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THE 12th EUROPEAN CONFERENCE ON PRECISION AGRICULTURE

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BOOK OF ABSTRACTS OF ALL THE POSTERS

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Foreword

Prof. Bruno Tisseyre, Conference Chair

May 25, Montpellier SupAgro, Montpellier, France

Dear Reader,

In 2001, the city of Montpellier hosted the 3rd European Conference on Precision Agriculture (ECPA). Now, 18 years later, we are very pleased to welcome the Precision Agriculture scientific community back to Montpellier for 12ECPA.

We sincerely hope this 12th European Conference on Precision Agriculture will result in a profitable meeting for everyone and will provide some solutions to the challenges that modern agriculture is facing.

We are grateful to Montpellier SupAgro, Irstea and the International Society of Precision Agriculture (ISPA) for supporting us in the organisation of this event. We are grateful to all the members of the Poster Scientific Committee for their invaluable contribution in assuring the scientific quality of the Posters presented at this conference.

We appreciate the financial contribution of all the sponsors of 12ECPA, which includes private companies as well as public institutions and consortia. We would also like to express our gratitude to all the authors and attendees. The conference is nothing without your support and engagement. We will have more than 120 oral communications (compiled in a Conference Proceedings) and nearly 100 posters that the extended abstracts are presented in this book. This is a strong indication of the trust placed in this conference as a source of knowledge related to Precision Agriculture.

Finally, as the Chair, I am indebted to the support and hard work of the conference Organising Committee over the past 2 years in bidding for and delivering this conference. It is simply not possible to do this without a fantastic team behind the scenes. The Organising Committee is composed of academics and engineers from a joint team of Montpellier SupAgro (Institute for Higher Education in Agriculture) and Irstea (National Research Institute of Science and Technology for the Environment and Agriculture); The UMR ITAP team. We are all both honoured and delighted to have worked for you and to have helped advance methods and techniques in Precision Agriculture.

Bon congrès à tous !

Bruno

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The mission of the Scientific Committee has been to guarantee the academic quality of the posters and their extended abstracts of the 12th European Conference on Precision Agriculture by reviewing and assessing each of the proposal received (more than 150 abstracts were received). The committee was chaired by Dr. J. A. Taylor, in his capacity as the editor of the 12th ECPA book of poster abstracts edited in this electronic book. The Scientific Committee was made up of renowned researchers involved in the organising committee. Abstracts of posters have followed a review process in order to guarantee the academic quality of 12th ECPA.
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MULTI-ACTOR, MULTI-CRITERIA ANALYSIS TO ADOPT SUSTAINABLE PRECISION AGRICULTURE

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Introduction

Fostering innovation in agriculture is a catalyst needed in the direction of digitizing agriculture and make it more sustainable. In the last years, several studies and European think thank pushed to put farmers at the centre of the innovation process (Di Mambro, 2017, Eip-Agri, 2019), contributing also to the dignity of this figure starting the food process and providing it for people. The introduction of innovation in farming is a complex process made by different steps in which taking decision is needed. To bring innovation and thus precision agriculture in the farming system means also to approach the ecosystem differently from the past (Lombardo et al., 2018). In this regard, MAMCA (Multi Actor Multi Criteria Analysis) software (Macharis & Baudry, 2018) is a tool to help with decision processes in multi-actor and multi-criteria situations.

Method

The MAMCA software was applied to answer the following question in three different levels of acquired technology: Is Precision Agriculture a real opportunity? For each level, there are several actors involved in an Italian Sustainable Precision Agriculture (SPA) System as farmers, providers, innovation brokers, industry, local community, research, public bodies. There are also several criteria for each actor, mainly divided in environmental, social, economic and operative criteria.

Levels are about the technology adopted in the farming system. The first level is about the introduction of auto-steering in farming, the second one considered the introduction of Variable Rate Technology (VRT) spreaders and seeders based on yield data and the third one is on the introduction of Decision Support System (DSS) in farming.

MAMCA is useful for taking decisions and considering the sustainability and the weight of each actor at the different levels. In this case, we tried to apply it to a poor system, represented as marginal agricultural lands, as a methodology to help actors in the decision process. After the problem and the alternatives have been defined, and the stakeholder analysis has been made, a definition of criteria and relative weights to build a criteria tree is needed. In MAMCA Analysis, the aim and goals of the stakeholder should be considered as criteria and weights and not, as is often done, as effects or impacts. In this case, the weight of each actor was considered equal as a pragmatic approach, in order to make it possible to respect each point of view on an equal basis. Afterwards, a set of indicators are built for each actor and a pairwise comparison of the alternatives respecting each specific criterion can be made. (Baudry et al, 2018)

Results

Results show that the MAMCA method could help to order (Macharis et al., 2012) the likely adoption of SPA from the actor point of view in marginal lands, highlighting contradictions between actors or point of contact between them. This allows to better visualize different views and to address the consequent solution that could be found also for policy makers.

Conclusions

From Figure 1 below, it is clear that different levels of acquired technologies mean different needs and different awareness of the ecosystem surrounding all the actors. It is important to take into account that new technologies acquisition is not only a cultural problem but depends

also on economic availability, only partially solved thought PAC funding. The MAMCA method could help actors in understanding and supporting decisions and make the best choice.

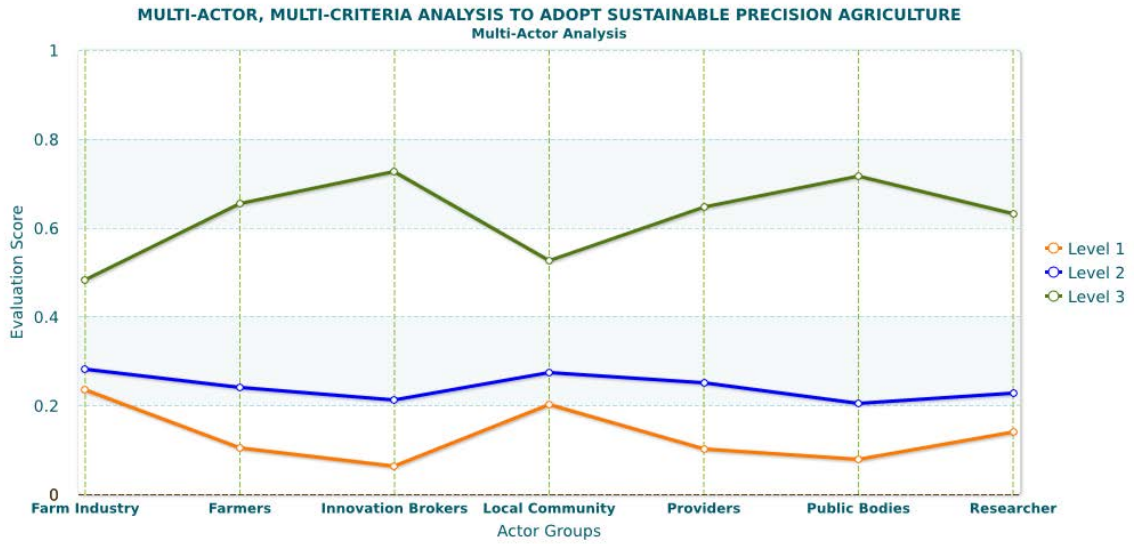

Figure 12: Multi-Actor Multi-Criteria Analysis chart for adoption of a Sustainable Precision Agriculture system

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