered to represent the essential body of knowledge to the investigation of the European context, although characterized by a high variability and fragmentation of related institutional sources and documents, as well as datasets types.

Therefore, the adoption of a grey literature approach and integrative review strategy allowed a selection of the most reliable and representative institutional sources and providers of grey literature. As a result, their most recent and comprehensive contributions valuable for the topic were identified and reviewed (Snyder, 2019; DeSilva et al., 2020).

According to the characteristics of the sampled sources, the review design did not follow any specific standard (Torraco, 2016; Whittemore, and Knalf, 2005). The sampling of sources was realized by adopting a purposeful approach, aiming at an inclusive selection of material (Snyder, 2019).

Specifically, the review process included the following steps: (i) identification of key terms for the definition of the research topic; (ii) use of the identified key terms as keywords to conduct an online search (Google Search engine); (iii) selection of 10 reliable institutions (i.e., industry organizations, trade fairs, flower auctions, commercial services, governments, and other national and international institutions), among the major providers of grey literature concerning the European flower and plant market, and identification of their official websites; (iv) browsing of the official websites for the gathering of relevant documentary materials and statistics.

As a result, a purposeful sample of 58 secondary data sources was selected, according to well-identified inclusion criteria, i.e., relevance and reliability; document typology and accessibility; year of publication; scope; language. The sample was added with literature until achieving the saturation of information (Saunders et al., 2018).

The sampled grey literature was analyzed by the means of a comprehensive qualitative approach (Snyder, 2019; Torraco, 2016; Whitemore and Knalf, 2005). Accordingly, through the full-text reading of documents and the querying of datasets, the most relevant text parts and statistics were extracted. The extracted information was compared and integrated, based on criteria of logic and conceptual reasoning. Lastly, the results were elaborated in a narrative synthesis form, leading to the depiction of an effective framework of the investigated phenomena.

4. Summary of publications and contributions to ROs

4.1 Territorial dynamization for inclusive and sustainable rural development with (bio-)cultural identity

Publication 1. “Redes y dinamización territorial, factores clave para la valorización sostenible e inclusiva del patrimonio biocultural rural: un análisis desde el territorio de Garfagnana (Italia)”^{2,3}

Background. The international debate increasingly values the adoption of a new territorial approach to rural development, based on biocultural element of territorial capitals. To that end, human development and localized social capital acquired a growing consideration as key factors in accompanying the dynamization of biocultural resources, providing for higher agricultural sustainability and rural cohesion.

Aims. The Publication aims at conceptualizing and supporting new territorial approaches to rural development with (bio-)cultural identity. Specifically, we intend to: characterize and analyze quality virtuous valorization dynamics of rural biocultural resources; identifying relevant dynamization gaps, and related educational needs; proposing a new educational profile, flexible, and adaptable to different territorial contexts.

Theoretical framework. On a theoretical basis, a new conceptual model is identified, supporting the design and implementation of innovative capacity-building approaches, in the field of rural territorial development with (bio-)cultural identity.

Methodology. We applied the model to the analysis of the representative case study of the Garfagnana territory (Italy). The latter was selected among the cases analyzed within the scope of an Erasmus+ Capacity Building in Higher Education project. Based on a PAR approach, the project integrated and compared study cases related to experiences of

²English title: “*Networks and territorial dynamization, key factors for an inclusive and sustainable valorization of rural biocultural heritage: an analysis from the territory of Garfagnana (Italy)*”.

³Funding: this publication presents the results of the project “SUS-TER Networking Knowledge, Skills and Competencies for an Inclusive and Sustainable Territorial Valorization of Cultural Heritage, Origin products and Biodiversity”, co-funded by the Erasmus+ Programme of the European Union (<http://suster.org/>).

rural territorial development with (bio)cultural identity, in both Europe and Latin America.

Outcomes and impact. As the main outcome, the case study analysis allows validating the model potential and applicability to different territorial contexts and diverse biocultural-oriented experiences of rural territorial development, with a view to: identify key processes of biocultural resources valorization and related multiple benefits; detect relevant criticalities, needs for improvements, and contextualized educational gaps; define a shared demand for specific knowledge, skills, and competences, supporting the expansion of key human resources capabilities for territorial dynamization. Besides that, a new educational profile of “*Territorial Enhancer*” is also identified, adaptable to respond to different territorial context demands, and sustain the training of innovative professional figures, accompanying processes of empowerment of territorial actors towards the inclusive and sustainable mobilization of biocultural heritage. In the long run, we expect a significant impact of the new conceptual model, and its operationalization, in fostering processes of territorial dynamization with (bio-)cultural identity.

Contribution to ROs. The Publication innovatively contributes to improve the conceptualization of territorial approaches to rural development (**RO1**) by the identification of a new conceptual model, applicable to different territorial contexts, for the characterization and analysis of key processes of rural territorial development with (bio-)cultural identity. According to **RO2**, Publication findings give further insights to the recognition of biocultural resources’ multiple values as common territorial assets, and to the validation of their potential role in feeding processes of multidimensional transformation in rural areas, leading to higher agricultural sustainability, and rural cohesion. In accordance, the new model sustains the detection of main critical aspects and needs for improvement, providing for an effective combination of private with public action, for the realization of polycentric governance settings, and collective management mechanisms (**RO3**). In line with **RO4**, the Publication outlines the role of innovative education and capacity-building approaches to meet these gaps, thus supporting the development of co-learning communities, and the implementation of new educational profiles, intended to satisfy contextual-specific demand of knowledge, skills, and competencies. Herein, enhancing key human resources capabilities and strengthening localized social capital are

considered as fundamental aspects, boosting the empowering of local actors towards the building of networked territorial intelligences and multi-actor valorization strategies (RO4).

4.2 Agrobiodiversity valorization for rural territorial development and global sustainability

Publication 2. “La Cipolla Rossa della Valtiberina”. In: “Tutela e valorizzazione dell’agrobiodiversità vegetale e animale in Toscana: analisi e indicazioni di policy”^{4,5}

Background. The identification of agrobiodiversity resources qualities and specific value potential is among the focuses of the international and EU policy debate and institutional transformations, concerning sustainable agriculture and rural development. Accordingly, specific legislation is emerging - at the EU level, and in some of the EU Member States -, providing for agrobiodiversity resources protection, and inclusive and sustainable valorization.

Aims. This Publication aims to characterize local specific systems of agrobiodiversity resources, and to describe and analyze virtuous public-private initiatives, intended to their conservation, sustainable use, and equitable sharing of benefits. In particular, the research intends to: describe the qualities and multiple values of agrobiodiversity resources for agricultural sustainability and rural territorial development; identify and analyze activated governance settings and management mechanisms, determining their protection and territorial valorization; detecting relevant threats, needs for improvements, and new action directions, to sustain an effective transformation and coordination of public and private action.

Methodology. A case study analysis is followed, concerning the illustrative and representative case of the Valtiberina Red Onion (*Cipolla Rossa della Valtiberina*), a threatened plant genetic resource of Tuscany (Italy), and the public-private initiatives implemented for their protection

⁴ English title: “*The Red Onion of Valtiberina*”. In: “*Protection and valorization of animal and plant agrobiodiversity of Tuscany: analysis and policy indications*”

⁵ Funding: this publication presents the results of the project “Possibili scenari futuri del sistema di tutela e valorizzazione delle risorse genetiche vegetali, animali a rischio di estinzione della Toscana, in seguito all’avvento del sistema nazionale previsto dalla L 194/2015: un’analisi dei possibili effetti delle azioni di conservazione, tutela e valorizzazione a partire da 6 casi di studio”, funded by the Tuscany Region (Regione Toscana-MiPAAFT, Fondo Art.10, L. 194/2015).

and valorization. Based on a PAR approach, the research focuses on the analysis and comparison of virtuous cases of plant and animal underutilized and neglected landraces, selected among the ones registered in the Tuscan Regional Repertories of local breeds and varieties (Regional law 64/2004), and also included in the Italian National Registry of biodiversity for agriculture and food (National law 194/2015).

Outcomes and impact. According to the case study results, the research allows to: identify agrobiodiversity resources and related potential for the benefit of local economies, the society, and ecosystems; describe virtuous conservation and valorization dynamics, valuing the role of key local actors (e.g. custodian farmers, territorial bodies), and outlining the strengths and weaknesses of implemented public policies and private strategies; detect relevant threats, and new action directions, for enhancing and better coordinating policy tools and private efforts, towards the realization of tailored landrace-based product qualification strategies, marketing approaches, and territorial valorization paths.

We expect the Publication provides innovative insights for the advancement of the EU, Italian national, and Tuscany Regional debate and ongoing processes of institutional transformation, sustaining a greater recognition, and fairer remuneration, of agrobiodiversity-oriented agricultural activities, agri-food chains, and territorial paths.

Contributions to ROs. The Publication innovatively contributes to the identification of agrobiodiversity resources systems, consisting of local specific genetic resources and related traditions, and to the characterization of the latter distinctive valuable qualities (e.g., morphological, nutritional, historical, cultural, agronomic, etc.) and socioeconomic and environmental potential (e.g., advantaging rural growth, local communities, healthy food habits, safe nutrition, social capital construction, biodiversity, natural resources, energy preservation, etc.) (**RO2**). In light of **RO2** and **RO3**, our research describes and validates the essential role of public and private actors, at the EU, national, and local level, in coordinating their efforts towards the recognition of underutilized and neglected landraces multiple values, and their controlled conservation, and collective valorization, as common territorial assets, leading to the realization of resilient and multifunctional agri-food systems, and inclusive and sustainable rural territorial development paths.

In that regard, according to **RO3**, the research highlights and supports necessary institutional improvements, for the strengthening of polycentric

governance settings, capable to sustain the innovation and enhancement of specific policy tools, the adaption of legislation, and the development of tailored multi-stakeholder strategies. In line with that, the identified new action directions aim at favoring: on the one hand, the optimization of different landraces' market potential (e.g., the realization of integrated and traced supply chains, niche markets, etc.); at the same time, the protection and valorization of their specific sociocultural and environmental functions, considering the maintenance of public control and responsibility for local genetic resources, pure animal and plant breeding, territorial linkages, and collective property rights (**RO3**).

Publication 3. “Agrobiodiversity-Oriented Food Systems between Public Policies and Private Action: A Socio-Ecological Model for Sustainable Territorial Development”⁶

Background. The international and European literature and institutional contexts are fostering agrobiodiversity as the foundation of a new paradigm for localized agri-food systems development and sustainability. Accordingly, new systemic and holistic theoretical approaches and conceptual models are needed.

Aims. The Publication aims to identify and apply a new conceptual framework contributing to the understanding of how the restoring and valorization of underutilized or neglected landraces can act as a trigger of sustainable territorial development.

Theoretical framework. A new holistic model was designed for the characterization and analysis of agrobiodiversity-oriented food systems. The model is considered innovative in enhancing their conceptualization by the adoption of a socio-ecological systems (SES) approach.

Methodology. The model was applied to the representative case study of the localized agri-food system of the Valtiberina Red Onion (*Cipolla Rossa della Valtiberina*), a threatened plant landrace cultivated in Tuscany (Italy) (see also Publication 2). A participatory action-research approach was followed, involving both public and private stakeholders.

⁶ Funding: this publication presents the results of the project “Possibili scenari futuri del sistema di tutela e valorizzazione delle risorse genetiche vegetali, animali a rischio di estinzione della Toscana, in seguito all'avvento del sistema nazionale previsto dalla L 194/2015: un'analisi dei possibili effetti delle azioni di conservazione, tutela e valorizzazione a partire da 6 casi di studio”, funded by the Tuscany Region (Regione Toscana-MiPAAFT, Fondo Art.10, L. 194/2015).

Outcomes and impact. As the main outcome of the Publication, the new SES model capability was proved to identify and classify the assets, drivers, human action processes, and generated beneficial effects, concerning the development and reproduction of landrace-based quality virtuous valorization circles. Research findings highlighted the model as an innovative tool for the analysis of agrobiodiversity-oriented food systems sustainability and multifunctional role. Significantly, the model was designed to analyze and support the combined role of public policies and private action in sustaining the implementation of coherent management mechanisms, and effective governance settings. The Publication is expected to represent a further contribution to the most recent theoretical efforts and attempts of conceptualization, concerning the identification and implementation of new agrobiodiversity-oriented territorial approaches to rural development and higher global sustainability.

Contributions to ROs. The Publication contributes to the understanding of how the restoring and valorization of the knowledge and use of endangered landraces and traditional practices among local farmers, supply chain actors, consumers, and communities, could sustain the development and reproduction of multifunctional agrobiodiversity-oriented food systems, and act as a lever of territorial development and sustainability (**RO2**). According to **RO1**, the identification and testing of an innovative conceptual model, contributing to the notion and sustainability analysis of agrobiodiversity-oriented food systems, provides for a further conceptualization of rural territorial development approaches, by the means of a holistic and transdisciplinary point of view. Innovatively, in line with **RO1**, **RO2**, and **RO3**, the characterization and analysis of agrobiodiversity-oriented food systems as socio-ecological systems favor the identification of relevant assets, drivers, action processes, and effects, related to the development of landrace-based quality virtuous valorization circles, and the evaluation of their performance of sustainability and territorial development. Accordingly, the new model shows its potential for the detection of different public and private interests at stake. With particular reference to **RO3**, this provides support to the enhancement and effective combination of public policies and private action, towards the planning and implementation of hybrid management mechanisms, and polycentric governance settings. As a result, agrobiodiversity-food systems can improve their capacity of combining the production of private and public goods and services with

the generation and fair distribution of a complex of economic, environmental, and sociocultural benefits (**RO2, RO3**).

4.3 New strategic industries for rural territorial development and global sustainability: The case of Ornamental Horticulture

Publication 4. “Evolving Consumption Trends, Marketing Strategies and Governance Settings in Ornamental Horticulture. A Grey Literature Review”

Background. Ornamentals are the most diversified products and fast-changing industry of horticulture. A new flower and ornamental plant market scenario is developing: remarkable opportunities are emerging, but more efforts are required by both public and private stakeholders to seize them and assure a high-value positioning.

Aims. The Publication aims at filling the gap in the availability of integrated data sources and structured theoretically sound studies on new consumption trends, marketing strategies, and governance settings. Specific objectives are: identifying an innovative ornamental horticulture market data framework; evidencing evolving dynamics of competition in Europe and necessary adaptations of public and private action; defining a new action-research agenda, capable of stimulating the interest of businesses, researchers, and institutions.

Methodology. In terms of methodology, an innovative integrative review analysis was carried out, of the wide and most reliable grey literature and statistics, using a comprehensive approach.

Outcomes and impact. Results show the emerging consumption dynamics and high-value consumer profiles characterizing the European market, expected to significantly expand and transform, according to the impact of globalization, climate change, urbanization, digitalization, and the affirmation of neo-luxury and sustainability-oriented consumption patterns. The evolution of marketing strategies and governance settings is also highlighted, together with the necessity of developing and integrating public and private initiatives for realizing high-value sustainable and transparent production systems and supply chains. Accordingly, relevant action-research directions are described.

These findings are expected to improve the current debate on the competitiveness of the European ornamental industry and contribute to taking a step towards a synergic combination of new differential advantages and wider sustainability goals.

Contributions to ROs. In light of **RO2**, the Publication highlights how major changes in social and ecological determinants are driving the emergence of new competitive dynamics and sustainability issues in the European agribusiness, boosting the enhancement of local specific resources as a way to synergically combine new differential advantages, with wider social and environmental goals. Innovatively, the Publication focuses on the representative case of the European ornamental horticulture. The Publication wants to evidence the combined effects of the evolution of market and social demand, at EU and national level, and the transformation of relevant institutional frameworks (both public and private), in making European ornamental industry acquire a strategic role in the fields of agricultural sustainability and rural territorial development (**RO2**). Accordingly, the Publication findings give relevant inputs to the advancement of market research and the improvement of public and private action and coordination, for the enhancement of flowers and plants domestic production systems and supply chains economic, social, and environmental benefits (**RO3**). In that regard, the provided integrative data frameworks on new consumption trends, evolving marketing strategies, and governance settings, together with the new identified action-research directions are intended to sustain policy makers, businesses, and industry organizations in the planning and combination of effective informed public policies and private strategies. Therefore, according to **RO3**, the study contributes, on the public side, to highlight the necessary translation of a new EU policy orientation – e.g., related to the implementation of the EU Green Deal strategy and Biodiversity 2030 directions- into favorable adaptations of agricultural, environmental, and social policies, leading to boost ornamentals demand, and sustain an adequate reorganization of production and trade. Besides that, on the private side, the Publication evidences the importance of developing more collaborative strategic and governance approaches, for the realization of win-win production and marketing strategies, and effective communication and sensitization initiatives.

Publication 5. “Luxury strategies for agricultural products: a new sustainable governance model for the valorisation of the Tuscan flower supply chain”

Background. Italian floriculture suffers from market globalization and the pressure of industrialized, standardized, low-cost productions, originating from the Southern World and distributed by the Dutch market. Among the main Italian supply systems, Tuscany experiences a lack of policies and initiatives for the enhancement of flower traditional crops, local knowledge, and production practices, towards the enhancement of local supply system sustainability and territorial valorization.

Aims. The Publication aims at valorising a sustainable differentiated Tuscan flower supply to be positioned in a high added-value niche emerging market, the floral design one. The identified tool was the activation of a shared origin-based qualification strategy, sustainably governed by an innovation multi-stakeholder platform (IP).

Theoretical framework. On a theoretical basis, a business-to-business-to-consumer (B2B2C) luxury marketing approach is adopted. Besides that, the IP is characterized as a reference point for the planning of the governance model, promoting collaborative learning and organization.

Methodology. The Publication is based on a case study analysis, concerning a virtuous collective initiative, intended to the inclusive and sustainable requalification of the Tuscan flower supply system. The initiative was activated and coordinated by one of the most important Italian flower trading cooperatives, with the support of the University of Florence. In terms of methodology, a Participatory Action Research (PAR) approach was followed, involving local producers, wholesalers, research institutes, and public authorities.

Outcomes and impact. As the main outcomes, the Publication led to: validate the relevant theoretical framework; define and assess the new floral design market niche, for the positioning of a differentiated offer of Tuscany-grown flowers; validate the potential of a shared B2B2C origin-based qualification strategy, according to luxury marketing principles; characterize the IP as a sustainable governance model for the strategy and operations. As a result, the re-organization and strategic re-orientation of the local supply system are expected to enhance its sustainability and competitiveness, and to activate a wider territorial path of development, based on the virtuous valorization of local specific flower agrobiodiversity and related biocultural heritage.

Contributions to ROs. The Publication provides an innovative and representative case study, concerning the enhancement of valuable systems of local specific resources as a lever of inclusive and sustainable rural territorial development (**RO2**). Actually, according to the evolution

of socio-ecological determinants affecting the world, European, and Italian national markets (see also Publication 4), consumers increasingly perceive territory and sustainability as sources of value for locally-grown and preferably autochthonous flowers, thus boosting new opportunities of differentiation and territorial development for small-scale high-cost local supply systems, as the one of Tuscany (**RO2**). Accordingly, in light of **RO2** and **RO3**, the presented case study evidences how the activation and collective organization of different territorial actors and stakeholders (e.g., breeders, producers, traders, floral designer, research institutes and public authorities) can support the co-design and implementation of effective marketing strategies and collaborative governance settings, capable to dynamize and virtuously valorize local specific flower (agro-)biodiversity and related territorial capital (social, human, natural). In that way, PAR initiatives appear particularly relevant for the realization of high-value sustainable and transparent supply systems and rural development paths. With reference to **RO3**, the Publication highlights the importance of enhancing public and private action and coordination to the realization of new positionings to add value to locally-grown flowers, with a view to the penetration of emerging high-potential market niches (as is the case of floral design). Accordingly, the innovative role of B2B2C qualification strategies and luxury marketing approaches is validated. Indeed, in the considered case, the latter demonstrate their potential for: the qualification of a Tuscany-specific flower product offer, based on distinctive specialty, origin, and sustainability attributes; and the creation of an ingredient brand identity, getting a higher social recognition and fairer remuneration for Tuscany flowers unique biocultural and sustainability content (**RO3**). In addition, on the side of governance, the fundamental role of innovative (formal and informal) cooperative networks is highlighted. The latter can work as innovation multi-stakeholder platforms (IPs), supporting participatory and empowering mode of collaboration among territorial actors, and developing their capacity of co-learning, co-design, and self-organization of both relevant strategic and operational transformations (**RO3**).

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II – PUBLICATIONS



Publication 1

Belletti, G.; Ranaboldo, C.; Scarpellini, P.; Gabellini, S.; Scaramuzzi, S.; Redes y dinamización territorial, factores clave para la valorización sostenible e inclusiva del patrimonio biocultural rural: un análisis desde el territorio de Garfagnana (Italia). In *Bio-cultural Heritage and Communities of Practice. Participatory Processes in Territorial Development as a Multidisciplinary Fieldwork*; Bindi, L., Ed.; Perspectives on Rural Development. 2022.

Redes y dinamización territorial, factores clave para la valorización sostenible e inclusiva del patrimonio biocultural rural: un análisis desde el territorio de Garfagnana (Italia)

*Giovanni Belletti, Claudia Ranaboldo, Paola Scarpellini, Sara Gabellini, Silvia Scaramuzzi*⁷

1. Introducción: la valorización virtuosa del patrimonio biocultural rural

Los países europeos comparten un patrimonio biocultural muy importante, basado en recursos materiales e inmateriales, como la naturaleza y el paisaje, la agrobiodiversidad, los productos de origen, la cultura, las tradiciones y los saberes hacer. Las zonas rurales suelen ser cunas para la protección y conservación de este patrimonio. La importancia de la agricultura familiar campesina y de los productores y emprendedores de pequeña escala, el crecimiento del empleo y los ingresos rurales no agrícolas, la relevancia de las ciudades y pueblos intermedios para las articulaciones urbano/rurales, recién comienzan a reflejarse en las agendas políticas y en las estrategias de los países.

Algunos enfoques exitosos, como los del desarrollo local endógeno y neo-endógeno (van der Ploeg y Marsden, 2008) y de la multifuncionalidad (Van Huylenbroeck y Durand, 2003) que, en algunos contextos, han sido adoptados para abordar el papel fundamental de las áreas rurales, plantean que el énfasis en la identidad del territorio puede llegar a tener un sentido estratégico, siendo capaz de asegurar un mayor poder de negociación de los actores sociales locales en los procesos de desarrollo y en la distribución de sus beneficios.

⁷ *Giovanni Belletti* y *Paola Scarpellini* pertenecen al Departamento de Ciencias Económicas y Empresariales de la Universidad de Florencia; *Claudia Ranaboldo* es parte de la Plataforma Diversidad Biocultural y Territorios; *Sara Gabellini* y *Silvia Scaramuzzi* pertenecen al Departamento de Ciencias y Tecnologías Agrícolas, Alimentarias, Ambientales y Forestales de la Universidad de Florencia. Todos los autores contribuyeron de igual manera al manuscrito final.

El potencial del patrimonio biocultural para el desarrollo sostenible e inclusivo, como afirman Fonte y Ranaboldo (2007), se basa – entre otros factores – también en una demanda de bienes y servicios con atributos simbólicos (Ray, 2003) que apelan a nuevos modelos de vida (naturaleza, salud, comercio justo, ética en los negocios), y al ligamen indisoluble entre estos atributos simbólicos y los territorios rurales. Más específicamente el reconocimiento del origen, la memoria y una trayectoria histórica compartida entre los actores locales contribuye a las relaciones sociales y la cohesión territorial, así como a valorar crecientemente las diversidades – culturales y naturales – en un mundo complejo. Todo ello ha permitido abordar y seguir la evolución – durante los últimos quince años – de distintos procesos de desarrollo territorial con identidad cultural (Ranaboldo, 2006 y 2018)⁸.

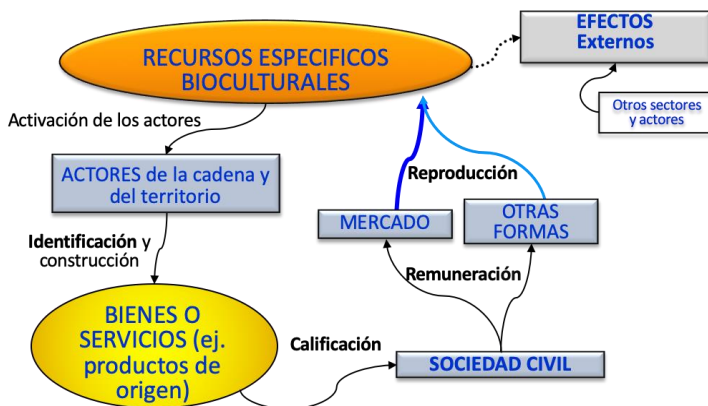
Sin embargo, muy a menudo los territorios rurales han sido incapaces de valorar el patrimonio biocultural para el desarrollo social y económico de las poblaciones locales. Se resaltan distintos tipos de problemas: los recursos patrimoniales no se utilizan o se utilizan por debajo del potencial (*falta de activación*); los recursos se sobre-explotan, en una lógica de corto plazo (*falta de sostenibilidad ambiental*); los recursos se valorizan, pero los beneficios se distribuyen de manera inequitativa y no permiten a los gestores de estos recursos (muy a menudo, agricultores de pequeña escala) de reproducirlos (*falta de sostenibilidad y justicia social*).

El modelo conceptual adoptado en este artículo es el círculo virtuoso del patrimonio biocultural (fig.1), extensión del modelo anteriormente desarrollado para los productos de origen (Belletti et al., 2003; Vandecandelaere et al., 2010). Este modelo se centra en los procesos que hacen posible remunerar los recursos bioculturales de un territorio a través de iniciativas activadas por los actores del territorio de manera colectiva. Los bienes y servicios que incorporan los recursos bioculturales pueden ser valorados por el mercado o por mecanismos extra-mercantiles, generando recursos económicos que – si distribuidos equitativamente entre los actores del sistema territorial – permiten cerrar el círculo, reproduciendo y mejorando los recursos mismos. El círculo virtuoso se basa en una valorización del patrimonio biocultural inclusiva de actores con mayores desigualdades, menores derechos y menos empoderados (actores diferentes, dependiendo de los contextos territoriales), entre ellos

⁸ Vea también las iniciativas impulsadas por la Plataforma Diversidad Biocultural y Territorios (<http://www.diversidadbioculturalyterritorios.org>).

agricultores familiares y empresarios de pequeña escala, jóvenes y mujeres.

Figura 1 – El círculo virtuoso del capital biocultural.



Fuente: Adaptado de Vandecandelaere et al. (2010).

El círculo nos permite identificar una pluralidad de procesos críticos que caracterizan las experiencias de desarrollo rural con identidad cultural (van der Ploeg y Marsden, 2008; Vandecandelaere et al., 2010; Brunori, 2019) y que podemos agregar en cinco macro categorías:

1. Endogeneidad y activación de los actores y recursos locales. Los actores locales son el pivote de los procesos de valorización sostenible (van der Ploeg y Van Dijk, 1995; Cejudo y Navarro, 2020), siendo los únicos capaces de movilizar recursos del territorio para la creación de ingresos y oportunidades de trabajo.
2. Conectividad. Las relaciones de red entre actores locales, y entre ellos y actores externos al territorio (van der Ploeg y Marsden, 2008) son clave para superar los obstáculos derivados del pequeño tamaño de las empresas y generar así una variedad de ventajas de colaboración.
3. Calificación y conexión con las cadenas de valor. La calificación es el proceso mediante el cual los actores sociales (consumidores, ciudadanos, instituciones públicas, otros actores del territorio y/o de la cadena de valor, etc.) pueden reconocer el valor de los productos vinculados al origen, al patrimonio cultural y a la biodiversidad y de

vincularlos eficazmente (desde el punto de vista comunicativo, comercial y logístico) con nichos de mercado locales y globales.

4. Integración de las actividades en el entorno rural. Los elementos del patrimonio biocultural, por su profundidad histórica y su dimensión colectiva e identitaria, permiten una integración con otras actividades en el medio rural, incluso más allá de su importancia económica actual (Bérard y Marchenay, 2004).

5. Gobernanza territorial multinivel. Muchos niveles diferentes del marco institucional influyen en los procesos de desarrollo local (Pollermann et al., 2014), por lo que resulta de suma importancia la capacidad de vincular el sistema de gobernanza territorial (incluyendo las organizaciones de ciudadanos y consumidores) (Lamine et al., 2012) con los ámbitos regionales, nacionales e internacionales

2. Contexto, objetivos y metodología

2.1. El Proyecto SUS-TER

La activación del círculo virtuoso requiere cambios importantes en las estrategias y en las lógicas operativas individuales y colectivas, privadas y públicas, la integración de nuevos conocimientos y competencias profesionales tradicionales hacia un proceso sostenible e inclusivo de desarrollo económico, social y territorial, y la activación de una sistemática interacción con el mundo de la investigación académica y la educación.

El Proyecto SUS-TER “Redes de conocimientos, habilidades y competencias para una valorización territorial inclusiva y sostenible del patrimonio cultural, los productos de origen y la biodiversidad”, apunta a contribuir a la valorización territorial inclusiva y sostenible de los recursos locales en particular reforzando el capital humano, que, como hemos visto, es un elemento determinante y crítico en la activación y el funcionamiento del círculo virtuoso.

En este artículo se expone el análisis de los problemas identificados en un territorio rural de montaña, caracterizado por su marginalidad, pero al mismo tiempo por la presencia de experiencias e intentos de valorización del patrimonio biocultural local. El objetivo del artículo es lo de especificar las demandas de conocimientos, habilidades y competencias para activar y apoyar procesos de valorización territorial inclusiva y sostenible del patrimonio cultural, productos de origen y biodiversidad; y

contribuir de esta manera a definir una figura de “Dinamizador territorial” y unos principios básicos para su formación.

2.2. La metodología

Durante la investigación se adoptó una metodología de estudio de caso, el mismo que fue seleccionado como resultado de un análisis documental para identificar un caso típico e ilustrativo (Seawright y Gerring, 2008). Seleccionamos a la Garfagnana, considerando las dimensiones económica, social, histórica, cultural, geográfica y ambiental que caracterizan a este territorio, así como su potencial bio-cultural, la institucionalidad local comprometida con el desarrollo rural, las formas de organización, las alianzas interinstitucionales y las experiencias de intervención previas.

Adoptamos un enfoque de investigación-acción participativa (Chambers, 1994; Baum et al., 2006) con el objetivo de involucrar a la comunidad local en la puesta en común y el análisis de su entorno. Este enfoque enfatiza el co-aprendizaje y la participación entre los actores en la transformación de su entorno (Kindon et al., 2007; Kindon et al., 2009; Padilla y Ramos Filho 2012). Así, la producción de conocimiento plural, compartido y participativo se convierte en un instrumento de transformación social y organizacional (Baum et al., 2006; Greenwood et al., 1993).

Durante la investigación, desarrollada en el primer semestre 2019, se siguieron las siguientes fases: a) revisión y análisis de fuentes secundarias; b) entrevistas semiestructuradas; c) grupo focal.

En la primera fase se revisaron fuentes secundarias, incluyendo datos estadísticos, estudios realizados por universidades y centros de investigación, documentos de administraciones públicas, prensa local, páginas web que promocionan el territorio; esto ha sido útil para conocer los procesos territoriales y sus factores críticos. En la segunda fase, durante los meses de abril y mayo 2019, fueron realizadas 10 entrevistas presenciales en profundidad con actores claves, a través de cuestionarios semiestructurados, para dejar espacio a reflexiones y argumentaciones más amplias. Los encuestados fueron seleccionados a partir de los siguientes criterios: profundo conocimiento del territorio y de sus dinámicas; pertenencia a diferentes sectores públicos y privados (expresión de diferentes actividades económicas: agrícola, turístico, comercial), y tercer sector (consorcios, asociaciones, organizaciones ciudadanas); conocimiento y/o participación en iniciativas de

valorización del patrimonio biocultural territorio. En particular se entrevistaron: dos gerentes de la Administración Regional de Toscana, expertos en políticas agrícolas, multifuncionalidad y desarrollo rural; el director del Grupo de Acción Local (aplicación del programa LEADER de la UE) que opera en el territorio, experto de agricultura y planificación local; la representante de la Asociación Nacional de Municipios Italianos de Toscana (ANCI-Toscana), experta del sector agroforestal y de formación acreditada; dos miembros de la Unión de Municipios de Garfagnana que trabajan en proyectos de protección de la biodiversidad, la diversidad social y cultural, la conservación y mejora de los paisajes, y el fortalecimiento de la gobernanza; la coordinadora de la asociación Comunidad de la Alimentación y Agrobiodiversidad de Garfagnana, expresión de un nuevo proyecto piloto que reúne a múltiples actores del territorio; el presidente de una cooperativa local que agrupa a muchos productores locales; el presidente de un consorcio que colabora activamente con las autoridades locales para coordinar y organizar iniciativas y programas para la promoción y mejora del territorio; y finalmente la responsable del servicio de información y turismo situado en el mayor centro de la zona que organiza eventos para mejorar el turismo, la cultura y las tradiciones locales.

El grupo focal se desarrolló en mayo 2019 en la Unión de los Municipios de Garfagnana, con la asistencia de 13 actores locales, en particular empresarios agrícolas y del sector del turismo rural, representantes de instituciones y asociaciones locales. El grupo focal se realizó siguiendo técnicas participativas que permitieron la mayor expresión posible de diferentes sujetos. El grupo de enfoque se guió por algunos temas clave que los participantes debatieron en pequeños grupos mixtos. Los participantes fueron elegidos tratando de garantizar la equidad en el origen geográfico, es decir, que cada zona del territorio estuviera representada; en el sector productivo (agricultores, silvicultores, criadores); en los métodos productivos (producción convencional y orgánica); en los servicios (comerciales, sociales y turísticos). Fue garantizada la representatividad de las instituciones locales (municipios y servicios públicos) y de las distintas organizaciones profesionales agrarias y de las asociaciones locales vinculadas a la agricultura, al comercio, al deporte, al turismo y a los otros servicios.

3. Resultados del análisis

En esta sección, tras una breve descripción del territorio seleccionado, se presenta el análisis de las demandas de conocimientos y competencias relacionadas con la valorización inclusiva y sostenible del patrimonio cultural, los productos de origen y la biodiversidad del territorio de Garfagnana, a fin de identificar la orientación posible de una formación pertinente. Los resultados son organizados con referencia a las cinco macro categorías de procesos que caracterizan el desarrollo rural con identidad cultural, presentando para cada categoría problemas, objetivos, conocimientos, habilidades y competencias requeridas.

3.1. Dinámicas de desarrollo rural territorial relevantes en el territorio de la Garfagnana

La Garfagnana, la zona más septentrional de la provincia de Lucca en Toscana es conocida en Italia como “territorio verde”, de hecho, su nombre significa “Gran Bosque”. Los 15 municipios del territorio⁹ han pasado, históricamente, por una importante reducción de la población, y se caracterizan actualmente por una estructura demográfica desequilibrada hacia grupos de mayor edad y una tasa de natalidad muy baja. Este fenómeno es destinado a incrementarse con la ausencia de políticas eficaces para garantizar servicios adecuados a las poblaciones locales y apoyar el desarrollo de actividades económicas atractivas, en particular para los jóvenes.

El paisaje rural de la Garfagnana se presenta como un sistema único, en el que la acción de la naturaleza y del hombre se integraron en armonía y cuyo rico patrimonio de la agrobiodiversidad agrícola vegetal y animal es el resultado del aislamiento secular del territorio y también de una actitud cultural resistente a la innovación. El sector agroalimentario muestra fuertes sinergias con la agricultura y la artesanía, con una canasta de productos caracterizada por producciones de pequeña escala con calidad medio-alta. El panorama de productos típicos ha evolucionado en los últimos años, producciones tradicionales, como el trigo y el maíz, han dado paso a cultivos que, gracias a su singularidad y particularidad territorial, ofrecen mayores garantías económicas¹⁰.

⁹ La Garfagnana tiene actualmente 28.806 habitantes, con una densidad de población ex de 53,97 km² (para comparar la provincia de Lucca tiene una densidad de 459,61 km²).

¹⁰ Dos productos con reconocimiento de origen europeo: Farro (espelta) della Garfagnana IGP, Farina (harina) di Neccio DOP. Muchos otros productos

En el territorio se encuentran importantes testimonios de arte y arquitectura, tales como iglesias románicas, monasterios, fortalezas y castillos. Este patrimonio cultural e histórica de base material se ha enriquecido a través de una revalorización de las identidades locales y la recuperación del sentido de pertenencia a su cultura, expresadas a través de los ritos religiosos, las actuaciones y los cuentos populares que se pueden ahora apreciar más en el territorio.

De gran importancia ha sido el reconocimiento por la UNESCO, en el 2015, de los territorios del Parque Nacional de los Apeninos toscano y emiliano y de los municipios circunstantes como Reserva Mundial de Biosfera¹¹, contribuyendo a valorizar el paisaje y la biodiversidad, beneficiándose también de los efectos de imagen y comunicación que derivan de este tipo de certificaciones internacionales.

La conexión y la estrecha correlación a nivel de la imagen existente entre el territorio y las producciones, permite también una conexión con el turismo rural y ambiental desarrollado a través de una oferta variada de rutas temáticas vinculadas a los productos del territorio.

En los últimos años, y sobre todo en el contexto originado por la pandemia, se están generando transformaciones de las comunidades rurales que pueden abrir puertas a nuevas perspectivas de desarrollo. La mayor atención y valorización del patrimonio biocultural en Garfagnana, la difusión de una agricultura familiar multifuncional, una mayor atención al ambiente, la presencia de nuevos residentes o pobladores originarios que regresan al campo, son factores que están contribuyendo a crear o fortalecer diferentes redes de colaboración entre muchos actores dinámicos, y nuevas oportunidades económicas y sociales alrededor de los productos típicos, el turismo y también la búsqueda de una nueva calidad de vida local. Un ejemplo es el Grupo de Acción Local (GAL), impulsado en el ámbito del programa LEADER que aplica la estrategia de desarrollo local, y la Comunidad de la Alimentación (*Comunità del Cibo*), que reúne a múltiples actores privados y públicos del territorio.

3.2. Análisis de las demandas de formación relacionada con la valorización del patrimonio biocultural de Garfagnana

agroalimentarios forman parte de la tradición gastronómica local y están totalmente integrados en la gama de productos típicos de Garfagnana.

¹¹ <http://www.mabappennino.it>.

3.2.1. Endogeneidad y activación de los actores y recursos locales

En la Garfagnana (y en la Región Toscana en general) existe una gran riqueza de agrobiodiversidad endémica, agroecosistemas, tradiciones locales, recursos ambientales vinculados a entornos montañosos particulares, productos de origen y platos típicos. Esta riqueza está también registrada en las bases de datos de productos agroalimenticios tradicionales¹² y de la *Banca del Germoplasma* de la región Toscana¹³ donde, por ejemplo, se encuentran muchas variedades de frijoles y de maíz endémicas de la Garfagnana.

Existen fuertes lazos construidos a lo largo del tiempo entre los recursos culturales, tradicionales y enogastronómicos del territorio y la identidad de la población. Los habitantes se identifican con algunos de estos recursos, a menudo los más conocidos, pero el nivel de conocimiento no es homogéneo, especialmente por parte de las generaciones más jóvenes y también por parte de las propias empresas. Además, hay un gran número de recursos endógenos que han sido olvidados o se está perdiendo la memoria “fina” en relación con su producción y consumo.

Un aspecto crítico es el policentrismo de los recursos endógenos del territorio, ya que un solo recurso difícilmente puede ser tan importante como para “jalar” el desarrollo de todo un territorio. La capacidad de articular productos típicos, tradiciones locales, eventos, elementos del patrimonio histórico-arquitectónico, entre otras expresiones de la identidad, aumenta las ventajas diferenciales de un territorio y las potencialidades de su desarrollo con base en este patrimonio.

Tabla 1. Problemas, objetivos y conocimientos, habilidades y competencias demandadas: categoría endogeneidad y activación de los actores y recursos locales.

| | |
|------------------|---|
| <i>Problemas</i> | <ul style="list-style-type: none">- Erosión de los recursos genéticos, culturales, humanos- Pérdida de conocimientos en términos de producción, uso y consumo- Pérdida de conciencia de los vínculos del recurso con la vida local, el territorio y otros recursos- Apropiación individual de los recursos locales |
|------------------|---|

¹² <http://prodtrad.regione.toscana.it>.

¹³ <http://germoplasma.arsia.toscana.it>.

| | |
|--|---|
| <p><i>Objetivos</i></p> | <ul style="list-style-type: none"> - Conservar o mantener los recursos biológicos, culturales y paisajísticos presentes en el territorio - Desarrollare el capital humano - Difundir el conocimiento sobre los productos de origen y sus usos - Reforzar las conexiones entre los diferentes elementos del patrimonio biocultural (ej. platos típicos y recursos agro-genéticos locales) - Aumentar la percepción del patrimonio biocultural como un recurso por parte de los actores locales |
| <p><i>Conocimientos, habilidades y competencias demandadas</i></p> | <ul style="list-style-type: none"> - Reconocer y valorar el conocimiento local y los actores locales que detienen esa sabiduría - Disponer de las herramientas para apropiarse del conocimiento científico y técnico sobre los recursos patrimoniales relacionados con la identidad cultural - Saber cómo mantener relaciones con universidades y centros de investigación - Desarrollar habilidad para mediar entre el conocimiento científico y el conocimiento contextual (sabidurías locales) - Promover un enfoque holístico, capaz de comprender las conexiones con otros recursos y elementos del capital territorial: uso de herramientas tales como mapas participativos (mapas comunitarios), georreferenciación, uso de sistemas participativos de información geográfica - Conocer y utilizar herramientas para la protección de la agrobiodiversidad, tradiciones sociales, culturales, gastronómicas y vitivinícolas - Saber planificar actividades de inventario y catalogación de los recursos territoriales |

Fuente: Elaboración propia sobre investigación directa.

3.2.2. Conectividad

El patrimonio cultural, los productos de origen y la biodiversidad son bienes que comparten un carácter colectivo. De hecho, son construidos, conservados y reproducidos a lo largo del tiempo por una comunidad de actores locales, no sólo productores. Consecuentemente, al ser un bien común, su valorización no puede ser llevada a cabo sólo por empresas y emprendimientos individuales.

Una experiencia interesante y muy reciente de conectividad territorial es la de la mencionada Comunidad de la Alimentación: una asociación entre productores locales (agricultores, agroturismos, restauradores, cooperativas y procesadores) y sus formas asociativas (asociaciones profesionales de agricultores, asociaciones vinculadas a la protección de las razas autóctonas), ciudadanos y consumidores locales (consumidores, grupos de compras solidarias y asociaciones culturales) y municipalidades locales, que conecta la cultura local con la innovación. Dentro de la Comunidad una presencia importante es la de los “agricultores guardianes” que se comprometen a conservar los recursos de la agrobiodiversidad vinculados a los métodos de cultivo tradicionales. Los principales problemas encontrados en el análisis de la Garfagnana son el individualismo de los actores y su dificultad para llegar a acuerdos. De ahí que la demanda de habilidades para fomentar el trabajo en red y la conectividad entre actores del territorio es muy fuerte. En tal sentido se plantea la importancia de construir redes formales o informales (grupos de trabajo, asociaciones, empresas cooperativas, consorcios) y realizar un tipo de animación territorial que conduzca a la planificación.

Tabla 2. Problemas, objetivos y conocimientos, habilidades y competencias demandadas: categoría Conectividad.

| | |
|------------------|---|
| <i>Problemas</i> | <ul style="list-style-type: none">- Individualismo de los actores- Voluntad limitada por tomar parte en procesos participativos- Dificultades para llegar a puntos de vista compartidos sobre el uso de los recursos del territorio |
| <i>Objetivos</i> | <ul style="list-style-type: none">- Promover la apertura y la confianza entre los actores del territorio- Crear espacios de encuentro y discusión en el territorio |

| | |
|---|---|
| | - Resolver conflictos para desarrollar dinámicas y diseños colectivos |
| <i>Conocimientos, habilidades y competencias demandadas</i> | <ul style="list-style-type: none"> - Emplear metodologías participativas (animación de las comunidades locales y grupos de productores y ciudadanos que conduzca a espacios de diálogo) - Conocer y utilizar técnicas de facilitación para lograr visiones comunes y mediar conflictos - Conocer las herramientas jurídicas relativas a las formas asociativas y a las formas colectivas de empresa - Ubicar las oportunidades político-financieras relacionadas con los procesos de desarrollo rural - Contribuir al desarrollo de la planificación institucional y territorial |

Fuente: Elaboración propia sobre investigación directa.

3.2.3. Calificación y profundización en la cadena del valor

En los últimos años, en la Garfagnana se han generado nuevas iniciativas de calificación y valorización relacionadas con la producción local, como los sellos de calidad (denominaciones de origen e indicaciones geográficas protegidas, marcas colectivas) y las ventas directas.

Estas iniciativas a menudo no resultan sostenibles por falta de conocimientos relacionados con la inserción a mercados y la promoción. En particular se ha detectado: falta de un enfoque de marketing y de promoción adecuada por parte de muchos productores; falta de conocimiento técnico de la producción y de conocimiento del mercado; fragmentación de la oferta sin plataformas comunes, y debilidades en el uso de nuevas tecnologías y herramientas digitales.

El territorio se compone principalmente de micro realidades y pequeñas empresas: el esfuerzo por crear una red es fundamental para poder entrar en los mercados y también para el aspecto logístico, es decir, para crear plataformas, lugares donde la producción puede fluir y luego ser puesta en el mercado.

Un aspecto crítico es el débil vínculo entre los productores y los restaurantes y los distintos expendios de comida. El producto local a

menudo no es apoyado o valorado, tanto en términos de conocimiento e información como en términos de aspectos prácticos de la compraventa. Esto trae consigo problemas de logística, transporte, almacenamiento, pero sobre todo de diálogo, difusión y comunicación de una veta potente para los productos locales, que es la gastronomía.

Otro aspecto crítico es el uso de nuevas herramientas tecnológicas. Si bien los canales de venta de las empresas se han ampliado, todavía pocos empresarios son capaces de utilizar las plataformas informáticas, las ventas en línea de sus productos y / o servicios. El sector de la comunicación es también un punto débil: las páginas web de las empresas, así como los perfiles de Facebook o Twitter, a menudo están mal mantenidos e infrautilizados en comparación con el potencial que ofrecen.

Tabla 3. Problemas, objetivos y conocimientos, habilidades y competencias demandadas: categoría Calificación y profundización en la cadena del valor.

| | |
|-------------------------|---|
| <p><i>Problemas</i></p> | <ul style="list-style-type: none"> - Falta de normas comunes sobre los atributos esenciales de calidad de los productos de origen y de los servicios locales (restauración, turismo, etc.) - Pequeño tamaño de las explotaciones y de las empresas de transformación, lo que dificulta el acceso a algunos mercados y canales de venta - Dificultades para comunicar la especificidad de los productos y servicios locales, preservando y mejorando sus diversos componentes de valor - Falta de experiencia colectiva en la comercialización de productos/servicios - Sector turístico fragmentado y poco profesional |
| <p><i>Objetivos</i></p> | <ul style="list-style-type: none"> - Desarrollar estándares de calidad y señalización (sistemas de calidad de la empresa, DOP/IGP, marcas colectivas, sistemas de control y garantía del consumidor) - Desarrollar métodos de comercialización coherentes con las características del producto (canal, mercado de referencia, comunicación de calidad, marketing mix) y con las necesidades de desarrollo del sistema de producción del producto - Mejorar las actividades de marketing colectivo - Acceder a nuevas formas de venta (cadenas cortas innovadoras, mercados digitales) |

| | |
|--|---|
| <p><i>Conocimientos, habilidades y competencias demandadas</i></p> | <ul style="list-style-type: none"> - Emplear conocimientos y herramientas de marketing estratégico, individual y colectivo - Utilizar las herramientas de comunicación digital - Saber identificar y comparar los canales comerciales más adecuados (venta directa, Internet, restaurantes locales, ferias, mercados locales, mayoristas, minoristas, grandes minoristas) - Conocer los marcos jurídicos relevantes (sellos de calidad, reglamentos de calidad de los productos, normas voluntarias) - Acompañar el diseño de proyectos utilizando herramientas de control de gestión (plan de negocio) e instrumentos financieros - Saber evaluar los efectos de proyectos de valorización, tanto ex-ante como ex-post |
|--|---|

Fuente: Elaboración propia sobre investigación directa.

3.2.4. Integración de las actividades en el entorno rural

Como se señaló, es muy importante combinar los aspectos agrícolas y rurales con los aspectos naturalistas, turísticos y culturales del territorio de Garfagnana. En el territorio se encuentran proyectos integrados que se desarrollan en las explotaciones multifuncionales individuales, donde hay una diversificación de las actividades empresariales (agroturismo, transformación de productos, venta directa, degustación, explotaciones educativas, servicios terapéuticos). Sin embargo, a menudo se trata de iniciativas individuales que luchan por emerger.

En el territorio falta un sujeto capaz de contribuir a la construcción de relaciones más sólidas entre los diferentes actores, facilitando la identificación de orientaciones y objetivos comunes que supere la fragmentación de intereses y posiciones, fragmentación que se ha consolidada a lo largo de muchos años. También hace falta una participación más continuativa y de calidad que permita pasar de una

lógica de “proyectos ideales” a su aplicación práctica en el mediano/largo plazo.

El turismo puede resultar una actividad integradora y un motor de desarrollo en la Garfagnana, vinculando gastronomía, visitas históricas y a la naturaleza, deportes de aventura, y varias otras alternativas presentes en el territorio. Para ello se requiere de una gestión adecuada que, al mismo tiempo, conserve y valore la tradición, y maximice los atractivos, en una lógica de sostenibilidad.

Tabla 4. Problemas, objetivos y conocimientos, habilidades y competencias demandadas: categoría Integración de las actividades en el entorno rural.

| | |
|---|--|
| <i>Problemas</i> | <ul style="list-style-type: none"> - Falta de diálogo y colaboración entre empresas de diferentes sectores de la zona - Dificultades en el desarrollo de proyectos multiactores |
| <i>Objetivos</i> | <ul style="list-style-type: none"> - Construir de manera participativa una imagen unitaria del territorio que represente un capital simbólico para las empresas y los actores institucionales - Promover encuentros entre los actores de las diferentes actividades económicas - Desarrollar paquetes turísticos que vinculen el turismo con la experiencia gastronómica, deportiva y naturalista - Elaborar calendarios de eventos que conecten la oferta de los diferentes actores y sectores del territorio |
| <i>Conocimientos, habilidades y competencias demandadas</i> | <ul style="list-style-type: none"> - Desarrollar metodologías participativas, y capacidad para organizar y gestionar reuniones con actores locales - Conocer e impulsar técnicas de facilitación para lograr visiones comunes y mediar conflictos - Conocer y emplear instrumentos jurídicos relativos a las formas asociativas y a las formas colectivas de empresa, así como a los sistemas de financiación correspondientes |

Fuente: Elaboración propia sobre investigación directa.

3.2.5. Gobernanza territorial multinivel

Debido a una reforma de la organización de la administración pública aplicada a nivel nacional y regional, en los últimos años, se ha perdido un importante vínculo intermedio entre la Región y los territorios, que es el de las Provincias y - en el sector turístico - de las Empresas de Turismo Provincial. El territorio está todavía en un momento de asentamiento y caos. La Unión de Municipios podría llenar una parte del vacío institucional que se ha creado, pero no tiene ni la fuerza ni el papel de la Provincia.

Los recursos públicos puestos a disposición del territorio son relevantes: desde la Estrategia Nacional para las Áreas Internas, pasando por el programa LEADER de los Grupos de Acción Local, hasta las medidas del Plan de Desarrollo Rural. Sin embargo, no hay integración de recursos y planificación conjunta para su uso.

Se abren nuevas oportunidades para crear formas de gobernanza público-privada a través de instrumentos voluntarios recientemente habilitados por la legislación nacional o regional, como las Comunidades de la Alimentación, los Distritos Rurales y los Distritos Ecológicos. La transformación de estas experiencias en formas eficaces de gobernanza territorial es un proceso largo y complejo, que requiere animación y mediación.

Aquí se subraya una vez más que existe una gran dificultad para conectar a los diferentes actores, tanto a nivel institucional local como a nivel privado o social privado, que, mediante la agregación, podrían elaborar estrategias y planificar colectivamente el uso de los recursos disponibles. En este ámbito surgen dos demandas principales: un tipo de diseño integrado entre los sectores público y privado y un diseño de la cadena de suministro intersectorial. En el territorio existe la necesidad de promover acciones innovadoras, muchas de las cuales pueden surgir justamente de la creatividad local, en particular de los jóvenes, la misma que, luego, pueda ser apoyada por las políticas públicas.

Tabla 5. Problemas, objetivos y conocimientos, habilidades y competencias demandadas: categoría gobernanza territorial multinivel.

| | | |
|------------------|---|--|
| <i>Problemas</i> | - | Falta de dialogo entre actores privados, instituciones públicas, organizaciones representantes de intereses colectivos |
|------------------|---|--|

| | |
|---|---|
| | <ul style="list-style-type: none"> - Falta de capacidad para integrar numerosas fuentes de financiación para el diseño conjunto de estrategias - Escasa capacidad para desarrollar proyectos interdisciplinarios, integrados, multimedios e intersectoriales - Dificultades en la participación y conexión de los diferentes actores del nivel institucional local, del nivel privado y del nivel social privado - Dificultades en la mediación de conflictos entre actores a nivel horizontal y vertical |
| <i>Objetivos</i> | <ul style="list-style-type: none"> - Desarrollar proyectos interdisciplinarios e integrados - Promover el dialogo entre instituciones y actores locales y supra-locales - Construir confianza y empatía |
| <i>Conocimientos, habilidades y competencias demandadas</i> | <ul style="list-style-type: none"> - Conocer los instrumentos y herramientas de las diferentes políticas para apoyar el desarrollo territorial - Conocer y desarrollar herramientas de gobernanza en diferentes niveles institucionales y público-privados (contratos de red, distritos, etc.) - Desarrollar habilidades relacionales - Desarrollar competencias para crear un clima de confianza y empatía alrededor del potencial de los capitales territoriales bioculturales |

Fuente: Elaboración propia sobre investigación directa.

4. Discusión: el perfil del dinamizador territorial y la expansión de capacidades

El análisis desarrollado para el caso específico de la Garfagnana, a la luz también de la investigación-acción que se ha realizado en el marco del Proyecto SUS-TER en estos últimos dos años y medio en otros siete

territorios de Europa y América Latina¹⁴, muestra que están surgiendo nuevas orientaciones generales y demandas específicas para apuntalar procesos innovadores de desarrollo territorial con identidad cultural, anclados en la valorización del patrimonio biocultural.

Lo anterior es coherente con la evaluación que se ha realizado acerca de los quince años de desarrollo territorial en América Latina donde, al lado de las fortalezas del enfoque, se han evidenciado numerosas debilidades en su aplicación, entre ellas la defectuosa coordinación intersectorial e interinstitucional y el limitado empoderamiento de los actores locales. Hacen falta capacidades institucionales y ciudadanas para superar, entre otros problemas, el sesgo sectorial y construir una inteligencia territorial en red (Berdegué, Constanza y Favareto, 2020). También en el programa Leader da la Unión Europea se ha demostrado como el papel del capital humano es decisivo para influir en la construcción y ejecución de los proyectos, así como en sus resultados y rendimiento (Mantino, 2009).

Adoptar y concretizar, hoy en día, un abordaje de valorización virtuosa del capital biocultural representa una revolución copernicana, que fue esbozada ya en sus desafíos hace más de una década (Ranaboldo y Schejtman, 2009), y que implica nuevos conocimientos, habilidades y competencias, muy distintas de las requeridas por modelos de desarrollo rural y agropecuario convencionales. La formación tradicional, tanto universitaria como profesional, aún no logra llenar este vacío.

El modelo convencional “*mainstreaming*” se basa en el concepto de “homologación” no solo de las técnicas, los recursos genéticos y los productos finales, sino también de los conocimientos. Se trata de un modelo “*top-down*” que procede desde el “centro” a la “periferia”, según una lógica lineal y unidireccional, en el que las diversidades representan

¹⁴ Aplicando una metodología común desarrollada en el marco del proyecto SUS-TER (Proyecto SUS-TER, 2019), el análisis de las demandas de formación relacionada con la valorización del patrimonio biocultural se llevó a cabo en los siguientes territorios emblemáticos y representativos en el campo de la valorización del patrimonio cultural, productos de origen y biodiversidad de los diferentes países involucrados en el proyecto SUS-TER: departamento de Caldas, subregiones oriente y occidente (Colombia); Unidad hidrográfica del río Quindío (Colombia); territorio Nandayure-Hojancha-Nicoya y Territorio Santacruz – Carrillo, Provincia de Guanacaste (Costa Rica); Territorio Turrialba – Jiménez, Provincia de Cartago (Costa Rica); Estado Oxaca, región de Valles centrales, municipio de Santa Catalina Minas (México); territorio vinculado con la Misión de Bachajón en el estado de Chiapas (México); territorio de Alt Pirineu i Aran, comarcas de Alt Urgell y Pallars Sobirà (España).

un problema a eliminarse o cuanto menos a reducirse (Fonte y Ranaboldo, 2007).

El desarrollo territorial con identidad cultural, al contrario, enfatiza la atención en territorios específicos con sus peculiaridades y elementos diferenciales que requieren de una capacidad de lectura y comprensión que no pueden estar basados en generalidades y normas standard. En este contexto cobra relevancia la identificación y valorización justamente de la diversidad natural y cultural, propia del territorio. El patrimonio biocultural es un signo distintivo a potenciarse.

Para ello, el desarrollo territorial con identidad cultural se basa en un sistema holístico y corresponsable que requiere el reconocimiento de los conocimientos y el “saber hacer” de una multiplicidad muy grande de actores, muchos de ellos ya presentes en los territorios. Antes que traer conocimientos, técnicas y variedades desde afuera, según los cánones clásicos de la extensión agropecuaria y la transferencia de tecnologías, se trata de identificar el sistema de conocimientos presente localmente, su vigencia en contextos que han cambiado y su proyección, incluyendo aquella que implica un diálogo con nuevos saberes, tecnologías, tendencias de consumo y mercados. Hablamos de “corresponsabilidad” y no de participación porque ésta última se ha desarrollado a menudo como una consulta formal o como un proceso en el que no se toman decisiones compartidas y dialogadas. Al reconocer sistemas diferentes y transdisciplinarios de conocimientos, se reconoce este dialogo entre pares, que conduzca a corresponsabilizarse de los procesos.

El proyecto SUS-TER ha identificado un nuevo perfil profesional interdisciplinario de "Dinamizador territorial", capaz de facilitar estos procesos de valorización sostenible del territorio basados en el patrimonio cultural, la biodiversidad y los productos de origen. Se trata de figuras claves, con conocimientos, competencias y habilidades complementarias, capaces de salvaguardar y activar los territorios en múltiples direcciones, o sea de:

- Comprender las dinámicas territoriales actuales, en sus articulaciones internas y externas, incluyendo las nuevas relaciones urbano/rurales en las que cobran mucha relevancia los pueblos y ciudades intermedias, y los nuevos movimientos poblacionales (emigraciones, regresos al campo, doble residencia).
- Contribuir al diseño y puesta en marcha de estrategias territoriales sostenibles orientadas a plasmar alternativas multidimensionales de desarrollo, económicas, por supuesto, pero

también sensibles y propositivas respecto a las crisis, climáticas, ambientales, pandémicas, entre otras.

- Vincular esa comprensión de las dinámicas territoriales y la contribución a las estrategias territoriales con el sistema y las normas formales de planificación e inversión local, para contribuir a la apropiación y continuidad de las propuestas e iniciativas a nivel subnacional, y su articulación intersectorial.

- Identificar los conflictos internos y externos, y facilitar procesos de encuentro, diálogo, y ayudar a forjar nuevos pactos y alianzas, promoviendo una cultura de paz.

- Ejercer pensamiento crítico e innovador. No se trata de contar con cuadros políticos-partidarios o gremiales/organizativos tradicionales. La dinamización territorial debe apuntalarse en el reconocimiento, respeto y valorización de la tradición y el patrimonio cultural, pero también incorporar innovación, redes extraterritoriales, conocimientos internacionales, estableciendo puentes entre unos y otros. Asimismo, no puede haber nuevos liderazgos asentados en una cultura autoritaria y de exclusión, de ahí que el respeto de los derechos individuales y colectivos, es un factor clave que, incluso, puede llevar a cuestionar patrones culturales (p.ej. los de género) profundamente arraigados (Ranaboldo, 2018 y 2021).

El proyecto SUS-TER ha diseñado un curso para el desarrollo de conocimientos, habilidades y competencias, orientado a una audiencia muy diversa y bajo una lógica de inclusión social y de dialogo entre actores con conocimientos teóricos y maestros locales, portadores de conocimientos, habilidades y competencias desde el campo. De hecho, las dos ediciones del curso probadas y validadas entre el 2020 y el 2021, han sido dirigidas tanto a estudiantes universitarios como a actores estratégicos territoriales e institucionales, estos últimos provenientes de comunidades campesinas, pueblos indígenas y poblaciones afrodescendientes, organizaciones de productores, agencias locales de desarrollo, administraciones públicas, activistas ambientales, entre otros ámbitos. Este enfoque busca el enriquecimiento mutuo, también mediante el uso de metodologías pedagógicas adecuadas, como los Laboratorios Territoriales (véase más adelante).

El curso es de carácter modular para estructurar adecuadamente contenidos acordes con las demandas identificadas, integra conocimientos teóricos y prácticos, combina diferentes métodos de aprendizaje que puedan, además, contribuir a forjar nuevas habilidades blandas, muy útiles para un perfil profesional que acompañe los procesos

territoriales. El concepto de acompañamiento – creativo, innovador, cambiante de acuerdo a cada contexto – es clave puesto que el dinamizador territorial no se sustituye a los actores locales, sino que facilita sus difíciles tareas, promoviendo también sus recorridos de empoderamiento.

Uno de los módulos claves del Curso es representado por un Laboratorio Territorial (LABTER) que, desde el trabajo compartido entre maestros locales, estudiantes y docentes, permite visibilizar un territorio, sus actores y una masa crítica de experiencias en curso, co-creando alternativas de cara al futuro, estrechando lazos y construyendo redes. Un inter-aprendizaje en doble sentido¹⁵. Los efectos empáticos de un LABTER son muy importantes, como se puede mostrar de la documentación recogida a lo largo de SUS-TER¹⁶.

El conjunto de la experiencia SUS-TER está siendo analizada en otros contextos y países que están, hoy en día, comprometidos con procesos de desarrollo territorial con identidad cultural innovadores, por ejemplo, en la nueva Asamblea Constituyente en Chile, en las redes de sistemas importantes patrimonio agrícola mundial o nacional (SIPAM/SIPAN) en el área andina, y en ámbitos de gestión biocultural territorial aplicada a estrategias de resiliencia y adaptación al cambio climático, como en Bolivia. Entre los socios de SUS-TER se está procediendo a la institucionalización de la oferta formativa desarrollada dentro de los planes de estudio existentes, de hecho, ya se empezó en esta línea en Colombia y México.

5. Conclusiones

El círculo virtuoso del patrimonio biocultural ofrece interesantes oportunidades para reconocer, utilizar, remunerar y reproducir los recursos locales de un territorio, transformándolos en activos bioculturales. Esta valorización, que es multidimensional y no solo

¹⁵ Proyecto SUS-TER. Documento de trabajo Módulo 5 Laboratorio Territorial. Principios, Criterios y métodos. Junio 2020. En fase de revisión para su versión final.

Ver también el vídeo sobre LABTER: <https://www.youtube.com/watch?v=q1cX3IEVAAk>.

¹⁶ Ver – como un caso documentado – las reacciones al LABTER en México: <https://www.youtube.com/watch?v=wRyyAKkHvCk>.

económica, constituye una contribución relevante a un desarrollo territorial que sea, al mismo tiempo, sostenible e inclusivo.

La aplicación en la realidad de este círculo virtuoso exige conocimientos, competencias y habilidades que, a menudo, faltan en los currículos de las universidades tradicionales. De hecho, los modelos educativos de las Instituciones de Educación Superior pueden carecer de sensibilidad, conocimiento y propuestas, así como de visiones y arraigo territorial. Por lo tanto, el tipo de formación que resulta de ello suele estar alejado de los problemas y demandas de un enorme contingente de jóvenes que reclaman no sólo conocimientos científicos, sino también nuevas metodologías y contenidos, para contribuir a una cultura de paz, justicia, equidad y redes de colaboración. En una perspectiva que es internacional, pero se hace cargo de las ventajas comparativas locales, representadas por un mosaico de diversidades culturales y naturales que integran los bienes comunes de importancia mundial.

En esta lógica, el proyecto SUS-TER ha diseñado y validado un curso para el desarrollo de conocimientos, habilidades y competencias orientadas a estudiantes universitarios y también a actores territoriales e institucionales estratégicos, favoreciendo el encuentro y la cooperación entre representantes de mundos distintos. Esta experiencia está demostrando un alto potencial para su escalamiento, tanto en el ámbito de los socios universitarios de SUS-TER que están incorporando el curso en sus propios planes de estudio, como en otras esferas de las políticas públicas y estrategias territoriales en varios países.

Declaraciones

Los resultados presentados son parte de las actividades del Proyecto Erasmus+ Alta Educacion “Networking Knowledge, Skills and Competencies for an Inclusive and Sustainable Territorial Valorisation of Cultural Heritage, Origin products and Biodiversity (SUS-TER)”, cofinanciado por la Unión Europea (598957-EPP-1-2018-1-IT-EPPKA2-CBHE-JP). En el proyecto participan dos universidades europeas, seis latinoamericanas y ONG. Ver: www.suster.org por más detalles.

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La Cipolla Rossa della Valtiberina

Silvia Scaramuzzi, Sara Gabellini¹⁷

1. Introduzione

La Cipolla Rossa della Valtiberina è una varietà locale di specie erbacea¹⁸ iscritta ai Repertori Regionali delle Razze e Varietà Locali della Toscana e classificata a rischio di estinzione. L'iscrizione è frutto di un progetto di recupero e caratterizzazione della risorsa genetica locale, promosso e coordinato dall'Istituto d'Istruzione Superiore A.M. Camaiti di Pieve Santo Stefano, sezione della Banca Regionale del Germoplasma, in collaborazione con alcuni coltivatori storici della varietà situati nel Comune di Sansepolcro, e con il Dipartimento di Agronomia e Gestione dell'Agrosistema dell'Università di Pisa.

L'iscrizione ai Repertori ha permesso di identificare l'esistenza e le caratteristiche storiche, morfologiche, ed agronomiche della risorsa genetica, e di inserirla nel sistema regionale di tutela e valorizzazione della biodiversità di interesse agricolo ed alimentare di cui alla LR 64/2004 e successivo regolamento regionale di attuazione (RR 12/2007). Inoltre, ai sensi dell'art. 3 della L 194/2015, la risorsa è stata inserita di diritto nell'Anagrafe Nazionale della biodiversità di interesse agricolo e alimentare, in quanto varietà locale a rischio di estinzione già iscritta ai Repertori Regionali della Toscana¹⁹.

¹⁷ Silvia Scaramuzzi e Sara Gabellini: Dipartimento di Scienze e Tecnologie Agrarie, Alimentari, Ambientali e Forestali (DAGRI), Università di Firenze.

¹⁸ La Cipolla Rossa della Valtiberina appartiene alla famiglia delle Liliaceae, al genere *Allium*, ed alla specie *Allium cepa*. La risorsa è stata inserita nei Repertori Regionali, repertorio per le specie erbacee, il 13 ottobre 2010. Regione Toscana. Repertori Regionali delle Razze e Varietà Locali, germoplasma.regione.toscana.it

¹⁹ Ai sensi di quanto previsto dall'art. 3, comma 4 della L 194/2015, e relative disposizioni attuative, contenute nel DM 1862 del 18/01/2018, sono state iscritte di diritto all'Anagrafe nazionale della biodiversità di interesse agricolo e

Ad oggi, la varietà locale aggrega un sistema ampio ed efficace di attori del territorio impegnati nelle attività di conservazione e valorizzazione. Tra questi vi sono non soltanto i coltivatori custodi e le sezioni della Banca Regionale, incaricati della sua conservazione, ma anche altri soggetti iscritti alla Rete di Conservazione e Sicurezza, enti territoriali ed associazioni culturali della Valtiberina, istituti di ricerca, ed operatori di filiera, che sono interessati a lavorare per una sua valorizzazione.

In particolare, la facilità di coltivazione ed un forte interesse di mercato per la varietà locale hanno spinto alcuni coltivatori custodi più strutturati ad avviare una vera e propria attività di produzione di Cipolla Rossa della Valtiberina, e a commercializzarla e promuoverla, sia tramite canali diretti (vendita in azienda, mostre mercato), che indiretti (punti vendita locali, trasformatori, GDO, ristorazione).

Tali attività, insieme alle principali iniziative di divulgazione promosse e partecipate da coltivatori custodi, Banca Regionale e Terre Regionali Toscane, hanno favorito la diffusione di conoscenza e di apprezzamento per la varietà locale tra consumatori ed operatori di filiera, ciò anche al di fuori dei confini regionali, grazie anche all'emergere di un sempre maggior interesse di mercato per prodotti tipici, sostenibili e locali.

La crescita dell'interesse e, conseguentemente, della domanda di mercato per la Cipolla Rossa della Valtiberina sta incontrando un limite nella riproduzione del seme e nel mantenimento della risorsa in purezza. In merito, la Cipolla Rossa della Valtiberina, a differenza di altre varietà locali di cipolla iscritte ai Repertori, non è stata ancora iscritta ai Registri nazionali per la commercializzazione delle sementi, come varietà da conservazione²⁰.

Inoltre, non sono stati adottati dagli attori locali interessati strumenti di tutela dell'origine e della qualità dei prodotti agro-alimentari, come DOP, IGP, STG, marchi collettivi geografici, o altri, come PAT o Slow Food,

alimentare le 753 risorse genetiche a rischio di estinzione della Toscana con DM n. 36393 del 20/12/2018, germoplasma.regione.toscana.it

²⁰ Ministero delle Politiche Agricole, Alimentari e Forestali. Registri delle Varietà Vegetali, www.sian.it/mivmPubb/autenticazione.do

né è stata fatta richiesta per l'utilizzo del Contrassegno regionale previsto dalla LR 64/2004.

In tal senso, l'iscrizione della risorsa al Registro Nazionale come varietà da conservazione e l'adozione di strumenti per la tutela dell'origine e della qualità potrebbero essere utili ad un ampliamento dell'attuale sistema produttivo, e a favorire la tracciabilità del prodotto fresco e trasformato.

Inoltre, occorre considerare e valutare anche le opportunità di valorizzazione per la risorsa locale a rischio di estinzione derivanti dal processo di attuazione del nuovo sistema nazionale di tutela e valorizzazione dell'agrobiodiversità, di cui alla L 194/2015, e dalla sua armonizzazione con il sistema regionale.

In sintesi, le caratteristiche distintive della varietà locale, il forte interesse di mercato, e l'attuale grado di sviluppo del sistema di conservazione e produzione, individuano la Cipolla Rossa della Valtiberina come un caso di studio interessante per individuare e valutare le principali problematiche ed opportunità relative ai sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità, e per delineare possibili modelli di valorizzazione economico-territoriale della risorse genetiche locali.

L'attività di ricerca ed analisi relativa al caso di studio si pone gli obiettivi di seguito delineati.

In primo luogo, descrivere la risorsa genetica locale ed i suoi caratteri distintivi, in termini storici, morfologici, agronomici, organolettici e nutraceutici. Secondariamente, ricostruire ed analizzare l'attuale sistema di conservazione e produzione della varietà locale, valutandone le principali problematiche ed opportunità di sviluppo. Allo stesso modo, delineare ed analizzare il sistema di valorizzazione della varietà, considerando le attività di commercializzazione e promozione del prodotto, ed identificando ed analizzando gli attori coinvolti e le loro interrelazioni.

Di conseguenza, identificare e valutare le principali problematiche ed opportunità per la valorizzazione della varietà locale, alla luce degli

strumenti di valorizzazione previsti della normativa regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità, ed alle possibilità offerte dai regimi di commercializzazione delle sementi, presidi, marchi e sistemi di qualità.

Infine, delineare e validare, insieme agli attori locali interessati, indicazioni utili per lo sviluppo e l'armonizzazione dei sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità, e per la definizione di possibili percorsi di valorizzazione delle risorse genetiche locali, mirati a favorire un processo di sviluppo endogeno integrato del territorio.

Per giungere a tali obiettivi, l'indagine è stata basata su un processo di ricerca ed analisi partecipata di tipo quali-quantitativo, svolto attraverso la raccolta e l'analisi critica di fonti documentali e normative, e della letteratura esistente; e tramite il coinvolgimento diretto, per mezzo di interviste in profondità, dei principali attori locali interessati e coinvolti nel sistema di conservazione, produzione e valorizzazione della varietà oggetto di indagine. I risultati sono stati restituiti agli attori del territorio per una discussione e validazione, al fine di elaborare in modo congiunto strategie ed indicazioni di policy.

In termini di fonti documentali, le principali informazioni relative alla Cipolla Rossa della Valtiberina sono reperibili sulla scheda identificativa dell'accessione, inserita nei Repertori Regionali²¹. La scheda fornisce informazioni relative alle caratteristiche storiche, morfologiche ed agronomiche della varietà, al territorio di interesse per la coltivazione, ed ai soggetti che si occupano della sua conservazione o sono interessati alla sua valorizzazione.

In aggiunta, alcune informazioni rispetto a proprietà nutraceutiche ed organolettiche distintive della varietà locale sono riscontrabili dai rapporti

²¹ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

finali pubblicati nell'ambito del progetto Mis. 16.2 "BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità", PIF 26/2015²².

Le uniche altre fonti reperibili sulla Cipolla Rossa della Valtiberina riguardano alcuni articoli su quotidiani locali online. Questi riportano in merito all'attività svolta dai coltivatori custodi per la conservazione delle risorse locali e per la loro valorizzazione, anche tramite la partecipazione ad iniziative locali di divulgazione, organizzate in collaborazione con associazioni culturali del territorio correlate al mondo della gastronomia.

L'attività di indagine sul campo ha permesso dunque di ampliare ed approfondire in modo significativo le informazioni disponibili sulla varietà e sul relativo sistema di conservazione e valorizzazione. Ciò ponendo anche l'accento sulle opinioni dei principali attori locali coinvolti. Essa ha carattere esplorativo, e ha comportato lo svolgimento di 11 interviste in profondità, di tipo non strutturato, condotte per via diretta, nel periodo tra novembre e dicembre 2018.

Il campionamento per le interviste è stato di tipo non probabilistico, *a palla di neve* (Patton, 2002; Wang et alii, 2017). Inizialmente, sono stati intervistati rappresentanti della Regione Toscana e di Terre Regionali Toscane. Tali interviste hanno permesso anche di identificare una lista di interlocutori privilegiati del territorio per proseguire con l'indagine. Durante la ricerca sul campo sono stati individuati ulteriori soggetti da intervistare, sia nell'ambito della filiera locale della Cipolla Rossa della Valtiberina, come trasformatori e ristoratori, sia referenti di istituti di ricerca che hanno svolto indagini sulla varietà. Le interviste sono state condotte fino a raggiungere la saturazione dell'informazione (Saunders et alii, 2018).

Complessivamente sono stati coinvolti 11 attori, rappresentativi dei principali *stakeholders* locali e regionali: Banca Regionale del Germoplasma, coltivatori custodi, iscritti alla Rete di Conservazione e Sicurezza, operatori della filiera (trasformatori, commercianti, ristoratori) e istituti di ricerca.

²² Progetto Mis. 16.2 "BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità", PIF 26/2015 "Mangiare Corto per Guardare Lontano", www.validmersegreen.com/basiq/

I seguenti paragrafi riportano i risultati della ricerca. In particolare, il Paragrafo 2 descrive e analizza le principali caratteristiche distintive della varietà locale, mentre i Paragrafi 3 e 4 ne ricostruiscono e illustrano rispettivamente l'attuale sistema di conservazione e produzione, ed il sistema di valorizzazione, focalizzando sulle attività di commercializzazione e promozione poste in essere. Alla luce di ciò, ed in base al quadro normativo vigente, il Paragrafo 5 identifica e valuta le principali problematiche ed opportunità relative alla valorizzazione della risorsa locale a rischio di estinzione. Infine, il Paragrafo 6 delinea alcune indicazioni utili per lo sviluppo ed armonizzazione dei sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità, e la definizione di possibili percorsi di valorizzazione delle risorse genetiche locali come leva di sviluppo territoriale integrato.

2. Origine storica e caratteristiche

La Cipolla Rossa della Valtiberina è un varietà locale di specie erbacea iscritta dal 2010 ai Repertori Regionali della Toscana come varietà a rischio di estinzione. L'iscrizione ha fatto seguito ad un progetto di recupero e caratterizzazione, che ha permesso di identificarne e descriverne le principali caratteristiche storiche, morfologiche ed agronomiche, ora inserite nella scheda identificativa della risorsa.

Le interviste in profondità hanno evidenziato ulteriori tratti caratteristici della varietà, insieme alle principali problematiche tecnico-agronomiche e ad alcuni aspetti interessanti su cui far leva per favorirne la valorizzazione.

2.1 L'origine storica

Le origini della Cipolla Rossa della Valtiberina risalgono al 1800, quando questa cipolla veniva coltivata dagli ortolani della zona di Sansepolcro (Arezzo), chiamati nei mercati delle zone limitrofe *cipollari*, proprio a testimoniare la diffusione di questa coltivazione. Da quest'area la produzione si è estesa nel tempo a tutta la Valtiberina, in quanto territorio

fortemente vocato a produzioni orticole, come la cipolla. In particolare, questa varietà rappresentava la produzione principale del territorio.

Gli ortolani producevano piantine da destinare al consumo, sia nelle aziende agricole, che negli orti familiari²³. Inoltre, le piantine venivano abitualmente vendute a mazzi nei mercati della provincia di Arezzo e Perugia e, talvolta, anche nei paesi delle vicine Marche e dell'alta Romagna²⁴.

La coltivazione della varietà nelle zone della Valtiberina è stata storicamente favorita dalla presenza di un terreno particolarmente adatto, e dal clima ideale per la conservazione della cipolla nei mesi invernali²⁵.

La zona tipica di produzione definita all'interno dei Repertori Regionali è rappresentata dai sette comuni della provincia di Arezzo che costituiscono la Valtiberina toscana²⁶: Anghiari, Badia Tedalda, Caprese Michelangelo, Monterchi, Pieve Santo Stefano, Sansepolcro e Sestino.

Le interviste hanno evidenziato l'importanza della definizione della zona tipica di produzione ai fini dell'iscrizione di una risorsa ai Repertori Regionali e dell'impostazione di un adeguato ed efficace sistema di conservazione e valorizzazione. Infatti, gli intervistati hanno affermato che l'individuazione di un'area eccessivamente ristretta potrebbe comportare: in termini di conservazione, una minore possibilità di reperire un numero adeguato di coltivatori custodi che conservino la varietà *in situ*; in termini di valorizzazione, minori opportunità di sviluppo di un sistema produttivo capace di mettere a frutto le potenzialità di mercato della risorsa. Al contrario, l'individuazione di un'area eccessivamente ampia potrebbe ridurre il legame del prodotto con il

²³ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

²⁴ Fabio 13280. Le cipolle rosse di Toscana, fabio13280.wordpress.com/2016/01/09/le-cipolle-rosse-di-toscana/

²⁵ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

²⁶ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

territorio e, di conseguenza, inficiare la possibilità di ottenere ricadute positive in termini di differenziazione sul mercato.

2.2 Le caratteristiche distintive

La Cipolla Rossa della Valtiberina presenta caratteristiche distintive, rispetto ad altre varietà di cipolla locali, o commerciali, in termini morfologici, agronomici, organolettici e nutraceutici.

Dal punto di vista morfologico ed agronomico, la varietà mostra potenzialità interessanti, in quanto le sue caratteristiche incidono positivamente su resilienza e produttività della coltivazione, e sulla sua appetibilità di mercato. Inoltre, anche in termini nutraceutici ed organolettici, la varietà presenta proprietà rilevanti, che meriterebbero di essere ulteriormente approfondite per permetterne una valorizzazione di tipo commerciale.

Quanto emerso in merito alle caratteristiche distintive della varietà locale, considerato anche l'attuale grado di sviluppo dell'attuale sistema di conservazione e produzione, la individuano tra le risorse iscritte ai Repertori Regionali ritenute pronte ad effettuare un percorso di sviluppo da un regime incentrato sull'attività di conservazione, ad uno orientato principalmente al mercato, potendo così generare un forte impatto in termini di valorizzazione, con considerevoli ricadute positive sul territorio.

Caratteristiche morfologiche

La pianta di Cipolla Rossa della Valtiberina presenta un accrescimento determinato a portamento ricadente. Le sue foglie sono caratterizzate da glaucescenza e sono di un colore verde medio e di taglia media (lunghezza e diametro massimo medi)²⁷.

Il bulbo ha una pezzatura medio-grande, soggetta a forte variabilità, ed una forma ellittica appiattita. Le interviste hanno evidenziato come la taglia grande e variabile di questa cipolla rappresenti un problema dal

²⁷ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

punto di vista commerciale, per l'appetibilità ridotta di bulbi molto grandi e per una difficoltà di confezionamento standardizzato per il rifornimento dei canali GDO.

Il bulbo di questa varietà locale è più carnoso rispetto a quello di cipolle moderne, selezionate per un'agricoltura intensiva. Esso ha un numero inferiore di strati, ed una quantità ridotta di buccia esterna, il che lo rende più delicato in fase di raccolta, in quanto risente maggiormente di eventuali traumi. In tal senso, gli intervistati hanno affermato che tale delicatezza specifica richiede una raccolta di tipo manuale, o svolta tramite forme molto *soft* di meccanizzazione.

A livello cromatico, le tuniche esterne del bulbo sono di colore rosso intenso, il colore dell'epidermide delle scaglie interne è rossastro, mentre la polpa interna è di colore bianco²⁸.

Il bulbo e la pianta in campo sono mostrate nella Figura 1.

Figura 1 – Bulbo e pianta in campo di Cipolla Rossa della Valtiberina



Fonte: Regione Toscana. Repertori Regionali delle Razze e Varietà Locali

²⁸ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

La varietà locale ha un'epoca di maturazione commerciale media (80% fogliame reclinato), una bassa sterilità maschile (inferiore al 10%), ed è a giorno lungo, ovvero sfrutta l'allungamento del fotoperiodo per l'ingrossamento del bulbo²⁹. Ciò significa che la cipolla viene trapiantata nel periodo aprile-maggio ed il bulbo arriva a maturazione ad agosto.

Questa varietà di cipolla, a differenza di altre varietà locali o commerciali, anche se non trattata, non germoglia fino a tarda primavera. Infatti, il bulbo presenta una resistenza molto elevata durante il periodo di stoccaggio invernale. Se conservato in zona ben areata, fresca e asciutta, l'alto contenuto di acqua permette di mantenere il bulbo per tutto il periodo da agosto a marzo.

Gli intervistati hanno evidenziato come tale specificità favorisca sia la commercializzazione della cipolla, permettendo di garantire una continuità di rifornimento ai diversi canali per un periodo di almeno sette mesi, sia la possibilità di attivare una coltivazione secondo il metodo dell'agricoltura biologica.

Caratteristiche agronomiche

La semina della varietà locale avviene in semenzaio, nel mese di gennaio, in un terreno adeguatamente concimato, con concimi organici nell'anno precedente. Le concimazioni organiche sono svolte nell'anno precedente la coltivazione, in modo da evitare l'insorgenza di marciumi, mentre durante il ciclo vegetativo è utile effettuare una concimazione azotata⁶⁹. I coltivatori intervistati hanno affermato che il seme viene ottenuto grazie all'essiccazione del fiore, che viene poi rotto, macinato a mano e pulito. Tale processo si svolge nella seconda metà del mese di luglio. Il seme raccolto viene poi conservato in ambiente asciutto dentro idonei contenitori.

²⁹ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

Il trapianto delle piantine ottenute in semenzaio inizia nel mese di aprile e prosegue fino a tutto il mese di maggio. La distanza ideale per il trapianto è considerata di 20 X 20 cm³⁰.

Per quanto riguarda l'irrigazione, se ne attua una di soccorso al momento del trapianto e, di seguito, in base a quello che è l'andamento stagionale, si esegue altre tre o quattro volte durante l'anno³¹. Nella zona della Valtiberina, il terreno franco-limoso assorbe l'acqua con lentezza, per tale ragione le piantine devono essere irrigate poco e con una maggiore frequenza.

La raccolta del bulbo si effettua nel momento in cui la fronda appare secca. Solitamente, tale fase ha inizio dopo Ferragosto e si protrae fino alla metà del mese di settembre. Come detto in precedenza, le caratteristiche morfologiche della varietà la rendono molto delicata, ed è richiesta una particolare cura in fase di raccolta per evitare eventuali traumi. Inoltre, vi sono problematiche relative alla presenza di malerbe in campo, che possono causare un effetto di trascinamento. Per tale ragione, gli intervistati hanno affermato che, per sostituire la raccolta manuale dei bulbi, occorre l'utilizzo di macchinari adeguati a far fronte a queste difficoltà.

Dopo essere state raccolte, le cipolle vengono conservate dapprima in penombra, a terminare la maturazione, e poi riunite in mazzi o legate fra loro per essere riposte nei luoghi di conservazione, che debbono essere ben areati, asciutti, ma protetti dalle gelate. Nel mese di marzo, vengono selezionate e trapiantate alcune cipolle da mandare a fiore, da utilizzarsi per la riproduzione del seme. I bulbi sono scelti fra quelli che hanno la

³⁰ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

³¹ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

migliore conformazione e che hanno mostrato una più lunga serbevolezza³².

I coltivatori intervistati hanno affermato che per garantire la buona resa della coltivazione, occorre praticare un adeguato processo di rotazione colturale. In particolare, essi hanno individuato un periodo di almeno quattro anni necessario per limitare la crescita di malerbe sul terreno e per evitare l'insorgenza di patologie fungine nelle piante.

Infine, è utile sottolineare che, ai sensi della LR 64/2004 e successivo regolamento di attuazione, le attività di riproduzione di materiale genetico e di coltivazione della varietà locale, svolte dai coltivatori custodi iscritti alla Rete di Conservazione e Sicurezza, sono regolamentate da apposita convenzione, stipulata dai custodi con Terre Regionali Toscane, e sono sottoposte a verifiche e controlli annuali. La stipula della convenzione impone ai coltivatori custodi di seguire precise norme tecniche in termini di isolamento, avvicendamento, semina-trapianto, epurazione, raccolta, quantità di seme scambiabile all'interno della Rete, e quantità di seme da conferire annualmente alla Banca Regionale. Le norme tecniche sono definite in modo generale per singola specie – come per il caso *Allium cepa* L. (cipolla) - e sono pubblicate sul sito regionale dedicato al sistema di tutela e valorizzazione dell'agrobiodiversità³³.

Caratteristiche nutraceutiche

I bulbi di Cipolla Rossa della Valtiberina sono molto ricchi di molecole dotate di funzioni nutraceutiche.

Alcuni studi condotti nell'ambito del progetto “BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità”, PIF 26/2015 “Mangiare Corto per Guardare Lontano” hanno permesso di misurare la capacità antiossidante, il contenuto totale di polifenoli, flavonoidi e antocianine, ed il contenuto di specifici flavonoidi (quercetina, miricetina e campferolo) e di specifiche antocianidine (peonidina e petunidina) di sei

³² Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

³³ Regione Toscana. Norme tecniche per la corretta conservazione “in situ” o “on farm” ed “ex situ” delle varietà locali toscane, germoplasma. regione.toscana.it

varietà locali di cipolla, iscritte ai Repertori Regionali come a rischio di estinzione³⁴. I valori rilevati nelle varietà autoctone sono stati poi confrontati con quelli ottenuti da alcuni campioni di una varietà commerciale di cipolla, rappresentativa delle più comuni varietà provenienti dalla grande distribuzione³⁵.

I risultati hanno evidenziato che i bulbi delle varietà locali analizzate sono particolarmente ricchi delle sostanze sopra menzionate, tanto da poter essere classificati come *functional food*, ovvero alimenti per i quali è stato dimostrato un certo effetto benefico nei confronti della salute umana, oltre ad effetti nutrizionali adeguati³⁶.

In tal senso, le varietà locali hanno dimostrato di avere proprietà nutraceutiche quasi sempre superiori rispetto a quella commerciale, aprendo importanti prospettive in termini di valorizzazione, grazie alla loro capacità di contribuire ad un'alimentazione sana e sostenibile. In particolare, esse sono ricche di molecole antiossidanti che possono contribuire a ridurre l'insorgenza di malattie cronico-degenerative e, di conseguenza, favorire un minor uso di farmaci, che può influire positivamente sull'inquinamento ambientale.

Da questi studi, il profilo nutraceutico della Cipolla Rossa della Valtiberina appare interessante, in particolare per l'elevato contenuto di antocianine ed antocianidine, anche nel confronto con le altre varietà locali analizzate.

In primo luogo, è stato evidenziato che la Cipolla Rossa della Valtiberina presenta un livello interessante di potere antiossidante. Infatti, la cipolla è una specie di ortaggio che detiene una vasta gamma di composti antiossidanti, in grado di contrastare i fenomeni ossidativi che possono

³⁴ Le varietà locali analizzate sono state: Cipolla della Maremma, Cipolla Rossa Massese, Cipolla di Treschietto, Cipolla Rossa della Valtiberina, Cipolla Rossa di Lucca, Cipolla Rossa Fiorentina

³⁵ Progetto Mis. 16.2 "BASIQ La Bottega Alimentare della Sostenibilità - Identità - Qualità", PIF 26/2015 "Mangiare Corto per Guardare Lontano", www.validmersegreen.com/basiq/

³⁶ Progetto Mis. 16.2 "BASIQ La Bottega Alimentare della Sostenibilità - Identità - Qualità", PIF 26/2015 "Mangiare Corto per Guardare Lontano", www.validmersegreen.com/basiq/

compromettere la funzionalità di cellule e tessuti, e che si associano a numerose patologie croniche, come disturbi cardio-circolatori, diabete, cancro, malattie neurodegenerative. In aggiunta, la varietà della Valtiberina, in linea con le altre varietà locali considerate negli studi, presenta un contenuto di antiossidanti totali (antiossidanti totali $1,15 \pm 0,11$ mmol/100 g) maggiore rispetto a quello della varietà commerciale analizzata (antiossidanti totali $0,91 \pm 0,02$ mmol/100 g), che ne determina buone potenzialità di valorizzazione.

In secondo luogo, le cipolle sono ricche di composti fenolici, anch'essi con un'azione antiossidante, in grado di eliminare i radicali liberi e, di conseguenza, ridurre l'insorgenza di malattie cardiovascolari, malattie neurodegenerative e tumori. Anche in questo caso, alcune delle analisi effettuate hanno mostrato che la Cipolla Rossa della Valtiberina detiene un quantitativo di polifenoli totali (polifenoli totali $98,58 \pm 3,1$ mg/100g) che, in linea con le altre varietà locali considerate, si distingue positivamente rispetto a quello della varietà commerciale analizzata (polifenoli totali $55,98 \pm 0,87$ mg/100g), conferendogli in tal modo proprietà antiossidanti distintive.

Successivamente, le analisi hanno misurato il contenuto di flavonoidi totali delle diverse varietà. Per la Cipolla Rossa della Valtiberina hanno evidenziato un contenuto di flavonoidi totali pari a più del doppio di quello della varietà commerciale analizzata, fornendo un'ulteriore conferma delle sue interessanti proprietà benefiche. Infatti, i flavonoidi sono potenti antiossidanti, che contribuiscono alla prevenzione di molte patologie legate all'invecchiamento cellulare e persino alla prevenzione di alcune forme tumorali. Inoltre, essi sono dotati di attività antifungina, antivirale e antibatterica.

Viste le importanti proprietà benefiche dei flavonoidi, gli studi hanno misurato anche il contenuto di quercetina, miricetina e campferolo delle diverse varietà di cipolla, in quanto flavonoidi caratterizzati da un'elevata capacità antiossidante. Tutte le varietà locali considerate presentano valori elevati di questi flavonoidi, e la Cipolla Rossa della Valtiberina in particolare si distingue per l'elevato contenuto di campferolo, di molto superiore a quello della varietà commerciale.

Infine, nell'ambito della ricerca, è stato misurato il contenuto di antocianine totali e di peonidina e petunidina delle diverse varietà. Generalmente, le cipolle sono caratterizzate da una forte variabilità rispetto a questi composti. Le analisi hanno evidenziato che la Cipolla Rossa della Valtiberina ha notevoli potenzialità distintive, sia rispetto alla varietà commerciale, che a tutte le altre varietà locali considerate.

A tal proposito, le antocianine sono composti polifenolici con interessanti proprietà antiossidanti, con effetti anti-cancerogeni ed antinfiammatori. Esse prevengono l'insorgenza di malattie cardiovascolari, e sono utili nel controllo di obesità e diabete, nonché per migliorare vista e funzioni cerebrali. In tal senso, la Cipolla Rossa della Valtiberina è la varietà locale più ricca di antocianine (antocianine totali $55,5 \pm 2,8$ mg/100 g) rispetto a tutte le altre varietà analizzate, con un valore che differisce in modo netto da quello rilevato per la varietà commerciale ($24,3 \pm 0,38$ mg/100 g).

La peonidina e la petunidina sono antocianidine, e rappresentano la parte agliconica delle antocianine. Esse hanno diverse funzioni biologiche e benefiche per la salute dell'uomo: antiossidante, antinfiammatoria e antitumorale. Anche in questo caso, la Cipolla Rossa della Valtiberina è quella con il contenuto più elevato di antocianidine (peonidina $36,47 \pm 1,9$ µg/g, petunidina $21,45 \pm 1,3$ µg/g) rispetto a tutte le altre varietà di cipolla analizzate, distinguendosi in modo rilevante dalla varietà commerciale (peonidina $10,96 \pm 0,5$ µg/g, petunidina $10,24 \pm 2,7$ µg/g).

Alla luce di quanto osservato, le proprietà antiossidanti rilevate per la Cipolla Rossa della Valtiberina, come l'alto contenuto di polifenoli, flavonoidi e antocianine, hanno valore per la loro azione benefica sulla salute, e distinguono in modo interessante la cipolla locale rispetto alle più comuni varietà commerciali. Infatti, i composti che sono stati esaminati possono ostacolare l'azione dei radicali liberi, e contrastare i fenomeni ossidativi, che sono la causa principale di malattie tumorali e cardiovascolari.

La presenza consistente di tutti i diversi composti analizzati nelle varietà della Valtiberina, come nelle altre varietà locali considerate, si spiega con la capacità di adattamento di queste piante al loro territorio di origine, in quanto queste molecole sono metaboliti secondari delle piante, coinvolti

nella difesa dell'organismo. Tali varietà mostrano dunque un elevato potenziale salutistico-nutraceutico rispetto al prodotto commerciale e aprono interessanti prospettive verso lo sviluppo di un'alimentazione sana e sostenibile, intesa come: consumo di cibo sano, con potenziali effetti benefici sulla salute umana, con bassa impronta ambientale e particolare attenzione a salvaguardia della biodiversità³⁷.

Un sempre maggior interesse dei consumatori per tale tipo di alimentazione potrebbe favorire la promozione, valorizzazione e sviluppo di linee commerciali di varietà locali di cipolla ad alto potere bioattivo, come la Cipolla Rossa della Valtiberina, con importanti ricadute in termini di produzione e valorizzazione di tali varietà e del territorio

Caratteristiche organolettiche ed utilizzo

Attualmente, la Cipolla Rossa della Valtiberina viene utilizzata a scopo alimentare. Essa ha un sapore intenso ed una caratteristica dolcezza, e può essere consumata cotta o cruda³⁸.

Nell'ambito del progetto “BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità”, PIF 26/2015 “Mangiare Corto per Guardare Lontano”, alcune varietà locali di cipolla, tra cui la varietà della Valtiberina, sono state caratterizzate in termini sensoriali. Ciò al fine di identificarne le caratteristiche organolettiche più rilevanti ed il gradimento relativo da parte del consumatore, e di valutarne la versatilità di utilizzo, anche rispetto alla possibilità di mettere a punto prodotti trasformati innovativi³⁹. In particolare, tale studio ha permesso di caratterizzare cinque varietà locali di cipolla, iscritte ai Repertori

³⁷ Progetto Mis. 16.2 “BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità”, PIF 26/2015 “Mangiare Corto per Guardare Lontano”, www.validmersegreen.com/basiq/

³⁸ Regione Toscana. Repertori Regionali delle Razze e Varietà Locali. Scheda identificativa dell'accessione Cipolla Rossa della Valtiberina, germoplasma.regione.toscana.it

³⁹ Progetto Mis. 16.2 “BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità”, PIF 26/2015 “Mangiare Corto per Guardare Lontano”, www.validmersegreen.com/basiq/

Regionali come a rischio di estinzione⁴⁰, analizzate anche a confronto con una varietà di cipolla commerciale, nello specifico la Cipolla Rossa da Inverno.

In primo luogo, lo studio ha individuato un alto contenuto di zuccheri (glucosio, fruttosio e saccarosio) per la Cipolla Rossa della Valtiberina ($9,1 \pm 0,1$ °Brix), in linea con quasi tutte le altre varietà locali considerate, che si distingue in modo interessante rispetto alla varietà commerciale analizzata ($8,1 \pm 0,3$ °Brix). Anche in termini di effetto lacrimatorio, che si sprigiona in conseguenza della rottura al taglio delle cellule bulbose, le analisi hanno evidenziato che la varietà locale della Valtiberina si differenzia positivamente dalle altre cipolle considerate per il suo carattere non pungente, che ne annulla del tutto l'effetto lacrimatorio percepito⁴¹.

Lo studio ha confermato tali dati effettuando un'analisi sensoriale, che ha permesso di ricostruire il profilo delle varietà analizzate, in termini di vista, olfatto e gusto. Nello specifico, la Cipolla Rossa della Valtiberina si caratterizza sia per piccantezza, che per intensità olfattiva. Essa non presenta sentori agliacei o erbacei rilevanti, né una particolare dolcezza o sapidità, ed ha un livello medio di croccantezza. Inoltre, in termini cromatici, la varietà della Valtiberina presenta una polpa bianca, con leggere sfumature tendenti al rosa, ed è tra quelle analizzate per le quali si sono osservate le tonalità di rosso più intense delle tuniche esterne⁴².

Lo studio ha evidenziato che tutte le varietà locali di cipolla analizzate presentano caratteristiche organolettiche peculiari e diversamente valorizzabili, anche in abbinamento alle proprietà nutraceutiche viste in precedenza.

⁴⁰ Le varietà locali di cipolla analizzate sono state: Cipolla Rossa della Valtiberina, Cipolla Rossa di Maremma, Cipolla Rossa di Lucca, Cipolla di Treschietto, Cipolla Rossa Massese

⁴¹ Progetto Mis. 16.2 “BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità”, PIF 26/2015 “Mangiare Corto per Guardare Lontano”, www.validmersegreen.com/basiq/

⁴² Progetto Mis. 16.2 “BASIQ La Bottega Alimentare della Sostenibilità - Identità – Qualità”, PIF 26/2015 “Mangiare Corto per Guardare Lontano”, www.validmersegreen.com/basiq/

Le interviste in profondità hanno confermato il profilo sensoriale delineato dallo studio per la Cipolla Rossa della Valtiberina e la sua discreta versatilità di utilizzo a fini alimentari. Infatti, gli intervistati hanno affermato che la cipolla viene utilizzata in uno svariato numero di preparazioni, più o meno tradizionali, sia consumata a crudo, che cucinata con tecniche diverse di cottura. Le preparazioni più tradizionali la vedono consumata al cartoccio, di accompagnamento a carni stufate o arrostiti, in confettura o in zuppa.

Inoltre, le interviste hanno ribadito quanto emerso dallo studio in merito alle peculiarità di gusto (piccante, ma leggero) e profumazione (intensa, ma dolce) della varietà, capaci di distinguerla sia dalle altre varietà locali di cipolla rossa iscritte ai Repertori Regionali, sia da altre varietà tipiche più note sul mercato nazionale.

Infatti, gli intervistati hanno affermato che la Cipolla Rossa della Valtiberina è facilmente identificabile e riconoscibile da parte dei consumatori finali da un punto di vista organolettico. Inoltre, essi hanno evidenziato che i consumatori finali dimostrano grande apprezzamento per questa varietà, conosciuta durante eventi di promozione (degustazioni o mostre mercato), acquistata presso punti vendita locali e GDO, e consumata sotto forma di prodotto fresco o trasformato.

Le interviste e l'analisi documentale hanno evidenziato che le qualità organolettiche, la versatilità di utilizzo e l'interesse dimostrato dai consumatori per la varietà locale incidono notevolmente sulle potenzialità commerciali della Cipolla Rossa della Valtiberina, capaci di attivare un circolo virtuoso di valorizzazione, che ne faciliti l'uscita dal rischio di estinzione e permetta interessanti ricadute economico-territoriali.

3. Il sistema di conservazione e produzione

L'iscrizione della Cipolla Rossa della Valtiberina ai Repertori Regionali della Toscana come varietà a rischio di estinzione ha inserito la risorsa genetica vegetale nel sistema regionale di tutela e valorizzazione della biodiversità di interesse agricolo ed alimentare, previsto dalla LR 64/2004 e successivo regolamento di attuazione RR 12/2007. Inoltre, a seguito del

processo di attuazione della L 194/2015, la varietà locale rientra anche tra le risorse genetiche vegetali a rischio di estinzione oggetto del nuovo sistema nazionale per la tutela e valorizzazione dell'agrobiodiversità. I due livelli disciplinari richiedono dunque un'adeguata armonizzazione ed integrazione, per garantire ed accrescere l'efficacia del processo di conservazione e valorizzazione della risorsa.

Inoltre, l'attuale grado di sviluppo del sistema di conservazione e produzione della varietà, ed il favore da essa riscontrato sul mercato, mostrano interessanti potenzialità di tipo economico e commerciale. In base a ciò, i diversi attori locali intervistati (coltivatori custodi, Banca Regionale del Germoplasma e Terre Regionali Toscane) hanno evidenziato l'opportunità di investire sulla realizzazione di un sistema di produzione e commercializzazione ampio, tracciato e strutturato della varietà, che possa soddisfare ed accrescere la domanda di mercato emergente e facilitare l'uscita della risorsa dal rischio di estinzione.

3.1. Il sistema di conservazione

L'attivazione del sistema di conservazione della risorsa genetica ha fatto seguito al lavoro di recupero (ricognizione e prelievo) del materiale genetico e caratterizzazione, che ha condotto all'iscrizione della risorsa ai Repertori Regionali ed alla valutazione del rischio di estinzione.

La varietà locale è stata inizialmente recuperata da alcuni coltivatori storici presenti nell'aria di San-sepolcro, e messa in sicurezza, così come previsto dalla LR 64/2004 e successivo regolamento di attuazione, grazie al lavoro congiunto dei soggetti appartenenti alla Rete di Conservazione e Sicurezza, ed all'attività di gestione, coordinamento e controllo di Terre Regionali Toscane.

Attualmente, vi sono 11 coltivatori custodi iscritti alla Rete⁴³, situati nei comuni della Valtiberina toscana, ed incaricati della conservazione *in situ* della Cipolla Rossa della Valtiberina -autoriproduzione e mantenimento in purezza del materiale genetico-, secondo le norme tecniche

⁴³ Il numero e l'elenco dei coltivatori custodi della Cipolla Rossa della Valtiberina sono stati forniti da Terre Regionali Toscane, e sono aggiornati al mese di dicembre 2018.

obbligatorie e sotto i regolari controlli tecnici annuali, come previsto dalla convenzione da essi stipulata con Terre Regionali Toscane.

In base a quanto stabilito dalla D.G.R 327 del 18/04/2016 (Allegato B), i coltivatori custodi di Cipolla Rossa della Valtiberina ricevono un rimborso spese forfettario annuale di 340 € per il mantenimento in custodia della varietà⁴⁴.

L'attività dei coltivatori custodi è affiancata e supportata dalla Banca Regionale del Germoplasma, soggetto appartenente alla Rete. In particolare, sono due le sezioni della Banca coinvolte per la varietà: la sezione istituita presso l'Istituto d'Istruzione Superiore A.M. Camaiti di Pieve Santo Stefano, adibita alla conservazione delle specie frutticole ed erbacee tradizionali della Valtiberina; e la sezione centrale della Banca, istituita presso Terre Regionali Toscane, che conserva seme di specie erbacee, soprattutto ortive e frumento, provenienti da tutta la Toscana. Secondo quanto previsto dalla normativa regionale, i coltivatori custodi ricevono inizialmente il materiale genetico dalla Banca, nella modica quantità di 1 grammo prevista dalle norme tecniche regionali per la specie *Allium cepa* L. (cipolla)⁴⁵, e la riforniscono annualmente di materiale genetico nuovo, autoriprodotta, così da permettere la conservazione *ex*

⁴⁴ D.G.R 327 del 18/04/2016. Allegato B. RR (UE) 1305/2013 - PSR 2014/2020: Disposizioni per l'attuazione della misura 10 "Pagamenti per impegni agro-climatico-ambientali", sottomisura 10.2 "Sostegno alla conservazione e all'uso sostenibile delle risorse genetiche in agricoltura" del Programma di sviluppo rurale 2014-2020 della Regione Toscana. Ai sensi della presente delibera, le varietà di specie erbacee sono suddivise in cinque gruppi. La Cipolla Rossa della Valtiberina rientra tra le varietà di specie erbacee appartenenti al Gruppo 4: "Varietà di specie erbacee allogame che necessitano di oltre 1000 metri di isolamento o di isolatori o di particolari cure colturali (es. il trapianto) come pomodoro, cipolle, cavoli, rape, bietola, spinaci, zucca, melone, cocomero, cetriolo, spinacio, sedano, carota, mais, finocchio, radicchio, cardo dei lanaioli, cardo". Per tali varietà la delibera prevede un rimborso forfettario di 340 Euro annui per la conservazione "in situ/nell'azienda agricola". La delibera, e relativi allegati, sono pubblicati sul portale della Regione Toscana nella sezione dedicata, PSR 2014-2020: normativa regionale, www.regione.toscana.it

⁴⁵ Regione Toscana. Norme tecniche per la corretta conservazione "in situ" o "on farm" ed "ex situ" delle varietà locali toscane, germoplasma.regione.toscana.it

situ della risorsa, in base anche alle linee guida previste dalla Regione Toscana per le specie erbacee di interesse agrario⁴⁶.

In aggiunta, vi sono anche altri soggetti iscritti alla Rete, interessati alla conservazione e valorizzazione della varietà. Infatti, la LR 64/2004 e successivo regolamento di attuazione RR 12/2007 stabiliscono che alla Rete possono aderire ulteriori soggetti, pubblici o privati, in forma singola o associata, interessati alle attività di tutela e valorizzazione delle varietà locali iscritte ai Repertori Regionali, ed ubicati o aventi sede nella Regione. L'iscrizione avviene su domanda dell'interessato, e a seguito di verifica del possesso dei requisiti di idoneità da parte di Terre Regionali Toscane. In base a quanto previsto dall'art. 8 della LR 64/2004 e dall' art. 10 del RR 12/2007, tutti gli aderenti alla Rete possono scambiare fra loro, senza scopo di lucro ed in ambito locale, una modica quantità di materiale genetico - prevista per le singole specie, all'interno delle norme tecniche regionali - delle risorse iscritte nei Repertori Regionali a rischio di estinzione. La possibilità di far circolare all'interno di una rete di soggetti locali, censita e controllata, modiche quantità di materiale genetico delle risorse genetiche tutelate mira a supportarne l'attività di conservazione, facilitando la diffusione della conoscenza delle risorse e la loro coltivazione sul territorio.

Al dicembre 2018 risultavano 118 gli altri soggetti regolarmente iscritti alla Rete, oltre ai coltivatori custodi ed alla Banca Regionale. Tra questi, vi sono 2 soggetti che hanno fatto richiesta della modica quantità consentita di seme di Cipolla Rossa della Valtiberina - 1 grammo che corrisponde a 192 semi⁴⁷ - senza averne ad oggi la custodia⁴⁸.

Le interviste in profondità hanno permesso di comprendere il ruolo e le funzioni dei singoli soggetti incaricati dell'attività di conservazione della varietà.

⁴⁶ Regione Toscana. Norme tecniche per la corretta conservazione “in situ” o “on farm” ed “ex situ” delle varietà locali toscane, germoplasma.regione.toscana.it

⁴⁷ Regione Toscana. Norme tecniche per la corretta conservazione “in situ” o “on farm” ed “ex situ” delle varietà locali toscane, germoplasma.regione.toscana.it

⁴⁸ Tali dati sono stati forniti da Terre Regionali Toscane e sono aggiornati al mese di dicembre 2018.

L'Istituto d'Istruzione Superiore A.M. Camaiti di Pieve Santo Stefano

La diffusione capillare del sistema della Banca Regionale del Germoplasma su tutto il territorio della regione⁴⁹ - vicinanza delle sezioni alle zone di origine delle varietà - ha un'importanza fondamentale nella capacità della Banca di provvedere al recupero, caratterizzazione e mantenimento delle risorse genetiche locali, e di avere un contatto diretto con i coltivatori custodi, e gli altri soggetti interessati alla loro tutela e valorizzazione.

In particolare, l'Istituto di Istruzione Superiore A. M. Camaiti di Pieve Santo Stefano gestisce una sezione della Banca Regionale del Germoplasma, specializzata nella conservazione delle specie frutticole ed erbacee tradizionali della Valtiberina, a seguito di stipula di apposita convenzione con Terre Regionali Toscane, ai sensi dell'art. 5 del RR 12/2007.

Già a partire dagli anni ottanta, l'Istituto ha maturato una notevole esperienza nel settore. Infatti, esso si è occupato di attività di raccolta, conservazione e valorizzazione di vecchie coltivazioni locali, prima frutticole, come melo e pero, e poi anche orticole, cerealicole, foraggere, ed infine di olivo e guado.

Ad oggi, l'Istituto svolge un ruolo fondamentale, sia per l'attività di conservazione *ex situ* delle specie tradizionali del territorio iscritte ai Repertori, tra le quali la Cipolla Rossa della Valtiberina, sia per la partecipazione a numerosi progetti di promozione, e di recupero e caratterizzazione di varietà locali (es. varietà di pomodoro, legumi, cultivar di olivo, ecc).

La Cipolla Rossa della Valtiberina è stata tra le prime varietà orticole locali che l'Istituto ha contribuito a caratterizzare ed iscrivere, come soggetto promotore e tecnico di riferimento, vista la storica rilevanza della coltivazione per il tessuto agricolo locale.

⁴⁹ Regione Toscana. Banca Regionale del Germoplasma, germoplasma.regione.toscana.it

I coltivatori custodi

Il ruolo primario svolto dai coltivatori custodi della Cipolla Rossa della Valtiberina è quello di permettere la conservazione ed il mantenimento in purezza della risorsa genetica locale sul territorio di origine della coltivazione.

Ai sensi dell'art. 9 della LR 64/2004, essi provvedono a mantenerla in sicurezza, proteggendola e salvaguardandola da qualsiasi forma di contaminazione, alterazione o distruzione; effettuano il rinnovo dei semi della specie erbacea conservati presso le due sezioni della Banca Regionale del Germoplasma; e si occupano di diffondere la conoscenza e la coltivazione della risorsa, tramite lo scambio regolamentato di materiale genetico all'interno della Rete di Conservazione e Sicurezza, e la promozione e partecipazione ad iniziative di divulgazione.

Al momento dell'assegnazione della risorsa in custodia, i coltivatori incaricati ricevono dalla Banca Regionale 1 grammo di seme della varietà locale, che è la modica quantità prevista per la specie *Allium cepa* L. dalle norme tecniche regionali⁵⁰. Essi si occupano di autoriprodurre *in situ* il materiale genetico ricevuto, secondo quanto previsto nelle norme tecniche regionali, e sotto il controllo ed il supporto di tecnici agrari incaricati da Terre Regionali Toscane, che effettuano due sopralluoghi all'anno per le specie erbacee. Anche la Banca Regionale, su richiesta, può fornire supporto tecnico all'attività di custodia di questi coltivatori. Annualmente, i coltivatori custodi restituiscono alla Banca nuovo seme, in una quantità prefissata di 50 grammi per la specie *Allium cepa* L. (cipolla), o comunque proporzionale alla quantità di seme prodotto durante l'ultimo ciclo produttivo⁵¹.

Le interviste hanno evidenziato la criticità del ruolo dei coltivatori custodi nel garantire l'efficacia dell'attività di conservazione, in quanto essi si occupano della sua fase più critica, ovvero la riproduzione del materiale genetico, caratterizzata da elevato rischio di contaminazione. Ciò vale in

⁵⁰Regione Toscana. Norme tecniche per la corretta conservazione "in situ" o "on farm" ed "ex situ" delle varietà locali toscane, germoplasma.regione.toscana.it

⁵¹Regione Toscana. Norme tecniche per la corretta conservazione "in situ" o "on farm" ed "ex situ" delle varietà locali toscane, germoplasma.regione.toscana.it

particolar modo, per le specie da semente, come la cipolla, che richiedono una riproduzione per impollinazione, ed hanno maggiori complessità nella tutela genetica, rispetto alle specie da propagazione. In tal senso, gli intervistati hanno sottolineato l'importanza di un'adeguata attività di formazione, informazione e supporto tecnico da fornire agli agricoltori custodi, al fine di accrescere la loro conoscenza, competenza e senso di responsabilità.

I coltivatori possono richiedere a Terre Regionali Toscane l'assegnazione in custodia di una o più tra le risorse iscritte ai Repertori Regionali a rischio di estinzione, che siano di loro specifico interesse. Al contrario, alcune volte, capita che sia Terre Regionali Toscane a prendere l'iniziativa, e ad affidare in custodia alcune risorse locali meno conosciute, selezionando dall'elenco dei coltivatori custodi aderenti alle Rete, un numero adeguato di soggetti che garantisca la messa in sicurezza delle accessioni, nelle rispettive zone tipiche di produzione. In ogni caso, è previsto un limite massimo al numero di risorse che un coltivatore custode iscritto può detenere in custodia.

In tal senso, la Cipolla Rossa della Valtiberina è tra le varietà iscritte più richieste per la messa in custodia, visti la sua notorietà a livello locale e l'interesse dimostrato dal mercato. Come anticipato, attualmente, vi sono 11 coltivatori custodi attivi per la varietà, situati tra i Comuni di Sansepolcro, Anghiari, Badia Tedalda e Pieve Santo Stefano. Per tale ragione, al momento, nonostante l'interesse, il numero limite di 10 coltivatori custodi, previsto dal Decreto di Terre Regionali n. 76 del 29/09/2016 per la varietà di specie erbacea, non permette di affidare la risorsa in custodia ad ulteriori soggetti interessati⁵².

⁵² Attualmente, il numero di coltivatori custodi attivi per la varietà locale supera il limite previsto necessario alla messa in sicurezza della risorsa. Infatti, il decreto di Terre Regionali Toscane n. 76 del 29/09/2016, con oggetto LR 80/12 "Trasformazione dell'Ente Azienda Regionale Agricola di Alberese in Ente Terre Regionali Toscane. Modifiche alla L. R. n. 39/2000, alla L. R. n. 77/2004 e alla L. R. n. 24/2000", art. 2, comma 1, lettera e – numero massimo di coltivatori custodi per varietà locale a rischio estinzione conservata, che adotta le indicazioni ricevute dalla commissione tecnico-scientifica delle specie erbacee, formulate nella riunione del 22 luglio 2016, definisce il numero massimo di coltivatori custodi attivabili per le diverse varietà locali a rischio estinzione conservate. Il

Tra gli attuali coltivatori custodi, vi sono aziende agricole tra loro diversificate, in termini di struttura, dimensioni ed orientamento strategico. Inoltre, quasi tutte detengono la custodia non solo della varietà di cipolla, ma anche di altre varietà locali tra quelle iscritte ai Repertori Regionali.

In particolare, le interviste hanno evidenziato la presenza di quattro aziende orientate al mercato, che detengono la custodia della Cipolla Rossa della Valtiberina, non soltanto al fine di conservare e mantenere in purezza la risorsa locale, ma anche con finalità produttive. Queste ultime sono aziende a carattere familiare, di dimensioni variabili, con livello di meccanizzazione medio-basso e diverse specializzazioni colturali.

Al momento, di questo gruppo di coltivatori custodi, tre soggetti, situati nel Comune di Sansepolcro, gestiscono in modo congiunto e strutturato l'attività di produzione e commercializzazione di Cipolla Rossa della Valtiberina. Nello specifico, uno tra questi tre coltivatori, iscritto come custode già a partire dal 2008, è tra i soggetti promotori del progetto di recupero, caratterizzazione ed iscrizione della varietà locale ai Repertori Regionali, ed è il principale promotore delle attuali attività di produzione ed iniziative di promozione della risorsa. L'azienda è di dimensioni medie, specializzata nella coltivazione biologica di frutta, e detiene in custodia diverse tra le varietà locali iscritte, soprattutto di frutta e legumi. In precedenza, l'azienda produceva varietà commerciali di cipolla, la cui coltivazione è stata ad oggi sostituita da quella della Cipolla Rossa della

decreto adotta la Tabella di “Definizione del numero massimo di coltivatori custodi per varietà locale a rischio estinzione conservata in situ/on farm”, che suddivide le varietà di specie erbacee in cinque gruppi. La Cipolla Rossa della Valtiberina, in quanto varietà appartenente al Gruppo 4 “varietà di specie erbacee allogame che necessitano di oltre 1000 metri di isolamento o di isolatori o di particolari cure colturali”, prevede un numero massimo di dieci coltivatori custodi. Il decreto stabilisce anche, nel caso sia già presente un numero di coltivatori custodi superiore ai limiti fissati, di non aumentare tale numero, ma di riportarlo progressivamente, a seguito delle possibili naturali cessazioni o esclusione dalla attività, operate da Terre Regionali Toscane in ottemperanza alla LR 64/2004, al numero massimo previsto per le singole varietà. Il decreto è pubblicato nella banca dati degli atti amministrativi di Terre Regionali Toscane, www.regione.toscana.it

Valtiberina. La scelta di prendere la custodia ed avviare la produzione di tale varietà è derivata dall'aver percepito una maggiore potenzialità di mercato di quest'ultima. Le altre due aziende sono di più recente iscrizione all'elenco dei coltivatori custodi della varietà. Una di queste, di piccola dimensione, è specializzata nella produzione di varietà locali di specie ortive. Oltre alla cipolla, detiene in custodia altre varietà iscritte ai Repertori Regionali, soprattutto di legumi. L'altra azienda, di dimensioni medio-grandi, ha un elevato livello di meccanizzazione, ed è specializzata nella produzione di varietà commerciali di mais, patate, foraggi e nell'allevamento di bovini. Essa detiene in custodia soltanto la Cipolla Rossa della Valtiberina. Entrambe queste aziende hanno deciso di prendere la custodia della cipolla al fine di attivarne la produzione per la vendita, avendone valutate le discrete potenzialità di mercato.

Attualmente, oltre a questo primo gruppo di tre imprese, vi è un'azienda agricola e boschiva situata nel Comune di Anghiari, iscritta come coltivatore custode per la varietà dal 2018, che ha attivato, a partire da questo stesso anno, l'attività di produzione e vendita della Cipolla Rossa della Valtiberina. Tale azienda è specializzata nella produzione di olio, grano, specie ortive e da bosco. Insieme alla cipolla, detiene in custodia altre varietà di pomodoro, legumi e mais iscritte ai Repertorio Regionali. Questa azienda gestisce l'attività di produzione e vendita della Cipolla Rossa della Valtiberina, in collaborazione con un'altra azienda agricola e boschiva situata nel Comune di Anghiari, che ha richiesto ed ottenuto, come soggetto iscritto alla Rete di Conservazione e Sicurezza, la modica quantità di seme della varietà (1 grammo), ai sensi dell'art 10, comma 2 del RR 12/2007. Attualmente, le due imprese hanno sperimentato, durante alcune mostre mercato locali, la vendita della produzione derivata dai primi quantitativi di seme messi a coltura nel 2018.

Le interviste hanno evidenziato che la principale motivazione che ha spinto le diverse imprese, attualmente impegnate nella produzione della varietà, ad intraprenderne il percorso di custodia, o a richiederne il materiale genetico, deriva dalla loro percezione delle sue potenzialità economiche. Infatti, i coltivatori hanno sperimentato il notevole interesse dei consumatori per la varietà locale, durante gli eventi di promozione regionali ed i primi tentativi di commercializzazione. Inoltre, è emersa una volontà condivisa di tutte queste aziende a portare avanti l'attività di

produzione e commercializzazione della cipolla, anche lavorando in modo congiunto su strategie di marketing condivise.

Più in generale, l'indagine sul campo ha messo in luce il peso sempre maggiore che alcune delle varietà locali iscritte ai Repertori Regionali, come la Cipolla Rossa della Valtiberina, stanno acquisendo in termini di interesse da parte di consumatori e, soprattutto, di coltivatori locali, che gli affidano un ruolo sempre più rilevante all'interno delle proprie aziende. Anche se non tutte le varietà locali iscritte ai Repertori Regionali sono facilmente spendibili sul mercato, i coltivatori intervistati hanno dimostrato un forte interesse ad investire nello sviluppo di sistemi di produzione e commercializzazione, non solo della cipolla, ma anche di altre varietà locali ritenute più adatte ed interessanti.

In tal senso, i produttori locali hanno mostrato un interesse ad impegnarsi sempre più nelle attività di caratterizzazione, conservazione e produzione di varietà di ortaggi della Valtiberina, come legumi e pomodori, cultivar di olivo, e frutti antichi, grazie all'attivazione degli strumenti previsti dalla normativa regionale e nazionale in materia, ed al lavoro coordinato dei vari attori locali interessati.

Gli altri soggetti iscritti alla Rete

Come detto in precedenza, ai sensi dell'art. 7 della LR 64/2004 e dell'art. 9 del RR 12/2007, la Rete di Conservazione e Sicurezza può includere soggetti ulteriori rispetto alla Banca Regionale e ai coltivatori custodi.

Questi soggetti necessitano di essere censiti da parte di Terre Regionali Toscane, considerata anche la possibilità di libero scambio tra gli aderenti alla Rete, a titolo gratuito ed in ambito locale, di modiche quantità di materiale genetico delle risorse locali iscritte ai Repertori Regionali (art. 8 LR della 64/2004 e art. 10 del RR 12/2007). Infatti, tali soggetti possono richiedere e ricevere, se idonei, una modica quantità di materiale genetico delle risorse locali iscritte, prevista per singola specie dalle norme tecniche regionali⁵³.

⁵³ Regione Toscana. Norme tecniche per la corretta conservazione "in situ" o "on farm" ed "ex situ" delle varietà locali toscane, germoplasma.regione.toscana.it

Tale possibilità, come detto, deriva dall'intenzione del sistema regionale di facilitare la diffusione della conoscenza e della coltivazione delle risorse locali a rischio di estinzione sul territorio, e di incentivare la partecipazione di attori locali ad iniziative di divulgazione e promozione.

I soggetti iscritti alla Rete, che richiedono e ricevono la modica quantità di materiale genetico di una risorsa locale iscritta ai Repertori Regionali, senza divenirne custodi, non sono incaricati della sua conservazione *in situ*. Questi soggetti hanno la possibilità di divenire coltivatori custodi, e di ottenere la custodia di una o più risorse tra quelle iscritte ai Repertori Regionali, facendone apposita richiesta a Terre Regionali Toscane. Nel caso in cui essi ottengano la custodia di una varietà, per la quale abbiano già precedentemente ricevuto la modica quantità di materiale genetico, in qualità di semplici iscritti alla Rete, è necessario che ne ricevano una nuova quantità dalla Banca Regionale. Ciò al fine di garantirne la purezza, per la messa in riproduzione ai fini della custodia.

Le interviste hanno evidenziato che al 2018 sono quattro i soggetti che hanno fatto richiesta del seme di questa cipolla, in qualità di semplici iscritti alla Rete. Tra questi, due hanno successivamente richiesto ed ottenuto la custodia della varietà⁵⁴. Questi soggetti sono importanti per accrescere e diffondere sul territorio l'interesse per le varietà locali a rischio di estinzione, e per la loro coltivazione e consumo.

3.2 Il sistema di produzione

I coltivatori custodi possono utilizzare il seme autoriprodotta in purezza, per la produzione e vendita di bulbi di Cipolla Rossa della Valtiberina, e di prodotti da questi derivati, nelle quantità da essi desiderate.

Come visto nel paragrafo precedente, attualmente, vi sono due gruppi di coltivatori che gestiscono, in modo congiunto al proprio interno, l'attività di produzione e vendita della varietà locale di cipolla. Il primo gruppo è costituito da tre coltivatori custodi situati nel Comune di Sansepolcro; mentre il secondo, di nuovo ingresso, da un coltivatore custode ed un iscritto alla Rete, entrambi situati nel Comune di Anghiari.

⁵⁴ Tali dati sono stati forniti da Terre Regionali Toscane e sono aggiornati al mese di dicembre 2018.

Tutte queste aziende sono state intervistate per comprendere l'attuale struttura organizzativa e di gestione dell'attività produttiva, e valutare opportunità e problematiche per l'attivazione di future collaborazioni e strategie condivise di commercializzazione e promozione della varietà.

Al momento, è stata principalmente considerata l'attività di produzione inerente al primo gruppo di coltivatori. Infatti, il secondo gruppo ha ricevuto le prime quantità di materiale genetico soltanto nel 2018, e non produce ancora un quantitativo sufficiente di cipolla, per sostenere un vero e proprio sistema di commercializzazione. In tal senso, le interviste hanno evidenziato un tempo medio di 3 anni, utile ad un coltivatore custode per passare dal primo grammo di seme ricevuto, ad una quantità di seme tale (circa 1 etto) da permettere l'attivazione di un sistema commerciale strutturato, considerato il rispetto dei doveri inerenti alla riproduzione *in situ* del materiale genetico ed al rinnovo annuale di quello conservato presso la Banca Regionale. Ad oggi, le aziende del secondo gruppo, gestendo insieme l'attività produttiva, sotto il controllo dei tecnici incaricati da Terre Regionali Toscane, hanno sperimentato la vendita del prodotto - poche cassette derivanti dalla prima semina -, durante la mostra mercato *I Centogusti dell'Appennino 2018*, riscuotendo un discreto successo.

Per quanto concerne il primo gruppo di coltivatori, le interviste hanno permesso di raccogliere alcuni dati riguardo le superfici destinate alla produzione di Cipolla Rossa della Valtiberina, ed i volumi di prodotto immessi sul mercato a partire dal 2016, anno in cui la produzione per la vendita ha assunto volumi consistenti. Le tre aziende destinano complessivamente 2 ettari di terreno alla produzione di Cipolla Rossa della Valtiberina⁵⁵, suddivisi in due appezzamenti rispettivamente di 0,5 e di 1,5 ettari. Al momento, tale area è capace di accogliere all'incirca 1 chilogrammo di seme.

Gli agricoltori intervistati hanno espresso la necessità di garantire un'adeguata rotazione della coltura, almeno quadriennale, per ridurre l'insorgenza di fitopatologie e garantirne una buona resa produttiva. Di conseguenza, ogni anno, per ogni ettaro seminato a cipolla, sono necessari

⁵⁵ Tali dati sono stati forniti dai tre coltivatori custodi appartenenti al primo gruppo e sono aggiornati al mese di dicembre 2018.

almeno altri tre ettari da destinare a colture sostitutive. Al momento, le coltivazioni usate da questi tre agricoltori per la rotazione sono zucca, sovescio e favino. In tal senso, essi hanno affermato che sarebbe utile anche individuare altre- specie più redditizie da sostituire a queste colture, tenendo in considerazione le potenzialità produttive e di mercato di altre delle varietà iscritte ai Repertori Regionali (es. varietà locali di legumi).

Per quanto concerne la produzione di cipolla destinata alla vendita, la Figura seguente mostra l'andamento annuo dei volumi prodotti dal primo gruppo di coltivatori tra il 2016 ed il 2018.

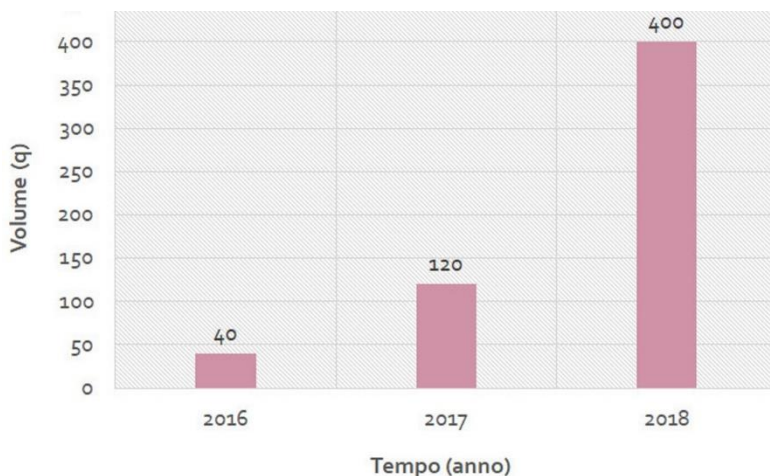
La produzione di cipolla per la vendita ha iniziato ad assumere volumi consistenti a partire dal 2016. In questo stesso anno, soltanto una delle tre aziende del primo gruppo si occupava di produrre la cipolla per la commercializzazione. Dal 2016 al 2018, grazie anche all'ingresso delle altre due aziende, il volume annuo di produzione destinato alla vendita è decuplicato, passando da i 40 quintali del 2016, ai 400 quintali del 2018. Gli intervistati hanno evidenziato che la rapida crescita dei volumi di produzione è stata favorita dall'incremento dell'interesse e della domanda di mercato per questo prodotto, e dalla necessità di rifornire un numero crescente di canali commerciali.

Il sistema produttivo della Cipolla Rossa della Valtiberina ha iniziato il proprio sviluppo a partire dal 2013. Inizialmente, la cipolla era detenuta in custodia solo da pochi coltivatori, quasi tutti in età avanzata ed interessati solo all'attività di conservazione e non ad una sua valorizzazione commerciale.

L'idea di passare dalla mera conservazione di questa cipolla, all'attivazione di un regime di coltivazione più strutturato, è nata con la partecipazione di una delle aziende custodi appartenenti al primo gruppo di produttori ad una mostra mercato. In questa occasione, presentando per la prima volta la cipolla, il coltivatore ha subito notato il grande interesse dei consumatori per questo prodotto, attratti dalla sua storia e dalla specificità delle sue caratteristiche morfologiche ed organolettiche. Di conseguenza egli ha deciso di sperimentare la vendita della cipolla locale, grazie al supporto di due piccoli ortofrutta di Sansepolcro e della GDO locale, che riforniva già con varietà commerciali di cipolla. Un elemento di interesse è che i commercianti coinvolti hanno permesso al coltivatore

di stabilire il prezzo alla produzione di questa cipolla, diversamente da quanto già avveniva per le varietà commerciali fornite, permettendogli, fino dal principio, di ottenere margini interessanti. Già dal primo anno, tramite questi canali e la vendita diretta, in azienda e presso i mercati locali, l'azienda ha venduto circa 30 quintali di prodotto, riscuotendo grande interesse da parte dei consumatori e consumando l'intera produzione annua in un solo mese.

Figura 2 - Andamento annuo dei volumi di produzione di Cipolla Rossa della Valtiberina (q, 2016-2018)



Fonte: nostra elaborazione su interviste in profondità

In seguito, la crescita della domanda di cipolla su questi canali, e l'apertura di nuovi sbocchi commerciali, hanno favorito la nascita della collaborazione tra questa azienda custode e le altre due aziende custodi del primo gruppo. Come detto in precedenza, infatti, la decisione di questi tre coltivatori di gestire in modo congiunto l'attività di produzione e vendita della Cipolla Rossa della Valtiberina ha lo scopo di accrescere la capacità produttiva del sistema e di gestione delle fasi di coltivazione, stoccaggio e distribuzione di volumi sempre maggiori di prodotto.

Le interviste con i tre coltivatori custodi del primo gruppo, e con l'Istituto d'Istruzione Superiore A.M. Camaiti, che fornisce supporto ed assistenza alla loro attività, hanno messo in luce il funzionamento delle varie fasi del processo produttivo della cipolla: dalla riproduzione del seme *in situ*, fino alla raccolta e stoccaggio dei bulbi pronti per la vendita.

La riproduzione del seme ed il trapianto

Come detto in precedenza, i tre coltivatori custodi si occupano di riprodurre *in situ* il seme della varietà locale di cipolla, secondo quanto previsto dalla LR 64/2004 e dal RR 12/2007, in base alle norme tecniche regionali, e sotto il controllo dei tecnici incaricati da Terre Regionali Toscane. Essi riforniscono annualmente con nuovo seme la Banca Regionale - nello specifico la sezione istituita presso l'Istituto d'Istruzione Superiore A.M. Camaiti e la sezione centrale istituita presso Terre Regionali Toscane -, in una quantità di 50 grammi o inferiore, in base all'effettivo volume di seme ottenuto durante l'ultimo ciclo produttivo.

Attualmente, i tre custodi gestiscono fino ad 1 kilogrammo di seme all'anno. Il seme viene trattato sia manualmente, sia tramite l'uso di macchinari artigianali. Esso viene raccolto a mano nella seconda metà del mese di luglio, attraverso la rottura e macinazione del fiore, e poi lasciato ad essiccare. Il seme viene poi pulito grazie ad un macchinario realizzato dagli stessi agricoltori, sulla base di un disegno prototipale fornito dall'Università di Pisa.

Tutto il seme pulito viene consegnato ad un'azienda vivaistica locale, che lo restituisce sotto forma di piantine pronte per il trapianto in pieno campo. Questa azienda ha una macchina pneumatica ed utilizza la semina in alveolo, in quanto la semina diretta non è possibile per via della consistenza franco-limoso del terreno. L'affidamento in conto terzi dell'attività di semina deriva dalla necessità di affidarsi ad un soggetto che abbia macchinari e spazi adeguati a gestire in modo ottimale questa fase.

Nel 2018 sono state trapiantate circa 165.000 piantine. Il trapianto avviene a macchina, con distanza di circa 8-9 centimetri su fila, e di circa

60 centimetri tra file. Al momento, questa è la minima distanza ottenibile, considerati i macchinari a disposizione.

In fase di trapianto, i coltivatori intervistati mirano a ridurre al minimo possibile la distanza tra le piantine. Ciò al fine di accrescere la resa produttiva della coltura a parità di superficie, ed allo scopo di controllare e contenere maggiormente la pezzatura dei bulbi, per aumentarne l'appetibilità di mercato. In tal senso, le norme tecniche regionali ammettono tale riduzione, ma per attuarla occorrono macchinari adeguati a lavorare sulle piccole dimensioni. Gli intervistati hanno affermato che già dimezzando le attuali distanze, dai 2 ettari attualmente destinati alla coltura, si potrebbe ottenere fino quasi al doppio della produzione, inoltre, riducendo lo spazio necessario a parità di quantità di seme, si attenuerebbero le problematiche di rotazione e costo.

Pertanto, la difficoltà di reperire sul mercato macchinari adeguati alle specificità della coltura, ed il loro costo di acquisto, rappresentano una limitazione alle possibilità di crescita della produzione per le piccole realtà aziendali coinvolte. Per tale ragione, sarebbe interessante riflettere sull'opportunità di realizzare progetti innovativi, per finanziare investimenti in meccanizzazione, anche tramite la creazione di macchine prototipali specifiche, non solo per il trapianto, ma per le diverse fasi colturali della varietà che lo necessitano.

La raccolta dei bulbi

Come anticipato sopra, la fase di accrescimento delle piantine, che conduce alla raccolta dei bulbi, implica alcune criticità legate alla possibilità di controllare la pezzatura di queste cipolle. Infatti, i bulbi hanno tra loro pezzatura variabile e tendono a raggiungere dimensioni anche molto grandi, specificità queste che possono costituire un problema per la selezione ed il confezionamento delle cipolle destinate alla vendita sui vari canali.

In tal senso, gli agricoltori intervistati hanno tentato di limitare la fase di accrescimento del bulbo, tramite una raccolta anticipata, senza però avere successo, in quanto le cipolle tolte troppo presto non assumevano la loro tipica forma appiattita. Al contrario, essi hanno effettuato alcune prove di doppia semina (doppio seme in alveolo), ottenendo risultati interessanti,

ovvero due midolli separati e due cipolle di pezzatura media, che risultano più versatili nella commercializzazione per la loro dimensione più contenuta.

Al momento, la raccolta delle cipolle viene effettuata tramite l'utilizzo di un macchinario artigianale, che non riesce a fronteggiare in modo ottimale il problema della delicatezza del bulbo e quello del trascinarsi, dovuto alla presenza di malerbe nel terreno.

La Cipolla Rossa della Valtiberina, infatti, in termini morfologici - carnosità, numero contenuto di strati, spessore fine della buccia esterna, è meno predisposta all'agricoltura intensiva rispetto alle varietà commerciali moderne, e rischia di essere danneggiata con facilità durante la raccolta a macchina. Anche per questa fase, dunque, sarebbe interessante poter investire in meccanizzazione, al fine di limitare gli effetti di attrito e trascinarsi, e ridurre il rischio di danneggiare il prodotto.

La conservazione dei bulbi post-raccolta e lo stoccaggio

Gli intervistati hanno affermato che le fasi di stoccaggio e di conservazione post-raccolta dei bulbi presentano attualmente le problematiche più urgenti da risolvere, a seguito della crescita ingente della quantità di prodotto da gestire.

La Cipolla Rossa della Valtiberina ha una lunga capacità di conservazione. I bulbi si mantengono senza germinare per un periodo lungo fino a sette mesi, dal momento della raccolta in agosto, fino a marzo. Tale durezza, però, è garantita soltanto dalla possibilità di conservare i bulbi in luoghi freschi, asciutti ed areati, evitando che l'elevato contenuto di acqua possa generare marciumi.

Infatti, tradizionalmente, queste cipolle venivano appese all'aria aperta, sotto tettoie, o dentro capanni. Le grandi quantità attualmente prodotte, però, non permettono questo tipo di conservazione tradizionale. Inoltre, alcuni tentativi hanno evidenziato come la cipolla non sia conservabile neanche in cella frigo, per via della sua forte umidità.

Pertanto, al momento, gli agricoltori intervistati hanno ideato un sistema di stoccaggio dei bulbi di tipo artigianale. Le cipolle raccolte vengono

sistemate in grandi casse di metallo, con pareti retate, e separate internamente da alcuni *plateaux* di polistirolo forati, che fungono da distanziali areati.

Tale sistema però risente delle grandi quantità di cipolla attualmente da stoccare, che ne limitano la capacità di areazione, riducendo di conseguenza la durata dei bulbi raccolti. Gli intervistati hanno infatti evidenziato che questa soluzione necessita di essere migliorata per permettere una durata maggiore del prodotto e mettere a pieno frutto la sua capacità di resistenza.

In aggiunta, sussiste il problema della mancanza di impianti aziendali adeguati dove sistemare i cassoni durante il periodo di stoccaggio. Infatti, attualmente, una volta riempiti con le cipolle, i cassoni vengono dati ad un'azienda ortofrutticola locale che si occupa di mantenerli per il periodo di conservazione. Le casse rientrano in azienda solo al momento in cui le cipolle devono essere selezionate e confezionate per la vendita.

Di conseguenza, anche in questa fase, emerge la necessità di sostenere i produttori nella realizzazione di progetti di investimento, che gli permettano di gestire internamente, e con attrezzature ed impianti adeguati, quantitativi di prodotto sempre maggiori.

Come osservato in precedenza, le attività di produzione e vendita di Cipolla Rossa della Valtiberina realizzate dal primo gruppo di coltivatori custodi, sono affiancate, a partire dal 2018, da quelle realizzate da un secondo gruppo di due produttori: un'azienda agricola che è coltivatore custode della varietà, ed un'azienda iscritta alla Rete di Conservazione e Sicurezza, che ha richiesto ed ottenuto la modica quantità di seme della cipolla, prevista dalle norme tecniche regionali.

Per questi due produttori, nonostante l'ingresso recente nel sistema, le interviste hanno permesso di evidenziare alcuni tratti interessanti della loro attività e delle loro prospettive.

Con le prime quantità di seme ricevute nel 2018, essi hanno messo a coltura un appezzamento di terreno condiviso. Su questo terreno, essi gestiscono in modo congiunto l'attività di coltivazione della cipolla, secondo le norme tecniche regionali e sottoponendosi ai controlli e

verifiche previste per i coltivatori custodi. Come il primo gruppo di coltivatori, anche questi ultimi hanno esternalizzato la fase di semina ad una azienda vivaistica locale, per ovviare alle problematiche di tipo tecnico-agronomico e limitare la necessità di spazio da destinare alla coltura.

Queste due aziende sono di dimensioni medio-grandi ed hanno un buon livello di meccanizzazione, inoltre gestiscono ancora quantità di prodotto molto contenute. Pertanto, al momento, essi non si sono scontrati in modo rilevante con le problematiche riscontrate dal primo gruppo per le fasi colturali e di stoccaggio. Attualmente, essendo in fase iniziale, la maggiore problematica che questi sembrano percepire è di riuscire a garantire una quantità adeguata e una continuità nella produzione di cipolla, utilizzando il solo seme autoriprodotta, e considerato il dovere dell'azienda custode di rinnovo annuale del materiale genetico conservato presso la Banca Regionale.

Nonostante le diverse problematiche emerse, le interviste hanno messo in luce la volontà di tutti e due i gruppi di coltivatori di collaborare tra loro, al fine di gestire in modo congiunto e condiviso strategie che possano facilitare lo sviluppo di un sistema produttivo e commerciale più ampio e strutturato.

In particolar modo, i coltivatori del primo gruppo sentono fortemente la necessità di allargare la propria rete collaborativa, al fine di accrescere la propria capacità produttiva e poter soddisfare la domanda di mercato crescente e le richieste che provengono dagli attuali canali commerciali serviti.

Allo stesso tempo, i coltivatori del secondo gruppo, sebbene abbiano affermato di voler mantenere, almeno al momento, la propria indipendenza organizzativa e gestionale in termini di produzione, si sono dimostrati molto interessati a lavorare su strategie condivise di commercializzazione e promozione del prodotto. Ciò al fine di riuscire a soddisfare le esigenze crescenti dei canali commerciali, ed acquisire maggiore forza in termini di capacità promozionale.

Infine, entrambi i gruppi di produttori sono d'accordo sull'opportunità di lavorare insieme per valutare e porre in essere strumenti collettivi di tutela

dell'origine e della qualità ed elaborare comuni strategie di marketing, che possano facilitare la nascita di una filiera locale tracciata del prodotto.

In tal senso, parrebbe interessante un approfondimento sulla possibilità ed opportunità di questi soggetti di ricorrere a tali strumenti, anche alla luce di quanto previsto in merito dalla normativa regionale e nazionale sulla tutela e valorizzazione dell'agrobiodiversità.

4. Il sistema di valorizzazione

Ad oggi, sussistono interessanti opportunità per la valorizzazione delle varietà locali a rischio di estinzione, iscritte ai Repertori Regionali della Toscana (LR 64/2004), ed inserite di diritto nell'Anagrafe nazionale della biodiversità di interesse agricolo ed alimentare (L 194/2015). Tali opportunità sono frutto dell'evoluzione del quadro normativo inerente alla tutela e valorizzazione dell'agrobiodiversità, sia a livello regionale, che nazionale; alla commercializzazione delle sementi di varietà da conservazione; ed anche alla tutela e valorizzazione dell'origine e della qualità di prodotti agro-alimentari.

Le interviste hanno evidenziato lo stato attuale del sistema di valorizzazione della Cipolla Rossa della Valtiberina, nel quale i coltivatori custodi dimostrano di avere un ruolo chiave come promotori e sostenitori delle principali attività ed iniziative.

Come osservato nei precedenti paragrafi, la cipolla è stata recuperata, caratterizzata ed iscritta ai Repertori Regionali, grazie all'iniziativa di storici coltivatori locali della varietà, in collaborazione con istituti di ricerca, Banca Regionale, e Terre Regionali Toscane. In tal modo, il lavoro congiunto dei diversi attori locali ha permesso di mettere la risorsa in sicurezza e di far emergere le sue potenzialità produttive e commerciali.

Inoltre, i coltivatori custodi si impegnano in diverse iniziative locali di promozione della varietà, come cene tematiche, degustazioni, partecipazioni a fiere, sagre e mercati, grazie anche alla collaborazione con PROLOCO ed associazioni culturali del territorio, legate al mondo

del *food*. Essi sfruttano anche le opportunità di valorizzazione offerte dalle diverse iniziative organizzate da Terre Regionali Toscane, come l'APP *Agrodiversità*, o le mostre mercato annuali.

Infine, come visto in precedenza, alcuni dei coltivatori custodi stanno investendo nello sviluppo di un vero e proprio sistema di produzione e commercializzazione del prodotto, per sfruttarne e valorizzarne le potenzialità di mercato.

4.1 La struttura

Le interviste hanno permesso di ricostruire uno schema che individua e caratterizza i diversi soggetti (pubblici e privati) che fanno parte dell'attuale sistema di tutela e valorizzazione della Cipolla Rossa della Valtiberina (Figura 3).

L'individuazione della struttura del sistema è fondamentale per identificare i principali portatori di interesse e le loro interrelazioni, nonché i principali vincoli ed opportunità di valorizzazione della varietà locale. Inoltre, questa tipologia di schema potrebbe fungere da modello esportabile per ricostruire ed analizzare anche i sistemi relativi ad altre varietà locali iscritte ai Repertori Regionali.

Tra i soggetti mostrati nella Figura, quelli principalmente impegnati nelle attività di conservazione e produzione della varietà sono già stati individuati e descritti nei paragrafi precedenti. Gli altri, maggiormente coinvolti nelle attività di commercializzazione e promozione, sono invece approfonditi nei paragrafi seguenti.

La Figura mostra l'elevato grado di maturità dell'attuale sistema di tutela e valorizzazione della varietà locale, in quanto le attività di conservazione sono affiancate da un sistema di produzione e commercializzazione in fase avanzata di strutturazione e sviluppo.

In tal senso, le interviste hanno evidenziato che questa varietà di cipolla è tra quelle iscritte ai Repertori Regionali che stanno dimostrando un maggior interesse commerciale ed un'elevata capacità di aggregazione di un sistema di attori locali interessati alla sua valorizzazione.

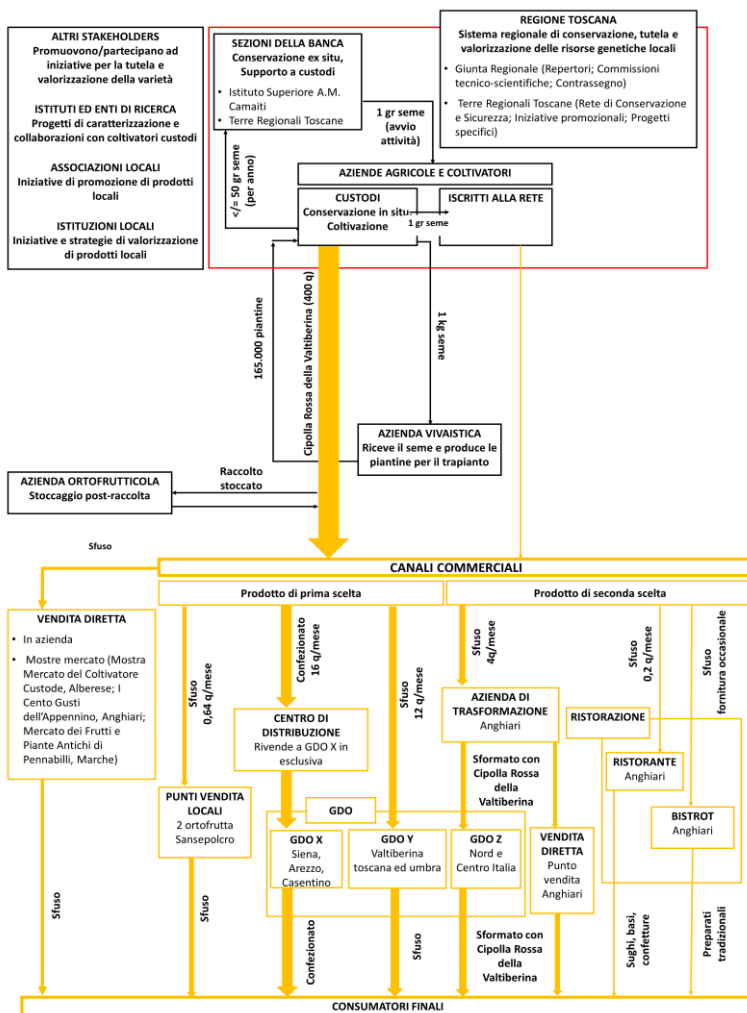
4.2 La commercializzazione e le dinamiche di consumo

Come visto nel Paragrafo 3, l'attuale sistema di commercializzazione della Cipolla Rossa della Valtiberina ha iniziato a strutturarsi nel 2013, ad opera di un coltivatore custode di Sansepolcro, che ha presentato per la prima volta la cipolla durante una mostra mercato, riscontrando un forte interesse da parte del pubblico presente. Per tale ragione, ha deciso di sperimentarne la vendita, sia attraverso il canale diretto, in azienda e presso mercati locali, che grazie alla collaborazione con due piccoli ortofrutta di Sansepolcro e una catena GDO della Valtiberina toscana ed umbra, che egli già riforniva abitualmente con varietà commerciali di cipolla. Già dal primo anno, tutta la produzione, circa 30 quintali, è stata consumata in un solo mese, evidenziando le interessanti potenzialità di mercato di questa varietà.

Negli anni successivi, la domanda di Cipolla Rossa della Valtiberina da parte di questi canali è cresciuta. Inoltre, a questi, ne sono stati affiancati di nuovi, a partire da un ristorante, un bistrot ed un'azienda di trasformazione situati nel Comune di Anghiari, ed un nuovo canale GDO, aperto nel 2018, che rivende la cipolla nei suoi punti vendita delle province di Siena ed Arezzo, e in tutto il Casentino.

L'ampliamento dei canali commerciali e la crescita della domanda hanno favorito la nascita di una collaborazione tra il coltivatore custode ed altre due aziende agricole di Sansepolcro che, negli ultimi anni, hanno richiesto ed ottenuto la custodia della varietà. Come visto in precedenza, al momento, i tre coltivatori gestiscono in modo congiunto l'attività di produzione e commercializzazione della cipolla. Le attività di selezione e confezionamento del prodotto per la vendita, e la gestione logistica dei diversi canali vengono gestite internamente da parte delle tre aziende custodi.

Figura 3 – Il sistema di recupero, caratterizzazione, conservazione e valorizzazione della Cipolla Rossa della Valtiberina



Legenda:

Linea rossa – Evidenzia il sistema di conservazione della varietà

Linee arancio – Evidenziano il sistema di commercializzazione della varietà

Fonte: Dati 2018. Nostra elaborazione su interviste in profondità e fonti documentali

Come evidenziato nel Paragrafo 3, le cipolle raccolte vengono stoccate e conservate in cassoni retati mantenuti presso un'azienda ortofrutticola locale. Al momento della vendita, i cassoni vengono trasportati presso la sede di una delle tre aziende, affinché le cipolle possano essere pulite, selezionate in prima e seconda scelta, pesate e confezionate.

La selezione dei bulbi tra prima e seconda scelta avviene in base alla loro pezzatura, rispettivamente più piccola o più grande, al grado di danneggiamento del bulbo, ed alla forma più o meno appiattita. Le cipolle di prima scelta sono destinate a rifornire il canale diretto, i due ortofrutta locali e i due canali della GDO. La seconda scelta viene invece smaltita rifornendo il canale della ristorazione e della trasformazione.

Gli intervistati hanno affermato che è fondamentale poter garantire la presenza di canali di smaltimento di bulbi di seconda scelta. Infatti, questi canali aiutano a sopperire alle problematiche legate alla delicatezza del bulbo, ed alle difficoltà tecniche di conservazione, che ne accorciano la resistenza post-raccolta, soprattutto in presenza di temperature al di sopra della media stagionale.

Una volta selezionate, le cipolle vengono pesate e confezionate manualmente. I tre coltivatori custodi hanno ideato e realizzato un logo e dei *packaging* specifici per la Cipolla Rossa della Valtiberina, con il fine di comunicare in modo adeguato ai consumatori l'identità di questa cipolla, il suo legame con il territorio e l'appartenenza al sistema regionale di tutela e valorizzazione della biodiversità di interesse agricolo ed alimentare.

Nello specifico, i coltivatori forniscono con il fresco il canale diretto (vendita in azienda e presso mostre mercato), il piccolo dettaglio locale e la catena GDO della Valtiberina e, con il confezionato, il nuovo canale GDO aperto nel 2018.

Gli operatori commerciali riforniti con il fresco vendono la cipolla sfusa. Per il rifornimento, le cipolle pulite e selezionate vengono sistemate dai coltivatori in cassette da 4 kilogrammi cadauna, sulle quali viene apposta una fascia di cartone che riporta: il logo della cipolla, la denominazione della varietà, la sua origine storica, e una dichiarazione di appartenenza

alle varietà locali a rischio di estinzione iscritte ai Repertori Regionali (Figura 4).

Figura 4 – Fascia identificativa della Cipolla Rossa della Valtiberina ideata dai coltivatori custodi



Fonte: nostra rilevazione

Durante le mostre mercato, inoltre, la cipolla viene mostrata e venduta in accompagnamento a del materiale informativo, come brochure e cartonati, finalizzato ad identificare e raccontare la varietà.

La cipolla viene venduta confezionata soltanto tramite il nuovo canale GDO, aperto nel 2018. La catena ha punti vendita non solo in Valtiberina ed in Toscana, ma in tutta Italia, e rappresenta perciò un'opportunità di lancio importante per il prodotto. Gli agricoltori confezionano la cipolla e la vendono ad un centro di distribuzione locale. Quest'ultimo si occupa di prezzare le confezioni e di rivenderle in esclusiva alla GDO. La confezione è stata ideata appositamente per tale canale dai coltivatori custodi, ed ha ottenuto il favore della GDO, che ne ha l'esclusiva. Le cipolle vengono confezionate a mano in sacchetti di rete biodegradabile, dal peso di 1,4 kilogrammi ciascuno. Ai sacchetti viene apposta un'etichetta in cartone che riporta: il logo della cipolla, la denominazione varietale, la sua origine storica, e una dichiarazione di appartenenza alle varietà locali a rischio di estinzione iscritte ai Repertori Regionali (Figura 5).

Le interviste hanno evidenziato che il principale problema relativo al confezionamento delle cipolle riguarda la loro pezzatura. Infatti, è necessario garantire la produzione di bulbi di una dimensione tale da poter rientrare nel limite di peso previsto per singola confezione, e da poter essere appetibile per il consumatore finale. I bulbi della varietà locale, però, se lasciati crescere possono raggiungere un peso di circa 400 o 500 grammi ciascuno. Per tale ragione, i tre agricoltori si stanno attrezzando per trovare soluzioni agronomiche in grado di controllarne l'accrescimento. Come osservato nel Paragrafo 3, al momento, essi hanno sperimentato con successo la doppia semina in alveolo, che consente di avere cipolle più piccole, che mantengono la loro caratteristica forma appiattita.

Infine, le tre aziende custodi si occupano direttamente della gestione logistica del rifornimento dei diversi canali, effettuando con proprio personale le consegne ai clienti.

I paragrafi seguenti evidenziano quanto emerso dalle interviste in merito alle dinamiche di gestione dei diversi canali, anche in termini di volumi e prezzi. In particolare, i tre coltivatori custodi intervistati hanno affermato che, per la prima volta, sono stati coinvolti da parte dei dettaglianti locali e della GDO nella definizione del prezzo alla produzione. Di conseguenza, essi hanno fissato tale prezzo in base alla valutazione dei costi di produzione, senza tenere conto dell'andamento dei prezzi di mercato di altre varietà di cipolla, e tentando di ottenere una remunerazione adeguata dei fattori utilizzati.

Figura 5 – Confezione della Cipolla Rossa della Valtiberina ideata dai coltivatori custodi per la GDO



Fonte: nostra rilevazione

La vendita diretta ed il piccolo dettaglio locale

Attualmente, l'attività di vendita diretta viene svolta in un punto vendita situato in una delle tre aziende custodi, ed in occasione di fiere o mostre mercato incentrate sulla promozione di prodotti tipici. Su questo canale, la cipolla viene venduta sfusa, nelle apposite cassette con fascia identificativa.

Gli intervistati hanno affermato che le mostre mercato rappresentano un canale fondamentale per la diffusione della conoscenza e dell'apprezzamento della varietà locale tra i consumatori, anche provenienti da altre regioni italiane.

Le principali mostre mercato a cui essi partecipano sono *I Centogusti dell'Appennino*, organizzata ogni anno ad Anghiari; la *Mostra Mercato del Coltivatore Custode* di Alberese, organizzata da Terre Regionali Toscane; e la mostra mercato dei frutti e delle piante antiche di Pennabilli, località della Regione Marche.

Inizialmente, i tre agricoltori partecipavano anche a mercati di paese settimanali, ma al momento danno priorità alla fornitura degli altri canali, data la loro maggiore rilevanza.

Per quanto riguarda il piccolo dettaglio, uno degli agricoltori rifornisce settimanalmente due piccoli ortofrutta di Sansepolcro. Le cipolle sono vendute sfuse e rifornite nelle cassette da 4 kilogrammi con apposita fascetta identificativa.

La grande distribuzione organizzata

Come visto, al momento, vi sono due canali GDO tramite i quali la cipolla viene commercializzata.

Il primo canale è rappresentato da una GDO locale, che conta circa 38 punti vendita. La Cipolla Rossa della Valtiberina viene venduta in punti vendita situati su tutto il territorio della Valtiberina, sia toscana, che umbra. Su questo canale la cipolla viene venduta sfusa, e rifornita nelle cassette da 4 kilogrammi con fascetta identificativa.

Il secondo canale GDO è stato aperto nel 2018, ed è costituito da una catena che ha punti vendita diffusi su tutto il territorio nazionale. Come osservato in precedenza, la vendita su questo canale viene intermediata da un centro di distribuzione, che acquista la cipolla confezionata dagli agricoltori, la prezza e la rivende in esclusiva alla GDO. La cipolla è al momento distribuita in diversi punti vendita situati nelle province di Siena ed Arezzo, e in tutta l'area del Casentino.

La cipolla viene venduta confezionata nei sacchetti di rete biodegradabile, con etichetta identificativa, ideati appositamente dai coltivatori custodi, i quali sono stati anche liberi di proporre il prezzo di acquisto della fornitura. Infatti, la catena GDO sta puntando fortemente sulla valorizzazione dei prodotti tipici e locali, visto l'ottimo ritorno di mercato da essi dimostrato. In tal senso, essa acconsente ad effettuare un ricarico minimo su questa tipologia di merce, per utilizzarla da fattore di attrazione per i consumatori.

Visto il successo di mercato della varietà locale, la GDO ha chiesto ai tre agricoltori di poter accrescere il volume dell'attuale fornitura da un valore di circa 16 quintali al mese - rifornimenti da 4 quintali alla settimana -, ad

uno di 40 quintali al mese - rifornimenti da 10 quintali alla settimana. Tale richiesta ha destato la preoccupazione dei tre agricoltori che, alle condizioni attuali di superficie, meccanizzazione ed impianti, non sono in grado di soddisfarla, evidenziando con forza la necessità di un ampliamento ed ottimizzazione del sistema produttivo attuale.

Il canale della trasformazione

I tre agricoltori custodi riforniscono con cipolla di seconda scelta un'azienda di trasformazione locale, che produce pasta fresca e gastronomia. L'azienda è di dimensione media, ha carattere familiare, detiene un punto vendita diretto ad Anghiari, e rifornisce con prodotti trasformati tre catene della GDO, con punti vendita situati su tutto il territorio nazionale.

Il trasformatore usa la Cipolla Rossa della Valtiberina come base per la preparazione di sughi e come ingrediente principale di una tipologia di sformato monodose di circa 240 grammi di peso. È interessante notare che l'azienda ha conosciuto la varietà locale durante la mostra mercato *I Centogusti dell'Appennino*, dove ha potuto apprezzarne le interessanti qualità organolettiche ed il favore dei consumatori.

Al momento, l'azienda di trasformazione vende lo sformato presso un punto vendita diretto, situato ad Anghiari, e tramite una delle tre catene GDO rifornite, che lo distribuisce in diversi negozi dislocati nel Nord e nel Centro Italia.

Lo sformato è venduto confezionato in contenitori di polistirolo che contengono due pirottini monodose ciascuno, e sono venduti presso la GDO per il libero servizio, riportanti il marchio dell'azienda di trasformazione. È interessante la decisione dell'azienda di riportare esplicitamente sulla confezione dello sformato la denominazione della cipolla utilizzata: *Sformato di Cipolla Rossa della Valtiberina*. Benché l'azienda produca diversi gusti di sformato, anche utilizzando altri prodotti locali, solo per quello di cipolla viene valorizzata l'origine tipica e locale della materia prima utilizzata.

Dalle interviste emerge la dinamica molto positiva dei volumi di vendita dello sformato di cipolla. Tale andamento sta spingendo l'azienda a

valorizzare ulteriormente l'utilizzo di materie prime tipiche e locali della Valtiberina all'interno dei propri prodotti, al fine di accrescerne il valore aggiunto. Ciò non soltanto considerando la produzione di sfornati, ma valutando anche la possibilità di utilizzare la cipolla, così come altre produzioni del territorio, all'interno di nuovi prodotti trasformati, come zuppe e vellutate, che riscuotono un discreto successo sul mercato del pronto.

In tal senso, le interviste hanno messo in luce la volontà del trasformatore di attivare collaborazioni con coltivatori custodi ed altri attori locali interessati, al fine di realizzare progetti condivisi di valorizzazione della cipolla, come di altre varietà locali iscritte ai Repertori Regionali, ideando prodotti innovativi capaci di esaltarne origine e qualità.

Infine, gli agricoltori intervistati hanno evidenziato l'importanza di questo canale per la propria attività, e la loro volontà di ampliarlo ed approfondirlo. Infatti, quest'ultimo genera un interessante ritorno di immagine per la varietà locale, e permette di smaltire bulbi di seconda scelta.

Il canale della ristorazione

I tre coltivatori custodi riforniscono con cipolla di seconda scelta un ristorante ed un bistrot di Anghiari. Anche questo canale, come quello della trasformazione, è ritenuto importante dagli intervistati per il possibile ritorno di immagine per la varietà locale, e la possibilità di smaltire prodotto di seconda scelta.

Il ristorante viene rifornito regolarmente, su base mensile, con un quantitativo di cipolla di circa 20 kilogrammi, sufficiente alla preparazione di sughi e di confetture di accompagnamento a carni e formaggi. Diversamente, il bistrot compra la cipolla soltanto occasionalmente, per inserire nel proprio menu piatti tradizionali o stagionali.

Il ristorante non riporta sul menu indicazioni relative alla varietà locale di cipolla utilizzata nelle proprie preparazioni. Il personale del ristorante riferisce tale informazione solo su richiesta, ai clienti più interessati. Al momento, il ristoratore ha valorizzato la Cipolla Rossa della Valtiberina,

facendo un esplicito riferimento alla sua specifica denominazione, soltanto all'interno un secondo piatto, presentato in occasione di una competizione culinaria *slow food* di rilievo nazionale.

Durante le interviste, il ristoratore ha affermato di essere interessato a promuovere maggiormente la cipolla all'interno dei propri piatti alla carta. In tal senso, però, egli ha sottolineato la necessità che i coltivatori garantiscano una continuità di rifornimento, così da permettergli di standardizzare il menu, e di fare al suo interno un richiamo specifico alla varietà locale.

In merito, la Cipolla Rossa della Valtiberina mostra potenzialità interessanti, visto che, se ben conservata, ammette un periodo di commercializzazione di circa sette mesi, dalla fine dell'estate, fino al mese di marzo.

I prezzi ed i volumi di vendita di Cipolla Rossa della Valtiberina sui diversi canali

Con riferimento ai diversi canali forniti e sopra riportati, le interviste in profondità hanno permesso di individuare, per ciascun canale, le attuali quantità di prodotto vendute (kilogrammo/mese), ed il livello dei prezzi praticato, sia alla produzione che al consumo (Euro/Kilogrammo) (Tabella 1).

Tabella 1 – Canali, prezzi e volumi di vendita della Cipolla Rossa della Valtiberina (2018)

| Prezzi e volumi di vendita di Cipolla Rossa della Valtiberina per canale servito | | | | |
|---|---|----------------------------|-------------------------------------|---------------------------------|
| Canale di vendita | Prezzo alla produzione (€/kg, netto IVA) | Quantità (kg/mese)* | Tipologia di confezionamento | Prezzo al consumo (€/kg) |
| Azienda | // | N.d. | Fresco sfuso | 2,00 |
| Mostre mercato | // | N.d. | Fresco sfuso | 2,50 |

| | | | | |
|--|--------|------|--|---|
| Punti vendita locali | 1,20 | 64 | Fresco sfuso (Cassette da 4 kg cad.) | 2,50 |
| GDO Y | 1,20 | 1200 | Fresco sfuso (Cassette da 4 kg cad.) | 1,99 – 2,00 |
| GDO X (Tramite Ce. Dis.) | 1,50** | 1600 | Confezionato (Reti da 1,4 kg cad.) | 2,54 |
| Trasformatore*** (Rivende sformato per via diretta e tramite GDO Z) | 0,80 | 400 | Fresco sfuso Seconda scelta | 3,90 (Confezione due sformati 240 gr cad.) |
| Ristorante | 0,80 | 20 | Fresco sfuso Seconda scelta | // |
| <p>*Periodo di commercializzazione standard. Tale periodo prosegue dal momento della raccolta dei bulbi, fino ad esaurimento delle scorte di prodotto. In generale, coincide con il periodo da settembre a gennaio. Nel 2018, però, le temperature elevate hanno causato un germogliamento precoce dei bulbi, riducendo il periodo di commercializzazione della cipolla di prima scelta a soli tre mesi.</p> <p>**Premio di prezzo significativo sul canale GDO. Il premio di prezzo sulla cipolla venduta su questo canale risulta significativo, considerato che la varietà commerciale di provenienza varia nazionale viene venduta ad un prezzo alla produzione pari a circa 0,45 euro/kg al netto di IVA, in confezioni da 1 kg, franco il mercato.</p> <p>***Trasformatore. Egli fa contratti di fornitura annuali con i coltivatori custodi e con la GDO, per accordarsi su dinamiche di fornitura e prezzi. Per la GDO è il trasformatore che propone il prezzo di vendita al consumo del prodotto trasformato.</p> | | | | |

Fonte: Dati dicembre 2018. Nostra elaborazione su interviste in profondità

L'attuale sistema di commercializzazione della Cipolla Rossa della Valtiberina fa capo principalmente all'attività dei tre coltivatori custodi situati nella zona di Sansepolcro, che da più tempo hanno avviato l'attività di produzione della varietà locale.

Ciononostante, le interviste hanno evidenziato alcune informazioni interessanti anche rispetto all'attività di vendita della varietà locale

effettuata dal secondo gruppo di coltivatori, che ha avviato l'attività di produzione della cipolla soltanto nel 2018. Questi ultimi hanno deciso di mettere in produzione questa cipolla dopo averla conosciuta ed apprezzata durante la *Mostra Mercato del Coltivatore Custode*, dove hanno rilevato il notevole interesse del pubblico per il prodotto.

Nel 2018, essi hanno prodotto soltanto poche cassette di cipolla, frutto della prima semina effettuata con il materiale genetico ricevuto nello stesso anno. Tutta la produzione è stata venduta durante la mostra mercato locale de *I Centogusti dell'Appennino*. I due coltivatori hanno definito il prezzo di vendita della cipolla, sulla base del prezzo praticato dal primo gruppo di coltivatori. Ciò al fine di creare, anche in prospettiva, una politica condivisa in tal senso.

L'ottimo riscontro dei consumatori, in merito alla cipolla e ad altre produzioni locali da essi vendute durante la mostra mercato (olio, farina, ortaggi), hanno rafforzato la convinzione di questi coltivatori nel dare sempre maggior spazio all'interno delle proprie aziende a questa tipologia di coltivazioni.

Inoltre, essi hanno affermato di voler collaborare insieme ai coltivatori del primo gruppo, al fine di realizzare strategie di marketing condivise. In tal senso, per esempio, gestire in modo congiunto alcuni canali commerciali, accordarsi su politiche comuni di prezzo, utilizzare strumenti di promozione congiunti. In aggiunta, valutare l'opportunità di porre in essere strumenti collettivi di tutela dell'origine e della qualità o iniziative che conducano alla realizzazione di strategie di valorizzazione economico-territoriale della varietà locale. Le interviste hanno evidenziato che, già nell'inverno 2018, i due gruppi di coltivatori hanno avviato i primi contatti per valutare le relative possibilità di collaborazione.

Infine, le interviste hanno evidenziato in modo specifico le rilevanti potenzialità di mercato della Cipolla Rossa della Valtiberina, confermandone il rilevante valore commerciale e per il territorio. Infatti, tutti i coltivatori intervistati, che si occupano di produrre e vendere la cipolla, hanno ribadito il forte interesse dei consumatori per questa varietà, anche rispetto a quello dimostrato per altre varietà locali parimenti iscritte ai Repertori Regionali.

Durante le mostre mercato, i consumatori si dimostrano molto incuriositi dalla varietà locale e dalle sue peculiarità. Inoltre, essi sono caratterizzati da una buona disponibilità a pagare, per il prodotto fresco o trasformato, su tutti i canali commerciali attualmente serviti. Gli intervistati hanno rilevato un certo grado di affezione dei consumatori al prodotto, che manifestano una ripetizione dell'acquisto sia presso i mercati, che presso il dettaglio tradizionale e la distribuzione organizzata. In aggiunta, durante alcune mostre mercato, diversi consumatori, provenienti dal Nord e Centro Italia, hanno lamentato l'assenza del prodotto sui mercati di origine.

Nel dettaglio, i consumatori che acquistano la varietà locale sono di età e genere diversi, e dimostrano di apprezzarne soprattutto forma, profumazione e gusto caratteristici, e versatilità di utilizzo a scopo alimentare. Inoltre, essi apprezzano fortemente il profondo legame del prodotto con la storia e la tradizione del territorio e la provenienza locale, nonché la sua naturalità.

Le interviste hanno evidenziato che il principale effetto di tale apprezzamento è la discreta libertà dei produttori nella scelta del prezzo da praticare sia sui canali diretti, che su quelli indiretti. Ciò permette loro attualmente, non solo di coprire i costi di produzione, ma anche di ottenere margini interessanti. Inoltre, il forte interesse della GDO per il prodotto, sia fresco che trasformato, mostra un elevato potenziale di crescita della domanda a cui occorre dare risposta.

Quanto visto mette in luce la necessità del sistema locale di ampliare la propria capacità produttiva, e di avviare un processo di sviluppo, congiunto e condiviso tra tutti gli attori locali interessati, che determini un passaggio da un'ottica di conservazione ad una di produzione per la commercializzazione, capace di facilitare l'uscita della risorsa locale dal rischio di estinzione, e di generare ricadute positive per tutto il territorio.

4.3 Le altre iniziative di promozione

Le interviste e l'analisi documentale hanno permesso di analizzare anche le altre iniziative di promozione legate alla diffusione di conoscenza sulla varietà locale e sulle attività ed il funzionamento del sistema toscano di tutela e valorizzazione dell'agrobiodiversità.

I coltivatori custodi, oltre partecipare alle iniziative promosse da Terre Regionali Toscane, come l'APP *Agrodiversità*⁵⁶ e la *Mostra Mercato del Coltivatore Custode*, sono promotori di diverse iniziative a carattere locale, organizzate in collaborazione con associazioni culturali del territorio ed enti locali interessati.

Tra queste, rilevano in particolare, la partecipazione ad interviste di quotidiani locali, l'organizzazione di cene ed eventi di degustazione, e la partecipazione a mostre mercato.

La risonanza sui quotidiani locali⁵⁷ è stata utile ad informare il pubblico sul ruolo dei coltivatori custodi, l'importanza dei Repertori Regionali e del sistema regionale di tutela e valorizzazione, e le notevoli potenzialità economico-territoriali di alcune delle varietà locali iscritte, tra le quali la cipolla, da mettersi a frutto in modo partecipato tra tutti gli attori del territorio interessati.

Inoltre, gli eventi di degustazione hanno riscosso un discreto successo, evidenziando la loro capacità di avvicinare ed appassionare il pubblico a questa tipologia di produzioni. Tra questi, per la cipolla, si possono ricordare l'evento *Ricordando i Cipollari*⁵⁸ e *La Terrazza ed il Gusto del Sapore*⁵⁹, organizzati grazie alla compartecipazione di coltivatori custodi, enti ed associazioni e la ristorazione locale. Entrambe le iniziative hanno permesso al pubblico di scoprire la varietà, conoscerne la storia e le proprietà caratteristiche e distintive, di gustarla in preparazioni tradizionali, e di capirne le potenzialità di tutela e valorizzazione, grazie al lavoro congiunto dei soggetti coinvolti nel sistema regionale.

⁵⁶ Regione Toscana. Applicazione Agrodiversità, open.toscana.it/web/app/-/agrodiversita-toscana

⁵⁷ Primo Piano Notizie, 30 novembre 2017, Torna a Sansepolcro la coltivazione della pregiata Cipolla Rossa della Valtiberina, www.primopia-nonotizie.com

⁵⁸ Le Centopelli. Ricordando i cipollari. 25 gennaio 2018, www.facebook.com/centopelli/videos/2075032036114221/; Valtiberina Informa. 27 gennaio 2018. "Ricordando i cipollari", l'associazione Le Centopelli riporta l'attenzione sulla coltivazione della Cipolla Rossa della Valtiberina, www.valtiberinainforma.it

⁵⁹ Saturno Notizie. 30 luglio 2018. Grande serata nella "Terra di Michelangelo": protagonisti gli "Accademici della Valtiberina", www1.saturnonotizie.it

Infine, la partecipazione alle diverse mostre mercato, organizzate da Terre Regionali Toscane, ma non solo, appare come lo strumento più importante per la diffusione della conoscenza e dell'apprezzamento della varietà locale tra il pubblico, e come occasione di incontro e scambio tra i diversi attori del sistema, anche in vista dell'attivazione di strategie comuni di valorizzazione.

Il livello di partecipazione e di risposta del pubblico alle diverse iniziative mostra un elevato interesse per questo tipo di produzioni, fortemente legate alla tradizione ed al territorio, e che richiamano i concetti di genuinità, sostenibilità e qualità. In tal senso, appare dunque interessante valutare l'opportunità di intensificare le collaborazioni tra tutti gli attori locali interessati, per lavorare a nuove iniziative di promozione della Cipolla Rossa della Valtiberina, sia con finalità commerciali, che di valorizzazione economico-territoriale.

5. Problematiche ed opportunità per la valorizzazione

L'analisi critica dei risultati di ricerca ha permesso di individuare le principali problematiche ed opportunità relative all'attuale sistema di tutela e valorizzazione della Cipolla Rossa della Valtiberina ed alle sue possibilità di sviluppo. In tal senso, sono stati presi in considerazione i principali strumenti e vincoli derivanti dalla normativa regionale e nazionale in materia, e dal quadro normativo nazionale ed europeo su sistemi sementieri e sistemi di tutela dell'origine e della qualità dei prodotti agro-alimentari.

Di seguito, è riportata l'analisi dettagliata delle maggiori problematiche ed opportunità relative ai diversi elementi che incidono sullo sviluppo del sistema locale: il prodotto; il sistema di conservazione della varietà; il sistema di produzione e valorizzazione; gli strumenti previsti dalla normativa regionale e nazionale in materia di tutela e valorizzazione dell'agrobiodiversità.

Il prodotto Cipolla Rossa della Valtiberina

Le diverse caratteristiche che identificano e distinguono la Cipolla Rossa della Valtiberina sembrano favorire la possibilità di sviluppo del sistema attuale, da un'ottica di conservazione, ad una di produzione e commercializzazione.

Le specificità morfologiche ed organolettiche della varietà locale - forma appiattita, colore saturo, profumazione intensa e dolce, gusto piccante ma leggero - sono ben riconoscibili e di attrattiva per il consumatore. Inoltre, egli dimostra apprezzare la notevole versatilità di utilizzo del bulbo ed il profondo legame della varietà con il territorio, la sua storia e le sue tradizioni.

In termini agronomici, la varietà locale dimostra rilevanti potenzialità produttive. Infatti, essa presenta una buona capacità di resa per ettaro coltivato, è una coltura resiliente, che si adatta bene alle condizioni climatico-ambientali locali, e mostra una discreta resistenza genetica contro le principali patologie delle coltivazioni orticole, elemento che potrebbe facilitare anche l'implementazione di un ciclo produttivo di tipo biologico.

Se ben conservato, il bulbo ha una considerevole resistenza durante la fase post-raccolta, che ne rende possibile la commercializzazione per un periodo di tempo di circa sette mesi, da cui consegue la possibilità di garantire un discreto livello di continuità nel rifornimento dei diversi canali.

Le interviste hanno sottolineato la presenza di alcune problematiche tecniche ed agronomiche, che emergono in modo sempre più marcato con l'aumentare del volume di produzione.

Innanzitutto, il bulbo presenta una notevole delicatezza e può essere facilmente danneggiato durante la fase della raccolta, soprattutto se essa viene effettuata a macchina.

In secondo luogo, la natura franco-limonosa del terreno facilita l'insorgenza di malerbe in semenzaio, che possono rendere difficoltosa la fase di semina e di accrescimento e raccolta delle piantine per il trapianto. Per tale ragione, al momento, i coltivatori custodi intervistati hanno affermato che la gestione di tale fase è affidata ad una azienda vivaistica

locale, dotata di strutture e spazi appositi, così da evitare l'utilizzo di diserbanti chimici.

In terzo luogo, la pezzatura della cipolla risulta molto variabile e di grandi dimensioni. Ciò causa problematiche nelle fasi di selezione e confezionamento del prodotto di prima scelta, venduto tramite il canale GDO. In tal senso, una meccanizzazione adeguata della fase di trapianto, che consenta di lavorare su dimensioni molto ridotte tra le file, potrebbe facilitare la capacità di controllo della pezzatura, al momento gestita grazie alla tecnica della doppia semina in alveolo. Inoltre, gli agricoltori intervistati hanno affermato che la varietà locale richiede una rotazione colturale almeno quadriennale, al fine di garantirne una buona resa produttiva e limitare l'insorgenza di malerbe nel terreno. Tale caratteristica comporta che, per aumentare in modo consistente i volumi di produzione, sia necessario avere porzioni ampie di superficie destinabile, e selezionare specie e varietà sostitutive, adatte alla rotazione, che possano avere una resa economica interessante. In tal senso, alcuni intervistati hanno sottolineato l'opportunità di introdurre nella rotazione della cipolla, altre varietà locali iscritte ai Repertori Regionali, come alcune varietà di legumi della Valtiberina.

Per quanto concerne la conservazione dei bulbi nella fase post-raccolta, la resistenza della cipolla è garantita dalla possibilità di stoccare il prodotto in un luogo fresco, asciutto e ben areato. Ciò richiede agli agricoltori la disponibilità di strutture ed impianti adeguati, capaci di gestire anche quantitativi di cipolle più consistenti.

Alla luce delle diverse problematiche osservate, lo sviluppo di un sistema produttivo ampio e strutturato, capace di valorizzare al meglio i tratti specifici della varietà locale, sembra richiedere adeguati investimenti nella meccanizzazione dei processi colturali, nella realizzazione di impianti e strutture per lo stoccaggio e la conservazione dei bulbi, e nella gestione ottimale di superfici e rotazioni colturali. Inoltre, appare fondamentale un'adeguata attività di supporto ed assistenza da parte di tecnici di Banca Regionale e Terre Regionali Toscane per la realizzazione di progetti di sviluppo ed il reperimento di fonti di finanziamento.

Infine, la varietà locale mostra proprietà nutraceutiche interessanti, che potrebbero essere ulteriormente approfondite, ai fini di una loro

valorizzazione commerciale. Essa detiene un elevato contenuto di antocianine, di peonidina e petunidina, che la distinguono positivamente sia da più comuni varietà di cipolla commerciale, che da alcune delle altre varietà locali di cipolla rossa iscritte ai Repertori Regionali.

In tal senso, essa è dotata di proprietà antiossidanti, antinfiammatorie e antitumorali, che possono essere adeguatamente valorizzate agli occhi del consumatore.

In tal senso, parrebbe utile investire in progetti specifici di caratterizzazione nutraceutica della varietà locale, al fine di generare dati ed informazioni utili da spendere sul mercato. Allo stesso tempo, sarebbe interessante anche sviluppare progetti di caratterizzazione mirati ad identificarne ed analizzarne a fondo le proprietà organolettiche specifiche, al fine anche di definirne modalità innovative di utilizzo.

Il sistema di conservazione

La ricerca ha messo in luce l'efficacia del sistema di conservazione posto in essere. In particolare, tale sistema ha permesso di: recuperare, caratterizzare e mettere in sicurezza la risorsa genetica; diffonderne la coltivazione e la conoscenza sul territorio; accrescere l'interesse alla sua tutela e valorizzazione da parte di coltivatori locali, operatori commerciali, trasformatori, ristoratori e consumatori.

In primo luogo, le interviste hanno sottolineato il ruolo cruciale svolto dai coltivatori custodi per garantire il mantenimento in purezza della varietà. Essi si dimostrano infatti responsabili della fase più critica del processo di conservazione della risorsa, riguardante la riproduzione del materiale genetico, che richiede conoscenze, abilità e competenze tecnico-agronomiche specifiche, per evitare errori, contaminazioni o derive di selezione.

La ricerca ha evidenziato dunque l'importanza della Rete di Conservazione e Sicurezza per mantenere in purezza la varietà locale, diffonderne la conoscenza e favorirne la coltivazione. Un'efficace attività della Rete costituisce la base per la realizzazione di un sistema di produzione e commercializzazione ampio, strutturato e tracciato della varietà. A tal fine, gli intervistati hanno ribadito il ruolo fondamentale

delle attività di controllo, supporto ed assistenza tecnica ai coltivatori custodi e di una corretta gestione dello scambio ed utilizzo delle modiche quantità di materiale genetico all'interno della Rete.

Alla luce di ciò, la ricerca ha posto l'accento sull'importanza di adeguate attività di informazione, formazione e supporto tecnico, dirette a rinforzare le conoscenze e competenze specifiche dei coltivatori custodi, e a sostenerli nel far fronte alle principali criticità di tipo tecnico, giuridico e gestionale, riscontrabili nelle attività di conservazione e valorizzazione della varietà locale. Tali attività risultano determinanti per garantire il funzionamento efficace del sistema di conservazione, e sostenere un processo congiunto e collaborativo di valorizzazione della risorsa.

In tal senso, l'attuale grado di sviluppo del sistema di conservazione della Cipolla Rossa della Valtiberina pone in luce l'opportunità di avviare un percorso congiunto tra i coltivatori custodi, e gli altri attori locali interessati, finalizzato allo sviluppo di un sistema di produzione e commercializzazione della varietà, volto a favorirne l'uscita dal rischio di estinzione, e capace di divenire leva di un processo di sviluppo territoriale integrato.

Il sistema di produzione e valorizzazione

Tra i coltivatori custodi della Cipolla Rossa della Valtiberina, le interviste hanno evidenziato la presenza di due gruppi di aziende agricole che hanno avviato l'attività di produzione della varietà locale, al fine di sfruttarne e svilupparne le specifiche potenzialità di mercato. La decisione dei coltivatori di avviare tale attività deriva dalla loro percezione rispetto ad un forte interesse e disponibilità a pagare per il prodotto da parte di consumatori ed operatori di filiera.

Le interviste hanno mostrato come tale interesse sia alimentato e rinforzato dalla capacità di questi coltivatori di promuovere il prodotto su diversi canali commerciali diretti (azienda e mostre mercato) ed indiretti (dettaglio locale, GDO, trasformazione, ristorazione), anche grazie alla creazione di un logo e di *packaging* distintivi, volti a comunicare l'identità, le caratteristiche e l'origine della varietà locale. Inoltre, un ruolo importante in tal senso è rivestito dalla loro partecipazione ad eventi di divulgazione e degustazione, interviste su quotidiani locali, mostre

mercato, ed alle diverse iniziative organizzate da Terre Regionali Toscane. Infine, le emergenti tendenze di consumo sui diversi canali stanno orientando sempre più le decisioni di acquisto e di spesa verso prodotti di qualità, locali, tipici, sani e sostenibili.

Alla luce di ciò, le interviste hanno mostrato una crescita della domanda di mercato per la Cipolla Rossa della Valtiberina, sia a livello di consumo, che da parte di operatori commerciali, trasformatori e ristoratori. In particolare, è emerso come alcune catene della GDO stiano investendo sulla valorizzazione di prodotti tipici, locali e stagionali, per venire incontro al favore del mercato. In aggiunta, la crescita della domanda è affiancata dalla possibilità di ottenere margini interessanti sulla vendita del prodotto. Infatti, la ricerca ha evidenziato che i coltivatori, non solo sono coinvolti dagli operatori nel processo di definizione del prezzo alla produzione della cipolla, ma detengono un certo grado di libertà nella sua fissazione, così come avviene anche per il prezzo da praticare sui canali diretti. In tal senso, essi definiscono il prezzo su una valutazione di costo, per garantire l'adeguata remunerazione dei fattori produttivi.

La principale problematica è determinata dal fatto che l'attuale sistema di conservazione e produzione della varietà locale sembra essere vicino alla saturazione della propria capacità produttiva e, di conseguenza, sperimenta diverse difficoltà nel sostenere tale crescita della domanda di mercato. Infatti, il numero massimo di coltivatori custodi ammissibili è stato raggiunto e la dimensione, il livello di meccanizzazione e la capacità di stoccaggio delle aziende agricole coinvolte nel sistema paiono non permettere, al momento, di gestire un aumento ulteriore dei volumi di produzione, date anche le criticità tecniche ed agronomiche di coltivazione e conservazione della varietà.

In tal senso, le interviste hanno evidenziato la volontà di entrambi i gruppi di aziende agricole, attualmente coinvolte nell'attività di produzione della cipolla, di investire impegno e risorse nello sviluppo di un processo di ampliamento e strutturazione del sistema in ottica produttiva e commerciale. Ciò anche attivando collaborazioni stabili tra loro, e con gli altri attori locali interessati, e grazie al supporto ed al sostegno degli strumenti e delle attività previste dai sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità. In merito, le interviste hanno

evidenziato diverse opportunità per le quali sarebbe utile un approfondimento.

In primo luogo, come già anticipato, sarebbe utile valutare la realizzazione di nuovi progetti condivisi e partecipati di caratterizzazione della varietà locale, atti in particolare ad identificare ed analizzare le sue proprietà organolettiche e nutraceutiche, e le sue potenzialità di utilizzo. Tali progetti possono infatti generare dati ed informazioni capaci di evidenziare le potenzialità economiche della cipolla, e di essere valorizzati in termini commerciali e territoriali.

A tal fine, potrebbero attivarsi collaborazioni tra coltivatori custodi, Banca Regionale, ed altri soggetti iscritti alla Rete di Conservazione e Sicurezza, insieme con istituti di ricerca ed operatori di filiera. Inoltre, sarebbe interessante considerare le opportunità di finanziamento e supporto offerte a tale scopo dai sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità, da specifiche misure del PSR, o da eventuali soggetti privati, come catene della GDO, che potrebbero essere interessati a progetti di valorizzazione di prodotti agro-alimentari tipici e locali.

In secondo luogo, al fine di incrementare la capacità produttiva e commerciale del sistema, parrebbe necessario, da parte dei coltivatori interessati, investire in miglioramenti tecnici ed agronomici dei processi colturali, dell'attività di conservazione e stoccaggio post-raccolta, e di gestione logistica dei diversi canali commerciali.

Nello specifico, essi potrebbero investire su un'adeguata meccanizzazione dei processi di coltivazione, al fine di limitare l'insorgenza sul terreno di malerbe che inficiano il processo di semina; di permettere un maggior controllo della pezzatura del bulbo in fase di accrescimento; e di rispettare la delicatezza del bulbo durante la raccolta. Inoltre, i coltivatori potrebbero lavorare sull'ottimizzazione dei processi di rotazione colturale, valutando anche l'opportunità di utilizzare come colture sostitutive alcune delle varietà locali più adatte tra quelle iscritte ai Repertori Regionali. In aggiunta, investire sulla realizzazione di impianti e processi innovativi di conservazione del bulbo in fase post-raccolta, che possano garantire la lunga durata del prodotto in fase di stoccaggio. Infine, considerare l'opportunità di un ampliamento dei canali

commerciali serviti con prodotto di seconda scelta (bulbi di pezzatura grande, danneggiati, o germogliati), come ristoranti o aziende di trasformazione, che attualmente coprono solo una piccola percentuale del volume di prodotto venduto.

A tal proposito, le interviste hanno evidenziato l'importanza di fornire ai coltivatori custodi informazione e supporto rispetto alla possibilità di cogliere le più adeguate opportunità di finanziamento disponibili. Queste, per esempio, possono derivare dalla propria appartenenza al sistema regionale di tutela e valorizzazione dell'agrobiodiversità (LR 64/2004), come dalla loro adesione al nuovo sistema nazionale istituito dalla L 194/2015; oppure essere attivate su specifiche misure del PSR, come quelle previste dai GAL – nel caso specifico, il GAL Appenino-Aretino – o relative ai progetti integrati di filiera (PIF) o territoriali (PIT). In terzo luogo, in merito a quanto detto, parrebbe fondamentale per i coltivatori custodi valutare l'opportunità di costruire reti stabili di collaborazione tra loro, e con tutti gli attori locali interessati (Banca Regionale, altri soggetti iscritti alla Rete, istituti di ricerca, associazioni ed enti locali, operatori di filiera), al fine di sviluppare strategie di marketing congiunte e progetti partecipati di valorizzazione del prodotto e della filiera.

In particolare, l'attivazione di tali collaborazioni potrebbe favorire la nascita di un sistema produttivo e commerciale ampio, strutturato e tracciato della Cipolla Rossa della Valtiberina. In tal senso, sarebbe utile valutare l'opportunità sia di iscrivere la risorsa locale come varietà da conservazione ai Registri nazionali per la commercializzazione delle sementi, che di porre in essere strumenti collettivi di tutela dell'origine e della qualità di prodotti agro-alimentari.

Alla luce di ciò, ai sensi del DL 267/2010⁶⁰ e relative disposizioni applicative⁶¹, la risorsa potrebbe essere iscritta ai Registri nazionali come

⁶⁰ DL 267/2010. Attuazione della direttiva 2009/145/CE, recante talune deroghe per l'ammissione di ecotipi e varietà orticole tradizionalmente coltivate in particolari località e regioni e minacciate da erosione genetica, nonché di varietà orticole prive di valore intrinseco per la produzione a fini commerciali ma sviluppate per la coltivazione in condizioni particolari per la commercializzazione di sementi di tali ecotipi e varietà, scs.entecra.it

⁶¹ DM 18 settembre 2012 - Disposizioni applicative del decreto legislativo 30 dicembre 2010, n. 267, per ciò che concerne le modalità per l'ammissione al

varietà da conservazione, in quanto essa rappresenta una varietà tradizionalmente coltivata in una particolare località e minacciata da erosione genetica. I soggetti interessati all'iscrizione devono compiere l'iter procedurale previsto dal DL 267/2010 e disposizioni applicative, e sottostare alla verifica dei requisiti di idoneità, per l'ammissione della risorsa ai Registri. L'iscrizione come varietà da conservazione determina la necessità di definirne la zona di origine, ovvero una o più zone di coltivazione tradizionale, che serve a delimitare il confine all'interno del quale può avvenire la selezione conservatrice (mantenimento in purezza) della varietà e, salvo deroghe⁶², la produzione delle sementi, che devono derivare obbligatoriamente da quelle prodotte dalla selezione conservatrice. Le interviste hanno evidenziato diversi aspetti interessanti inerenti all'iscrizione.

Innanzitutto, ai sensi del DL 267/2010 e relative disposizioni applicative, l'iscrizione ai Registri nazionali come varietà da conservazione prevede un controllo ufficiale obbligatorio sul nucleo del mantentore (prodotto derivante dalla selezione conservatrice) e la certificazione delle sementi di seconda riproduzione prodotte nella zona di origine. A questo, si accompagna un controllo obbligatorio sull'attività di mantenimento in purezza della varietà da parte del mantentore incaricato all'interno della zona di origine. L'attivazione di tale tipologia di controlli per la Cipolla Rossa della Valtiberina potrebbe favorire lo sviluppo di un sistema tracciato di produzione e commercializzazione, che comprenda tutti gli stadi della filiera.

In secondo luogo, il DL 267/2010 ammette la commercializzazione delle sementi delle varietà da conservazione iscritte ai Registri nazionali, se prodotte e lavorate secondo gli obblighi di legge, e nel rispetto delle

Registro nazionale delle varietà di specie ortive da conservazione e delle varietà di specie ortive prive di valore intrinseco e sviluppate per la coltivazione in condizioni particolari. (12A12791), scs.entecra.it

⁶² Art. 13 del DL 267/2010. Attuazione della direttiva 2009/145/CE, recante talune deroghe per l'ammissione di ecotipi e varietà orticole tradizionalmente coltivate in particolari località e regioni e minacciate da erosione genetica, nonché di varietà orticole prive di valore intrinseco per la produzione a fini commerciali ma sviluppate per la coltivazione in condizioni particolari per la commercializzazione di sementi di tali ecotipi e varietà, scs.entecra.it

restrizioni quantitative previste per singola specie. Inoltre, l'iscrizione prevede che le sementi possano essere commercializzate se, salvo deroghe⁶³, sono state prodotte nella loro zona di origine; sono commercializzate nella loro zona di origine; e soddisfano i requisiti previsti dalla normativa fitosanitaria vigente.

La possibilità di commercializzare semente iscritta della varietà locale permetterebbe di ampliare l'attuale sistema di produzione della Cipolla Rossa della Valtiberina ed accrescere la sua capacità produttiva, senza intaccare la facoltà di tracciare la produzione, a partire dal materiale genetico utilizzato.

In primo luogo, infatti, le buone potenzialità produttive e commerciali della varietà locale potrebbero attrarre, all'interno del sistema, un buon numero di altre aziende agricole, con caratteristiche strutturali e capacità d'investimento interessanti. In aggiunta, sfruttare la possibilità di inserire, nella denominazione della varietà registrata come da conservazione, la sua origine territoriale, potrebbe favorire una forma di tutela del suo legame con il territorio, e facilitare la nascita di una filiera locale tracciata e di un percorso di sviluppo territoriale integrato.

La ricerca ha messo in luce anche alcuni aspetti problematici percepiti dagli attori del sistema di conservazione e produzione della Cipolla Rossa della Valtiberina, rispetto all'opportunità di iscrivere la risorsa ai Registri nazionali come varietà da conservazione.

In tal senso, alla luce degli obblighi relativi all'attività di produzione delle sementi di varietà da conservazione (DL 267/2010 e disposizioni applicative), ai fini di avviare l'iter di registrazione, gli intervistati hanno espresso pareri distinti in merito alla possibilità di appoggiarsi su un'azienda sementiera del territorio, di piccole o grandi dimensioni, oppure di far costituire come azienda sementiera uno dei coltivatori

⁶³ Art 14, comma 2 ed art. 13, commi 1 e 2 del DL 267/2010. Attuazione della direttiva 2009/145/CE, recante talune deroghe per l'ammissione di ecotipi e varietà orticole tradizionalmente coltivate in particolari località e regioni e minacciate da erosione genetica, nonché di varietà orticole prive di valore intrinseco per la produzione a fini commerciali ma sviluppate per la coltivazione in condizioni particolari per la commercializzazione di sementi di tali ecotipi e varietà, scs.entecra.it

custodi della varietà locale. Tale problematica è conseguenza del fatto che, almeno inizialmente, la quantità di semente da produrre sarebbe poca, vista anche la capacità di assorbimento del sistema produttivo attuale, e ciò potrebbe essere economicamente non attrattivo per un'azienda sementiera, specialmente se di dimensioni medio-grandi. Per tale ragione, la maggior parte degli intervistati ha espresso parere favorevole per la scelta di un coltivatore custode, con caratteristiche idonee a rivestire questo ruolo, oppure di un'azienda sementiera di dimensioni contenute.

A supporto di quest'ultima opzione, la ricerca ha messo in luce il percorso intrapreso per altre due varietà locali di cipolla, iscritte ai Repertori Regionali, che sono state inserite nei Registri nazionali come varietà da conservazione, grazie al coinvolgimento di una piccola azienda sementiera situata nella loro area di produzione tradizionale. Un approfondimento delle attività intraprese dai soggetti promotori dell'iter di iscrizione di queste due varietà potrebbe essere utile, anche al fine di evidenziarne le principali problematiche e i maggiori benefici.

Le interviste hanno evidenziato come la struttura e il funzionamento del sistema di conservazione della Cipolla Rossa della Valtiberina, possano rappresentare una buona base di partenza per l'avvio ed il compimento dell'iter di iscrizione della risorsa ai Registri nazionali come varietà da conservazione. Tuttavia, alcuni dei coltivatori custodi intervistati hanno affermato di avere poca conoscenza a riguardo dei possibili effetti, derivanti dalla registrazione della cipolla come varietà da conservazione, rispetto al proprio ruolo e funzioni all'interno dell'attuale sistema di tutela e valorizzazione della varietà locale. Inoltre, essi hanno evidenziato l'importanza di prevedere attività di informazione ed assistenza, mirate a sostenerli nella valutazione e compimento dell'iter di iscrizione della risorsa ai Registri nazionali.

In tal senso, al fine di rendere tale iscrizione una leva di sviluppo dell'attuale sistema di conservazione e produzione della varietà locale, sarebbe utile: in primo luogo, lavorare su un'adeguata armonizzazione tra sistemi sementieri e sistemi di tutela e valorizzazione dell'agrobiodiversità, in merito alle varietà da conservazione, così come previsto dall'art. 11 della L 194/2015, di cui però non è stata ancora

emanata normativa di attuazione; secondariamente, fornire da parte di Banca Regionale e Terre Regionali Toscane un'adeguata attività di supporto ai coltivatori custodi nell'avvio e sviluppo del percorso di iscrizione.

Alla luce di quanto considerato, l'iscrizione della Cipolla Rossa della Valtiberina ai Registri nazionali per la commercializzazione delle sementi potrebbe divenire un primo passo verso la realizzazione, non solo di un sistema produttivo più ampio e strutturato della risorsa locale, ma anche di una vera e propria filiera locale, integrata e tracciata, che funga da volano per l'avvio di un processo di sviluppo economico-territoriale.

Tale percorso di valorizzazione della varietà locale non può prescindere dalla definizione di strategie di marketing e territoriali, condivise e partecipate dai diversi attori locali interessati.

A questo proposito, l'iscrizione della risorsa locale ai Registri nazionali come varietà da conservazione potrebbe essere affiancata dall'implementazione di strumenti collettivi per la tutela dell'origine e della qualità dei prodotti agro-alimentari, capaci di garantire il mantenimento della varietà sul territorio, e di valorizzare il legame causale tra provenienza e qualità distintive del prodotto. In tal senso, sarebbe utile valutare le opportunità offerte dai marchi collettivi geografici, dai sistemi di qualità (DOP, IGP, STG, ecc), o da altri strumenti, come PAT o Presidi Slow Food. Pertanto, occorrerebbe un approfondimento per evidenziare gli effetti, sulle possibilità di utilizzo di questi strumenti, generati dall'appartenenza della Cipolla Rossa della Valtiberina ai sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità, alla luce di quanto stabilito in merito dalla L 194/2015, per le risorse locali inserite nell'Anagrafe nazionale della biodiversità di interesse agricolo ed alimentare.

Inoltre, le interviste hanno evidenziato l'importanza di approfondire le diverse opportunità di finanziamento esistenti per la realizzazione di progetti condivisi e partecipati di valorizzazione commerciale o economico-territoriale della risorsa, tenendo in considerazione gli strumenti offerti dai sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità, ma anche da misure specifiche del

PSR, e dalla realizzazione di progetti integrati di filiera (PIF) o territoriali (PIT).

A favore di ciò, gli attori dell'attuale sistema di conservazione e produzione della varietà locale appaiono molto interessati a collaborare stabilmente verso la realizzazione, non solo di una filiera integrata e tracciata della Cipolla Rossa della Valtiberina, ma anche di una filiera più ampia, che possa includere un paniere di prodotti tipici del territorio, derivanti da una selezione di varietà locali iscritte ai Repertori Regionali, scelte in base alle loro potenzialità economiche e commerciali (es. varietà di specie ortive, cultivar di olivo, ecc).

In conclusione, la ricerca ha messo in luce l'importanza di un'intensificazione delle diverse iniziative locali, promosse da coltivatori custodi e Terre Regionali Toscane, dedicate a diffondere la conoscenza e l'interesse per la varietà locale e per le attività svolte dai sistemi di tutela e valorizzazione dell'agrobiodiversità. Infatti, mostre mercato, eventi tematici, attività di divulgazione ed animazione territoriale, si stanno dimostrando strumenti fondamentali nel favorire il processo di aggregazione di attori locali interessati alla valorizzazione delle risorse genetiche locali, e la nascita di collaborazioni stabili e durature.

Gli strumenti di valorizzazione previsti dalla normativa regionale e nazionale

Le interviste hanno evidenziato le percezioni dei diversi attori locali interessati rispetto ai principali strumenti di valorizzazione delle varietà locali a rischio di estinzione, previsti dal sistema regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità.

A livello regionale, attualmente, nessuno dei coltivatori custodi della Cipolla Rossa della Valtiberina ha fatto richiesta per avere la concessione d'uso del Contrassegno, strumento previsto dalla LR 64/2004 per la valorizzazione delle risorse locali a rischio di estinzione iscritte ai Repertori Regionali. In tal senso, gli intervistati hanno evidenziato che lo scarso favore ricevuto da tale strumento è dovuto principalmente ai costi da sostenere per l'ottenimento della certificazione biologica o integrata della produzione - necessario per avere la concessione -, e al suo non riconosciuto valore comunicativo e di mercato.

Contrariamente, a livello nazionale, le interviste hanno evidenziato un forte interesse dei diversi attori del sistema di conservazione e produzione della cipolla per i nuovi strumenti di valorizzazione previsti dalla L 194/2015, a favore delle varietà locali a rischio di estinzione, rientranti di diritto nell'Anagrafe nazionale della biodiversità di interesse agricolo ed alimentare, e dei coltivatori custodi, aderenti alla Rete nazionale della biodiversità di interesse agricolo ed alimentare.

In tal senso, parrebbe utile un approfondimento delle diverse opportunità offerte. Per esempio, valutare la possibilità di realizzare, anche in Valtiberina, una Comunità del cibo e della biodiversità di interesse agricolo e alimentare⁶⁴; oppure di costruire un Itinerario della biodiversità di interesse agricolo e alimentare, che coinvolga la cipolla insieme ad altre varietà locali; o anche di sfruttare le opportunità di finanziamento aperte per organizzare iniziative presso le scuole, animare la Giornata nazionale della biodiversità di interesse agricolo e alimentare, e per sostenere interventi di ricerca sulla biodiversità di interesse agricolo e alimentare.

In aggiunta, sarebbe interessante approfondire come l'iscrizione di una varietà locale a rischio di estinzione nell'Anagrafe Nazionale, istituita con L 194/2015, e l'adesione dei coltivatori custodi alla Rete nazionale della biodiversità di interesse agricolo e alimentare, oltre a rafforzarne la conservazione e a conferire ai custodi un riconoscimento a livello nazionale, possa favorire l'accesso a contributi del PSR, e la partecipazione a progetti regionali, nazionali ed europei sulla tutela e valorizzazione dell'agrobiodiversità.

Alla luce di quanto emerso, le interviste hanno messo in luce l'importanza di garantire, agli attori dell'attuale sistema regionale di tutela e valorizzazione della varietà locale, un livello adeguato di informazione, formazione ed assistenza tecnica, al fine di diffondere la conoscenza dei vantaggi e limiti dei diversi strumenti utilizzabili per la valorizzazione e, in particolare, delle nuove opportunità offerte dal processo di attuazione del nuovo sistema nazionale istituito con L 194/2015. Ciò al fine di

⁶⁴ Regione Toscana. Istituzione di una Comunità del Cibo e della Biodiversità di Interesse Agricolo e Alimentare in Garfagnana, germoplasma.regione.toscana.it

incentivare e supportare la nascita di percorsi di sviluppo economico-territoriale che mettano a frutto il valore delle risorse genetiche locali.

Infine, la ricerca ha evidenziato che, al momento, appare prioritario l'impegno congiunto di soggetti istituzionali ed attori locali interessati per provvedere ad un'adeguata armonizzazione tra i sistemi di tutela e valorizzazione dell'agrobiodiversità a livello regionale e nazionale. Lo scopo è quello di non abbandonare quanto già istituito in Toscana, grazie alla LR 64/2004 e RR 12/2007, ma di adottare le modifiche necessarie per una corretta integrazione con le disposizioni della L 194/2015, e relativa normativa di attuazione. In tal senso, molti intervistati si sono dimostrati favorevoli alla possibilità di mantenere a livello locale la gestione, il coordinamento ed il controllo delle attività di recupero, caratterizzazione e conservazione delle risorse genetiche a rischio di estinzione; e di demandare a livello nazionale, quanto concerne la loro valorizzazione, compreso il compito di disciplinare le interconnessioni con sistemi sementieri, e sistemi di tutela dell'origine e della qualità dei prodotti agro-alimentari.

6. Considerazioni Finali

Il caso di studio ha permesso di far emergere alcuni interessanti spunti di riflessione per i soggetti istituzionali coinvolti nelle attività di regolamentazione, gestione e coordinamento dei sistemi regionale e nazionale di tutela e valorizzazione della biodiversità di interesse agricolo ed alimentare.

A livello regionale, il sistema di tutela e valorizzazione, istituito con LR 64/2004, sta dimostrando la propria efficacia rispetto alla possibilità di recupero, caratterizzazione e messa in sicurezza di risorse genetiche locali di interesse agricolo ed alimentare. Esso permette di censire ed identificare le risorse locali, tramite iscrizione ai Repertori Regionali, e facilita la diffusione della loro coltivazione e conoscenza sul territorio, permettendo ai coltivatori locali di scoprirne e valutarne le potenzialità produttive e di mercato.

Inoltre, le interviste hanno evidenziato un forte apprezzamento di coltivatori custodi ed altri attori locali interessati, rispetto alle diverse iniziative di valorizzazione delle risorse genetiche del territorio, promosse e compartecipate dalla Regione Toscana, tramite Terre Regionali Toscane. Tra queste, in particolare, emergono: la promozione e compartecipazione a progetti di caratterizzazione e valorizzazione delle risorse genetiche locali; l'organizzazione delle Mostre Mercato del Coltivatore Custode; la realizzazione di incontri, convegni tematici e pubblicazioni; e la creazione dell'APP *Agrodiversità*. Il favore degli attori locali ed il buon esito di queste iniziative mettono in luce la necessità di continuare ad investire in tal senso.

In secondo luogo, a livello nazionale, tutti gli intervistati hanno mostrato un forte interesse per le potenzialità del nuovo sistema di tutela e valorizzazione dell'agrobiodiversità, istituito con L 194/2015. Essi hanno posto l'accento sulle opportunità derivanti dal suo processo di attuazione, in merito alla possibilità di rafforzare la tutela delle risorse locali a rischio di estinzione, inserite di diritto nell'Anagrafe Nazionale; di dare riconoscimento nazionale al ruolo ed alle funzioni della Banca Regionale e dei coltivatori custodi, tramite la loro adesione alla Rete Nazionale; e di definire nuovi ed interessanti strumenti di valorizzazione.

I principali spunti di riflessione, che emergono dal caso di studio, riguardano: l'opportunità dei due sistemi, regionale e nazionale, di integrarsi tra loro in modo armonico, rafforzando la propria capacità di supporto e sostegno ai processi di conservazione delle risorse genetiche locali a rischio di estinzione; lo sviluppo di sistemi ampi, integrati e tracciati di produzione e commercializzazione delle risorse locali, che dimostrino rilevanti potenzialità produttive e di mercato ed un'adeguata capacità di aggregazione di attori interessati alla loro valorizzazione.

La ricerca ha evidenziato come, a livello regionale, sarebbe interessante promuovere ed intensificare le attività di informazione, formazione ed assistenza tecnica dedicate ai coltivatori custodi, al fine di accrescere la loro capacità di gestire le fasi più critiche dei processi di conservazione e mantenimento in purezza delle varietà locali a rischio di estinzione e di supportarli nell'identificare, valutare e mettere a frutto le diverse opportunità di valorizzazione esistenti per le risorse di loro interesse.

In aggiunta, le interviste hanno sottolineato l'importanza di un rafforzamento delle attività regionali volte ad incentivare e supportare la realizzazione di progetti di caratterizzazione e di studi tecnico-agronomici, finalizzati a determinare il potenziale economico delle varietà locali iscritte ai Repertori, ed individuare quelle più adatte per avviare processi di sviluppo dei loro sistemi produttivi e commerciali. A tale proposito, appare fondamentale anche proseguire ed intensificare le diverse iniziative di divulgazione ed animazione territoriale, che possono favorire la nascita di reti di collaborazione tra gli altri attori locali interessati, che conducano a strategie congiunte di valorizzazione delle risorse locali.

Lo studio ha messo in luce come la capacità degli attori del territorio di costruire filiere integrate e tracciate delle varietà locali iscritte ai Repertori Regionali, e di avviare processi di sviluppo territoriale basati sulla valorizzazione delle risorse genetiche, possa essere rafforzata grazie ad attività regionali di supporto. In tal senso, gli intervistati hanno evidenziato l'importanza di attività di sostegno ed assistenza tecnica ai coltivatori custodi, nei processi di iscrizione delle risorse locali a rischio di estinzione ai Registri nazionali come varietà da conservazione; ed allo stesso tempo, il loro favore a ricevere supporto per la realizzazione di progetti integrati di filiera (PIF) o territoriali (PIT), e l'implementazione di strumenti condivisi di tutela dell'origine e della qualità di prodotti agro-alimentari.

In secondo luogo, il caso di studio ha evidenziato la priorità di proseguire nel lavoro congiunto tra organi regionali e nazionali, in collaborazione con i diversi attori interessati, per provvedere ad un'adeguata armonizzazione del sistema regionale di tutela e valorizzazione dell'agrobiodiversità, con il nuovo sistema nazionale, istituito con L 194/2015, ciò al fine di apportare le modifiche necessarie ad un'integrazione dei due sistemi che permetta di risolvere le criticità.

A questo proposito, tutti gli intervistati si sono dimostrati favorevoli rispetto all'opportunità di mantenere, a livello regionale, il coordinamento, la gestione, ed il controllo delle attività di recupero, caratterizzazione e conservazione delle risorse locali, al fine di garantirne una prossimità al territorio; e di demandare, a livello nazionale, quanto

concerne la loro valorizzazione, per dare maggiore forza e coerenza alle diverse attività e strumenti a ciò finalizzati.

La ricerca ha evidenziato che un'armonizzazione efficace tra i due sistemi necessiterebbe di essere sostenuta, a livello regionale, da un'adeguata attività di informazione e supporto degli attori locali interessati, e coinvolti nella conservazione e valorizzazione delle risorse genetiche del territorio, al fine di renderli consapevoli delle diverse opportunità, e delle criticità, derivanti dall'iscrizione delle risorse locali a rischio di estinzione all'interno dell'Anagrafe nazionale della biodiversità di interesse agricolo ed alimentare, e dall'adesione alla Rete Nazionale da parte di coltivatori custodi, sezioni della Banca Regionale ed altri soggetti interessati.

In tal senso, sembrerebbe importante un approfondimento sulle nuove opportunità di valorizzazione delle risorse genetiche locali derivanti dal processo di attuazione della L 194/2015, per evidenziarne i principali vantaggi ed anche le possibilità di ampliamento e sviluppo.

In primo luogo, sarebbe interessante valutare le diverse opportunità di finanziamento aperte per le risorse iscritte all'Anagrafe Nazionale e per i soggetti appartenenti alla Rete Nazionale. La L 194/2015 prevede il sostegno a progetti di ricerca innovativi sull'agrobiodiversità ed alle attività da porre in essere per l'implementazione dei diversi strumenti di valorizzazione, come: le Comunità del cibo e della biodiversità di interesse agricolo ed alimentare; gli Itinerari della biodiversità di interesse agricolo ed alimentare; le iniziative presso le scuole e la Giornata nazionale della biodiversità di interesse agricolo ed alimentare. Inoltre, l'iscrizione di una risorsa genetica all'Anagrafe Nazionale dovrebbe favorire l'ottenimento di premialità e contributi, su fondi europei o altri fondi nazionali, per la realizzazione di attività di conservazione e valorizzazione.

In secondo luogo, le interviste hanno evidenziato l'importanza di provvedere rapidamente, a livello nazionale, ad emanare la normativa di attuazione di quanto previsto dall'art 11 della L 194/2015 *Commercializzazione di sementi di varietà da conservazione*, al fine di incentivare il ricorso all'iscrizione delle varietà locali a rischio di estinzione ai Registri nazionali per la commercializzazione delle sementi,

come strumento utile per una loro valorizzazione in termini economici e territoriali.

Tale articolo, infatti, mira ad un'armonizzazione di quanto previsto dalla disciplina sementiera, in merito al mantenimento, produzione, e commercializzazione delle sementi delle varietà iscritte nei Registri nazionali come varietà da conservazione, con quanto disciplinato dalla L 194/2015, in materia di conservazione e scambio del materiale genetico delle varietà a rischio di estinzione iscritte all'Anagrafe Nazionale, da parte dei diversi soggetti iscritti alla Rete Nazionale.

La ricerca ha evidenziato che tale armonizzazione, favorendo i processi di iscrizione delle varietà locali a rischio di estinzione ai Registri nazionali come varietà da conservazione, appare come un utile strumento di valorizzazione, in quanto capace di incentivare lo sviluppo di sistemi ampi e tracciati di produzione e commercializzazione delle varietà locali, con rilevanti potenzialità economiche e di mercato e maggiore capacità di aggregazione di attori del territorio.

Alla luce di ciò, le interviste hanno evidenziato che sarebbe interessante anche approfondire gli effetti derivanti dall'iscrizione all'Anagrafe Nazionale di una varietà locale a rischio di estinzione, rispetto alla possibilità dei diversi attori locali interessati di adottare strumenti collettivi di tutela dell'origine e della qualità dei prodotti agro-alimentari, come marchi collettivi geografici, o sistemi di qualità DOP, IGP o STG. Ciò in base a quanto previsto dall'art. 3 della L 194/2015 su diritti di proprietà intellettuale, private e brevetti per le varietà iscritte all'Anagrafe Nazionale.

Inoltre, tutti gli intervistati hanno evidenziato un elevato interesse per l'opportunità di prevedere, a livello nazionale, un marchio di *Agricoltore Custode*, da apporre sui diversi prodotti derivanti dalle varietà locali tenute in custodia, che possa avere un maggior potere comunicativo e minore costi attuazione rispetto al Contrassegno regionale, disciplinato dalla LR 64/2004.

Infine, la ricerca ha messo in luce l'importanza di un approfondimento sulle prospettive di valorizzazione delle varietà locali iscritte ai Repertori Regionali per le quali non sussiste il rischio di estinzione. Infatti, a livello

regionale, per queste varietà, l'iscrizione ai Repertori svolge primariamente una funzione di identificazione e caratterizzazione, oltretutto garantire la conservazione *ex situ* del materiale genetico all'interno della Banca Regionale. Inoltre, a livello nazionale, queste risorse non sono iscrivibili nell'Anagrafe Nazionale, in quanto non sussiste il rischio di estinzione o erosione genetica. Per tale ragione, sarebbe interessante approfondire e valutare vantaggi e costi di includere maggiormente tali varietà nei sistemi di valorizzazione dell'agrobiodiversità.

In conclusione, le diverse indicazioni emerse dal caso di studio mirano, in primo luogo, a rafforzare la capacità dei sistemi regionale e nazionale di tutela e valorizzazione dell'agrobiodiversità di contribuire in modo efficace alla conservazione di un numero sempre maggiore di risorse genetiche locali; di supportare e sostenere lo sviluppo di sistemi integrati e tracciati di produzione e commercializzazione per quei prodotti basati su risorse con maggiori potenzialità economiche e di mercato.

In tal senso, questi sistemi potranno divenire un volano di sviluppo economico-territoriale, favorendo l'interesse di coltivatori, operatori di filiera e consumatori per la conservazione e valorizzazione delle varietà locali, la nascita di sistemi agricoli locali multifunzionali, e l'avvio di processi di sviluppo territoriale integrato, basati sulla valorizzazione sostenibile dei prodotti agro-alimentari tipici e delle risorse antropiche ed ambientali del territorio.

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(Az. agr. Bencini Carlo, Az. agr. Orto di Rocca di Mutti Nicoletta, Az. agr. Mori Daniela, Soc. agr. Antonelli Sergio, Giorgio, Enrico e Danilo S.S, Vincenzo Gonnelli), un coltivatore iscritto alla Rete di Conservazione e Sicurezza (Az. agr. Bergamaschi Andrea), un ente di ricerca coinvolto in studi di caratterizzazione di alcune delle varietà locali di cipolla iscritte ai Repertori Regionali (C.N.R. – IVALSA Istituto per la Valorizzazione del legno e delle Specie Arboree), un'azienda di trasformazione (Donna Eleonora Srl) ed un ristorante (Ristorante La Nena), che valorizzano la cipolla in alcuni prodotti e preparati.

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Allegati

Allegato 1 - Elenco dei coltivatori custodi di Cipolla Rossa della Valtiberina (Terre Regionali Toscane, dicembre 2018)

| Varietà locali di cipolla iscritte ai Repertori Regionali della Toscana | | |
|---|----------------------------------|--|
| Repertorio: Specie erbacee Nome della specie: <i>Allium cepa</i> L. (cipolla) N. di varietà iscritte per la specie: 9 Rischio di erosione genetica: Tutte Periodo di iscrizione: 1999 - 2019 | | |
| N. | Accessione | Zona Tipica di Produzione |
| 1 | Cipolla della Maremma | Provincia di Grosseto |
| 2 | Cipolla di Certaldo Statina | Barberino Val d'Elsa (FI), Castelfiorentino (FI), Certaldo (FI), Gambassi Terme (FI), Montespertoli (FI), San Gimignano (SI) |
| 3 | Cipolla di Certaldo Vernina | Barberino Val d'Elsa (FI), Castelfiorentino (FI), Certaldo (FI), Gambassi Terme (FI), Montespertoli (FI), San Gimignano (SI) |
| 4 | Cipolla di Treschietto | Bagnone (MS) |
| 5 | Cipolla Rossa della Valtiberina | Anghiari (AR), Badia Tedalda (AR), Caprese Michelangelo (AR), Monterchi (AR), Pieve Santo Stefano (AR), Sansepolcro (AR), Sestino (AR) |
| 6 | Cipolla Rossa di Lucca | Provincia di Livorno, Provincia di Lucca, Provincia di Massa-Carrara, Provincia di Pisa, Provincia di Pistoia |
| 7 | Cipolla Rossa Fiorentina | Provincia di Arezzo, Provincia di Firenze |
| 8 | Cipolla Rossa Fiorentina Vernina | Provincia di Arezzo, Provincia di Firenze |
| 9 | Cipolla Rossa Massese | Provincia di Livorno, Provincia di Lucca, Provincia di Massa-Carrara, Provincia di Pisa, Provincia di Pistoia |

Allegato 2 - Varietà di cipolla iscritte ai Repertori Regionali delle Razze e Varietà Locali (Regione Toscana, dicembre 2018)

| Elenco dei coltivatori custodi di Cipolla Rossa della Valtiberina | |
|---|---|
| N. | Denominazione |
| 1 | Bencini Carlo |
| 2 | Corazzini Giovanni |
| 3 | Matteucci Ernesta |
| 4 | Mercati Piera |
| 5 | Coop. Soc. Agr. L'Ortocolto |
| 6 | Bernardini Marco |
| 7 | Az. Agr. Orto di Rocca di Mutti Nicoletta |
| 8 | Gonnelli Vincenzo |
| 9 | Mori Daniela |
| 10 | Antonelli Elia |
| 11 | Annibali Gianmarco |



Publication 3

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Agrobiodiversity-Oriented Food Systems between Public Policies and Private Action: A Socio-Ecological Model for Sustainable Territorial Development

Silvia Scaramuzzi¹, Sara Gabellini^{1,}, Giovanni Belletti², and Andrea Marescotti²*

¹ Department of Agriculture, Food, Environment and Forestry, University of Florence, 50144 Florence, Italy; silvia.scaramuzzi@unifi.it

² Department of Economics and Management, University of Florence, 50127 Florence, Italy; giovanni.belletti@unifi.it (G.B.); andrea.marescotti@unifi.it (A.M.)

*Correspondence: sara.gabellini@unifi.it

Abstract: The international and European literature and institutional contexts are fostering agro- biodiversity as the foundation of a new paradigm for localized agri-food system development and sustainability. Accordingly, new systemic and holistic theoretical approaches and conceptual models are needed. This paper aims to identify and apply a new conceptual framework contributing to the understanding of how the restoring and valorization of underutilized or neglected landraces can act as a trigger for sustainable territorial development. A new holistic model was designed for the characterization and analysis of agrobiodiversity-oriented food systems. We consider the model innovative in enhancing the conceptualization of the adoption of a socio-ecological systems approach. We applied the model to a representative case study involving the localized agri-food system of the Valtiberina Red Onion, a threatened plant landrace cultivated in Tuscany, Italy. A participatory action–research approach was followed, involving both public and private stakeholders. As the main outcome of the paper, we demonstrated the capability of our new SES model by identifying and describing the assets, drivers, human action processes and generated beneficial effects concerning the development and reproduction of landrace-based quality valorization virtuous circles. Our research findings highlighted the model as an innovative tool for the analysis of agrobiodiversity-oriented food systems sustainability. Significantly, the model was designed to identify

the combined role of public policy and private action in supporting the implementation of coherent management mechanisms and effective governance settings.

Keywords: agricultural biodiversity; localized agri-food systems; sustainability transition; socio-ecological systems; origin-linked quality valorization virtuous circles; multi-stakeholder governance models; hybrid management mechanisms.

1. Introduction

The exploration of the role of agrobiodiversity in fostering sustainable transition processes is among the key research issues in the field of agri-food systems and territorial development studies [1–4].

Agrobiodiversity can be described as the evident outcome of a long-lasting human-nature relationship, conceivable as the continuous use, conservation, enhancement and renewal of a variety of crops and animal breeding which results in a biological as well as cultural diversity of seeds and breeds [5].

The involvement of local farming systems and agri-food chains for the conservation and enhancement of underutilized or neglected landraces is therefore essential, on the one hand, as a contribution to preserving local biodiversity and its natural functionality for farming activities and, on the other hand, for supporting and enhancing the joint provision of differentiated quality products and services together with social and environmental benefits [6–12].

Understanding the complexity of the values and processes underlying the management of local genetic resources and related traditions is a fundamental step for both private and public stakeholders to take for agrobiodiversity resource conservation and sustainable valorization [13–18].

In particular, preserving endangered local genetic resources and related human cultural values should not only be intended as a social and environmental goal, but also as a way to trigger rural territorial development on the basis of common territorial assets to be collectively activated and valorized [19–25].

Consequently, the current status of agrobiodiversity and related actions evidences the need for an increased research effort to support

understanding of the role of agrobiodiversity in agri-food systems and territorial paths [26–28].

The literature on this topic discusses how agrobiodiversity, particularly threatened landraces, can form the foundation of a new paradigm for agricultural systems and sustainable food chain transformation [29–31].

To that end, the coherent and collective organization of endangered landrace protection and valorization can contribute to the creation of landrace-based localized agri-food systems and the enhancement of their competitiveness as well as a multifunctional role in the environment and for human well-being [15,32–36]. Accordingly, important changes are required at the governance level, through the involvement of both public and private stakeholders.

In light of this, both the international literature and the evolving institutional context are fostering the design and implementation of polycentric multi-actor governance models [37] and participatory strategies [38,39]. The latter should enable and boost the conservation and collective use of agrobiodiversity as a set of genetic-cultural common territorial assets [28,40,41] and adopt coherent policies and action favoring an equitable sharing and fair distribution of generated benefits [2,13–16].

Particularly, specific policy goals and legal measures have been established at both the international and EU level in order to direct and stimulate the evolution of national and local policies and legislations on the protection and sustainable valorization of agrobiodiversity resources, with particular attention to the recovery of threatened landraces [30,42–45]. The integration of policies towards a consistent framework is of outstanding importance in seeking to address both the transition to sustainability and territorial development based on agrobiodiversity [46–48].

In this regard, policy makers show a growing interest in the restoring of knowledge and cultivation of underutilized or neglected landraces and their qualification and valorization through the marketing of landrace-based agrobiodiversity products [11,13,28,49–51]. At the same time, the recent literature emphasizes the adoption of new holistic and systemic approaches to the conceptualization and analysis of agri-food systems, the

preservation and valorization of endangered landraces, and the promotion of related culture and traditions [52,53].

The intent of the debate on these topics is to foster interdisciplinary action, research and participatory methodologies towards the development of sustainable and multifunctional agrobiodiversity-based systems [54–56]. The debate also aims at favoring the design of new conceptual frameworks in order to characterize and analyze underlying human and natural factors, related interactions and generated outcomes [57].

Despite the importance of innovative theories and models, the debate is still in its infancy. This paper aims to present and apply a new conceptual framework to support the understanding of how the restoration and valorization of underutilized or neglected landraces can act as a lever of territorial development and sustainability. Specifically, our aim is to characterize and analyze from an innovative theoretical perspective the assets, drivers, human action processes and beneficial effects related to public–private initiatives for the protection and valorization of threatened local genetic resources and related traditions involving local farming systems and agri-food chains.

On a conceptual level, we make further reflections on and provide a contribution to the notion of biodiversity-oriented food systems [30] following the SES theoretical approach, and design a new holistic model for the characterization and analysis of agrobiodiversity-oriented food systems.

From a methodological point of view, we adopt a case study approach. A relevant case study was selected to apply the new SES framework and evaluate its potential. Specifically, we considered the initiatives implemented for the identification, protection and valorization of a threatened plant landrace in Tuscany, Italy: The Valtiberina Red Onion (*Cipolla Rossa della Valtiberina*). A participatory action–research approach was followed, with the involvement of both public and private stakeholders.

In Sections 2 and 3 we illustrate the identified conceptual framework and the participatory methodology. Section 4 presents the case study analysis and results. Lastly, Sections 5 and 6 are dedicated to the case study discussion and conclusions.

2. The Conceptual Framework

2.1. Agrobiodiversity-Oriented Food Systems: A Reviewed Integrated Definition

Restoring and promoting the knowledge and use of agrobiodiversity resources, particularly endangered landraces, can support the resilience of localized agri-food systems and contribute to local development and sustainable territorial growth [10,40]. Here, we refer to localized agri-food systems as production and service organizations (e.g., agricultural and agri-food production units, marketing, services and gastronomic enterprises, etc.) linked to a specific territory by their characteristics and operational methods [58,59].

Building on Brunori et al. (2018) [30], we identified the concept of agrobiodiversity-oriented food systems as localized agri-food systems based on: (i). The identification and preservation of underutilized, neglected and in particular threatened landraces and related traditions [21,24,60]; (ii). The collective use of the identified and protected local genetic and cultural resources for the creation of landrace-based agrobiodiversity products, both goods (e.g., fresh food, food preparations, by-products, etc.) and services (e.g., visits, didactic activities, etc.) [61,62]; and (iii). The participatory qualification, marketing and territorial valorization of landrace-based agrobiodiversity products [32,33,63].

Achieving resilient and sustainable agrobiodiversity-oriented food systems depends on increased levels of social learning and cognition about agrobiodiversity assets, involving both public and private stakeholders, and consequent improved collective action to structure adequate multi-actor governance and hybrid management mechanisms [27,54,55,57,62,64]. These processes can be seen within the frame of a quality valorization virtuous circle of endangered landraces and related traditions, considering the integration of relevant public policies and strategies of private actors [65,66]. In particular, the creation and enhancement of competitive and multifunctional landrace-based localized agri-food systems can be the result of a greater awareness and responsibility on the part of both public and private stakeholders on the multiple values (economic, social and environmental) of local genetic and cultural resources and the commitment of these stakeholders to coherent and collective valorization paths intended to guarantee the equitable

sharing and distribution of the resulting public and private benefits [22,30,35,67].

The analysis of agrobiodiversity as a new lever for sustainable rural development requires the adoption of different theoretical perspectives. In light of that, we have considered the framing of agrobiodiversity-oriented food systems according to an interdisciplinary approach that identifies them as evolving socio-ecological systems (SES).

2.2. Agrobiodiversity-Oriented Food Systems Analysis and Characterization: A New Socio-Ecological Model

Despite the lack of a unifying definition of socio-ecological systems (SES), the evolving debate in the literature contributes to enhancing the added value of the SES approach in analyzing and sustaining the resilience of local resource management systems [68–70]. The SES approach emphasizes that a delineation between social and ecological systems is artificial and arbitrary in understanding and supporting the development and sustainability of local farming systems and agri-food chains [71]. In particular, the SES approach favors the identification of systemic and interdisciplinary frameworks, which are suitable for the analysis of both human–natural assets and can process dynamic interplay within different territories and general socioeconomic and biophysical contexts [72–75]. SES frameworks can explain such important localized agri-food system properties as resilience and sustainability, and permit the identification of effective governance settings supporting local specific resources, socio-ecological understanding and coherent management [75,76]. To improve the validity and applicability of such findings, current research on agrobiodiversity increasingly places value on the contribution of holistic approaches [30,57,77], particularly socio-ecological theories and conceptual frameworks [2,78–84].

The SES approach can be retained as one of the most effective in interpreting the nature and value of the diversity of landraces and traditions characterizing a specific territory and affecting localized agri-food system potential, as well as in supporting agrobiodiversity-based sustainable growth and territorial development [85].

In light of this, our paper considers the SES theoretical framework by Maréchal et al. (2016) [71] and Dwyer et al. (2015) [86], designed on

the basis of the SES conceptual model by McGinnis and Ostrom (2014) [75].

Drawing on Maréchal et al. (2016) [71] and Dwyer et al. (2015) [86], we identified a new conceptual framework by innovatively combining and adapting the aforementioned SES framework with the origin-linked quality valorization virtuous circle by Vandecastelaere et al. (2010) [65] and Belletti et al. (2017) [66].

This innovative SES conceptual framework represents a holistic tool for the analysis and characterization of agrobiodiversity-oriented food systems (Figure 1). Thus, it provides a systemic analysis of the complex of assets, actors, processes and effects characterizing the mutually evolving relations between localized agri-food systems and the surrounding natural and sociocultural contexts.

The presented SES conceptual framework (Figure 1) is intended to highlight the structural elements and dynamic relationships that characterize agrobiodiversity-oriented food systems.

As shown in Figure 1, the SES framework structure outlines the components and interactions of the following basic conceptual categories:

1. The assets (*territorial capital including agrobiodiversity and other local specific assets*). They are constituted by the (natural, human, social, manufactured and cultural) components of the specific territorial capital, feeding natural ecosystem processes, and managed by humans for conservation and agricultural or market use. As part of that capital, agrobiodiversity assets include local genetic resources and the related traditional knowledge and practices that originated and/or evolved in the territory;

2. The drivers (*socioeconomic and biophysical drivers*). They include the factors, inherent to the general and specific social and ecological contexts, that trigger the evolution of processes in farming systems and agri-food chains. On the socioeconomic side, most influential drivers can be identified as the set of public policies (at international, national and local level), market dynamics, socio-cultural values, organizational culture, etc., affecting the natural evolution, the acknowledgement and management of agrobiodiversity genetic and cultural resources in the localized agri-food system. Similarly, on the biophysical side, they include the set of most critical natural influences, as for example, geomorphology, soil, water, climate and weather, etc.;

3. Human action and natural ecosystem processes (*hybrid management mechanisms of agrobiodiversity and other territorial assets and natural processes affecting local biodiversity and the agro-ecosystem*). They include public and private action combinations, intended as complexes of decisions and practices affecting agrobiodiversity and natural processes within agro-ecosystems. The category focuses on the hybrid management mechanisms implemented to pursue the restoring and valorization of underutilized or neglected landraces knowledge and use in localized agri-food systems. To illustrate, these mechanisms include local genetic resources and traditions protection systems and valorization paths, enabling a collective and coherent qualification and remuneration of the complexity of agrobiodiversity values. In that regard, we open this category to a wider perspective and consideration of the role such mechanisms could play in the activation and support of a quality valorization virtuous circle of agrobiodiversity resources, that will be described in detail below;

4. The effects category (*generation of private and public goods and services that benefit the society and the ecosystem*). This category aims at evidencing how the development of landrace-based localized agri-food systems characterized by quality valorization virtuous circles can combine the production of private goods and services (e.g., local farmers access to threatened landraces genetic material and other provisioning ecosystem services, landrace-based food products and services supply, reusable waste, etc.) with the one of public goods and services (e.g., biodiversity and rural culture preservation, provision for food security and safe nutrition, contribution to social education and leisure, enhancement of rural landscape and other social and environmental goods and services, etc.) and generate benefits for both the society and the ecosystem. The latter can be identified as the beneficial effects stemming from the several stages of the virtuous circle and sustaining the agrobiodiversity-oriented food system reproduction and sustainability. They could be analyzed considering the changes induced by the system development in economic, social and environmental dimensions at a local and territorial level and even in a wider global perspective (e.g., higher income and competitiveness of local farmers and agri-food chains, growth of local economies, protection of the environment and the ecosystem, enhancement of social and cultural capital and human well-being, etc.).

Lastly, the SES framework considers the characteristics and fundamental role of multi-level institutions and governance settings to be analyzed as an overridden cross-category which transversely affects the structure and functionality of all the other identified categories. Therefore, this class is not graphically represented in Figure 1. Nonetheless, the model identifies it as the specific systems of formal or informal rules, institutions and principles (e.g., property rights) underlying and determining the structure and beneficial effects of the interactions between agrobiodiversity resources and human action in the quality valorization virtuous circle. Public policies, legal regimes and market institutions are also taken into consideration. How governance is shaped is a key determinant for the production, equitable distribution and sustainable use of the private and public goods and services generable from the restoration and valorization of underutilized and neglected landraces in localized agri-food systems. At the same time, the interaction between actors and the functioning of the virtuous circle can modify existing institutions and governance settings, and/or generate new ones, based on a long-lasting participative process of acknowledgement and actualization of the values of agrobiodiversity [66].

Regarding point 3 of the SES model description, we adapted the origin-linked quality virtuous circle model by Vandecastelaere et al. (2010) [65] and Belletti et al. (2017) [66] to permit a detailed characterization of the human action processes underlying agrobiodiversity- oriented food system development and sustainability. The elaboration of a quality valorization virtuous circle of agrobiodiversity resources (Figure 1) aims to frame and analyze the possible combinations of public and private action throughout the evolving stages of a collective process of value recognition and coherent management of local genetic resources and traditions, with the latter leading to the effective protection as well as the market and territorial valorization of underutilized or neglected landraces.

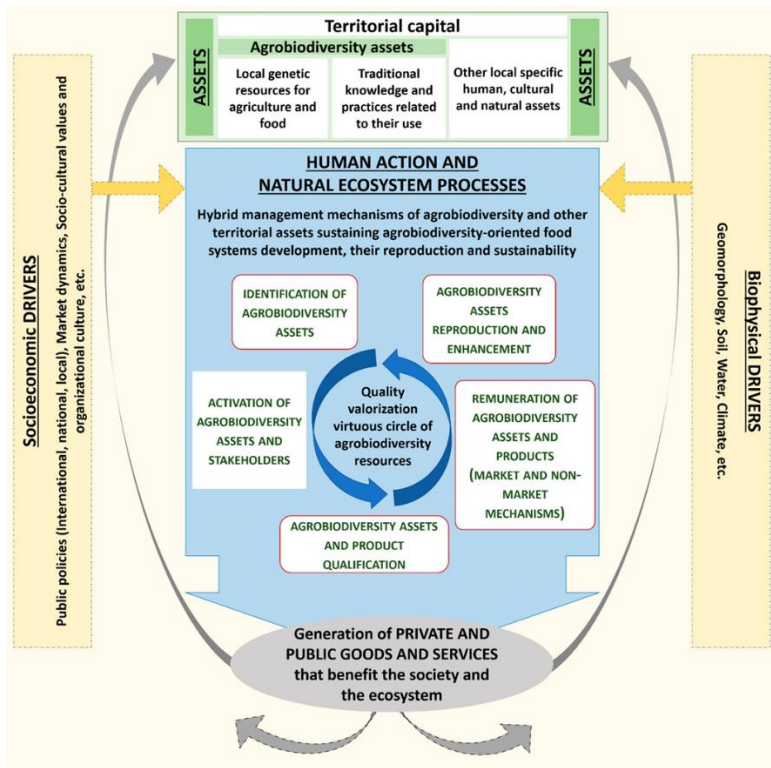


Figure 1. A Socio-ecological systems framework for the analysis and characterization of agrobiodiversity-oriented food systems. Source: our elaboration on [65,66,71,86].

As shown in Figure 1, the identified quality valorization virtuous circle includes the following stages:

1. *Identification of agrobiodiversity assets:* identification of underutilized or neglected local genetic resources (i.e., mapping, preliminary studies), their distinctive qualities (e.g., agronomic, morphological, organoleptic, nutraceutical, etc.) and reputation, their extinction risk and their relations with the territory and the other territorial assets (e.g., history, traditional knowledge and practices, etc.). As a result, local actors become aware of landraces and their specific identity and

multiple value potential, and take action leading to public recognition, conservation and product qualification;

2. *The activation of agrobiodiversity assets and stakeholders* considers the commitment of local farmers, supply chain operators and other interested parties (e.g., custodian farmers, conservation and food security networks, etc.) whether local or non-local, public or private, towards the registration of local genetic resource names, qualities and territorial linkages in dedicated public repertories, as well as the conservation of the genetic material of threatened landraces and the restoring of landrace knowledge and cultivation/breeding in localized agricultural systems;

3. *Agrobiodiversity assets and product qualification*: private and sometimes public stakeholders work for the unanimous characterization and social recognition of the value of agrobiodiversity assets and products. For instance, they make special efforts to identify effective signaling tools to qualify landraces and landrace-based agrobiodiversity products (e.g., collective marks, denominations of origin, inscription in public registries of seeds, propagation material commercialization, etc.);

4. *Remuneration of agrobiodiversity assets and products*: local farmers realize individual and/or collaborative marketing strategies for the valorization and protection of landrace-based goods and services, with the collaboration of agri-food chains actors and the support of other local or non-local stakeholders (e.g., universities, associations, territorial bodies, etc.). These strategies can refer to product and placement policies, price setting, and promotional initiatives. Sometimes, when products cannot find a specific market, non-market mechanisms may be adopted. The latter are government interventions (e.g., assistance, training, payments, etc.), implemented to remunerate the farmers' efforts for the conservation of non-marketable landraces or to integrate the inadequate compensatory role of the market for the agrobiodiversity products' public and private functions [34,61,62,87]. The scope of this stage is that of leading society to pay for the total value of public and private goods and services produced by farmers and other stakeholders involved in initiatives for the protection and valorization of agrobiodiversity resources;

5. *Reproduction of agrobiodiversity assets*: this phase aims at the preservation, enhancement and renewal of agrobiodiversity and the other

territorial assets around the landrace- based localized agri-food system. The goal of sustainability must be realized in terms of the production, equitable sharing and reproduction of the economic, social and environmental beneficial effects generated by the virtuous valorization circle in the evolving agrobiodiversity-oriented food system.

Lastly, horizontal results and further impacts can be reached through the implementation of extended territorial strategies based on the collective valorization (collective action and tools) of landraces and related traditions and of the products (goods and services) derived from them [54]. The scope of these strategies is the increase in social demand for agrobiodiversity in order to favor local genetic resource conservation and sustainable use in farming systems and agri-food chains, and resulting potential contributions to local territorial development.

3. Methodology

The methodology of this paper is based on a case study analysis [88,89]. We identified a case study concerning an agrobiodiversity-oriented food system structure and its evolving dynamics. Specifically, we focused on the triggers, actions and beneficial effects related to the combination of public and private initiatives implemented for the identification, protection and valorization of a threatened plant landrace typical of a small territory in Tuscany, Italy: The Valtiberina Red Onion. We chose the genetic resource from among the ones registered in the Tuscan Regional Repertories of local breeds and varieties (Regional law 64/2004) [90] and also included in the Italian National Registry of biodiversity for agriculture and food (National law 194/2015) [91].

The case study selection was the result of a documentary analysis of national and local policies and legislations in the EU concerning agrobiodiversity protection and valorization. To that end, we identified Italy as a virtuous country case. As a matter of fact, Italy is one of the few EU countries committed to the establishment of a specific national policy and legal framework on agrobiodiversity with the aim of functionally interlinking the environmental goal of local genetic resource and ecosystem conservation with that of the economic and socio-cultural realization of local and rural territorial development paths [42,44,48,63].

Furthermore, we evaluated the fundamental role of the Tuscany Region as a reference model for the design and ongoing implementation

of the new national system of agrobiodiversity. Tuscany was among the first Italian Regional Administrations to design and implement a specific regional law concerning the protection and valorization of Tuscan-specific agrobiodiversity assets, regarded as the capital of local breeds and varieties as well as related cultural and human aspects [90,92].

With reference to the Tuscan background, we selected the Valtiberina Red Onion for our case study based on the following criteria: (i). The case focuses on a threatened landrace that underwent a participatory process of characterization, protection and valorization involving local genetic resource registration and conservation and the development of a structured landrace-based localized agri-food system; (ii). We had access to suitable and reliable secondary and primary data and information; and (iii). there was sufficient availability of key informants willing and able to actively participate in the research process.

We adopted a participatory action–research approach. Representatives of the main public and private local stakeholders were actively involved in the research process. Participatory approaches are consistent with the analytical SES framework requirements [75,86,93]. Furthermore, active stakeholder participation is promoted as a new methodological paradigm within the debate on agrobiodiversity and socio-ecological transformation. Indeed, it gives support to both transdisciplinary research and the co-production of agro-ecological knowledge [28,40,94–98]. Specifically, the dialogue between theoretical and local practical understandings can strengthen endogenous potential and combine scientific production [99–101] with applicable solutions to the problems identified in the analyzed agri-food systems.

We applied qualitative methods for data collection and analysis [98,102]. A case study protocol was designed and discussed among the researchers involved [88,103]. We combined participatory field research activities with a prior detailed desk research process on literature, regulations, grey institutional sources and case-specific documents (Table 1). Secondary data collection contributed to the identification of the research institutional and theoretical contexts together with the main structural components characterizing the selected landrace-based localized agri-food system. Finally, primary data were collected by the means of 19 in-depth interviews with a series of key informants (Table 1) [104,105].

Table 1. The Valtiberina Red Onion case study data sources.

| Primary data sources | Affiliation | No. of interviewees |
|-------------------------------|---|----------------------------|
| | Ministry of Agricultural, Food and Forestry Policies (Italy) | 2 |
| | Tuscany Region Offices | 4 |
| | Custodian farmers | 6 |
| | Other local farmers involved in the Conservation and Security Network | 2 |
| | Germplasm Bank | 1 |
| | Local processors | 1 |
| | Local restaurants | 2 |
| | Research centers | 1 |
| Secondary data sources | Description of data sources | |
| | Legal documents and regulations | |
| | Tuscany Regional Repertories fact sheets | |
| | Available statistics (official statistics and local grey data sources) | |
| | Reports (grey institutional or project-based sources) | |
| | Media sources (e.g., newspapers, social posting) | |
| | Other case-specific documents (e.g., associations statutes, activity reports, etc.) | |

We employed purposeful snowball sampling for the recruitment of key informants. They were identified among private and public stakeholders involved in either characterization and conservation activities or promotional initiatives involving the selected landrace [106,107]. The interview structure was open ended. Five research topics were identified as guidelines for the interviews. Interviews were performed in person from October 2018 to April 2019 [108,109]. Interviews took between 60 and 240 min.

Qualitative text analysis followed data collection, aiming to triangulate the interview results with documentary analysis and literature review in order to enhance the validity of the results [105]. Both primary information and secondary qualitative and quantitative data and literature were integrated, elaborated and synthesized based on the innovative SES

analytical framework conceptual categories (Section 2.2) which created the basis for discussion.

Ultimately, a focus group was organized in April 2019 thanks to the collaboration of the Tuscany Regional Offices tasked with the governance and management of agrobiodiversity resource protection and valorization. All interviewees took part in the meeting, together with other key actors as representatives of all local stakeholder categories (i.e., local farmers and supply chain actors, key experts, local associations and territorial groups, and other committed local authorities). The aim was a participatory discussion to enrich and validate the research findings and to evaluate any major limitations as well as desirable future action–research goals [110].

4. Results: A Socio-Ecological Analysis and Characterization of the Valtiberina Red Onion Localized Agri-Food System

4.1. The Valtiberina Red Onion Genetic Resource and Related Territorial Capital

The Valtiberina Red Onion (*Cipolla Rossa della Valtiberina*) originated in the Tuscan Valtiberina area and co-evolved in time with the specific natural, cultural and human components of the local agro-ecosystem capital.

The origins of the Valtiberina Red Onion date back to the beginning of the 19th century. The landrace was widely cultivated in the territory, concentrated especially in the area of Sansepolcro (Arezzo). During this period, local farmers took the name of *onioners* (cipollari) in the community and nearby markets, testifying to the prevailing role and territorial rootedness of the knowledge and cultivation of this landrace. In time, farming extended from the Sansepolcro zone to the whole Tuscan Valtiberina territory, thanks to the distinctive territorial pedoclimatic (soil composition, climate, etc.) and socioeconomic characteristics (the central role of agriculture and horticultural products), which were particularly suitable for the introduction and enhancement of the local crop variety.

During the 19th century, the landrace significantly characterized the economic and socio-cultural history of the Valtiberina rural area and represented one of the main sources of livelihood for local farmers and families. Indeed, onion seedlings were produced for self-consumption both on farms and in family gardens. Moreover, farmers usually sold

onion bunches in villages either in the local markets of the Arezzo area or in the more distant markets of the nearby regions of Marche, Upper Romagna and Umbria.

Over the course of the 20th century, while horticultural crops and even onions still counted for the major share of the Tuscan Valtiberina agricultural production, the knowledge and use of the traditional onion crop variety declined greatly in the area, until it almost disappeared from local farms and the minds of local consumers. This was a consequence of both global and local socioeconomic changes that increased the preference of local farmers for conventional crop varieties which better responded to the intensification of farming, the processes of mechanization, and market standardization. Despite this, the local genetic resource survived, thanks to the action of a few local farmers and families that preserved the landrace in their small farms or gardens, reproducing and cultivating the seed and handing down their knowledge of the crop and related traditions.

Eventually, in 2010, the initiative of a small group of local farmers and hobbyists led to the recovery of the landrace and activated the process of its characterization and registration. Our interviews provided evidence of the enabling role played by local actors' specific knowledge and participation. In particular, the investigation pointed out as determinant factors the level of knowledge of local farmers concerning the Valtiberina's territory, history and local agrobiodiversity resources; the commitment of some old Valtiberina farmers in preserving and passing on traditional crop breeding and cultivation; local farmers' widespread and growing awareness of landraces and landrace-based products and their market potential; their understanding and skill level concerning the recovery and cultivation of threatened local genetic resources (including public support, acknowledgement and training); and their collaborative attitude, willingness and responsibility towards local specific resource valorization for the benefit of local economies and communities.

For registration purposes, the provision of public financial and technical assistance supported the commitment of local actors to the naming of the landrace and the characterization of its extinction risk, identity qualities (e.g., historical, morphological, organoleptic, agronomic, culinary, etc.) and territorial linkage. Successively, other participatory research projects contributed to improving knowledge of the

landrace's characteristics and its versatility [111]. The identification of the Valtiberina Red Onion's specific origin and distinctive attributes (Table 2) provided a basis for landrace protection and market differentiation.

Through inscription in the Regional Repertories (L.R. 64/2004) [90] and lately the National Registry (L. 194/2015) [91], the Valtiberina Red Onion received public recognition as a well-identifiable threatened local genetic resource, part of Tuscany's specific common agrobiodiversity assets and territorial capital. Its typical production area was identified as the seven municipalities constituting the Tuscan Valtiberina. Currently, this area works as a boundary identifying the legally-established territorial limit for controlled in situ conservation, circulation and use of the seed (Section 4.3).

Table 2. The Valtiberina Red Onion's identity qualities.

| Valtiberina Red Onion: Herbaceous Landrace at Risk of Genetic Erosion Pertaining to Tuscany-Specific Plant Agrobiodiversity | | | |
|---|--|--|--|
| Morphological Characteristics | Agronomic Characteristics | Nutraceutical Characteristics | Organoleptic Characteristics and Versatility |
| <ul style="list-style-type: none"> • Medium to large bulb size with high variability; reduced attractiveness and marketability of very large bulbs, with difficulty in standardization of packaging • Typical flattened, elliptical bulb shape and deep red outer tunics; immediate recognition of the variety by the consumer • Fleshy bulb with few layers, very delicate; needs | <ul style="list-style-type: none"> • Sowing of the seed in seedbed with organic fertilizer from previous year • Transplantation of the seedlings between April and May, with spacing adjusted to control the growth of the bulbs • A four-year crop rotation cycle is necessary to avoid weeds and diseases • The crop is watered three or four times a year | <ul style="list-style-type: none"> • Significant and distinctive antioxidant properties of the landrace (high bioactive power) with respect to conventional varieties, due to: <ul style="list-style-type: none"> ○ high content of total antioxidants and total polyphenols ○ high content of total flavonoids (more than twice as high as conventional varieties) ○ high content of specific flavonoids such as campferol ○ high content of total anthocyanins | <ul style="list-style-type: none"> • High sugar content of the landrace (glucose, fructose and sucrose) with respect to conventional varieties • Landrace characteristic intensity of smell, between sweet and spicy (easily recognizable by the consumer) • No perceived lacrimatory effect when smelling or cutting the bulbs |

| | | | |
|---|--|---|---|
| <p>manual harvesting or ad hoc soft mechanization</p> <ul style="list-style-type: none"> • Strong resistance of the bulb to germination during the storage period, even if untreated, permitting organic cultivation and conservation; harvested bulbs are sold over a period of seven months from August to March | <p>(the loamy Valtiberina soil absorbs water slowly)</p> <ul style="list-style-type: none"> • Harvesting occurs between August and September; manual harvesting use of soft mechanization avoids trauma and weed drag • Harvested bulbs are stored in well-ventilated, dry places protected from frost, previously in canopies, today in specially designed net boxes. The latter are good for small quantities of bulbs; properly storing large quantities remains an issue | <p>and, in particular, of the anthocyanidins peonidin and petunidina</p> <ul style="list-style-type: none"> • Consumption of the landrace has more beneficial effects on health than conventional varieties; the detected compounds, when consumed, can inhibit the action of free radicals and counteract oxidative phenomena, reducing the occurrence of inflammations, cancer and cardiovascular diseases | <ul style="list-style-type: none"> • Bulbs have a taste that is neither garlicky or herbaceous, nor particularly sweet or flavorful, with average crunchiness • Bulbs can be eaten cooked or raw, used fresh or in a variety of more or less traditional preparations (e.g., baked in foil, as an accompaniment to stewed or roasted meats, in jam or soup, etc.) |
|---|--|---|---|

Source: our elaboration on primary and secondary data.

4.2. *The Socioeconomic and Biophysical Drivers*

This case study investigation highlights the main contextual factors triggering the participatory recovery and characterization of the Valtiberina Red Onion crop variety and the restoration and valorization of its knowledge and use in the landrace-based localized agri-food system. Interviews and desk analysis showed these drivers as having different social, political, economic or ecological roots. We classified them according to the SES framework's conceptual categories of socioeconomic and biophysical drivers and the respective subcategories. Among the latter, we stressed the most significant for the case study. The results are synthetized in Table 3.

Table 3. A socio-ecological categorization of the Valtiberina Red Onion localized agri-food system drivers.

| Socioeconomic Drivers |
|---|
| Public policy and institutional framework |
| International and EU-integrated policies and legal framework |
| <ul style="list-style-type: none"> • Both the international and EU institutional frameworks sustain and regulate the ongoing integration between environmental and rural development goals and policy measures (e.g., EU Biodiversity Strategy for 2030; Europe 2020 strategy for sustainable, smart and inclusive growth; EU CAP evolution, Rural Development Policy, etc.) [11,51,112]. Agrobiodiversity resource protection and valorization are recognized as a self-standing objective closely related to rural territorial growth and sustainable development issues • More or less specific national and local laws and policies are provided, supporting and regulating public–private participatory initiatives towards conservation of local genetic resources and related traditions, sustainable use, and equitable sharing of benefits, with particular attention to underutilized or neglected landraces |
| Agrobiodiversity-specific Italian National and Tuscany Regional policies and institutions |
| <ul style="list-style-type: none"> • A multi-faceted path involving both national policy makers and regional administrations culminated in the adoption of the specific national law 194/2015 under implementation [91], establishing a uniform multi-layered national system for agrobiodiversity protection and valorization supplementing and harmonizing the existing regional policy goals and measures • The new national system and the Tuscany Regional legislation (Regional law 64/2004 and Regional regulation 12/2007) [90,92] recognize and treat agrobiodiversity resources as territorial commons: (i). Local genetic resources and related traditional culture are publicly recognized as belonging to the territory where they originated and/or adapted, and as being an integral part of local specific assets; (ii). Both public engagement and the maintenance of public control and responsibility over the reproduction and use of agrobiodiversity assets is justified, with particular reference to recovery and conservation of threatened landraces • The combined national and regional systems set out the foundations of a polycentric governance structure, enhancing public and private action and collective participation networks for better acknowledgment and coherent management of threatened local genetic resources, considering: <ul style="list-style-type: none"> ○ The determinant role of the specific regional laws and policy framework in supporting local farmers and other stakeholders with respect to characterization of threatened landraces and the restoration of their knowledge and local cultivation; ○ The high expectations around implementation of the L. 194/2015 [91] valorization tools supporting the enhancement of agrobiodiversity product marketing and sustainable upscaling and territorial development of landrace-based localized agri-food systems |
| Market dynamics |
| Western markets: evolving consumption patterns and trends |

Neo-luxury and sustainability macro-trends are driving agri-food markets toward new sustainable patterns:

- Informed, attentive, ethical, responsible consumption choices and habits
- Buying agri-food products is increasingly perceived as an emotional, learning and social experience (e.g., consumers show their interest in buying local, participating in trade fairs and traditional markets, knowing the origin and distinctive qualities of products, etc.)
- Increase in market value of agri-food products due to their origin and sustainable character, qualified as product locality, typicality, seasonality, wholeness and healthiness, nutritional content, social fairness and low environmental impact
- Increase in market value of signaling tools qualifying and communicating agri-food product territorial linkages and their social and environmental qualities (e.g., collective marks, certifications, food quality systems, etc.)

Italian and Tuscan market trends for agrobiodiversity

Growing market attractiveness and value of landrace-based and agrobiodiverse products:

- Local consumers' growing knowledge and interest (e.g., active participation in local trade fairs, events, promotion initiatives, etc.) about agrobiodiversity resources (as local genetic resources) and agrobiodiversity products (valorizing local genetic resources and related traditions) as well as their inherent sociocultural and environmental values
- Higher demand and willingness to pay in both local and traditional channels and modern distribution for products supporting the use of underutilized or neglected plant landraces and the adoption of traditional farming and transformation methods
- Increase in market value of specific signaling tools for qualification of landrace-based agrobiodiversity products, specifically those valorizing local genetic resources and traditions recognized and protected by the L.R. 64/2004 Tuscany Regional system (e.g., specific logos, packaging, collective marks, etc.) [90]

Biophysical drivers

Geomorphology, soil and water

- Valtiberina rural territory and agro-ecosystem specific characteristics (e.g., specific soil and water composition, hydrography and morphological features, etc.) are favorable to:
 - The recovery and on-farm conservation of the Valtiberina Red Onion as a threatened genetic resource seed;
 - The profitable and low-impact cultivation of the original and locally evolved plant landrace, supporting the use of extensive and traditional agricultural practices (e.g., high yield and resilience of the local crop variety with reduced use of chemicals or pesticides, etc.)

Climate and weather

- Climate change threats call for innovation of agri-food products and processes; innovation strategies can be based on the rediscovery and valorization of underutilized or neglected crops with beneficial effects in terms of quality, sustainability, and resilience at both a global and local level
-

-
- Valtiberina's local specific climate and weather conditions (e.g., temperature, precipitation, light exposure, etc.) are favorable to:
 - The recovery and on-farm conservation of the Valtiberina Red Onion seed as a genetic resource;
 - The profitable and low-impact cultivation of the original and locally evolved plant landrace, with the use of extensive and traditional agricultural practices (e.g., high yield and resilience of the local crop variety with reduced use of energy, nutrients, and water, etc.)
-

Source: our elaboration on primary and secondary data and [30,42,44,113,114].

Interviewees highlighted in particular how socioeconomic factors worked as the most effective triggers in stimulating public and private decisions and practices for landrace recovery, characterization and valorization. Specifically, they recognized the determining role of the integrated policy framework and the multi-level legal and institutional context. At the same time, the interviews showed how new consumption patterns and trends affecting the evolution of western agri-food markets [30,113,114], together with the specificities of the Italian and Tuscan markets, worked as fundamental triggers for the activation and commitment of local farmers and agri-food chain actors for the identification and conservation of the genetic resource, as well as for the realization of collaborative production and marketing strategies.

4.3. The Human Action Processes: The Landrace-Based Quality Valorization Virtuous Circle and Underlying Hybrid Management Mechanisms

The Valtiberina Red Onion localized agri-food system development was determined by a combination of public and private decisions and practices. The application of the new SES framework to the analysis of the implemented public and private initiatives led us to characterize them as the processes of human action that underline the evolving stages of the Valtiberina Onion quality valorization virtuous circle. The following paragraphs describe the hybrid management mechanisms supporting each of the identified restoration and valorization stages. In accordance with the SES model, the beneficial effects produced all around the circle by the actions undertaken are analyzed and described as a separate conceptual category in Section 4.4.

4.3.1. The Valtiberina Red Onion Identification and the Activation of the Landrace-Based Localized Security and Conservation Network

The Valtiberina Red Onion crop variety was recovered and characterized by the initiative of a small group of farmers in the Tuscan area of Sansepolcro (Arezzo), and thanks to the sustainment and collaboration of local research institutes and competent Tuscany Regional Offices. The L.R. 64/2004 supplied them with financial support and technical assistance and disciplined the commitment of the Tuscany Region Germplasm Bank in the realization of a dedicated participatory characterization project [90]. As anticipated in Section 4.1, the project culminated in 2010 with the landrace's inscription in the Tuscany Regional Repertories of Local Breeds and Varieties [90]. In 2018, the landrace was also inscribed in the National Registry of biodiversity for agriculture and food in accordance with the new National law 194/2015 statements [91].

Interviewed Regional Officers evidenced how local farmers activated to characterize the landrace to both counteract the risk of extinction and actualize local genetic resource production and market potential. Once registered, based on the L.R. 64/2004 provisions Valtiberina Red Onion seed was selected and entrusted to the Conservation and Security Network for breeding and reproduction (Figure 2) [90]. As members of the publicly funded and controlled network within the geographical boundaries of the landrace registered typical production area (Section 4.1), both the Central and the Valtiberina Regional Germplasm Bank sections, together with eleven local farmers (so-called custodian farmers), took action for conservation of the Valtiberina Red Onion.

Custodian farmers involved mostly older local farmers and hobbyists, except for a group of five custodians comprising market-oriented young entrepreneurs and medium-sized farms. Acting under the control and with the assistance of the competent Regional Offices (Figure 2), these farmers were committed to the conservation of landrace pure seed *in situ*, and to the yearly renewal of the seed conserved *ex situ* by the Germplasm Bank's dedicated sections. For their activity, the custodians receive an annual lump-sum custody fee of about EUR 340 (D.G.R 327 18/04/2016 [115]).

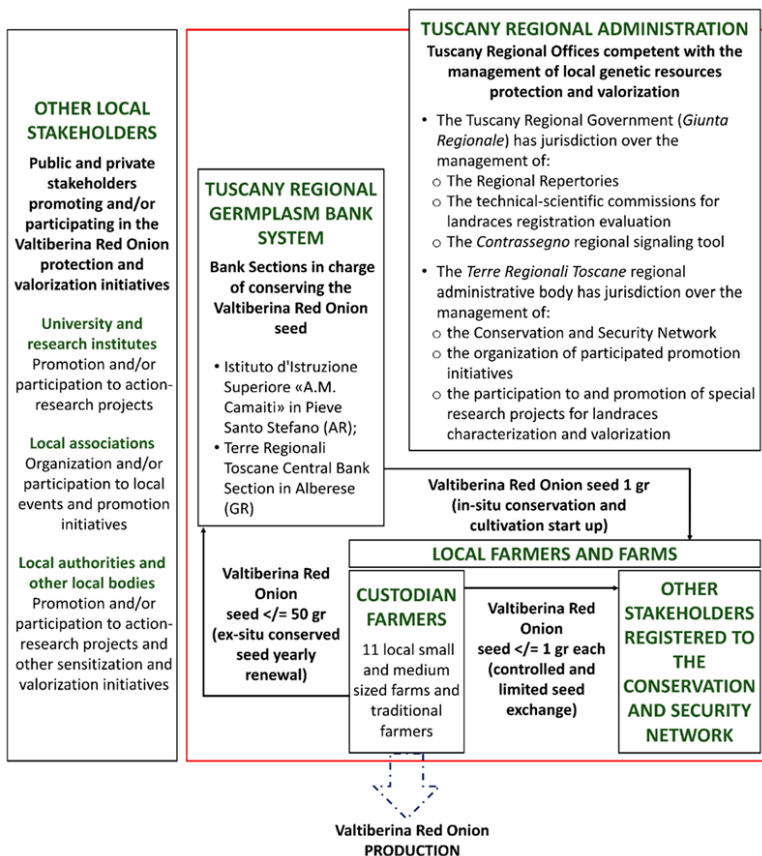


Figure 2. The Valtiberina Red Onion Conservation and Security Network. Source: our elaboration on primary and secondary data.

Interviews evidenced the determinant role of custodians with respect to other stakeholders (Figure 2), not only in the securing and conservation of threatened genetic resource, but also in the restoration and diffusion of knowledge and cultivation towards the creation of a landrace-based localized agri-food system, confirming the content and aims of the Regional law 64/2004 [90]. In particular, custodians could locally exchange the seed they reproduce on their farms, in limited quantity and free of charge, among the Conservation and Security Network members

(e.g., Germplasm Bank sections, custodian farmers, other registered public and private stakeholders) together with their specific knowledge, competencies and skills. Furthermore, the small group of market-oriented farmers were engaged in promoting the agricultural use and market potential of the onion seed on their farms. Specifically, the latter acted as the main group responsible for of the participatory research, organization and promotional activities, leading to the enhancement of the landrace's reputation and identity, as well as the structuring of a Valtiberina Red Onion-based production and marketing system (as presented in Figure 3).

4.3.2. The Valtiberina Red Onion and Derived Products: Qualification and Remuneration

Primary and secondary data analysis highlighted that custodian farmers represent the main engine of the Valtiberina Red Onion localized production and marketing system through collaboration with other actors in the local agri-food chain, universities and research institutes, local associations, local authorities and other territorial bodies (Figure 3).

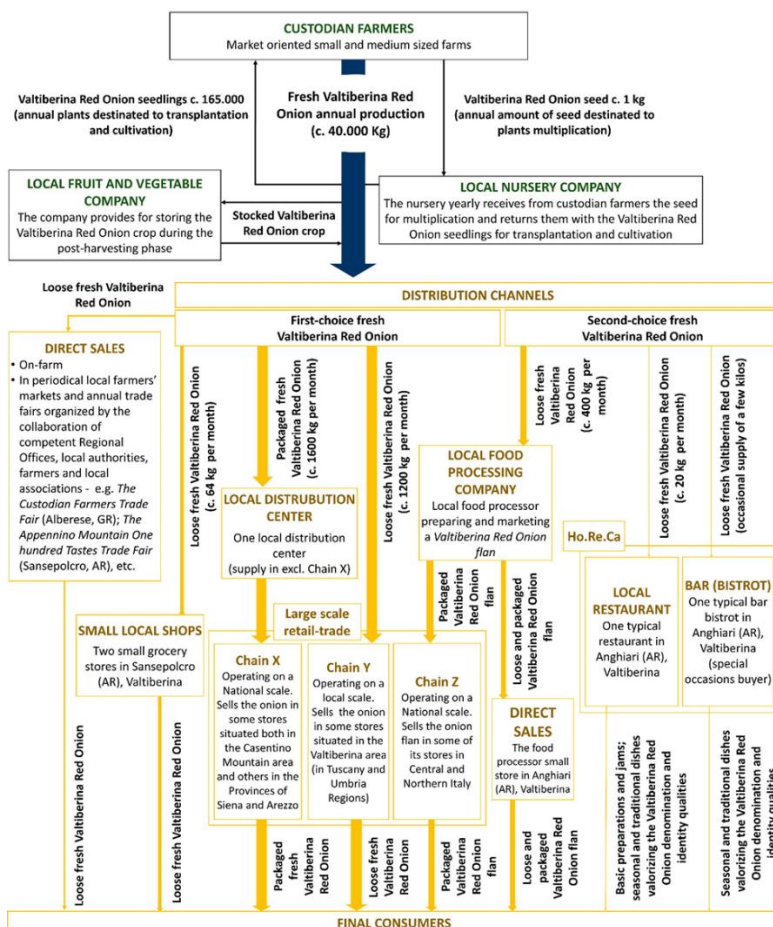


Figure 3. The Valtiberina Red Onion localized production and marketing system. Source: our elaboration on primary and secondary data.

The system is currently based on both informal governance settlements and formal supply chain agreements. On the one hand, the group of custodian farmers have established an internal systematic collaboration consisting of verbal and private agreements that allows for the realization and continuous adaptation of joint production and marketing strategies. Furthermore, different kinds of formal agreements

are periodically initiated and renovated with other local actors, both upstream (e.g., local nursery company) and downstream (e.g., local fruit and vegetable companies, local processor, restaurants, small- and large-scale retailers, etc.) in the agri-food chain.

Local farmers have designed joint production and marketing strategies and also institutionalized supply chain collaborations that support the qualification and remuneration of the Valtiberina Red Onion and its related traditions. Within the limits imposed on the agricultural use and marketing of registered threatened landraces [90,91], they were able to jointly organize and manage the breeding, harvesting and storage activities and the promotion and distribution of different Valtiberina Red Onion products through both traditional and modern channels. The co-design and collaborative implementation of the onion valorization strategies consist of non-systematic activities of research and planning, the temporary sharing of some of production and logistical inputs, risks and costs, and the informal mechanisms of reciprocal support and control.

As shown in Figure 3, a Valtiberina Red Onion localized agricultural system was developed at the production level. The group of market-oriented custodians cultivates the landrace seed they yearly reproduce on farms under competent Regional Office control and with Germplasm Bank technical support [90]. With the aim of increasing the controlled onion seed production and yield, they externalized the stage of multiplication to a local nursery company. The latter receives the onion seeds reproduced on farms by custodians and returns them with seedlings for transplantation. Custodian farmers jointly experiment with innovative agronomic and harvesting techniques together with ad hoc handicraft machineries in an attempt to balance increased production with the maintenance of low-impact and traditional methods. Eventually, to favor the post-harvesting resistance of a growing volume of bulbs, storage activity was externalized to a local fruit and vegetable company with more adequate space and facilities.

Valtiberina Red Onion valorization is currently based on the marketing of landrace-based agrobiodiversity products through both direct and indirect channels. Thanks to the commitment of the market-oriented custodians together with local processors and on-trade operators, the Valtiberina Red Onion is currently qualified by means of fresh or

processed goods and finds remuneration through both traditional trade and modern distribution (Figure 3).

In this respect, all of the interviewees spoke of the fundamental role played by custodian farmers in designing a specific Valtiberina Red Onion logo, packaging and information material. They use the latter as signaling tools to identify the onion's production and quality and market its distinctive denomination and qualities (e.g., historical, organoleptic, culinary) such as its belonging to the Tuscany Region's system for agrobiodiversity resources, protection and valorization [90].

The design and management of the logo and the other communication tools are based on verbal agreements among the custodians, such as informal reciprocal mechanisms of control and user regulation. Nonetheless, these tools have successfully contributed to the enhancement of the awareness of local supply chain actors, the community and consumers of the remuneration of the landrace and landrace-based products' identity values. Thanks to the latter, custodians have also managed to make up for the lack of specific and effective public signaling tools to qualify agrobiodiversity products or custodian farmer activities (i.e., lack of a national specific collective mark; interviewed farmers perceived inefficacy and high cost when using the L.R. 64/2004 provided label, called *Contrassegno* [90]).

Furthermore, interviews evidenced the important collaboration between the group of producer custodians and a local food processor in the creation of Valtiberina Red Onion flan, marketed both directly in stores and indirectly by regularly supplying a national large retailer (Figure 3). The interviewed processor affirmed that he successfully promotes the Valtiberina Red Onion registered denomination as an identity quality attribute for product differentiation, thus obtaining an increase in product placement and sales volume, selling price, and final consumer value.

Even the presence of a few local restaurants was highlighted. These started to regularly or periodically buy the onion landrace from the custodian farms. In this respect, the interviewed restaurant owner affirmed that he chose the Valtiberina Red Onion as a costlier but tastier and more delicate seasonal alternative to conventional varieties for the usual preparation of sauces and sides, and to be occasionally valorized in seasonal or traditional dishes with a high premium price.

The combined efforts of public and private actors together with the significant increase in the Valtiberina Red Onion's reputation among operators and consumers has sustained the ongoing process of landrace-based product market structuring and expansion. On the one hand, interviews evidenced how the relevant growth of consumer demand and willingness to pay drove an increase in local farms asking Regional Offices to enter the Conservation and Security Network and access the threatened landrace seed, taking charge of its on-farm conservation and supporting its agricultural and market use. On the other hand, the market-oriented farms accessing the system were incentivized to organize and collaborate in order to increase their production volumes, expand and penetrate the sale channels served, and identify a shared onion premium price policy.

Accordingly, we considered it of particular interest that the custodian farmers currently marketing the Valtiberina Red Onion play a role as price setters. Indeed, they internally collaborate through verbal agreements in order to maintain a shared premium price policy. The latter is based on their evaluation of onion production costs and fair profit margins and is regulated by annual supply agreements with traders and processors. For instance, in 2018, Valtiberina Red Onion producer prices were set in a range from EUR 0.80 for 1 kg loose (on the Ho.re.ca and local food processor channels) to EUR 1.50 for 1 kg packaged (on the G.D.O Chain X channel). At the same time, onion consumer prices varied in a range from EUR 2.00–2.50 for 1 kg loose (in direct sale channels) to a maximum of EUR 2.54 for 1 kg packaged (G.D.O Chain X channel).

Interviewed custodians affirmed they obtained a landrace producer price up to three times above that of conventional varieties; respectively, of EUR 1.50/kg instead of EUR 0.45/kg. Notably, they evidenced that the higher onion market prices, when added to the custody fee and free technical assistance they receive from the Regional Administration, fairly cover the costs and risks of the landrace seed on farm conservation and remunerate their specific production and marketing efforts. Moreover, as previously said, the restaurant and food processor also pointed out that they obtain premium consumer prices for their Valtiberina Red Onion preparations. As an example, a local food processor yearly sets the Valtiberina Red Onion flan consumer price (EUR 3.90 for a two-flan pack) in both direct and indirect channels (G.D.O. Chain Z). The price is

regulated by annual supply agreements, taking on onions given producer prices and recharging the processor for a fair profit margin.

4.3.3. The Valtiberina Red Onion Enhancement and Localized Agri-Food System Reproduction and Scaling-up

The combined action of competent Regional Offices, custodian farmers, and other stakeholders was successful in restoring and enhancing landrace knowledge and reputation and promoting its use through the structure of a Valtiberina Red Onion localized agri-food system. In particular, interviews and desk analysis evidenced how the public–private participatory initiatives for the identification and management of the landrace identity qualities and territorial linkage contributed to sustaining the recovery and reproduction of the threatened genetic resource and the enhancement and fair distribution of the inherent economic, social and environmental values. These action processes underlie the Valtiberina Red Onion capital enhancement and reproduction, and determine the growth and sustainability potential of the localized agri-food system.

In fact, the ongoing expansion of the landrace consumer demand and large-scale retail trade volumes are driving toward a demand excess compared to the present agri- food system supply. To meet market demand, in only three years (from 2016 to 2018) Valtiberina Red Onion production volume has increased tenfold (from 4000 to 40,000 kg), thus approaching saturation of the production capacity of the landrace-based agricultural system. In addition, the entrance of new custodian farmers asking to access the landrace seed and taking charge of its custody has reached the maximum legally allowed number of eleven [90], consequently limiting further expansion of the system’s production base. This situation creates strong pressure on:

- Custodian farmers’ business structure and organization (small- and medium-size family-run businesses);
- Their inadequate specific knowledge of funding opportunities and project planning (e.g., lack of awareness and access around specific public supporting tools such as Rural Development Programme (RDP) measures, integrated supply chain and territorial projects, etc.);
- L.R. 64/2004-imposed public control and responsibility over threatened landrace security and collective property rights [90];

- Low support from the regional public system for landrace-based collective product qualification and marketing.

This investigation highlights that custodian farmers' opportunity to enhance and benefit from the Valtiberina Red Onion's multi-functional product potential and marketability depends on their capacity to face these pressures and realize effective solutions for sustainable scaling up. Specifically, custodians and other interviewed stakeholders seemed to perceive as important development goals the landrace-based localized agri-food system's territorial identity protection, the expanding of onion production while avoiding agricultural intensification in respect of genetic resource security and conservation, the avoidance of opportunistic behaviors to misuse the genetic resource seed and denomination (e.g., cultivation and sale of crops based on seed circulating and reproduced outside of the Conservation and Security Network), and multi-actor governance of the system in order to preserve public control and collective property rights.

Interviewees evidenced critical aspects at both the private and public levels. On the private side, the involved farmers' businesses deficiencies (e.g., their need for enhanced breeding and planting techniques, the lack of suitable soft mechanization, the necessity to improve storage and distribution facilities, etc.) were highlighted. On the public side, they underlined the regional conservation and security system's failures and constraints in marketable threatened landraces qualification and territorial valorization (e.g., the limits on controlled seed use and circulation to the Conservation and Security Network members, the custodian farmers' obligation to cultivate only the seed they reproduce on their farms, the limited number of allowed custodians, the lack of specific public tools supporting the landrace-based agri-food system qualification and controlled expansion, etc.).

Both the interviewed custodians and competent Regional Offices highlighted how the opportunity to overcome the identified limits and sustain the Valtiberina Red Onion localized agri-food system's sustainable growth could depend on the realization of effective up-scaled multi-actor marketing strategies. The latter should be able to combine private collaborative efforts with the adoption of adequate public supporting tools in order to on the one hand, guarantee landrace security

and conservation and the maintenance of public control and responsibility over its collective use, and on the other, enhance its market potential and territorial value and provide for equitable sharing of related benefits with local farmers and other local and non-local stakeholders. To that end, all of the interviewees evinced a willingness to enhance their reciprocal dialogue, learning and collaboration towards the up-scaling of the landrace production base and the possible creation of a traced and integrated Valtiberina Red Onion supply chain. Particular consideration was given to the possibility of adopting collective marks or quality regimes and the potential of the new public tools provided by National law 194/2015 [91].

The interviewed custodians and competent Regional Offices considered the latter as possible effective solutions for landrace-based product value enhancements and the support of agrobiodiversity-oriented food systems through formal organization and territorial development. Specifically, they valued the new National law attempting to harmonize legal constraints related to threatened local genetic resources, seed reproduction, and cultivation with the opportunities offered by Italian regulation on conservation and marketing of seed varieties (D.Lgs.149/2009 [116] and D.Lgs.267/2010 [117]). Considering the Valtiberina Red Onion case, they affirmed that the registration of the landrace in the dedicated section of the National Registries for seed commercialization could give to the involved custodian farmers the opportunity to locally and directly sell the pure seed they reproduce on their farms, adding to their right to exchange it within the conservation and security network. As a consequence, this inscription could allow a controlled and territorially-identified expansion of the landrace production base and sustain the localized agri-food system's qualification and traceability.

Lastly, all the interviewees positively evaluated the opportunity to participate in the valorization of the Valtiberina Red Onion in a wider territorial perspective. In this regard, they gave particular consideration to the new national tools of L. 194/2015 [91]. Among these, they specifically pointed to those supporting the creation of specific Communities of Food and Biodiversity for Agriculture and Food or Routes of Biodiversity for Agriculture and Food, the access of local farmers and stakeholders to specific financial and technical support (e.g., institution of the Ministerial

Fund for the Protection of Biodiversity for Agriculture and Food), and access to RDP funds and priority measures (e.g., landrace inscription to the National Registry of Biodiversity for Agriculture and Food, custodian farmers participation in the new National Network of Biodiversity for Agriculture and Food), etc.

4.4. The Public and Private Goods and Services Production and Related Multiple Benefits

Considering the presented SES framework, we analyzed the human action effects produced all around the quality valorization virtuous circle as a separate conceptual category. We aimed to show how development of the Valtiberina Red Onion localized agri-food system led local farmers and other involved stakeholders to combine primary production of private goods and services with the delivery of social and environmental goods and services and the generation of multiple beneficial effects directly affecting the local farming system and food chain, supporting territorial growth and human well-being. In accordance with the conceptual categories of the SES model, Table 4 reports a synthesis of the main private and public goods and services produced by the analyzed agrobiodiversity-oriented food system.

Both interviews and desk analysis showed that the private and public goods and services synthesized in Table 4 had multiple benefits in the economic, environmental and social dimensions. We analyzed them by considering how the production of public and private goods and services sustained the organization of a high-value added Valtiberina Red Onion localized agri-food system, and determined its level of sustainability and multifunctionality (i.e., the contribution it gave to economic growth and territorial development, the protection of the environment and the ecosystem, and the enhancement of rural culture and human well-being at a wider, especially local, level).

At first, we considered the economic dimension. Interviews with custodian farmers showed how their potential profit from onion valorization was favored by the public system of support and regulation guaranteeing custodian farmers free access to pure onion seed, providing for mechanisms of control over its reproduction and circulation, preserving the resource's territorial identity and linkage, allowing custodians the agricultural use of the landrace seed they produce, and

marketing landrace-based products. In this respect, the fundamental role of multi-actor collaboration was also pointed out. Custodians' reciprocal informal governance settlements and their occasional collaboration with competent regional authorities, local associations, universities and research institutes as well as the supply agreements stipulated with processors, retailers and restaurants have created favorable conditions for structuring a high-value Valtiberina Red Onion localized agri-food system. Moreover, all the interviewees saw the strengthening of these collaborations as the first step towards scaling up, economic optimization and territorial leveraging.

Table 4. The Valtiberina Red Onion localized agri-food system's production of private and public goods and services.

| Private Goods and Services | Public Goods and Services |
|---|---|
| <ul style="list-style-type: none"> • Agrobiodiversity food products valorizing Valtiberina Red Onion use and identity attributes: <ul style="list-style-type: none"> ○ Fresh Valtiberina Red Onion ○ Valtiberina Red Onion flan ○ Valtiberina Red Onion-based traditional dishes, seasonal recipes and basic preparations ○ On-farm didactic activities and hospitality services • Byproducts (reusable waste; natural pigments; natural fertilizers) • Preservation, renewal and enhancement of local farmers' natural, cultural and social assets • Agri-food products promoting the use and distinctive qualities of other plant species used by local farmers during four-year crop rotation: <ul style="list-style-type: none"> ○ Fresh pumpkins, field beans and other species ○ Processed agri-food products based on pumpkins, field beans and other crops prepared and sold by local processors to feed humans or animals, served in local bars or restaurants, in basic preparations, and with typical or special recipes | <ul style="list-style-type: none"> • Recovery and uniform characterization of the Valtiberina Red Onion as a threatened local genetic resource • Landrace denomination and identification as part of Tuscany's specific agrobiodiversity assets and common territorial capital (registration in dedicated public repertories) • Valtiberina Red Onion pure seed publicly controlled for conservation and local circulation and cultivation, with a public guarantee to securing the landrace and collective property rights) • Preservation and enhancement of the landrace's specific traditional rural landscape, agricultural practices, typical food and non-food uses, and consumption habits • Contribution to the maintenance and enhancement of the quality of soil, air and water in the Valtiberina Red Onion's legally admitted zone of conservation and cultivation (the locally adapted and resistant variety and sustainability-based market trends favor the onion's extensive cultivation) • Enhancement of knowledge about the landrace, related traditions and its specific market potential and territorial linkage among local farmers and supply chain actors • Valtiberina Red Onion-based products promoted as experience goods and services (e.g., use of specific logo, packaging and information material; participation in local festivals, dedicated tasting dinners and custodian farmers' trade fairs; farm visits and didactic activities, etc.) which can contribute to entertain consumers, educate them on agrobiodiversity values and critical conservation aspects, increase their emotional involvement and responsible buying behavior • Contribution to the enhancement and reproduction of the specific social capital of the Tuscan Valtiberina: higher social awareness of threatened local genetic and |

cultural resources, identity, and values;
higher social responsibility and participation
in their conservation and sustainable use

- Contribution of Valtiberina Red Onion food production to higher consumer health and safe nutrition thanks to distinctive food and nutritional functions

Source: our elaboration on primary and secondary data.

Custodians highlighted how the initiation and extension of Valtiberina Red Onion production and marketing through both traditional and modern channels contributed to differentiate their offerings, enhance and diversify their incomes, increase their bargaining power and reduce their market risk.

As a second step, the focus of the analysis moved to the environmental and sociocultural dimensions. To illustrate these, both the interviews and desk analysis showed how the participatory characterization, protection and valorization of the threatened landrace and related traditional culture contributed, if in a small part, to the preservation and enhancement of the Tuscan Valtiberina's specific agricultural biodiversity, both directly through the restoration and valorization of the knowledge and use of the Valtiberina Red Onion and securing of a local genetic resource, and indirectly, thanks to the qualification and successful remuneration of landrace-based agrobiodiversity products, incentivizing local farmers' commitment to the characterization, conservation and cultivation of a growing number of underutilized and neglected landraces and the interest of local supply chains operators in their valorization.

In more general terms, the restoration and growing extension of Valtiberina Red Onion cultivation in its specific registered typical production area (Section 4.1) provides small but significant support in both environmental and sociocultural terms to the preservation of the local agro-ecosystem and the enhancement of related agro-ecosystem services. Interview analysis showed how in both the medium and long term the development, up-scaling and reproduction of the Valtiberina Red Onion localized agri-food system can sustain and favor the enhancement of natural resources, local farmers' livelihoods, and the well-being of the entire rural community.

Both the direct contribution and impulse to the increase in the area of the share of locally originated or adapted crop varieties and the use of traditional methods could reduce the environmental impact of local farming and favor the preservation and enhancement of specific natural assets and the increase in organic production. Similarly, interviews also showed the potential of promotion as a premium-price agrobiodiversity product in avoiding the intensification of production; the onion caught the interest of high-value market segments which value product origin and sustainability instead of quantity and standardization. At the same time, these effects could stimulate local actors towards the identification and qualification of a growing number of landrace-related human and cultural resources (e.g., history, rural traditions, landscape) pertaining to common territorial capital.

In the sociocultural dimension, as anticipated, a social learning effect was generated. It led local farmers, supply chain actors, consumers and community to increase, on the one hand, their knowledge of the Valtiberina Red Onion and other endangered landraces and their existence and socio-ecological identity, and on the other, their awareness of the opportunity to consider them not only as specific local resources to preserve, but also as common assets to collectively valorize for their own benefit and that of the territory in the wider perspective of sustainability.

Lastly, with regard to human health, Valtiberina Red Onion crop cultivation and food production could provide a contribution in terms of safe nutrition thanks to the landrace's demonstrated high nutritional and nutraceutical value (Section 4.1). The research institute and custodian farmers we interviewed expressed their willingness to continue their collaboration towards a wider and deeper identification of these qualities from a marketing and valorization perspective.

5. Discussion

The analysis carried out here aims at providing a contribution to the conceptualization of biodiversity-oriented food system structure and dynamics [2,30]. The SES theoretical approach has been positively evaluated for the analysis of agrobiodiversity-based transformation and territorial development processes [85]. As a matter of fact, the SES favors the interpretation of the complex nature of local genetic and cultural resources together with the human–natural interactions activating and

sustaining their qualification, fair remuneration, reproduction and territorial valorization [55,69,84,118].

Following the holistic SES theoretical approach, we innovatively identify agrobiodiversity-oriented food systems as socio-ecological systems characterized by quality valorization virtuous circles of endangered landraces and related traditions. In this regard, we designed a new conceptual model considering the SES frameworks by Dwyer et al. (2015) [86] and Maréchal et al. (2016) [71] in combination with the origin-linked quality virtuous circle by Vandecandelaere et al. (2010) [65] and Belletti et al. (2017) [66].

The application of the new SES model to the case study analysis proved its potential to identify and describe the relevant assets, drivers, human action processes and generated beneficial effects concerning the development and reproduction of the Valtiberina Red Onion localized agri-food system. In a wider perspective, the case study evidenced the novelty of the framework as a useful tool for the categorization, systematization and comprehension of the structural and dynamic elements characterizing public-private initiatives directed to the creation of agrobiodiversity-oriented food systems and the enhancement of their sustainability and multifunctional role.

With a view to the analysis of agrobiodiversity-oriented food systems' sustainability, the new SES model permits us to consider and evaluate the combined production of private and public goods and services stemming from the development and reproduction of landrace-based quality valorization virtuous circles [9,96]. Significantly, the description of the generated beneficial effects, their sharing, and their distribution provided us with insights on agrobiodiversity-oriented food systems and their capacity to benefit local farmers and supply chain actors, the territory, and the community, as well as to contribute to the wider goals of environmental protection and human well-being [36,40,60,71].

The extent of agrobiodiversity-oriented food systems' sustainability in joining private goods and services production with social and environmental benefits is determined by the level of involved stakeholder knowledge and awareness of agrobiodiversity resources and of the multiple related values, as well as the coherence of the implemented

management mechanisms. Moreover, the structuring effects of institutions and governance settings must be considered [30,119].

In this regard, the literature shows the determinant role of public policy in supporting social learning and favoring stakeholder recognition and collective action towards underutilized or neglected landraces' protection and valorization as territorial capital assets [27,30,60,62,64,120].

The new model is designed to facilitate the understanding of enabling policies and combined public–private strategies towards the creation of sustainable agrobiodiversity-oriented food systems. Specifically, the case study analysis pointed out as a fundamental policy driver the public recognition of agrobiodiversity resources as a specific territorial commons (L.R. 64/2004 [90] and L. 194/2015 [91]), thus legitimating as a public goal their collective conservation and sustainable use (that is, non-exclusive, in the interest of the entire local community and characterized by non-appropriability) [21–24,37,41] and the enhancement of the diverse beneficial economic, sociocultural and environmental outcomes [66,87].

In order to be effective in sustaining agrobiodiversity-oriented food system development and multi-functionality, coordination between public policies and private action implies the integration and balanced satisfaction of all the public and private interests at stake. To that end, we considered as a determinant step the understanding of these interests and of the main arising synergies and trade-offs, as well as of possible hybrid management solutions.

In light of these aims, the new framework proved to be suitable for highlighting the main private and public interests involved. With regard to private interests, local farmers and agri-food chain actors are concerned with the opportunity to increase and diversify their incomes and enhance their market positioning with respect to landrace cultivation and use. At the same time, the increased reputation and territorial valorization of landrace-based agrobiodiversity products can generate spillover effects benefiting other local stakeholders operating in different but related economic sectors (e.g., tourism, crafts, local trade, etc.) [32,33].

As for public interests, they essentially involve the optimization of the evolving agrobiodiversity-oriented food system's sociocultural and environmental performance. Specifically, policy makers are mainly

concerned with the maintenance of public control and responsibility over underutilized and neglected landrace protection and valorization activities in order to pursue their fundamental contribution to the preservation and enhancement of the environment and local agro-ecosystem, as well as the generation of social and cultural benefits affecting human development and well-being both at the local level and in a wider global perspective [40,66,87,121].

Hence, we have outlined both convergences and divergences emerging among the abovementioned interests. The model worked as a useful tool for their identification in light of the supporting or limiting effects they generate on the landrace-based localized agri-food system's public and private goods and services production and the equitable sharing and fair distribution of generated benefits.

On one side, we considered trade-offs arising when the prevalence of either private or public interests limits the agrobiodiversity-oriented food system's multifunctionality. We highlighted how legal constraints limiting seed access, breeding, and circulation can put a brake on system up-scaling, negatively affecting the opportunity to expand marketing channels and sustain demand growth. As a result, the necessity of maintaining public control and responsibility for securing the landrace and related collective property rights led to public interests prevailing at the expense of full actualization of the economic potential of agrobiodiversity assets. On the contrary, private interests prevail when local farmers favor the custody and cultivation of only the landraces showing a higher market attractiveness and suitability to modern distribution channels. In the latter case, the prevalence of local farmers' economic orientation may negatively affect public goals about the preservation and enhancement of the most endangered local genetic resources, independent of their actual market value.

Secondly, we found synergies arising when the pursuit of private interest becomes functional to the achievement of public goals, and vice versa [120]. In particular, the results confirm findings in the literature that highlight how the opportunity of local farmers and supply chain actors to obtain fair remuneration from the marketing of landrace-based agrobiodiversity products pushes their commitment towards securing threatened landraces and their qualification, together with related culture

and traditions [15,33,61] as well as the realization of landrace-based extended territorial paths [16,34].

With regard to the integration and balancing of the identified synergies and trade-offs, a fundamental role is played by the implementation of effective management mechanisms and governance settings in attaining sustainability. This study confirmed the potential of the new SES framework in supporting their identification and evaluation with a view to enhancing the processes of policy development and decision making [27,64,70,80,94,122,123]. In particular, our analysis highlighted the relevance of public and private actors' reciprocal learning and action coordination to integrate and balance all the interests at stake in the actualization and renewal of adequate policies and legal measures, as well as the importance of multi-stakeholder strategies based on both formal or informal statements, rules and control mechanisms and capable of developing and optimizing the economic potential of agrobiodiversity-oriented food systems and their inherently beneficial environmental and sociocultural effects (e.g., sustainable scaling up of the Valtiberina Red Onion localized agri-food system) [17,30,62,66,71].

The results confirm the importance of hybrid public-private mechanisms [124,125] for the multi-functional organization, enhancement and sustainability of landrace-based localized agri-food systems. At the same time, the concurrence of agrobiodiversity-dedicated integrated policies, multi-level laws and regulations with stakeholder collaboration in participatory initiatives for endangered landrace protection, market and social valorization sustains and feeds the development of tailored multi-actor polycentric governance [119], favoring coherent management with fair representation, equal protection and balanced satisfaction of the interests at stake [67,119,126,127].

In more detail, on the public side specific policies should support local farmers' and other stakeholders' awareness and responsibility on securing threatened landraces and their multiple value potential. Thanks to the enhancement of public technical and financial assistance, free learning, and training activities local farmers could be remunerated for and improve their active participation in the characterization and on-farm conservation of local genetic resources and traditional practices, and promote landrace knowledge and cultivation independent from the opportunity to valorize them on the market [22,62,120]. Secondly, policy

makers should sustain custodians, supply-chain operators and other interested actors (e.g., associations, researchers, etc.) in creating sound collaborations intended to appropriately qualify and fairly remunerate marketable landraces [32–34,61] and providing for their structuring and formalization by specific public or collective tools.

Specifically, for those landraces that prove to be suitable for large-scale cultivation and modern distribution public policies should support local actors towards controlled and sustainable scaling up, expanding production and marketed volumes and prices while at the same time avoiding agricultural intensification and guaranteeing fair distribution of the higher value created. Public assistance and learning activities should be directed to enhance custodian farmers' business and marketing skills and sustain the collaborative creation, protection and valorization of collective marks and landrace-based traced integrated supply chains. Alternatively, there are other situations where landraces demonstrate better suitability for small-scale cultivation or traditional market channels. In these cases, public support should be directed to favor the creation of landrace-based niche markets for agrobiodiversity products. Here, the participation of small or part time farmers could be supported to realize small-scale high-value added supply chains by experimenting with neglected traditional or innovative alternative uses of landraces and involving local traditional processors and retailers.

Whatever the case, public policies should incentivize local actors in accessing research projects for better landrace characterization (e.g., genetic, organoleptic, nutritional and nutraceutical, etc.), as well as specific funds, financial measures and valorization tools (National law 194/2015 [91]) and participation in integrated supply chains or territorial participatory plans. Furthermore, provisions for the maintenance of public control and responsibility over securing local genetic resources and collective property rights should be effectively harmonized with public jurisdiction over traditional agri-food products, quality schemes, the conservation of varieties, seed breeding and commercialization. This should favor the securing and tracing of seed, avoid potential information asymmetries, and guarantee territorial linkage of landraces and landrace-based agrobiodiversity products and non-appropriability of rights. Lastly, the creation of national specific public marks for the qualification and

market remuneration of agrobiodiversity products and custodian farmers' role in this should also be evaluated [61,62].

With a focus on the role of private actors, as shown in the case study, custodian farmers should serve as an engine for the activation and systematization of multi-actor strategies intended to conserve and characterize landraces and to tailor remuneration. They should improve their responsibility and participation in sensitization, learning and training activities in order to enhance their specific knowledge, agronomic and logistic skills and capability to share aims, costs, resources and facilities in the realization of participatory action–research projects and the organization of either small-scale landrace-based niche markets or large-scale integrated supply chains.

Moreover, the connections between landraces, local specific farming and processing methods within the territory represent important elements in defining the identity and quality of several products [128,129]. Our analysis proves the importance of local farmers and other stakeholders in the recognition of agrobiodiversity resources. This is especially relevant with reference to identity linkages with the territory they originate from and their commitment to protection and territorial valorization. While the first step could be the characterization and inscription of local genetic resources' denomination and territorial linkage in both agrobiodiversity-dedicated Regional Repertories [90] or National Registry [91], custodians and other stakeholders should also collaborate towards the creation of quality and territorial identification marks, e.g., Protected Designations of Origin (PDOs), Protected Geographical Indications (PGIs), Italian Traditional Agri-food Products (PAT), and the use of other forms e.g., *SlowFood*, for the qualification of landrace-based agrobiodiversity products.

One remark has to be made on the case of threatened landraces presenting no current market value. In these situations, local farmers should appreciate the role of dedicated non-market mechanisms as an alternative form of remuneration for non-marketable local genetic resources, their characterization, conservation and valorization efforts, in satisfaction of their private interest [34,120]. On the public side, greater policy commitment to additional technical assistance, payments and training is justified by the beneficial environmental and sociocultural

effects concerning the recovery and conservation of agrobiodiversity resources, even those with no actual market attractiveness [9,16,87,96].

In the end, both public and private actors should increase their involvement and act towards the realization of landrace-based territorial valorization paths. These could enhance endangered landraces' multiple value potential and the beneficial effects generated for agro-ecosystems, local agri-food chains, other related economic sectors and entire local communities. Collective territorial marks (e.g., territorial umbrella marks) could be created by custodians with other local actors such as processors, traders, tourist operators, craftsmen, local authorities, etc. At the same time, the case study offers a valuable example considering the new National law 194/2015 [91] on innovative provision for specific public tools (e.g., Routes or Communities of Food and Biodiversity for Food and Agriculture) and public funds with priority access to support the creation of agrobiodiversity-oriented territorial marketing strategies.

In synthesis, the new conceptual framework confirms its validity in supporting the analysis, interpretation and generalization of case study results by taking advantage of the adapted SES approach and quality valorization virtuous circle.

With a view to prove the model's general validity, we would like to make some remarks. As a matter of fact, the selected representative case study focused the analysis on the institutional context and policy frameworks of Italy and Tuscany and on local actors' initiatives for the protection and valorization of a threatened plant landrace. In that regard, we consider that the presented SES model could be extended and consolidated by widening the research field to include other countries and territories and the case of animal landraces.

6. Conclusions

Our work contributes to the understanding of how the restoring and valorization of the knowledge and use of endangered landraces and traditional practices among local farmers, supply chain actors, consumers and communities could sustain the development and reproduction of multifunctional agrobiodiversity-oriented food systems and act as a lever of territorial development and sustainability.

On a theoretical basis, we designed and tested a new conceptual model. By considering a holistic and transdisciplinary approach, we

provided a contribution to the notion of biodiversity-oriented food systems and the analysis of their sustainability. We consider the model innovative in the conceptualization and analysis of agrobiodiversity-oriented food systems intended as socio-ecological systems. As the main outcome of this paper, we proved the new SES model's capability in identifying and describing the assets, drivers, human action processes and generated beneficial effects concerning the development and reproduction of landrace-based quality valorization virtuous circles.

Our research findings showed the high capability of the SES model to analyze agrobiodiversity-oriented food systems and their sustainability and territorial development. As a matter of fact, the conceptual framework considers as a determinant aspect the characterization of these systems' performance in combining the production of private and public goods and services and generating and fairly distributing a complex of economic, environmental and sociocultural benefits.

The new model favors the identification of the major private and public interests at stake in the development and reproduction of agrobiodiversity-oriented food systems and the understanding of the role of both public policies and private action in the implementation of hybrid management mechanisms and polycentric governance systems promoting their sustainability and multifunctional role.

Therefore, we demonstrated how the goals of sustainability and multifunctionality can be pursued thanks to the coordinated efforts of public and private actors. These objectives can be attained through the creation and enhancement of collaborative landrace-based product qualification strategies, marketing approaches and territorial valorization paths. At the same time, the latter should be accompanied by the provision of adequate policy tools for supporting and maintaining public control and responsibility over local genetic resources, pure seed breeding, territorial linkage and collective property rights.

In this respect, it is important to highlight the enabling role of polycentric governance settings in sustaining specific public policies and multi-stakeholder participatory strategies for the development of agrobiodiversity virtuous quality valorization circles. In this way, the development and reproduction of agrobiodiversity-oriented food systems can favor the optimization of different landraces' market potential and, at

the same time, the valorization and protection of their specific sociocultural and environmental functions.

In a wider perspective, agrobiodiversity-oriented food systems could play an increasing role in attaining higher resilience and sustainability in the involved farming systems and agri-food chains.

We think that this paper represents a further contribution to the scientific and institutional debate concerning the identification of innovative theoretical approaches and conceptual frameworks for the analysis and interpretation of agrobiodiversity-oriented processes of sustainable transformation and rural development.

The adaptation of the holistic SES approach to the characterization of agrobiodiversity-oriented food systems opens the new model's analytical potential towards future research in multiple directions. Special regard could be given to the analysis of multi-stakeholder innovation governance settings and participatory qualification and remuneration strategies, with a focus on the use of collective marks and quality regimes for landrace-based agrobiodiversity product protection and valorization in the broader territorial perspective.

We expect future research could corroborate the role of agrobiodiversity-oriented food systems in addressing evolving processes of transition towards sustainable agriculture and food chains. The new conceptual model's enhancement and validation can provide a contribution to the most recent theoretical efforts for the identification of a new agrobiodiversity-based paradigm for territorial development and global sustainability.

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Publication 4

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Evolving Consumption Trends, Marketing Strategies, and Governance Settings in Ornamental Horticulture: A Grey Literature Review

*Sara Gabellini and Silvia Scaramuzzi **

Department of Agriculture, Food, Environment and Forestry, University of Florence, 50144 Florence, Italy; sara.gabellini@unifi.it

*Correspondence: silvia.scaramuzzi@unifi.it

Abstract: Ornamentals are the most diversified products and fast-changing industry of horticulture. A new flower and ornamental plant market scenario is developing: remarkable opportunities are emerging, but more efforts are required by both public and private stakeholders to seize them and assure a high-value positioning. Our paper aims at filling the gap in the availability of integrated data sources and structured theoretically sound studies on new consumption trends, marketing strategies, and governance settings. Specific objectives are: identifying an innovative ornamental horticulture market data framework; evidencing evolving dynamics of competition in Europe and necessary adaptations of public and private action; defining a new action-research agenda, capable of stimulating the interest of businesses, researchers, and institutions. In terms of methodology, we carry out an innovative integrative review analysis of the wide and most reliable grey literature and statistics, using a comprehensive approach. Results show the emerging consumption dynamics and high-value consumer profiles characterizing the European market, expected to significantly expand and transform, according to the impact of globalization, climate change, urbanization, digitalization, and the affirmation of neo-luxury and sustainability-oriented consumption patterns. The evolution of marketing strategies and governance settings is also highlighted, together with the necessity of developing and integrating public and private initiatives for realizing high-value sustainable and transparent production systems and supply chains. Accordingly, relevant action-research directions are described. These findings are expected to improve the current debate on the competitiveness of the European

ornamental industry and contribute to taking a step towards a synergic combination of new differential advantages and wider sustainability goals.

Keywords: market competition; consumer dynamics; market niches; high-value positioning; management approaches; collaborative governance; supply chain; quality products; origin; sustainability transformation

1. Introduction

Ornamentals are the most diversified products and fast-changing industry of horticulture [1]. They include a very big and hugely diverse group of whole plants or parts of plants that are grown usually for decorative purposes [2]. Building on Oxford Economics (2018) [3], we define Ornamental Horticulture as the set of the different sectors engaged in the ornamental horticultural activity: from firms that grow ornamental plants and flower to manufacturers of garden equipment and supplies, to the wholesalers and retailers, as well as floral designers and landscape and arboriculture professionals.

Nowadays, the world ornamental sector is characterized by a significant expansion of both production and consumption, that underpins the growth of international trade and globalization [4–8]. Consequently, major country markets have increased their interdependency and permeability. Accordingly, both flowers' and plants' supply and demand have increased their seasonality and mutability and caused higher volatility of prices [9,10].

From a global perspective, Europe represents one of the main markets for ornamentals, and it is expected to register, over the next decade, one of the highest performances of growth of both production and consumption, in line with the development of other mature producer countries, such as China, Japan, and North America [5,6,9].

Noteworthy, current expectations of the European ornamental demand have evidenced a perspective of unprecedented increase in purchases and price premiums, considering both private and institutional market segments [8,11,12]. As a matter of fact, the affirmation of neo-luxury and sustainability-oriented consumption patterns, together with the

expansion of urban upper and middle classes, has generated a new need for both consumers and citizens to green their lives [13–16]. Accordingly, individuals and institutions have shown a higher willingness to buy and pay for flowers and plants and behave as attentive and responsible consumers in choosing sustainability and transparency [11,17,18].

These trends are confirmed by the early insights on the impact of the ongoing COVID-19 pandemic [4,19,20]. Specifically, they highlight the strengthening of new consumer perception of flowers and plants as functional goods, with essential advantages for the environment and human well-being [11,21–23].

In light of the above, we consider the increase in new market opportunities for European domestic producers that show the power to drive processes of requalification and sustainability transformation of the European ornamental sector [24]. The good performance of European demand has also incentivized the growth and higher quality of imported productions, coming from exporting producer countries of Africa and South America [4,5]. This causes new relevant challenges for the competitiveness of high-cost domestic supply systems [6,10,25,26].

The seizing of new opportunities for the sustainable development of the European ornamental sector requires an increase in efforts from both private and public stakeholders. In other words, the enhancement and adaption of existing marketing strategies and governance settings appear essential to face the competition and also favor the realization of win-win approaches among different countries and stakeholders [10,12,27–32]. On this basis, the industry shows a gap in the capacity of prediction, planning, and coordination of relevant actors, thus evidencing a need for improving their knowledge and practices [25,33,34].

In this sense, market research plays a fundamental role [12,35]. Notwithstanding, in the European context, flower and ornamental plants' marketing and governance systems usually receive limited attention from the scientific literature; in addition, the chronic outdatedness and fragmentation of relevant data and information affect the availability of official statistics and institutional sources [36]. As a result, the current economic debate is weak.

Our paper aims at filling the gap in the availability of structured and theoretically sound studies and integrated data sources on new consumption trends, marketing strategies, and governance settings. In particular, the following objectives are pursued: (i) identifying an innovative ornamental horticulture market data framework; (ii) evidencing evolving dynamics of competition in Europe and necessary adaptations of public and private action; (iii) defining a new action-research agenda, capable of stimulating interest from businesses, researchers, and institutions.

As far as methodology is concerned, we carry out an integrative grey literature review. Considering the abovementioned limits of official data and scientific research, the grey literature represents an essential source of information within the sector. Innovatively, the integrative review strategy allows us to overcome the dispersion of grey literature sources and to integrate and synthesize the most reliable and representative data.

We believe our findings give an innovative contribution to the information, enhancement, and coordination of decisions and actions of policymakers, businesses, and industry organizations operating in the European ornamental sector, and sustain the realization and fair remuneration of high-value sustainable ornamental supply chains, with multiple functions for the society and ecosystems [37–39].

Specifically, we illustrate the followed review methodology in Section 2. Results are presented in Sections 3–5. Lastly, Sections 6 and 7 are dedicated to the identification of the new action-research agenda and the conclusions.

2. Methodology

The methodology of this paper is based on an integrative grey literature review [40,41]. We classify the grey literature as a non-systematic aggregate of material and research, produced by different organizations outside of the traditional academic or commercial publishing and distribution channels [42].

The panorama of the economic literature on the European ornamental horticulture industry is limited. At the same time, relevant official statistics are often poor and inconsistent. In light of this, we

consider grey literature to be the main source of knowledge on the European ornamental horticulture sector structure and dynamics, although characterized by high variability and fragmentation of related institutional sources and documents, as well as dataset types.

In line with this, the adoption of a grey literature approach and integrative review strategy allowed us to select the most reliable and representative institutional sources and providers of grey literature. This led us to identify and review their most recent and comprehensive contributions valuable for the topic [40,43].

The review design does not follow any specific standard [41,44]. The sampling of sources was realized by adopting a purposeful approach, aiming at an inclusive selection of material [40,44].

As a first step, we identified a set of key terms to define the research topic (Table 1). We used the identified terms as keywords to conduct an online search of relevant grey literature. The research was realized by the means of the Google Search engine [45]. The web searching method combined with the key terms identified permits to include in the sample grey literature that is open or easy to access, thus enhancing the study replicability.

Table 1. Key terms for research topic definition and online searching.

| Definers | Key Terms |
|--|---|
| Market and Industry | Floriculture Flower industry Ornamental industry Nursery industry Flower market Ornamental plants market |
| Product Category | Flowers and ornamental plants Ornamentals Cut flowers and pot(ted) plants Cut flowers and indoor plants |
| Supply Chain Structure and Characterization | Supply chain structure and dynamics Production Trade Consumption Consumption patterns Sales and spending |
| Geographical Area | World/Global Europe European Union (EU), i.e., EU (28)/EU (27) + United Kingdom (UK) |

Source: our elaboration.

As a preliminary result, we selected 10 institutions that are among the major providers of grey literature concerning the European flower and plant market (i.e., industry organizations, trade fairs, flower auctions, commercial services, governments, and other national and international institutions) and identified their official websites to gather relevant documentary materials and statistics (Table 2).

Among the latter, we selected a purposeful sample of 58 secondary data sources. The adopted inclusion criteria are reported in Table 3. We added literature to the sample until achieving the saturation of information [46].

Table 2. Major institutional sources in the European ornamental sector.

| Name of the Institution | Country | Official Websites ¹ |
|---|----------------|---|
| International Association of Horticultural Producers (AIPH) | Belgium | http://aiph.org/ |
| International Flower Trade Association (Union Fleurs) | Belgium | https://unionfleurs.org/ |
| Messe Essen GmbH Press Media Centre for IPM Essen | Germany | https://www.ipm-essen.de/world-trade-fair/ |
| Royal Flora Holland (RFH) | Netherlands | https://www.royalfloraholland.com/en |
| Association of the German Flower Wholesale and Import Trade (BGI) | Germany | https://bgi-ev.de/en/the-association/ |
| RaboResearch Food and AgriBusiness (Rabobank) | Netherlands | https://research.rabobank.com/far/en/home/index.html |
| European Commission Directorate-General for Agriculture and Rural Development (DG AGRI) Unit G2-Wine, spirits, and horticultural products | Belgium | https://ec.europa.eu/info/food-farming-fisheries/plants-and-plant-products/live-plants-and-flowers_en |
| International Trade Centre (ITC)—Trade Map | n/a | https://www.trademap.org/Index.aspx |
| Centre for the Promotion of Imports from developing countries of the Netherlands Ministry of Foreign Affairs (CBI) | Netherlands | https://www.cbi.eu/ |
| Assembly of European Regions producing Fruits, Vegetables and Ornamental Plants (AREFLH) | France | https://www.areflh.org/en/ |

Source: our elaboration. ¹ Accessed on 02 February 2022

Table 3. Inclusion criteria and sample description.

| Inclusion Criteria | Description of the Included Grey Literature |
|-------------------------------------|---|
| Relevance and reliability | <ul style="list-style-type: none">• Published or distributed by the most reliable and representative institutional providers of grey literature for the European ornamental industry• Reporting proprietary elaborations that integrate secondary data-official statistics or other reliable grey information—with primary data—interviews and surveys involving experts and practitioners |
| Document typology and accessibility | <ul style="list-style-type: none">• Including different typologies of documents and datasets, i.e., project reports, periodicals, statistics, yearbooks, press texts, lectures, working documents, opinion statements• Accessible from open-or-easy-to-access online institutional sources, i.e., official websites of the selected institutions |
| Year of publication | <ul style="list-style-type: none">• Published in the timeframe 2015–2022 (most recent disposable year) |
| Scope | <ul style="list-style-type: none">• Not limited to a single country or product category |
| Language | <ul style="list-style-type: none">• Using English language |

Source: our elaboration. ¹ We used 2015 as the base year for the gathering of grey literature. Indeed, it represents a turning point in the evolution of European ornamental industry and market dynamics [25,47].

The sampled grey literature was analyzed by the means of a comprehensive qualitative approach [40,41,44]. Accordingly, through the full-text reading of documents and the querying of datasets, we extracted the most relevant text parts and statistics. The extracted information was compared and integrated, based on criteria of logic and conceptual reasoning. The results were elaborated in a narrative synthesis form.

3. The World and European Ornamental Sector

3.1. A Description of the Global Scenario

At the global level, the ornamental sector is expanding in both production and trade, with a consequent increase in market globalization and competition [4–6,15,30,48,49].

On the side of production, flowers and ornamental plants count for a total world value of about EUR 35.5 billion, corresponding to an area of 745,000 Ha [50].

As for trade, Rabobank (2022a) [4] evidences a steady increase in global export, at a compound annual rate (CAGR) of 3.9%. Considering

the categories of cut flowers, foliage, and live plants, a twenty-year positive trend in export growth can be identified, which led to an aggregate world value of around EUR 18 billion in 2020 [5,51] (Figure 1).

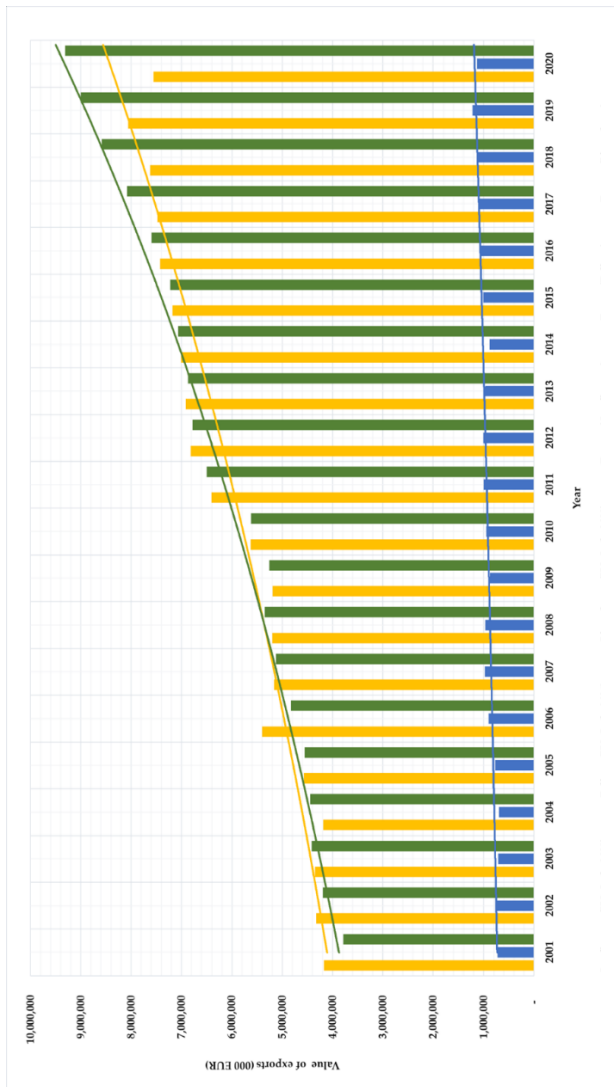


Figure 1. The international trade of flowers and ornamental plants: the trend of world exports (000 EUR, 2001–2020). Source: our elaboration on [51] (data extraction: 24th January 2022). The identified product categories follow the Harmonized System Nomenclature [52], HS Codes: 0603, 0604, 0602.

In order to identify and describe global main flower and ornamental plant markets, we consider a recent classification elaborated by AIPH (2019b) [6]. The latter characterizes four homogenous geographical groups, consisting of the major production and consumption markets at the global level.

Each group includes flowers and plants producer countries that have in common the same market determinants, and report similar conditions of both demand and supply. Building on AIPH (2019b) [6], in Table 4, we present a framework of the current World ornamental market scenario.

Table 4. The World ornamental market scenario: a classification.

| Country Group | Included Country/ Area ¹ | Market Determinants | Characteristics of Demand and Supply |
|--------------------------------------|--|---|--|
| Mature domestic producer countries | Europe Canada United States (US) China Japan | <ul style="list-style-type: none"> • Good economic performance of included countries • High urbanization rate • High occupation growth • High population aging rate • Interest of individuals in pursuing a higher well-being and life quality • Flowers and plants are core elements of local biocultural heritage | <ul style="list-style-type: none"> • Highest share of world total consumption value • Expected rapid and significant growth of demand, in both volumes and value • High demand fragmentation • Growing attention of consumers to flowers and plants multiple functions |
| | | <ul style="list-style-type: none"> • Long-standing tradition of ornamental production • Presence of highly functional logistics networks and hubs for the trade of large volumes of perishables • Subsistence of high flowers and plants production costs, especially due to climate, labor conditions, relevant regulations, and fiscal regimes | <ul style="list-style-type: none"> • Domestic productions cover the highest share of internal demand • China and Japan: expected growth of domestic productions volume to maintain the highest share of consumption growth • Europe and North America: expected growth of domestic productions differentiation to compete with the increase in quality and volume of flower imports from Africa and South America |
| Emerging domestic producer countries | India Mexico Brazil | <ul style="list-style-type: none"> • Increase in economic performance of included countries • Growth of per-capita income and purchasing power | <ul style="list-style-type: none"> • Domestic demand exceeds domestic supply • Expected sharp growth in demand volume and value due to the expansion of urban upper and middle classes |

| | | | |
|---------------------------------------|--|------------------------------------|--|
| | <ul style="list-style-type: none"> • High urbanization rate • Upsizing of urban upper-and-middle classes • Favorable climate and soil conditions for flowers and plants cultivation • Low cost of production inputs • Proximity to high-value demand markets pertaining to the group of mature domestic producers | Expanding domestic production base | <ul style="list-style-type: none"> • Expected increase in domestic production to obtain the major share of growth of internal demand • Domestic production will almost exclusively cover the growth of internal demand • The volume of exports will remain early negligible |
| Mature exporting producer countries | <p style="text-align: center;">Colombia Kenya Ecuador</p> <ul style="list-style-type: none"> • Unstable economic performance of included countries • High political instability • Low urbanization rate • Low occupation rate • Optimal soil and climate conditions for flower and plant breeding and cultivation • Minimum flower and plant production costs, due to low price of energy and labor, supportive regulations and fiscal regimes • Proximity to fast-growing and high-value markets pertaining to the groups of both mature and emerging domestic producers | Low-growth domestic demand | <ul style="list-style-type: none"> • Small size of internal demand (Europe and North America currently represent main destination markets) • Low expected growth in consumption (India, Mexico, and Brazil represent new accessible and attractive destination markets) |
| Emerging exporting producer countries | <p style="text-align: center;">Ethiopia Vietnam</p> <ul style="list-style-type: none"> • Localization of both European and North American production activities that bring with them advanced knowledge and skills, | Strong domestic production base | <ul style="list-style-type: none"> • Expected growth of domestic production following a significant expansion of exports • Dominant role of major crops production, i.e., roses, chrysanthemum and carnations • Domestic producers will maintain the role of World cost leaders |
| | | Low-growth domestic demand | <ul style="list-style-type: none"> • Small size of domestic demand • Low expected growth in consumption |

high investment capacity and professional services

Expanding domestic production base

- Expected increase in domestic production volume and competitiveness to capture a growing share of demand in fast-growing and high-value markets of Europe and Asia
- Expected significant increase in the share of domestic productions of world total export

Source: our elaboration on [4–7,9,11,25,53–55]. ¹Countries/areas with either production or consumption above 100 million EUR.

3.2. *Relevant Insights from Europe*

According to the presented market scenario, the European ornamental industry is transforming, with evolving dynamics of production and trade and the emergence of new strategic orientations [4,5,11,56,57]. Specifically, already since the biennium 2015–2016, the sector entered a period of profound change, determined by market globalization and the evolution of the socio-economic and bio-physical context [25,47,58,59].

In line with the above, in Europe, the flower and plant supply is expanding and structurally mutating, although the effects of climate change contribute to the higher instability and unforeseeability of prices and quantities [15,49]. Dynamics of change are affected by key determinant factors, such as globalization, demand growth, technological development, and favorable commercial policies.

To illustrate, from 2015, significant growth has been characterizing the European flower and plant production [60–62], covering an area of 60.000 Ha for a value of about EUR 11 billion [50]. In terms of value, the major contribution has been made by mature producer countries, i.e., Netherlands, Italy, Germany, France, Spain, and the UK, which together cover a share of 70% (approx. EUR 7.7 billion) of the European total [50]. At the same time, new domestic producers have emerged, such as the cases of Baltic states, Malta, and Luxembourg, that significantly record percentages of growth between 14% and 15% [60].

Important current dynamics of recovery and qualification of European domestic productions are expected to maintain and even accelerate [4,30], flanked by continuing growth of the flower and plant trade [4,5,30,48,49,54,61–66].

In that regard, Europe is consolidating its position of attractive and accessible target destination for both domestic and exporting producer countries. Hence, intra and extra EU trade is expanding due to: the growth of production, the innovation of information and communication technologies (ICT), the enhancement of logistics, the actualization of free trade agreements (FTA) and preferential trade schemes (GSP), the expansion of mature demand markets, and the emergence of attractive North-Eastern and Middle Eastern destinations (e.g., Denmark, Poland, Russia, Turkey) [4,5,11,12].

The European flower and plant trade is characterized by its dominant role of high-quality low-cost imported productions, originating in the Southern countries of Africa (primarily Kenya and Ethiopia) and Latin America (primarily Colombia and Ecuador), mainly distributed by the Dutch wholesale market [4,5,48]. Nonetheless, a stable positive trend can be identified in the improvement of the European trade balance.

To that end, Figure 2 reports our elaboration of ITC trade map data [51] concerning the country group EU (27) + UK in order to evidence the performance of the trade balance in the period 2001–2020 for the categories cut flowers, foliage, and live plants. Figure 2 shows a consistent improvement of the balance during the considered period, leading to a total value of about EUR 191 million in 2020.

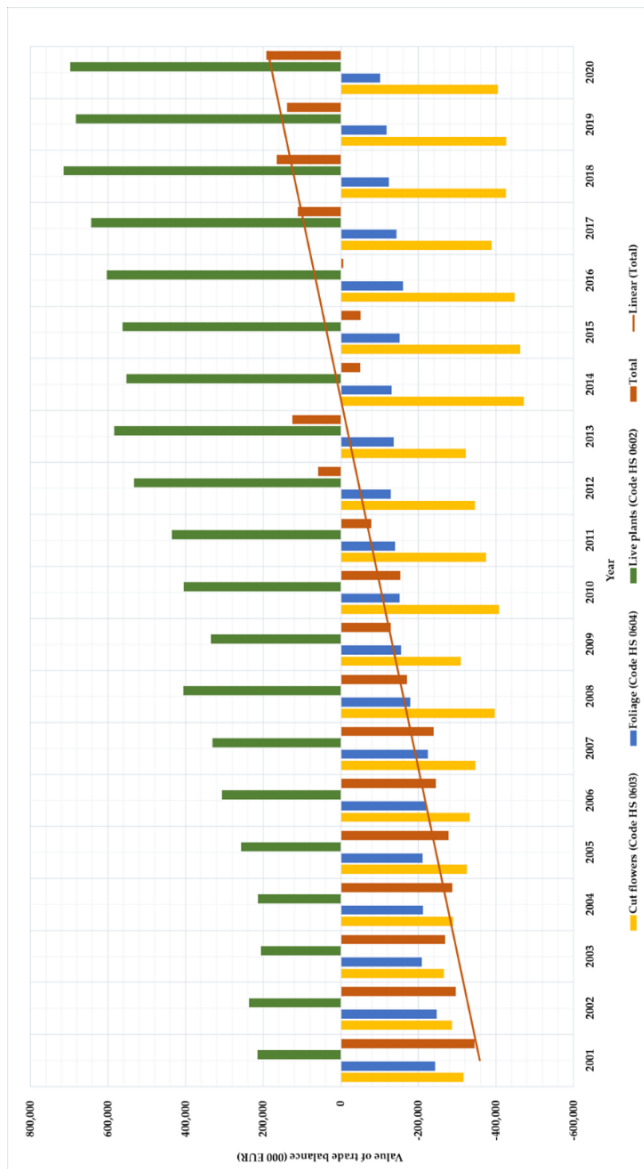


Figure 2. The European market for flowers and ornamental plants: EU (27) + UK trade balance (000 EUR, 2001–2020). Source: our elaboration on [51] (data extraction: 24th January 2022). The identified product categories follow the Harmonized System Nomenclature [52], HS Codes: 0603, 0604, 0602.

In light of the above, European market high internationalization increases its permeability to the political turmoil, economic turbulences, shocks, and crises occurring at the world or country level [54,66], with significant effects on its evolution dynamics and predictability.

To illustrate, among the latest developments affecting the European ornamental market, particular consideration is given to Brexit. On the one hand, the UK maintains its position as one of the major destinations in the European area. As a matter of facts, according to 2021 data, British consumers' demand is very high and Great Britain leads the rankings of Dutch exports growth [11]. On the other hand, current institutional changes (e.g., regulations, fiscal regimes) are partially reducing the attractiveness of the destination (e.g., higher transport and administrative costs) and challenging the European flower and plant exporters and producers [49,65,67,68].

Messe Essen (2022) [11] outlines the high market uncertainty deriving from the forthcoming introduction of a UK policy for the "comprehensive and full monitoring of flowers and plants from the Netherlands". This policy will come into force from the 1st of July 2022 and will require flowers and ornamental plants to be physically checked at the border to be imported into the UK.

As a result, higher administrative and transport costs, as well as shipping delays, are expected to affect both the volume and value of EU exports to the UK and influence European traders' and producers' marketing strategies and governance systems. In addition, other similar effects could be generated by the decision of the UK government to look for trade agreements outside the EU, particularly with members of the British Commonwealth, such as Kenya [4].

Lastly, the ongoing COVID-19 pandemic serves as a game-changer in the European scenario, with breakthrough effects on the flower and plant market. In spite of the limited information available, a few relevant contributions already allow outlining major negative outcomes and positive long-term expectations.

In particular, despite the unpredictable market shock of spring 2020, determined by the sharp brake of trade and sales during the peak season, in the long run, the pandemic is working as an accelerator in the growth

of the European flower and plant demand [11,69–72]. A rapid upturn of sales started in the second part of 2020 and accelerated during 2021 affecting a dramatic positive performance of the European flower and plant trade [4,73,74].

As illustrated in detail in Sections 4 and 5, the impact of COVID-19 on ornamentals consumption and competition will drive the emergence of new spaces for growth and profitability of European traders and producers, based on major institutional changes and a with-no-precedent good mood of European consumers [11].

4. Ornamentals Consumption Trends in the European Context

4.1. The New Determinants of Consumption Trends: A Classification

Europe is part of the group of mature domestic producer countries, identified by AIPH (2019b) [6] (Section 3.1). In that regard, in the European context, ornamentals consumption is expanding and changing, due to a selection of key socio-ecological determinants.

In particular, a shift in consumer behavior drives an upturn in the number of consumers and an increase in purchased quantities that both reached record-breaking numbers at the end of 2020 and in 2021 [11]. In addition, it generates a reduction in demand elasticity that makes quality prevail to the detriment of price [68].

In light of that, Table 5 reports a classification and description of the drivers we identified as the most relevant in affecting the evolution of the European flower and plant consumption trends.

Table 5. Main determinants affecting the evolution of flower and plant consumption trends in Europe.

| Determinant | Drivers for Change of Consumption Trends |
|----------------|--|
| Globalization | <ul style="list-style-type: none"> • Globalization is the most affecting driver of change in the ornamental sector. The increase in cross-border flows of products, technology, investments, people and information is leading to a strong interdependence of world economies, cultures, and populations. • In the ornamental sector, the high globalization causes a higher permeability among different geographical markets, thus generating a greater variability and mutability of consumer preferences and behavior. • The flower and plant fashion and consumption trends mutually affect each other and rapidly change. As a consequence, the demand for ornamentals appears more fragmented and unpredictable in major consumption markets as Europe. • New high-value demand markets are emerging in growing-income countries of Northern and Eastern Europe, as well as in the areas of Far East and Middle East. |
| Climate change | <ul style="list-style-type: none"> • Climate change causes significant alterations in seasonal weather and temperatures and determines a general increase in heat and drought. These changes lead to an upheaval in flower consumption trends compared to regular seasonal dynamics and flower holiday calendars. Flower demand increases its instability and shows sudden unpredictable peaks, thus causing high volatility of exchanged volumes and prices. • Both private and institutional consumers are showing growing attention to the functionality of ornamental plants in dealing with climate issues, thus increasing their demand and willingness to pay. |

Urbanization and
new city living

- Urbanization is a key driver of flowers' and plants' consumption evolution. AIPH (2019b,c) [6,7] estimates that about 9 billion people will live in cities by 2050. In urban areas, people worry about the adverse effects of cities on the environment and life quality. At the same time, they feel the need to restore direct contact with nature.
- By 2030 upper and middle classes are expected to expand to about 2 billion people. The growth of high-income urban consumers is seen to accompany the emergence of a new essential need for greening their lives. This fact increases flower demand volumes and value and reduces its elasticity to price.
- Currently, new programmes, regulations, and plans have been realized, intended to requalify urban environments and facilities, thus supporting their capacity to adapt and serve the present and future generations. In that regard, flowers and plants are furtherly considered as essential goods for improving the quality and livability of cities and their surroundings.

Evolution of the
socio-demographic
context

- The aging rate of populations is rising together with the rate of retirement. Old people are keen to buy and pay for keeping well their houses and gardens and care for their personal health and families.
 - The segment of urban young workers is expanding. People in this segment show an increase in the caring of their personal image, health, and happiness and in their per-capita spending.
 - Population aging together with the expansion of the class of young workers are boosting the increase in flowers' and plants' consumption. Old and retired people together with well-off attentive young workers increasingly perceive flowers and plants as lifestyle products, capable to symbolize their identity values and to enhance their well-being
 - A new biophilia sentiment is emerging that boosts the use of flowers and ornamental plants both as luxury gifts and specialty daily-use goods.
-

Neo-luxury and
sustainability-oriented
consumption patterns

- In Europe, a large portion of consumers—even in older age groups—seem to be aware of main global sustainability issues at the social, economic, and environmental level, and are committed to making responsible consumption choices.
- With reference to the issue of sustainability, a “neo-ecology” megatrend can be identified, transforming values of individuals, policymakers, and society [11], on Zukunftsinstitut (Future Institute) (p. 18).
- Neo-luxury and sustainability-oriented consumption patterns are emerging, thus affecting the evolution of demand and consumption in agri-food markets.
- Consumers seem to orient their choices to: valorize hedonistic and ethical principles; value quality instead of price; favor specialty products instead of standardized goods; consider information and transparency as fundamental value attributes; pay a premium for products qualities linked to origin and sustainability; recognize the value of products functionalities for higher life quality.
- High value-added goods and services (e.g., compositions, arrangements) are preferred by flower and plant consumers. At the same time, new sustainability values play a dominant role in boosting ornamentals consumption and orienting consumer preferences.

Evolution and spreading of
the Internet and ICT

- ICT and Internet are increasingly diffused and accessible in Europe. In line with this, they serve as game-changers in the ornamental sector.
 - The use of online channels and digital devices is rapidly spreading among flowers and plants consumers of all ages, for both information gathering and product purchasing. The UK is a pathfinder in this area.
 - The online channel (e.g., web and social media) becomes the primary source of information on ornamental products and brands; at the same time, online sales experience a significant growth which has accelerated due to the current COVID-19 pandemic.
 - A fundamental role is played by the activities of influencers and bloggers that discovered and promote a new passion for flowers, plants, and gardening.
 - Multi-channel shopping experiences are increasingly appreciated.
-

-
- The ongoing COVID-19 pandemic is expected to positively affect ornamentals consumption in the long run. This is a consequence of the structural changes the pandemic is causing, both socio-cultural and economic.
 - From a long-term perspective, the pandemic seems to accelerate and amplify the effects of the other identified determinants, thus in particular due to people's reaction to solitude, lockdown, smart working, and fear of new calamities. Consumers came to appreciate flowers and plants during the pandemic and seem to confirm their appreciation and propensity to buy and pay.
 - Specifically, consumers increase their desire for nature and natural resources (AIPH, Sustainability group) [75]; augment their interest in local products and short supply chains; corroborate their perception of flowers and ornamental plants as everyday products (e.g., to decorate their home offices and gardens); and improve their familiarity with the use of the online channel.
 - The ornamental plants' segment presents the highest perspective of growth due to the expansion of urban gardening, even including the cases of expanding public green areas and social gardening. In addition, the growing number of people working from home demands rare green plants to qualify home workplaces. At the same time, even cut flowers and foliage are beating the market, based on the recovery and speed up of events and the wedding market.
 - Flowers and ornamental plants are increasingly recognized by public administrations, businesses, and society as primary goods for enhancing individual well-being and collective life quality. Florists and garden centers have been included in the group of stores rapidly reopened, because of providing essential personal services. In some countries, public campaigns promoted the purchase of ornamental products as a remedy against the negative effects of lockdown solitude and isolation.

Source: our elaboration on [4–7,9–11, 13,15,22,23,25,26,30,47,49,54,55,58,64,65,68–70,72,76–85].

Determinants reported in Table 5 show evident effects on the expansion and transformation of ornamentals consumption trends. In perspective, further expansion and qualification of the ornamentals consumption may result from the implementation of the EU Green Deal strategy together with the possible adaptations of the new Common

Agricultural Policy (CAP) [12,86–90]. Indeed, flowers and plants seem to be gaining increasing consideration from policymakers as part of the solutions of the overall EU Green Deal objectives (e.g., climate neutrality, natural resources and biodiversity preservation, social inclusion, and well-being) [12,87,90] and the related Biodiversity 2030 strategy [91].

In line with that, expected changes in EU and national (agricultural, environmental, social) policies, flanked by possible transformations of programmes and legislations, and the actualization of pledges and other concerted initiatives concerning life greening, biodiversity, and replanting [92,93], may foster the demand for flowers and plants to mitigate climate change impact, increase social welfare, support green city planning, as well as forestry and agro-forestry activities.

Actually, how and to what extent the new policy orientation will concretely translate in a further and long-lasting expansion of the ornamentals consumption will depend on the capacity of industry and stakeholders to properly organize and effectively sensitize and dynamize both citizens and institutions [89,94].

4.2. Consumer Profiles and Dominant Consumption Trends

According to the presented evolution of the socio-ecological context, over the next decade, a positive trend in the growth of flower and ornamental plant consumption is expected to characterize the European market. This trend will concern both private and institutional segments [6,95].

In line with the opinion of the most reliable institutions in the sector, the main engine of this growth is represented by the increase in the number and consumption of high-income urban consumers, which will be profiled in the next paragraph (Section 4.2.1). Consistently, new consumption trends arise and consolidate, concerning both individuals (Section 4.2.2) and institutions (Section 4.2.3). Remarkably, businesses and public administrations are raising their expenditure for flowers and plants to improve the quality of working and living conditions [6,9,11,21,65].

4.2.1. New High-Value Consumer Profiles

In line with the good performance of consumer demand, various attempts are made by the sampled institutions to identify emerging high-value consumer profiles, evidencing dominant consumption trends, and attractive markets.

Among them, we consider the relevant contributions of AIPH (2019b) [6] and Rabobank (2017a) [9]. The latter adopts the criterion of age to identify the most relevant consumer profiles in mature domestic producer countries in Europe, Asia, and North America. Specifically, they highlight two generational segments including the majority of present and early future consumers of flowers and ornamental plants in the considered markets. The first segment is the one of “Millenials”, i.e., including people born between 1980 and 2000, while the second is the one of “Baby Boomers”, consisting of people born between 1945 and 1964.

In line with these results, Rabobank (2017a) [9] describes the two consumer groups of “Old age people, retired or approaching retirement” and “Young adult people, working or about to get a job” as the most representative ones to be considered in the analysis of prevailing consumption habits in the European market for flowers and plants.

Furtherly, with special consideration of the segment of cut flowers and indoor plants, RFH (2017) [96] uses a multivariable approach to group and classify consumers based on their psychographics and behavioral characteristics, also including flower and plant purchasing frequency and willingness to pay. As a result, three high-value consumer profiles are identified: the “Cultivated performers”, the “Cosiness seekers”, and the “Individualistic performers” (Table 6). They represent the ones covering the highest share of both the number of consumers and turnover.

Table 6. High-value consumer profiles in the European market for cut flowers and indoor plants: a multivariable approach.

| Classification Criterion | Description of Consumer Profile | | |
|--------------------------|--|--|---|
| | Cultivated Performers | Cosiness Seekers | Individualistic Performers |
| Psychographic | <ul style="list-style-type: none"> • Pursue high living standards • Are involved in social and cultural life • Are interested in sports, personal care and good nutrition • Perceive creativity as a value • Love to show their knowledge and expertise • Pay for higher quality • Appreciate exclusivity, choice variety and professionalism | <ul style="list-style-type: none"> • Care of the family • Love travelling and hosting • Have a busy life both at home and outside • Are interested in new technologies • Play sports occasionally • Pursue personal happiness • Are fashion conscious and attentive to seasonal trends • Are careful about price | <ul style="list-style-type: none"> • Look at appearances • Care of their own image • Consider the importance of style and creativity • Are interested in innovation • Seek and trust experts' advice • Pay for higher quality • Appreciate products sustainability and ecological benefits |

| Behavioral | | | | |
|---------------------|---|--|---|------------|
| | <ul style="list-style-type: none"> • Buy flowers and plants with a high frequency • Are used to shop through the specialized channel (especially florist shops) • Show a positive attitude towards the purchase of specialty crops and high-value bouquets and arrangements • Pay a premium for products assortment, craftsmanship and experience | <ul style="list-style-type: none"> • Buy flowers and plants with a high frequency • Are used to shop through supermarkets and garden centers • Buy flowers and plants as a vehicle of happiness • Show a positive attitude towards the purchase of seasonal species and trendy varieties • Consider wide and deep assortment as a choice discriminant | <ul style="list-style-type: none"> • Buy flowers and plants with a medium frequency • Are used to shop through the specialized channel • Pay a premium for products specialty, creativity and experience | |
| Market share | | | | TOT |
| % total consumers | 14.6 | 8.5 | 14.7 | 37.7 |
| % total turnover | 38.2 | 15 | 15.5 | 68.7 |

Source: our elaboration on [96].

With reference to the profile characterization reported in Table 6, RFH (2017) [96] validates the dominant role of urban young generations and high-income workers, together with old and retired people in boosting the outstanding performance of the European flower market.

4.2.2. Dominant Trends in Flower and Plant Consumption Preferences and Behavior

The evolution of consumer preferences and behavior in major European country markets is permeated by a relevant transformation, based on a new consumer perception of flowers and plants.

In general terms, consumers, especially the younger generations, seem firstly reinforcing their recognition of the unique value of flowers and plants as precious gifts or event arrangements; secondly, developing a new cognition of ornamental products as primary goods and essentials for enhancing their quality of life [11,22,23,55,64].

In more specific terms, new dominant consumption trends characterize the change in consumer beliefs and attitudes in Europe. We categorize these trends according to the following descriptions.

I. Consumers mostly prefer quality over price

Consumers ever more value and choose flowers and ornamental plants that are qualified as specialty goods and that offer multiple functional and emotional advantages [6,9,11,53,54].

Specifically, they recognize and pay a premium for flowers and plants capable of symbolizing their identity values and tastes, and to provide them with specific benefits, not only in terms of aesthetics but also with reference to their personal realization and well-being. Accordingly, the European market registers an increase in the number and frequency of purchases of high value-added ornamental products.

In line with this, refined bouquets and flower arrangements consolidate their positioning in both the segments of luxury gifts and events [4,11,49,81]. In these segments, main differentiation attributes become the following: rareness, creativity, branding, craftsmanship, and personalization. At the same time, flower and plant customized compositions acquire a growing market share in the segment of daily-use goods [5], as either decorations for homes and gardens or horti products [15,81].

In particular, with reference to flower and plant material, consumers choose and remunerate the quality of specialty crops, i.e., using branded seeds, valorizing innovative and trendy species

and varieties as well as traditional essences. In particular, good market performance is registered by seasonal off-the-cuff landraces and hardy and heat resistant crops [49,64,65,81].

Besides that, high-value aesthetics and designs reinforce their role in winning the favor of consumers. To that regard, a new ethic-oriented canon is emerging in flower beauty: consumers request and value new organic and fresh-from-the-field styles of flowers and compositions, valorizing effortlessness and naturalness [97–99].

II. Sustainability and transparency play as primary determinants of choice

An increasing number of consumers, especially in the group of young educated people, make responsible consumption choices when purchasing flowers and plants. For example, in the representative German market, a share of about 20% of total consumers consider sustainability as a primary determinant of choice [21–23,49,65]. Furthermore, according to a survey carried out by Statista in June 2021, the ongoing pandemic furtherly focuses flowers and plants trade and consumption on the value of sustainability and regionality. In addition, it increases consumer willingness to pay for environmentally friendly and socially sustainable production and distribution processes [11].

The growing consumer desire for sustainability is accompanied by a higher consideration for product transparency. As a consequence, flower and plant consumers are increasingly prepared to listen, learn and appreciate the value of product information [81].

Accordingly, consumers appear to increase their desire and willingness to pay for new quality attributes intended to: disclose products origin; communicate their low environmental impact and high social fairness; promote their contribution to biodiversity preservation; highlight their functionality for a better quality of living [9,11,22,23,55].

Therefore, higher price premiums are obtained by products that strategically use specific signaling tools. For example, a growing

number of consumers perceive and remunerate the added value of quality and safety standards as well as origin marks and sustainability certifications schemes (e.g., fair trade, organic, GLOBAL GAP, etc.) [4,26,54,57,65,76,95,96,100].

Likewise, consumers even consider the communicative value of packaging. In particular, they appreciate eco-friendly and plastic-free containers, vases, cartons, and wraps, either recycled or biodegradable [11,101], and appreciate their capacity to claim the product story, identity, and unique benefits.

Lastly, consumers show a new attitude for the use of web and social media as the main source of information as well as a channel of dialogue with breeders, producers, and traders [15,55,64].

III. Consumers recognize and remunerate ornamental products for their socio-ecological and therapeutic functionality

Ever more consumers are interested in discovering the unique and superior benefits flowers and plants can provide for multiple uses [6,102].

Accordingly, especially in cities, both private ambiances and public spaces are changing their design, focusing on the valorization of the beneficial role of flowers and plants [11,64]. Indeed, in the consumers' intention, the latter is used with multiple functions of: softening and beautifying urban landscapes, home, and commercial spaces; recalling a contact with nature; mitigating temperatures; purifying the air; treating stress disorders, concentration problems, and mental illnesses.

In that regard, particular consideration should be given to the new role of plants in the transformation of home environments, such as livings, gardens, balconies, and workspaces. Specifically, concerning the indoor segment, consumers increase their spending on green plants, e.g., split-leaf species, scented, and air-cleaning, as well as on woody plants [49]. In addition, the gardening segment is characterized by an unprecedented positive trend in consumption. As a benchmark, in 2019, it registered a turnover of about EUR 4.4 billion in the representative German market [55]. Moreover, Messe Essen (2022) [11] reports recent estimations by

Statista, evidencing that in 2021 around 15 million people aged over 14 spent time working in the garden several times per month, as far as around 9 million people doing it more times per week.

Moreover, consumers increasingly perceive home gardens as unique places for happiness, absolving also to the purposes of recreation and food production [11,49]. Specifically, they find satisfaction in the creation and caring of near-natural spaces, providing them with joy and peace of mind, contributing to the surviving of insects and small animals, valorizing regional and native plants, and producing healthy zero-mile food.

Consequently, a good market performance is registered by space-saving ornamentals (e.g., flowering perennials, beddings, and balcony plants), trees and shrubs as well as by fruit trees, cacti, vegetable crops, and herbs [11,49,55,65,81]. For example, a new trend for “nibbles gardens” is emerging [49,65]. In that regard, consumers research and pay for the specialty of snack and dwarf vegetable crops, fruit nibbles, aromatics, and officinal plants as well as easy-care and insect-friendly ornamental plants [11,49,55,64,81].

Lastly, the expansion of the gardening segment boosts the growth of complementary markets, such as Do-It-Yourself (DIY) and hobby gardening, e.g., to buy integrated pests, near-natural fertilizers, recyclable materials, and innovative protection stuff [11,49,64]. At the same time, a fast-growing “smart gardening” segment is emerging, combining consumer interest in gardening with their desire to experiment with the high functionality of new smart devices and home automation technologies (e.g., robotic lawn mowers, digitally controlled irrigation systems, drones, etc.) [11,49,55,65].

IV. Consumers value ornamental products origin and show a preference for locally-grown and seasonal flowers

Consumers appreciate the origin of ornamental products as a distinctive quality attribute, thus valuing their territorial linkage as a determinant of choice. In this sense, they consider not only the geographical provenance of the product but also the typicality of

the used species and varieties and the adoption of traditional production and processing techniques [32].

In light of that, a large part of consumers favors the purchase of both locally-and-nationally-grown flowers and plants. In addition, the market shows a new consumer interest in buying native species and varieties, even valorizing specialty crops and landraces that are typical of other countries [11].

In light of the above, consumers are willing to pay a premium for ornamental products qualified by specific signs or storytelling, identifying their local or national provenance.

V. Consumers attribute a growing added value to customized services

In line with the abovementioned trends, flower and plant consumers are changing their perception and remuneration of services (e.g., assistance, information, advice, composition, etc.). Accordingly, the flower market shows a shift in the composition of total consumer spending, characterized by a higher share for the remuneration of services, which become the main determinant of consumer choices and willingness to pay, while flowers and plants are considered components or “ingredients” [9,26,30,54,55,57,96].

In light of that, new high-value niches are emerging in the specific market of ornamental services. Among them, we consider the growth potential of floral and garden design segments [32], together with landscaping, that registers a positive trend in both sales volume and turnover [6].

VI. Consumers use alternative shopping channels and favor multi-channel experiences

Specialized trade still maintains the largest share of the market. Nonetheless, consumers are increasingly hybrid in alternatively using specialized and non-specialized shopping channels [4,5,11]. As a matter of fact, consumers increase channel switching frequency, on the basis of the purchase occasion and the wanted product category [49,54,63,66]. Accordingly, consumers are more likely to combine the use of specialized shops to purchase premium price products (e.g., rare essences, personalized

compositions, or arrangements), with the use of non-specialized channels to buy standardized products (e.g., mono or mixed bouquets, ordinary houseplants, seeds, and gardening material) [9,54].

Specifically, on the one hand, florists, kiosks, and street stalls still keep the highest share of the market, especially due to the expansion of luxury gifts and event segments. On the other hand, super-/hypermarkets and garden centers, followed by discounts and DIY, are rising their share, because of the higher sales of bouquets, houseplants (outdoor), and gardening products [4,5,49,50]. To illustrate, in the representative German market, in 2021, specialized trade accounted for a 60% share of private customers' total expenditure for flowers and plants, covering 30% of the total purchased quantity, while large-scale retailers reached a share of 40% of total expenditure, and covered 70% of the total purchased quantity [11].

Besides that, consumers are increasing their use and appreciation of online shopping channels. Remarkably, in consumer perception, online trade is complementing and integrating the role of stationary trade, but not replacing it. Indeed, while the market shows a swipe up of consumer spending on the online channel, the turnover of offline trade remains largely stable [9,65].

In line with this, consumers—and particularly “Baby Boomers”-, show a preference for multi-channel shopping experiences [9,15,26,54,57,96]. In that regard, on the one hand, they choose and value the higher convenience, entertainment, and personalization of online searching and purchasing processes [9,11,65]. On the other hand, they still prefer to visit offline shops to experience and value products, picking up orders, enjoy moments of leisure, and relate with local growers and retailers [54,63].

The positive trend in online sales started in the UK and Dutch markets, which represent the initiators of the trend in the European context, with a good performance in both the handicrafts and gardening segments [25,49]. Nowadays, online sales are

experiencing a steady growth in major European markets (Netherlands, France, Germany, and the UK), with the best performances of indoor and outdoor potted plants [4,11]. The good mood of online purchases in the gardening and DIY segments is flanked by the increase in online sales in the markets for flower and plant gifts and floral design arrangements [63].

On these bases, during the next decade, online trade is expected to cover a share of about 30% of the entire European ornamental market [9]. Significantly, we retain this estimate should even be revised upwards, to include the effect of acceleration generated by the COVID-19 pandemic [4,11].

4.2.3. A Focus on the Institutional Demand Segment

The institutional segment consists of both the demand of the private sector and public administration [100]. In accordance with the new determinants of consumption trends (Section 4.1), this segment is characterized by the growth of consumption and the change of institutional consumers' preferences and attitudes.

Concerning the private sector, flowers and ornamental plants are ever more integrated as a resource in the planning of business models [6,7]. Indeed, businesses and organizations demonstrate to recognize and research the high functionality of flowers and plants for the caring of the health and happiness of workers, the enhancement of their creativity and productivity, and the qualification of work and commercial spaces [11,21].

Likewise, the public administration is increasing the demand for ornamentals for their role in mitigating the adverse effects of climate change, urbanization, and modernization. Currently, new programmes, regulations, and initiatives have been realized, at both EU and national level, fostering the realization of incentive measures and territorial plans including support to the flowering and greening of urban areas, the (re-)forestation of woodlands, and the diffusion of agroforestry [49,64,81,103].

The strong increase in public spending plays as an unprecedented accelerator for the expansion of demand. In accordance with that, a good performance is registered in both sales and prices by woody plants, with

specific reference to native species and landraces, temperature mitigator and air purifier trees and shrubs, and low maintenance species. Similarly, even seeds and propagation materials expand their share of the institutional market, thus considering, in particular, the case of wildflowers and bee-friendly species [15,49,64,65].

Forward looking, the ongoing political transformations, particularly the evolution of the discussion concerning the implementation of the EU Green Deal strategy, seem to open new opportunities for further growth in institutional demand [12,75,90].

Significantly, the new policy orientation is also encouraged by the effects of the current COVID-19 pandemic [104]. Actually, the latter boosted the recognition of flowers' and plants' unique social and ecological functions, thus stimulating the expansion and qualification of both market and social demand, and attracting and directing the attention and commitment of the EU and national institutions [11,15].

4.3. Consumer Spending and Consumption Value

The revised literature evidences a lack in the availability of quantitative data, referring to the value of flower and plants consumption and consumer spending. Despite that, some valuable estimations are made in relation to the trends registered in consumers' per-capita income and purchasing power, e.g., per-capita gross domestic product (GDP) or gross national income (GNI) ratios.

We consider the valuable contribution of AIPH (2020a) [50] in aggregating the most recent available data referring to both per-capita and total consumer spending on flowers and plants (and related goods), in main world consumption markets excluding China.

On the one hand, for each of the considered countries, the value of per-capita spending related to the level of GNI per capita is reported, with the highest registered performances by Switzerland (EUR 127), Denmark (EUR 114), Germany (EUR 108), and the UK (EUR 104) (Figure 3). According to the latest contribution of Rabobank (2022b) [5], Norway is also included in this group of high-value spending countries.

Messe Essen (2022) [11] highlights a perspective increase in per-capita spending, with reference to the major German market. This is

attributed to the significant increase in the number of first-time consumers together with consumers' willingness to accept higher prices for plants (e.g., the average purchase amount per receipt increased by at least 10% from 2020 to 2021), and their higher propensity to pay for high-quality flowers as unique gifts.

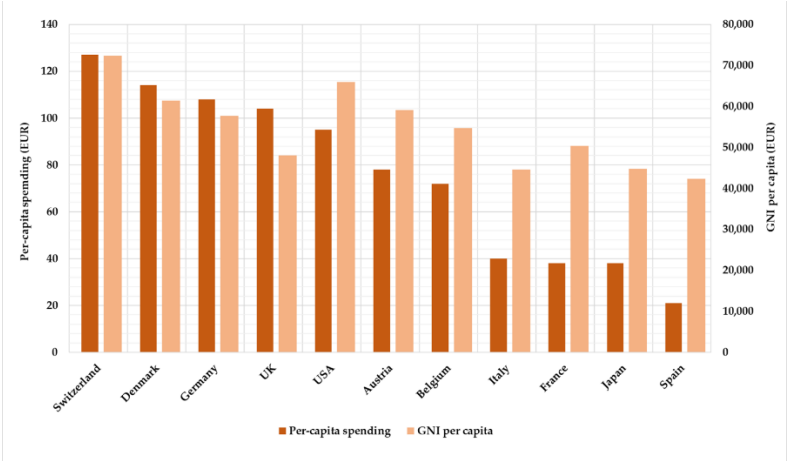


Figure 3. Consumption of flowers and plants (and related goods): per-capita spending and GNI in major world country markets (excl. China) (EUR). Source: our elaboration on [50]. The reported data do not include the share of spending concerning the market for services, e.g., floral and garden design, landscaping, green urban planning, green urban maintenance, etc. The data of per-capita spending refer to the latest available year in the timeframe 2015–2019. GNI = gross national income (at PPP = purchasing power parity) in 2016.

Besides that, regarding the estimations of total consumer spending, the highest values are registered in the US (EUR 31.1 billion), followed by Germany (EUR 8.9 billion), the UK (EUR 6.9 billion), and Japan (EUR 4.8 billion) (Figure 4).

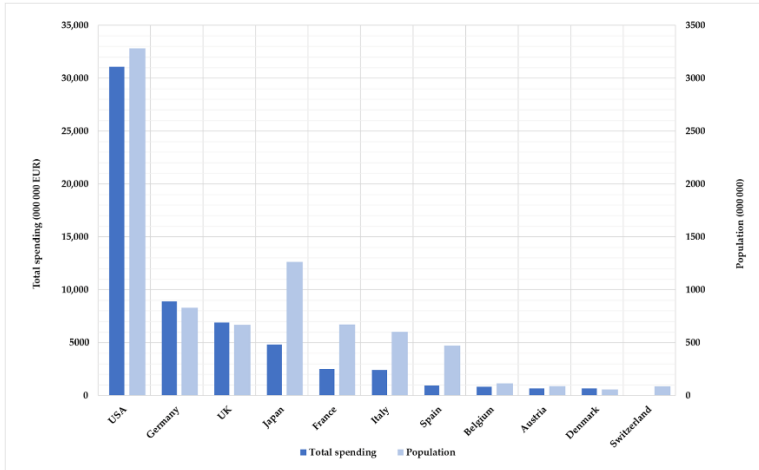


Figure 4. Consumption of flowers and plants (and related goods): total spending (EUR 000 000) over population (000 000) in major world country markets (excl. China). Source: our elaboration on [50]. ⁴The data of total spending refer to the latest available year in the timeframe 2015–2019. The reported data do not include the share of spending concerning the market for services, e.g., floral and garden design, landscaping, green urban planning, green urban maintenance, etc.

In order to give a long-term perspective of the trend of the world and European consumption value, Rabobank (2017a) [9] provides an estimation of the global major ornamental markets, with reference to the decade 2017–2027. The estimation is referred to the aggregate flowers and pot plants.

In this regard, Rabobank [9] reports that by 2027 the value of flowers and plants consumption will grow of a percentage of about 20% in both Europe and North America, while Asia will be characterized by a percentage of growth standing between 60% and 80%. According to these estimations, the total world consumption value is expected to reach about USD 100 billion in 2027. More specifically, Europe and Asia are expected to count, respectively, for approx. USD 37 billion, while North America is expected to register a value of approx. USD 20 billion.

Lastly, in light of the ongoing COVID-19 pandemic, Rabobank [9] estimations could be partially changed to include the effects of the

relevant socio-economic phenomena [11,84]. Nonetheless, according to the most recently available information, since the end of 2020, flower and plant sales, after a relevant but short-time decrease, recovered in both volume and value and soared at a rate equal or even higher than the one of the pre-pandemic period [4,11,22,23,25,73,74].

5. Emerging Competitive Dynamics in the European Ornamental Sector

5.1. The European Competitive Environment and Evolving Marketing Strategies

The presented evolving dynamics determine a situation of hyper-competition in the European ornamental sector, characterized by a mutable competitive environment, dominated by rapid or even unpredictable changes [57]. As a consequence, the whole flower and plant industry is required to increase its efforts for the adaption of its marketing strategies to pursue higher competitiveness and sustainability.

Specifically, involved business operators aim at increasing their sharing of resources, reducing their costs and risks, enhancing their predictive and planning capability, and developing sustainable competitive advantages [12,55,57].

The problem of costs reduction is particularly sensitive, also considering the significant increase in the costs of production and logistics in the European context [11]. As a matter of fact, a low availability of qualified personnel and a steep increase in land prices are contributing to a higher cost of inputs limiting the upscaling potential of localized systems and supply chains. In addition, the ongoing pandemic is furtherly worsening producers' and traders' costs, due to the shortage of labor and higher prices of raw materials (e.g., energy, potting soils and peat, and construction materials). As a consequence, the unprecedented good performance of flowers and plants purchases, in both quantity and price, demonstrates to be not always capable to improve the profit of the European ornamental businesses, thus requiring a change of their marketing strategies and organization.

In order to sustain the competitiveness of high-cost domestic producers and supply systems, businesses and institutions are enhancing

their efforts to pursue sustainable differential advantages. In that way, they intend to: on the one hand, address the problem of small scale and increasing costs; on the other hand, afford the challenge deriving from imported productions, outstanding for quality standardization and convenience.

What comes of it is a shift in the competitive orientation of the European ornamental industry, passing from cost minimization to quality maximization [11,25,33,105].

In other words, the current evolution of competition in the European sector makes the adoption of differentiation strategies an increasingly valuable solution for the effective positioning of domestic productions and supply systems [12]. Hence, European operators are growingly developing differentiation strategies, combining them with the adoption of focalized approaches. Specifically, they often decide for one or a few high-potential markets to serve and specialize their activities to target the satisfaction of specific consumers' needs.

In that regard, the development of effective marketing strategies appears an essential factor to target new high-value consumer profiles and emerging market niches. Specifically, we consider the selection of marketing levers should be intended to: (i) identify and qualify flowers and plants locality and territorial linkage; (ii) enhance and promote their specific functionalities for life quality and well-being, even by the integration of smart technologies and DIY; (iii) strengthen and communicate the commitment of businesses to the protection of the environment (e.g., reduction in CO₂ emissions, circular economy, preservation of biodiversity and ecosystems; renewable energy, etc.) and the pursuit of higher social fairness (e.g., protection of intellectual property rights and varietal innovation; promotion of human and labor rights; fair distribution of value, etc.) [106].

As an essential aspect, product policies should be enhanced by considering the potential advantage of the qualification of flowers and plants as specialty goods and services.

To that end, specific quality attributes can be valorized, as, for example: the selection of native species and traditional varieties (also with reference to the valorization of underutilized or neglected landraces); the

adoption of organic production methods and sustainable processing techniques; the valorization of both multifunctional species, e.g., bee-friendly wildflowers, edible flowers, dwarf vegetable, herbs, and principles of flower and plant design and arrangement [11,15,28,55,81,107].

To give evidence of the above, we consider the representative case of Germany, where since 2018, a large part of the ornamental production has been converted from major crops to seasonal and traditional species and varieties [81]. As a matter of fact, the increase in consumer recognition and remuneration of the value of flowers diversity and sustainability is driving a structural change in the orientations of both florists and floral designers, thus making them innovate their assortments and differentiate. Consequently, the latter have increased their need and demand for specialty crops and locally and sustainably produced flowers and plants, thus stimulating the expansion and diversification of the domestic production market [11,49,65].

In light of the foregoing, a growing number of quality standards are also adopted, together with the implementation of higher requirements of safety and sustainability [4,56,108]. In that regard, the creation of private and collective marks (e.g., geographical indications), the participation in voluntary certification schemes (e.g., GLOBALGAP, MPS-ABC, ISO, IFS), and the creation of eco-friendly talking packs can furtherly contribute to the enhancement of flowers and plants market value.

The described innovation in product policies is accompanied by the adoption of premium price policies and the adaptation of promotion and distribution strategies.

To illustrate, particular attention is given to the development of multi-channel distribution systems and the realization of seamless shopping experiences. Indeed, ever more traditional retailers use to improve their offer by combining the advantages of stationary trade (e.g., physical experience of goods and services, sociality, proximity, etc.) with the ones obtainable by online channels, such as higher convenience and personalization [54,80,81].

Besides that, producers' and traders' promotion strategies are increasingly valorizing the role and efficacy of new media marketing

tools, sustaining direct marketing approaches and storytelling. Indeed, web and social media serve as trendsetters and main sources of consumer information in the European market. At the same time, according to some relevant studies, referred to the comparable US context, web marketing strategies (i.e., the use of web and social media, forum, blogs, and newsletters) are demonstrating both lower costs and higher returns, in terms of product and brand image and customer loyalty, with respect to more traditional approaches [109–112].

Lastly, public and collective promotion campaigns are demonstrating their potential in enhancing consumers' awareness and feeding their desire. As a matter of fact, during the ongoing pandemic period, a growing number of initiatives have been taken, intended to stimulate flowers and plants consumption as a remedy against isolation and social distancing as well as essential goods for well-being and green living [11].

5.2. The European Competitive Environment: The Role of Governance

The described evolution of marketing strategies in the European ornamental sector goes hand in hand with the development of adequate organizational strategies and governance settings [4,9,56,57,63,65,77,81,112,113].

New threats and opportunities have emerged. European producers and supply chains are requested to improve their flexibility by the means of higher collaboration and investments. In light of that, flowers and plants growers, together with breeders and traders, are either creating or consolidating stable cooperative networks, and integrating supply chains, both at a horizontal and vertical level. To rapidly respond to the acceleration and diversification of demand, they must enhance their logistics efficiency [4,55,64].

In this regard, the case of European floral supply chains is of particular relevance. As a matter of fact, the latter are changing their structure [26,77,114,115], thus with consideration of processes of: (a) shortening, with the emerging role of new facilitators, aggregating different functions, and sustaining the connection of producers with final consumers; (b) decentralization, with reference to the emergence of

diffused logistic hubs and virtualized networks at the international level [5]; and (c) specialization, with a view to the targeting of new high-value consumer profiles and emerging market niches.

Concerning these points, Rabobank (2017e) [77] describes the major changes that will affect the organization of the European floral supply chains during the next few years and classifies the chain typologies that are expected to obtain the highest share of the market. According to the study, by 2027, three different supply chains will consolidate in Europe, and cover each a 30% market share:

- i. the specialist: targeting consumers who buy flowers and plants as a gift or for special occasions. It is centered on the role of specialist shops (florists, garden centers), auctions, wholesale markets, and growers, that are focused on the enhancement of specialty products and differential quality attributes;
- ii. the big-box: specialized in serving large retailer outlets. This chain includes growers, indeed large growing companies and associations, service providers, that play a dominant role in dealing with sourcing, logistics, payments, and quality control, and large-scale retailers, as super/hypermarkets, DIY, and discount stores. The focus is on the realization of sustainable cost and operational advantages, valorizing responsive logistics and economies-of-scale;
- iii. the e-commerce: targeting consumers buying flowers and plants online. It is characterized by short flexible connections between growers, digital marketplaces, and online retailers, committed to the pursuit of higher logistics efficiency, for assuring the satisfaction of a great number of small client-specific orders. Particular consideration should be also given to the entering into the market of new online retailers such as Amazon, or retailers with subscription models, such as Bloomon, or new logistical players, such as Post.nl.

Accordingly, with a view to improving their organization, business operators increase their investments and collaboration strategies [9,10,116].

In that way, they can easily specialize their activities, and synergically plan and act for the targeting of selected markets and the realization of high-value positionings, based on higher chains traceability, product quality and sustainability, and efficient distribution [114].

To that end, a central role is even played by digitalization and ICT [4,54,80–82,84,85]. What emerges is the relevant contribution that the use of new software and devices (e.g., systems for track-and-trace, big data management, etc.) can give to the enhancement of supply chain coordination and transparency, as well as the increase in the management of logistics.

In light of the above, the evolution of private actors' organizational strategies should also be supported by the efforts of public administrations and policymakers, at both the EU and national level [6,54,65]. Increasing public actors' attention and commitment should favor the adaption and innovation of mechanisms of support for the overall supply chains and the existing market structures, favoring the growth of private investments and the collaboration in the sector [12,89,90].

To illustrate, specific consideration should be paid to the importance of an effective adaption of the new CAP policy and related national programmes. As a matter of fact, until now, the sector benefited from little or no financial assistance within this framework, being eligible to receive sustain only through a few instruments linked to national rural development programmes (RDPs) [12,90]. AREFLH (2020) [12] affirms the opportunity to include ornamental horticulture among the mandatory sectoral interventions for EU Member States (Art. 40 of the draft regulation 2018/392 [117]), considering at least the countries that possess a sizeable production of flowers and plants.

Besides the abovementioned mechanisms, new EU and national policy measures, plans, and regulations can work, within or outside the new CAP framework, to give further support to flowers and plants producers and traders, with reference to the possible: (a) unification and standardization of certification schemes across Europe; (b) harmonization of labor, transport, environmental and plant products protection legislations among the EU Member States, as well as raising of social and environmental EU market requirements; (c) registration and marketing of

flowers and plants origin labels and quality schemes; (d) definition of multi-actor action-research programs on key topics as pest management, climate change, innovative breeding, etc.; (e) promotion of education and professional training.

With a view to favoring these transformations, industry stakeholders should further increase their commitment and collaboration in order to sensitize and direct the ongoing political debate and obtain full recognition of the strategic role of the sector [12,89,90,94].

Significantly, the latter demonstrates a huge potential in contributing to the processes of social and ecological transition involving European countries, also related to the EU Green Deal implementation [86,88]. Accordingly, the emergence of high-impact concerted initiatives (e.g., the EU Action Plan Towards Zero Pollution for Air, Water and Soil, the EU Pollinators Initiatives, etc.) [93], as well as relevant pledges (e.g., 3 billion Trees Pledge) [92], give significant evidence of the growing public attention and social recognition flowers and ornamental plants are acquiring for their role in dealing with major social and environmental challenges (e.g., climate change, resources erosion, urbanization, marginalization, etc.). Moreover, the consequences of the current COVID-19 pandemic have been shown to further strengthen this trend [104].

Despite that, the political debate is still ongoing and new institutional arrangements have not yet been finalized. Noteworthy, programmes and legislations aiming at meeting the new EU goals of sustainability could determine the necessity of balancing the necessary expansion of ornamentals production, to respond to the growing demand, with the required reduction of environmental negative externalities (e.g., lowering greenhouse emissions)[12,32,37,38,79]. As a result, an effective innovation of governance systems, favoring public and private action coordination, will be fundamental for the qualification and sustainability transformation of European ornamental supply chains.

6. A New Action-Research Agenda for the European Ornamental Horticulture Industry Development and Sustainability

The planning and implementation of new effective marketing strategies and governance settings are based on the improvement of

knowledge and capabilities within the industry and also at the institutional level.

In view of the above, we consider the advancement of scientific research as a critical condition. Accordingly, we identify a new action-research agenda. We designed the latter on the basis of the review analysis results, in order to improve the current debate and support the real needs of the industry. The agenda includes the following action-research directions.

- **Product innovation and multifunctionality**
Action research should favor the specification and implementation of new high-value quality and related product attributes capable of obtaining a price premium for the remuneration of producers and supply chains. In particular, the creation of innovative products with specific reference to the local provenance of flower and plant material, underutilized and neglected landraces, traditional crops, the sustainability of production methods, the socio-ecological functionality of varieties, and arrangement techniques should be further investigated.
- **Consumer analysis**
Advances in consumer analysis should sustain the action of high-cost producers and localized supply systems in identifying consumers' attitudes and evaluating their willingness to pay in both private and institutional segments. In this regard, specific attention should be paid to the description analysis of new consumer profiles.
- **Quality-oriented marketing strategies**
Action research should sustain new valuable approaches to market segmentation and sustainable differentiation, favoring the identification and targeting of emerging niche markets, recognizing and remunerating specific quality attributes. Accordingly, future goals should evaluate the potential of creating product brands, adopting origin signs and certification schemes, enhancing products transparency, and consumer engagement.

The institutional market segment should be also considered for the valorization of high-value products and services, with specific attention to floral design, landscaping, and urban greening.

The pursuit of higher competitiveness of high-cost domestic producers and localized supply systems asks for in-depth research on the potential of direct or short distribution channels, also paying attention to the role of online trade and digitalization.

- Collaborative Governance settings

Research advances are needed to favor the innovation and reinforcement of governance settings, both public and private. On the public side, research should support the improvement and harmonization of policies, standards, and legislations, at both the EU and national level. To that end, particular consideration should be given to foster the recognition and remuneration of the strategic role of the ornamental sector in sustaining the realization of the EU Green Deal strategy goals and of the related EU and national agricultural, social and environmental policies, programmes, and regulations.

On the private side, new forms of coordination, cooperation, and collaboration, at both the horizontal and vertical level, should be studied, discussed, and validated, for the enhancement of supply chains competitiveness, guaranteeing not only a generation but also a fair distribution of benefits, towards higher social, economic, and environmental sustainability.

- Dedicated research observatories

The construction of dedicated research observatories at the national or European level, committed to improving the availability of harmonized, updated, and reliable quantitative and qualitative data, is fundamental to support the new positioning of the ornamental sector and the implementation of effective marketing strategies and multi-actor governance models and the realization of participatory action-research.

This could support the development of academic and institutional research, according to the hypotheses identified by this work, and, on the other hand, promote a more widespread ability to forecast

and strategic planning among the various actors for the realization of new competitive objectives.

7. Conclusions

Our paper seeks to innovatively contribute to the advancement of market research in ornamental horticulture and to the improvement of public and private action and coordination for the enhancement of the industry-specific potential in economic, social, and environmental terms. As a matter of fact, whereas the relevant economic debate is limited and discontinued, we retain the development of scientific research as an essential lever, providing a reconnection of the academy and research institutes with the real necessities of the sector.

Therefore, our study contributes to filling the gap in the availability of structured and theoretically sound studies and integrated data sources on ornamentals' new consumption trends, marketing strategies, and governance settings. To that end, this paper proposes an innovative data framework, presenting major changes occurring in the world and European market, and emerging big threats and opportunities, affecting the transformation of European competitive dynamics.

As a result, this framework can be fundamental support for policymakers, business operators, and industry organizations for the planning and combination of effective informed public policies and private strategies.

Furthermore, new supporting action-research directions are identified, capable of stimulating the interest of businesses, researchers, and institutions. Noteworthy, our study outlines the necessity of advancing research to sustain an increase in the efforts and collaboration of public and private stakeholders, towards a synergic combination of new differentiation advantages and wider social and environmental goals. To this respect, a prompt adaption and effective innovation of production and marketing strategies as well as governance settings are seen as unavoidable.

Specifically, on the public side, EU and national institutions should increase their attention and commitment towards the investigation and realization of collaborative governance systems, and the identification of

a common strategic orientation. In that way, an effective adaption, integration, and harmonization of EU and national policies, programmes, and legislations should be favored, and new supporting measures and regulations should be provided to the sector (e.g., financial and technical assistance, quality and safety requirements, certification and quality schemes, etc.).

In that regard, we believe particular attention should be given to the ongoing political debate, concerning the implementation of the EU Green Deal strategy, and related Biodiversity 2030 directions, fostering a new strategic role for the ornamental industry. Accordingly, favorable adaptations of EU and national agricultural, environmental, and social policies, can boost ornamentals demand and support an adequate reorganization of production and trade. To that end, policymakers, together with citizens, and consumers, should be properly informed and sensitized, to recognize ornamental industry concrete multiple values and sustainability potential.

In line with that, on the private side, businesses and supply chains need to improve their planning capacity and investment policies. They should develop more collaborative strategic and governance approaches for the realization of win–win production and marketing strategies and effective communication initiatives.

As a result, we expect the European ornamental industry can increase its competitiveness and resilience, as well as affirm its unique role in the greening of the life of present and future generations.

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Luxury strategies for agricultural products: a new sustainable governance model for the valorisation of the Tuscan flower supply chain

S. Gabellini¹, and S. Scaramuzzi²

¹ Department of Agriculture, Food, Environment and Forestry, University of Florence, Piazzale delle Cascine 18, 50144 Firenze; ² Department of Agriculture, Food, Environment and Forestry, University of Florence, Piazzale delle Cascine 18, 50144 Firenze; sara.gabellini@unifi.it

Abstract

Italian floriculture suffers from market globalization and the pressure of industrialized, standardized, low-cost productions. Tuscany experiences a lack of initiatives for the enhancement of flower traditional crops, local knowledge and production practices. The project aims at valorising a differentiated Tuscan flower supply to be positioned in a high added-value niche emerging market, the floral design one. The identified tool was the activation of a shared origin-based qualification strategy, sustainably governed by an innovation multi-stakeholder platform (IP). On a theoretical basis, a business-to-business-to-consumer (B2B2C) luxury marketing approach was adopted. In terms of methodology, a Participatory Action Research (PAR) approach was followed. The paper led to: validate the relevant theoretical framework; define and assess the niche market; validate the potential of a B2B2C origin-based qualification strategy according to luxury marketing principles; characterize the IP.

Keywords: floriculture, origin-based strategy, luxury marketing, innovation multi-stakeholder platform, sustainability.

1. Introduction

Italian floriculture is affected by market globalization and the dominance of quality, low-cost industrial productions originating from the Southern World and distributed by the Dutch market (Hübner, 2016). Small-scale, high-cost Italian growers face both slower sales, mostly driven by low prices and special occasions, and logistics inefficiencies (ISMEA, 2015).

Tuscany experiences a lack of policies and initiatives for the enhancement of flower traditional crops, local knowledge and production practices.

Following previous studies results, such high-cost local supply systems could face the growing global competition through the penetration of flower national market niches, where marketing mix levers drive to differentiation advantages for locally-grown flowers (Ronco, 2002). Local actors should increasingly cooperate in order to develop dedicated sustainable supply chains, supported by facilitators governing the strategic and operational processes (Van Rijswijk, 2015).

Flora Toscana, one of the most important Italian flower trading cooperatives, invested in a long-term cooperation, involving local producers, wholesalers, research institutes and authorities, aimed at co-designing and implementing innovative strategies for qualifying a differentiated autochthonous flower supply to be positioned in a niche emerging market, the floral design one, characterised by a low elasticity of demand to the increase of price.

The leading partner Flora Toscana engaged the University of Florence in coordinating an action-research project aimed at validating and fulfilling the local actors' initiative. In terms of methodology, the authors adopted a Participatory Action Research (PAR) approach.

The project intends to enhance the Tuscan supply system sustainability (economic, social, environmental) by making the most of its flower biodiversity. In the floral design market niche, new macro-trends are driving demand to perceive territory and sustainability as sources of value for locally-grown and preferably autochthonous flowers, thus becoming a highly attractive opportunity for Tuscan productions.

The paper aims at: assessing the new floral design market niche for the valorisation of a differentiated offer of Tuscany-grown flowers; validating the potential of a shared origin-based qualification strategy; characterizing an innovation multi-stakeholder platform as a governance model.

The authors define the theoretical framework for the strategy (Paragraph 2), describe the PAR methodology followed (Paragraph 3) and analyse the case study (Paragraph 4). Concluding remarks and future goals are highlighted in Paragraph 5.

2. The theoretical framework

The authors identified the theoretical framework for co-designing and governing the origin-based qualification strategy according to a highly innovative luxury marketing approach.

Luxury is mostly defined by existing literature through a double perspective of luxury products and luxury consumption patterns (Mattia, 2013). In luxury business-to-business (B2B) markets (i.e. trading raw materials/components for finished luxury products), under certain circumstances, a supplier can successfully adopt a business-to-business-to-consumer (B2B2C) approach for his competitive strategy design (Kapferer and Bastien, 2010)⁶⁵.

As a result, the supplier can step-by-step develop his marketing mix levers on the basis of luxury marketing principles by overtaking business clients (i.e. buying his component) and targeting final consumers. In this way, the component can acquire global recognition in the consumer marketplace and contribute to the luxury value of the final product in consumers' perception.

Accordingly, the supplier should at first develop a product luxury marketing strategy, by activating an autonomous study process of consumption patterns and preferences and working with his upstream designers to draw his component attributes (colour, shape, dimension, etc). This capacity to match final demand needs increases the component value for business clients and their willingness to buy and pay. Consequently, the supplier can enhance his sales volumes, profit margins and appropriation of added value.

At a later time, the supplier should invest in an ingredient branding strategy aimed at creating a luxury brand identity to qualify the component in consumers' perception. Thereon, he can decide to develop all the marketing mix levers right to the consumer marketplace. The brand increases both the component and finished product perceived value and justifies higher consumer prices. Therefore, it can work as a win-win strategy for the supplier and business clients by enhancing their respective reputation and profit margins (Kotler and Pfoertsch, 2010).

⁶⁵This may apply when the supplier furnishes one of the main components of the finished product traded in the B2C market; the supplier is not easy replaceable by his business clients; his component maintains its entirety and aspect right to the final consumers' hands and contributes considerably to the finished luxury product image.

In light of the foregoing, the authors evidenced that the implementation of a design management strategic process (Bargellini, 2015) represents a fundamental instrument to govern a B2B2C approach for the strategy definition. Indeed, its basis is the continuous adaptation of the marketing mix levers to the evolving context and market dynamics.

Lastly, in organizational terms, they identified innovation multi-stakeholder platforms (IPs) as the reference point for characterizing the governance model for the strategy. Indeed, IPs have a high potential in supporting strategic and operational innovations by involving local stakeholders: they can support PAR processes; facilitate the co-design and implementation of shared activities; centrally coordinate individual stakeholders' businesses (Schut *et al.*, 2017). In agriculture, such cooperative networks among local actors successfully act as spaces for learning, action and change, facilitating market analysis processes; identifying participatory and empowering mode of collaboration and governance for stakeholders and developing their capacity to co-learn, self-organize, and co-innovate, incubating new organizational forms and nurturing their skills (Kilelu *et al.*, 2011).

3. Methodology

In terms of methodology, a Participatory Action Research (PAR) was followed. PAR is gaining ground as methodological paradigm in social, environmental and economic sciences (Kindon *et al.*, 2007). In agriculture, participatory methods of inquiry play a fundamental role within sustainable development processes of local value chains and production systems, especially in rural contexts where uncertainty is high and problems are neither well defined nor agreed upon (Herr, 2007; Padilla and Ramos Filho, 2012; Pretty, 1995).

In order to validate and develop the local actors' initiative, the leading partner Flora Toscana engaged the University of Florence research team in coordinating a PAR cyclical process of research, action and reflection (Kindon *et al.*, 2007) by actively involving the partners (local producers, wholesalers, research institutes, authorities) and other key local stakeholders. Academic researchers and local actors could jointly analyse the market context and the local flower supply system; improve their knowledge and skills; and jointly plan, organize and act towards sustainable innovation by co-designing and implementing innovative solutions to capitalize the emerging market opportunity and sustainably redevelop the local floriculture system (Herr, 2007).

In light of that, the authors combined participatory field research activities with a prior detailed desk research process on official statistics and literature. They used qualitative methods to conduct the participatory research process (Patton, 2002). Accordingly, both focus groups and in-depth interviews were carried out. The authors coordinated an initial focus group in order to co-design the participatory research together with the leading partner Flora Toscana. They employed purposeful, snowball sampling to recruit interviews participants among the local flower and floral design system actors and performed key informant interviews (Figure 1).

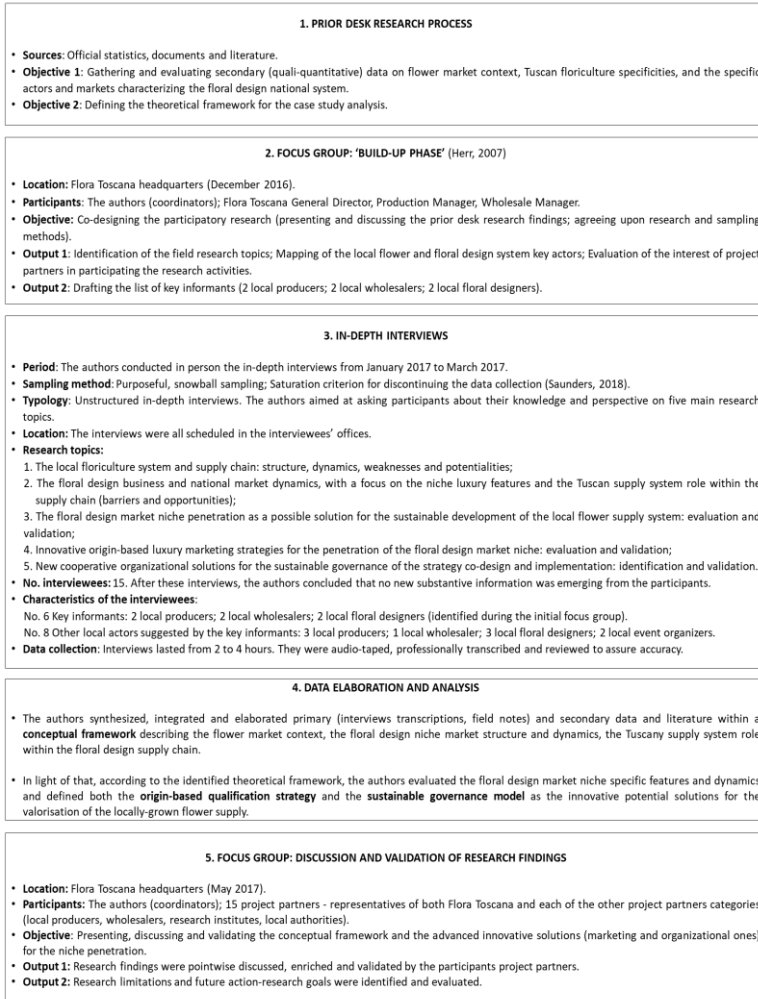


Figure 1. The Participatory Action Research followed methodology.

4. Results

4.1 The floral design niche and the Tuscan supply system

Floral design was validated as the target market for the origin-based qualification strategy aimed at valorising the Tuscan flower supply.

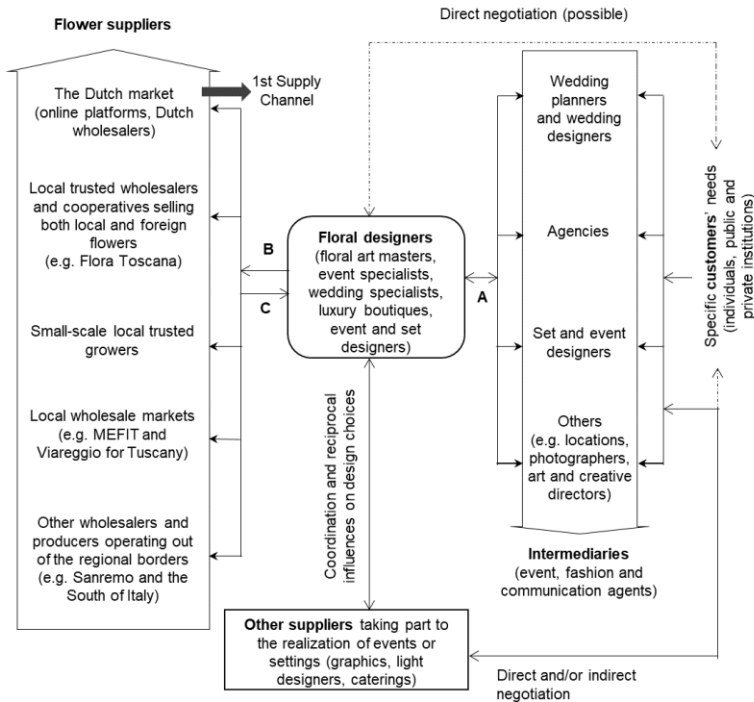
Floral design is a recent advancement in Italian floral art and flower business. Consequently, there is an evident lack of data and literature on its distinctive features, dynamics and market structure. All of this aside, Italian floral design shows a high growth potential due to its direct connection with the expanding national events, luxury and fashion markets.

As a matter of fact, interviewees identified floral designers as highly specialized professional figures dedicated to the realization of top-level floral arrangements and settings for events (fashion, weddings), visual merchandising (shops, fairs, showrooms) and luxury interior decorating (hotels, yachts, homes) and managing affluent customers and substantial budgets.

Floral designers use flowers as communication tools in order to create high-intense emotional experiences with a strong image and memorability effect. As a consequence, the growing importance of entertainment and Instagram-Worthiness (Banks, 2014) makes floral design increasingly relevant in events, fashion and business communication. Therefore, the growth and high performance of these sectors also determined a consequent increase of flower demand.

In that regard, Italian enterprises are increasingly investing in communication. ADC Group estimated 1 million euros spending for business events in 2017 (Event Report, 2015). In particular, in the well-performing national fashion sector, a growing number of artistic and creative directors consistently collaborate with floral designers to create sets for fashion shows, editorials and visual merchandising activities (Bansk, 2014). Furthermore, Milan is the first World location for fashion events, followed by Florence for Italy. Lastly, the constantly expanding destination wedding market segment – 441 million of market turnover, 8,000 celebrations and 53,000 operators - represents the core business for Italian floral designers who are more than 2,200 within the sector (CST Firenze, 2018).

The authors characterised floral design as a niche of the national flower market, according to its distinctive needs system and supply chain structure (Mattiacci, 2000) (Figure 2). The Tuscany system was analysed in depth.



- A. **Negotiation process** between customers' requests and floral designers and intermediaries opinions on their feasibility, design and budget aiming at realizing floral arrangements. Sometimes, rigid design directives can be imposed by customers/intermediaries
- B. **Floral designers needs system:** 1. product needs (high quantities; high-quality standards; specific aesthetic standards; specific product species/varieties; short timings); 2. service needs (one stop shop; customized assistance; merchandise delivery; support for off-site events and unexpected events management)
- C. **Supply** of cut flowers/foliage and services

Figure 2. The floral design market niche (based on data from Accattino, 2015; Ioricono, 2014; ISMEA, 2015).

As showed in Figure 2, floral designers play the role of gate-keepers in the supply chain, acting as key informants for flower suppliers about consumption trends and dynamics; regulating and mediating the functioning of the system and establishing a matching between flower supply – e.g. new products - and intermediate and final demand.

As related to the dynamics of the Tuscan floral design supply chain, interviewees affirmed that floral designers buy flowers from stable

networks of local and international trusted suppliers (Figure 2). Moreover, they generally favour the Dutch flower supply but, on equal terms, they would prefer locally-grown productions both for logistics and ethics reasons. Furthermore, price is not as important as the value deriving from satisfying their specific needs.

In-depth interviews evidenced Tuscan suppliers' awareness of both floral design opportunity and their need to cooperate for overcoming local weaknesses (lack of entrepreneurship and investments; no market-driven production planning; inefficiencies of production, promotion and distribution facilities; lack of central coordination) and jointly design and implement innovative solutions (marketing, productive, organizational ones) for the niche penetration.

4.2 A B2B2C origin-based qualification strategy for penetrating the floral design niche

Floral design has been characterised as a luxury niche of the flower market (Scaramuzzi and Gabellini, 2018).

As a consequence, the authors validated the opportunity for local flower suppliers to successfully adopt a luxury B2B2C strategic approach to win the competition in the floral design niche business-to-business market (i.e. trading flowers and foliage to be combined in floral arrangements) (Kapferer and Bastien, 2010).

Therefore, local suppliers can step-by-step co-design the marketing mix levers for the qualification strategy definition, on the basis of luxury marketing principles, by overtaking business clients (floral designers) and targeting final costumers. As a result, Tuscan flowers can become the main source of floral arrangements luxury in consumers' perception.

Accordingly, local suppliers should at first develop a product luxury marketing strategy by implementing a long-lasting monitoring activity on consumption patterns and trends in order to draw the flowers necessary quality attributes (species, varieties, colours, shape, dimension, standardization) through a continuative collaboration of local producers with varietal research institutes. This will enable to match the local flower supply with the final demand needs. Consequently, floral designers will be more inclined to propose Tuscan flowers to their customers and will additionally show a higher willingness to buy and pay.

At a later time, local suppliers should invest in an ingredient branding strategy aimed at creating a luxury brand identity for qualifying Tuscany-grown flowers in consumers' perception. Thereon, suppliers could also decide to develop all the marketing mix levers right to the consumer marketplace.

Finally, trendy luxury-branded Tuscany-grown flowers will increase both their desirability and floral arrangements perceived value thus justifying higher consumer prices (Kotler and Pfoertsch, 2010).

On the basis of market analyses and in-depth interviews, the authors validated the opportunity to build a luxury B2B2C qualification strategy for Tuscany-grown flowers, based on origin as differential factor, by targeting the destination wedding floral design segment.

As a matter of fact, this segment presents a high growth potential in Italy (Paragraph 4.1) and particularly in Tuscany - the first Italian wedding destination with a 32% of market share, 2,567 celebrations, 3,000 operators and more than 100 floral designers (TPT, 2018). Furthermore, it is characterised by emerging hedonistic and non-conspicuous luxury consumption patterns, driven by neo-luxury and sustainability macro-trends (Mattia, 2013), developed into new aesthetic (and ethic) floral design philosophies: the organic and fresh-from-the-field-specialty-flowers ones. Even a Slow Flowers movement, parallel to the founding principles of the Slow Food dynamics is taking ground. On this basis, Western couples seem to perceive and pay for the luxury of decorating their marriages with small quantities of high-quality, sustainable, locally-grown flowers. The symbolic goal of nature delicacy, territorial vocation and traditions is fulfilled in natural, authentic compositions, in harmony with the bio-culture of the location and territory.

The penetration of the destination wedding floral design segment through a B2B2C origin-based qualification strategy will lead local suppliers to:

- Qualify the Tuscan flower product offer by leveraging on seasonality, flower delicacy, territorial vocation and quality (instead of quantity), through the reintroduction of ancient delicate essences, traditional production processes and the creation of new trendy varieties (colour, shapes) of typical flowers;
- Create a luxury brand identity for Tuscany-grown flowers, identifying their biocultural content and aimed at educating the marketplace on Tuscan flower rural culture and bio-diversity by

means of instruments (e.g. storytelling) and channels (e.g. web and social media) coherent with the prefixed objectives and economic resources.

As a consequence, Tuscan flowers will increase their desirability and reputation. Hence, their price will become a function of the consumer's (and floral designers') higher perceived value, thus increasing sales and profits margins.

4.3 The multi-stakeholder governance model for the strategy design and implementation

During the field research, the authors validated with local actors the opportunity to build an innovation multi-stakeholder platform (IP) as a useful model for the centralized governance of the strategy described above and the related operations.

Starting up as an informal cooperative network among project partners, coordinated by Flora Toscana and supported by local authorities and the University of Florence research team, the IP will test the implementation of a design management process (Bargellini, 2015) aimed at co-governing the B2B2C strategy development and coordinating business activities along the supply chain (Schut *et al.*, 2017).

As a result, a long-lasting process of research, planning and control will be coordinated within the IP for the Tuscany-grown flowers origin-based qualification strategy definition. Local suppliers, together with research institutes and the academic research team, will co-design, step-by-step, the relevant marketing mix levers (strategic and operational ones), conforming to B2B2C principles.

As a first step, the IP will work on developing a product luxury marketing strategy to position the local offer in the target destination wedding floral design segment. The authors provided for establishing a 'creative body' (i.e. periodical roundtable) within the IP, acting as a fashion style office, aimed at centrally governing varietal research and production planning activity in a continuative process of consumer market study (Figure 3).

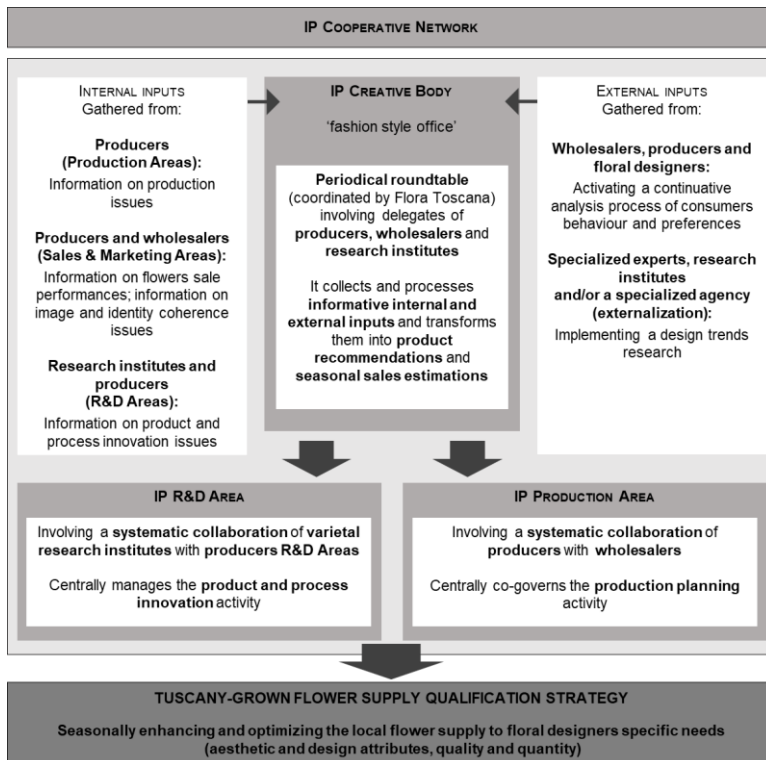


Figure 3. The governance model for the product qualification strategy.

The body will collect and transform internal and external informative inputs into product design recommendations (species, varieties, colours, shapes, dimensions) and seasonal sales estimations to be managed by an R&D area, involving varietal research institutes with producers, and a production area, involving producers and wholesalers (Figure 3).

These two areas will co-govern the production planning activity, on a seasonal basis, aiming at: matching local production capacity (land area, facilities, territorial vocation) and flowers biological cycles with consumption trends and timings in destination wedding segment; enhancing product (locality, varietal research activity) and process (tradition, cost-efficiency) sustainability and innovation.

At a later stage, the IP will work on the realization of a luxury branding strategy for Tuscany-grown flowers, by involving Flora Toscana, the producers and wholesalers, in coordination with local authorities and other floral design market operators. Consequently, the IP will coordinate the co-design and implementation of the other marketing mix levers aiming at creating shared and dedicated: promotion policies, through jointly investing in web marketing, storytelling, events, collaborations, and wedding tourism promotion; distribution channels, by sharing and improving facilities, services and logistics; price strategies, according to luxury parameters.

This will result in a high added-value positioning for Tuscany-grown flowers in the floral design niche market segment, thus enhancing reputation, sales volumes, and profit margins and activating a virtuous cycle of collaboration towards the sustainable valorisation of the local flower supply chain.

5. Conclusions

The paper validated the potential of a shared origin-based luxury qualification strategy and a dedicated sustainable reorganization of the Tuscan flower supply system for penetrating a high added-value niche of the national flower market thus escaping global competition.

In particular, the authors characterised the emerging floral design niche market and evaluated the Tuscan supply system role within the supply chain. They innovatively validated the opportunity to adopt a B2B2C luxury marketing approach and to use origin and sustainability as differential factors for penetrating the niche by positioning a differentiated offer of high added-value Tuscany-grown flowers in the destination wedding floral design segment. Lastly, they characterised an innovation multi-stakeholder platform as a sustainable governance model for the strategy and operations, on the basis of design management processes dispositions.

The project is still ongoing, expanding both in terms of participants and PAR activities. During the final focus group, the main limitations of the research analysis carried out were discussed. The results evidenced a lack and fragmentation of statistical information on the floriculture sector, a quite total absence of data and literature on Italian floral design business and market structure and a research gap on the Tuscan floriculture system specificities and biocultural heritage.

In terms of future action-research goals, the necessity and intention for a follow-up phase in participatory research activities (quali-quantitative methods) were validated in order to co-design a strategic plan for the implementation of the innovative solutions proposed.

As a result, the re-organization and strategic re-orientation of the local flower supply system is expected to increase its sustainability and, in the long run, redevelop Tuscan floriculture by making the most of its centennial biocultural heritage of flowers, landscapes, know-how and rural traditions.

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III – CONCLUSIONS

This thesis innovatively contributes to the advancement of economic literature and institutional debate, sustaining the validation and implementation of new territorial approaches to inclusive and sustainable agricultural and rural development.

As a matter of fact, during last years, the evolution of the social and biophysical contexts, at the world and EU level, drove the emergence of new challenges and opportunities for agri-food systems and rural territories, leading to a profound change in the scope of agricultural activities and development approaches. In that regard, both researchers and institutions focalized their attention on the understanding of a new territorial perspective, considering agricultural and food systems as integral and multi-functional components of wider territorial environments, and sustaining multi-actoral processes of institutional and productive transformation, combining economic goals, with wider social and environmental outcomes.

Despite the importance of this topic, relevant weaknesses can be identified on both the sides of economic research and stakeholders' action and coordination. Accordingly, this thesis is intended to fill these gaps.

Specifically, on the one side, a better understanding is provided of the key factors, actors, and dynamics, affecting the identification and enhancement of valuable systems of local specific resources, and of the produced economic, social, and environmental effects, impacting agricultural sustainability and rural cohesions. On the other side, possible governance settings and management mechanisms are proposed and discussed, to work as valuable solutions for improving the commitment and collaborative efforts of all public and private stakeholders (e.g., policy makers, public administrations, supply chain operators, local communities, etc.)

To that end, the Ph.D. Research process involved the sampling and analysis of different experiences and territorial contexts, as well as diverse resources systems and productive and institutional frameworks, concerned with their protection and valorization. Accordingly, five qualitative studies were realized and published. They adopt the PAR methodology, and an integrative grey literature review. All of the realized publications give relevant contributions to the thesis specific aim and objectives.

In Publications 1 and 3, new reviewed integrated definitions and innovative conceptual models - theoretically sound and adaptable to different geographical contexts – are designed and applied. These work as effective theoretical tools to enhance the characterization and analysis

of key processes of local resources quality virtuous valorization, underlying the development of inclusive and sustainable agri-food systems and cohesive rural territories.

Secondly, all of the Publications (1-5) provide relevant insights for the characterization of valuable systems of local resources. Their distinctive economic, social, and environmental qualities are analyzed, determining their potential as rural territorial assets. Significantly, specific attention is paid to the outstanding cases of agrobiodiversity and biocultural heritage. In that regard, the holistic SES analytical approach is adopted. It supports the systematization and description of local specific resources, and the classification of the drivers, human action dynamics, and generated benefits, underlying the realization of public-private initiatives for their valorization, involving different agricultural sectors and territorial strategies.

Noteworthy, all of the Publications (1-5) pose the attention on exploring the respective roles of public and private action in sustaining rural territorial development. Therefore, new directions are identified, fostering the implementation of supporting governance approaches and management solutions. Significantly, Publications 1, 2, and 3 highlight the validity of polycentric governance settings and hybrid management mechanisms. The latter are capable to guarantee a balanced satisfaction of the interests at stake in the recovery, conservation and sustainable use of local territorial assets, even considering the case of common (agro)biodiversity and cultural resources. Also, all the Publications highlight the necessity to sustain collective action and multi-actoral collaboration as enabling factors of development.

In light of the above, Publications 2,3,4, and 5 evidence how the adaption or creation of specific policies, integrated, and harmonized programmes and legislation should support the realization of bottom-up multi-stakeholder experiences for the identification, product qualification, marketing, and territorial valorization of valuable local resources.

Lastly, the critical issues of human development and territorial actors' empowerment are considered, affecting the capacity of public and private stakeholders to take the step and improve their coordination. In Publication 1, the potential of innovative capacity-building approaches is discussed and validated, considering their possible effects on the expansion of key human resources capabilities and the strengthening of localized social capital. Accordingly, particular attention is given to the necessity of adapting educational profiles and creating co-learning

networks, in order to fill the gaps of specific knowledge and capacities, detectable in different territorial contexts. As a result, new professional figures can be trained and supported, for empowering and accompanying territorial actors towards the dynamization of local resources throughout processes of rural territorial development.

According to the outcomes presented above, this thesis highlights relevant future action-research directions.

On the one side, public and private stakeholders, operating at different institutional levels, should enhance their coordination capacity, and strengthen their commitment to the development of resilient and multifunctional agri-food systems and cohesive rural areas, valorizing local specific human, natural, and cultural diversity. Accordingly, the creation or adaption of specific public tools and collective mechanisms should be considered, sustaining the qualification, protection, and fair remuneration of high-value multifunctional products and supply chains, and territorial valorization paths.

On the other side, the necessary evolution of policies and strategies should be directed and supported by the advancement of economic research. Indeed, relevant gaps are highlighted in the field of agricultural economics for rural development. The latter require an improvement of the theoretical approaches and conceptual models, intended to boost a synergic combination of scientific and practical knowledge, and foster the translation of research findings into effective action solutions.

To that end, building on the outcomes of this work, future research goals could be identified. Further studies should aim to the extension and consolidation of outlined literature and data frameworks, the enhancement of the validity and applicability of identified models and analytical approaches, and the development and implementation of proposed governance and management solutions. In that regard, the scope of research should be widened in order to include other countries, territories, and different systems of resources.

For these purposes, the adoption of innovative mixed methods is considered as a valuable option, combining the specific advantages of both qualitative and quantitative research. In particular, qualitative case study approaches and PAR methodologies should be integrated and enhanced with the adoption of innovative econometrics models and statistics.

In that way, different contexts and development experiences could be participatively explored. At the same time, quantitative analyses could deepen the understanding of the relevant drivers, assets, action dynamics,

and effects, also considering the possibility to measure their specific impact in terms of inclusiveness and sustainability. As a result, interested researchers, businesses, and institutions could be provided with relevant insights, feeding the debate and fostering action.

To conclude, what is expected is that the corroboration of a new territorial perspective can sustain the affirmation of innovative paradigms of development: reconnecting agriculture and rural systems with evolving needs of dynamic markets, and enhancing their contribution to the emerging necessities of people and the planet.