



UNIVERSITÀ
DEGLI STUDI
FIRENZE

FLORE

Repository istituzionale dell'Università degli Studi di Firenze

Forest Pathogen Invasion: Pathways, Surveillance and Early Detection

Questa è la Versione finale referata (Post print/Accepted manuscript) della seguente pubblicazione:

Original Citation:

Forest Pathogen Invasion: Pathways, Surveillance and Early Detection / Santini, Alberto; Ghelardini, Luisa; Migliorini, Duccio; Pepori, Alessia Lucia; Luchi, Nicola. - In: PHYTOPATHOLOGIA MEDITERRANEA. - ISSN 1593-2095. - ELETTRONICO. - 56:(2017), pp. 280-280.

Availability:

This version is available at: 2158/1097740 since: 2017-10-10T11:55:12Z

Terms of use:

Open Access

La pubblicazione è resa disponibile sotto le norme e i termini della licenza di deposito, secondo quanto stabilito dalla Policy per l'accesso aperto dell'Università degli Studi di Firenze (<https://www.sba.unifi.it/upload/policy-oa-2016-1.pdf>)

Publisher copyright claim:

(Article begins on next page)

ABSTRACTS

Abstracts of invited talks, oral and poster presentations given at the 15th Congress of the Mediterranean Phytopathological Union, June 20–23, 2017, in Córdoba, Spain

The 15th Congress of the Mediterranean Phytopathological Union entitled “Plant health sustaining Mediterranean Ecosystems”, was held in Córdoba, Spain on June 20–23, 2017. The mission of the meeting was to promote dissemination of the latest scientific advances and encourage dialogue, interaction and collaboration between researchers from different disciplines interested in all aspects of Phytopathology. More than 200 participants from 26 countries attended the congress, making this an outstanding scientific event. The presentations covered a broad range of aspects related to plant diseases including Genome Analysis, Invasive Emerging Pathogens, Integrated Disease Management, Food Safety, New Tools In Diagnostics and Management, Molecular Pathogen-Host Interactions, Biocontrol, Epidemiology and Modelling, and Microbiomes and their Role in Plant Health. Abstracts of the invited talks, and the oral and poster presentations are given in this issue.

Key note lectures

Olive quick decline and *Xylella fastidiosa* in Southern Italy: the state of the art. D. BOSCIA, M. SAPONARI. CNR – Institute for Sustainable Plant Protection, University of Bari, Via Amendola 122/D, 70126, Bari, Italy. E-mail: donato.boscia@ipsp.cnr.it

The identification in 2013 of an outbreak of *Xylella fastidiosa* (Xf) in olive groves in the Salento peninsula (southern Italy) resulted in a plant health emergency of unprecedented proportions for the EU. Infected olive trees show extensive canopy desiccation and severe quick decline symptoms. In the outbreak area, the bacterium was found to be efficiently spread by the meadow spittlebug *Philaenus spumarius*, abundant on the olive canopies during the dry season. The initial demarcated foci rapidly expanded over the following 4 years, establishing a new demarcation line 80 km from the first reported outbreak; while few species were found infected in 2013 the currently known susceptible hosts reached approx. 30 different plant species. Phytosanitary measures to combat the spread and mitigate the im-

part of the bacterial infections, included restrictions for new plantations and movement of propagating materials, and removal of infected trees. The severe damage and the imposed phytosanitary restrictions caused severe economic and social impacts in the local community, raising concerns against the containment measures and failure to implement timely, effective and coordinated preventive measures. Due to the novelty of the *Xylella*-associated disease in olives and the new outbreak in the EU, the EU Commission mobilized dedicated resources to build research activity to address research gaps for this emerging pathogen. Between 2015 and 2016, two projects in the H2020 framework have been funded. These are: “Pest Organisms Threatening Europe” (POnTE) and “*Xylella fastidiosa* Active Containment Through a multidisciplinary-Oriented Research Strategy” (XF-ACTORS), the latter exclusively targeting Xf. From the increased research activity developed in the past 3 years, new knowledge is providing data on the genetic and biological properties of the Xf population, the host range, vector identification and biology, and identification of olive cultivars with promising resistance traits.

ated genes are more likely to be recombinogenic and under selection, and that there is a strong signal for inter-pathogroup recombination. This inter-pathogroup recombination of niche-associated genes is likely to be critical for maintaining genetic cohesion, and thereby delimiting the species complex.

Will climate change affect IPM in the Mediterranean environment? I. PERTOT^{1,2}, E. ECCEL², A. ALIKADIC³, C. DOLCI³, C. ZARBO³, A. CAFFARRA², R. DE FILIPPI³, C. FURLANELLO³. ¹Center Agriculture Food Environment, University of Trento via E. Mach 1, 38010 TN, Italy. ²Predictive Models for Biomedicine and Environment, Fondazione Bruno Kessler, via Sommarive 18, 38123 Povo, Trento, Italy. ³Research and innovation Centre, Fondazione Edmund Mach, via E. Mach 1, S. Michele all'Adige, 38010 Tn, Italy. E-mail: ilaria.pertot@fmach.it

In the nearfuture, climate change is expected to have significant influences on the agricultural sector, and particularly on plant protection, due to temperature increase and variation in precipitation. Temperature, rain and relative humidity are the main environmental factors influencing disease epidemiology. Several studies have assessed, global and regional scales, the effects of temperature increase in the last century, and predicted future trends of climate change. Although there is uncertainty in climate-modeling, especially at the regional scale, there is general consensus that global average surface temperature will increase and precipitation will vary. However, translation of climate prediction into accurate quantification of the impacts on biological systems, particularly for pathogens and related diseases, has not been attained. This is for several reasons including: i) incomplete understanding of short and long term effects of climate on the complex interactions among plants, pathogens and their biocontrol agents, and the lack of accurate models that capture this complexity; ii) the natural seasonal variability of weather; iii) inability to accurately predict temperature and relative humidity changes at local and microenvironment levels; and iv) unpredictable or unrecognized factors that may affect disease epidemiology (e.g. variation in pathogen virulence). The uncertainty of predictions and the impacts of climate change on the efficient implementation of IPM in the Mediterranean region will be discussed.

Forest pathogen invasion: pathways, surveillance and early detection. A. SANTINI¹, L. GHELARDINI^{1,2}, D. MIGLIORINI^{1,3}, A.L. PEPORI¹, N. LUCHI¹.

¹Institute for Sustainable Plant Protection, CNR, Via Madonna del Piano, 10 50019 Sesto Fiorentino, Italy.

²Dipartimento di Scienze delle Produzioni Agroalimentari e dell'Ambiente DiSPAA, Università di Firenze, Piazzale delle Cascine 28, 50144 Firenze, Italy.

³ Department of Microbiology and Plant Pathology, Forestry and Agricultural Biotechnology Institute (FABI), University of Pretoria, Pretoria, South Africa. E-mail: alberto.santini@cnr.it

Human-driven species expansion has greatly increased during the last century, as a consequence of the unprecedented growth of international travel and trade, resulting in disturbance to ecosystems and severe socio-economic impacts. In plants, emerging infectious diseases (EIDs) are tightly linked to biological invasions. More than half of the world plant EIDs in the last few decades have resulted from the arrival of previously unrecognized pathogens. Many studies confirm that the main pathway of entrance of pathogens was the trade of living plants, and the trade of ornamental woody plants plays a role of primary concern. These observations should focus attention on the risk inherent in the trade of ornamental plants for planting in soil, which also constitutes the main pathway of introduction of pests. This pathway is particularly insidious because invasive harmful organisms are not easily detectable in soil, and they are, in addition, almost unknown and neglected in their native ranges. Several unexpected introduction pathways are becoming of increasing importance. Eradication is likely to be impossible, so increasing surveillance and prevention by early detection of new introductions are among the few reliable prevention measures, although detection is difficult in the face of global mobility and climate change.

Emerging pathogens as a consequence of globalization and climate change. M.L. GULLINO^{1,2}, G. GILARDI¹, A. GARIBALDI¹.

¹Centre of Competence for Agro-Environmental Innovation (AGROINNOVA) and

²Department of Agricultural, Forest and Food Sciences (DISAFA), University of Torino, Largo Paolo Braccini 2, 10095 Grugliasco, Torino, Italy. E-mail: marialodovica.gullino@unito.it