Second European conference on Xylella fastidiosa

How research can support solutions

FINAL CONCLUSIONS

Claude Bragard
Chair of Scientific Committee - 2nd European Conference on Xylella fastidiosa
Chair of EFSA Plant Health Panel
PREVIOUS CONFERENCES

12-13 November 2015 in Brussels (Belgium): EFSA workshop on Xylella fastidiosa: knowledge gaps and research priorities for the EU (100 participants)

13-15 November 2017 in Palma de Mallorca (Spain): First European conference on Xylella fastidiosa: finding answers to a global problem (260 participants)
Ajaccio 2019 – Thank you Corsica ;-)

Don’t Forget the FIELD TRIP tomorrow!
350 participants
41 nationality
55 presentations
115 posters
SECOND EUROPEAN CONFERENCE ON XYLELLA FASTIDIOSA

THANKS to the co-organizers:
THANKS to

The **Scientific committee** : Astrid Cruaud, Alice Delbianco, Michela Guzzo, Marie-Agnes Jacques, Laetitia Hugot, Françoise Poliakoff, Maria Saponari, Donato Boscia, Claude Bragard, Baldissera Giovani, Ralf Koebnik, Maroun El Moujabber, Giuseppe Stancanelli, Antonio Vicente

Nine **web meetings**, reviewing process, program design

THANKS to **EFSA CORSER** unit for support – Vanessa Descy
THANKS to **EFSA communication** – Maria Tejero
François Casabianca, Institut National de la Recherche Agronomique (INRA) (FR)
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Emanuela Tacci, Animal and Plant Health Unit (ALPHA), European Food Safety Authority (EFSA)
Marella Tassini, Corporate Services (CORSER), European Food Safety Authority (EFSA)
Thanks to all participants, for the quality of the presentations and posters

Feedback about the conference – ways for improving?
SESSION RAPPORTEURS

- Alice Delbianco,
- Ewelina Czwicznzek
- Baldissera Giovani
- Olaf Mosbach-Schulz
- Marco Pautasso
- Maria Saponari
- Makriona Diakaki
- Michela Guzzo

Stakeholders support – Sybren Vos, Andrea Maiorano, Sara Tramontini

Twitter support – Sara Tramontini and EFSA staff
SESSION CHAIRS

- Maria Saponari, Institute for Sustainable Plant Protection, CNR, Italy
- Joao Lopes, University of Sao Paulo, Brazil
- Françoise Petter, European and Mediterranean Plant Protection Organization (EPPO), France
- Rodrigo Krugner, Agricultural Research Service, USDA, USA
- Michael Maixner, Julius Kühn Institute, Germany
- Blanca Landa, Higher Council for Scientific Research (CSIC), Spain
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- Marie-Agnès Jacques, Institut National de la Recherche agronomique (INRA), France
- Rodrigo Almeida, University of California Berkeley (USA)
- Giuseppe Stancanelli, European Food Safety Authority
BIOLOGY AND PATHOGENICITY

Impressive progress in **comparative genomics**
- More than 350 draft genomes available, more to come;
  - efforts in dating some of the EU introductions;
  - the majority of the EU outbreaks rely on independent introductions;
- **clarify the complex taxonomy** - differentiate within the same subspecies and ST different lineages;
- importance of **recombination** – debate about its role?
- Significant progress in the understanding of **resistance** in Olive, pointing at **conserved traits** (grapevine and citrus)

Still to be done
- more in depth studies to understand the **host range and pathogenicity** of a given strain;
- description of multiple lineage within the same ST raises concerns about using the ST as tool to categorize susceptible host plants discovered in the different outbreaks, is VNTR the alternative?;
- **difference between each outbreak/infected areas** fostering the need for targeted research program and measures.
VECTOR

- Considerable gain in **knowledge on vector biology** in connection with the **role of P. spumarius** and other xylem-feeders in the epidemiology of Xf in Europe.
- Emerging ideas on **how to interfere with the vector** and Xylella transmission
- Methodological progress – approach for unravelling the **insect-trophic network** – **DNA barcoding** for insect identification
- Focus on dispersal - data from flying mills and **release-recapture experiments** – range of spread
- Information is required for the setup and improvement of **surveillance and risk management strategies**, but also for **IPM in containment areas**.
- However, **many data are still preliminary or restricted to specific regions or species** and need to be confirmed by further studies.
DETECTION

- Research not only on **molecular tests** for lab application but also **on site techniques** to be used by **growers** (tissue prints, portable PCR, LFD...)

- New real-time PCR developed for subspecies and **direct identification in plant material** (quicker and cheaper)

- Advances in both plant and vector testing

- Improvement of sampling regime (**pooling of samples**) for testing of symptomatic material

Still a need for research support to further optimise **sampling from the field to the lab**
ECOLOGY, EPIDEMIOLOGY AND MODELLING

- Significant amount of knowledge on biology and ecology of *Xylella fastidiosa* and associated vectors
- Development of predictive models for large scale and regional pathogen dispersal and distribution

- “Wish list” to improve the accuracy/precision of the models and research
  - The *transmission rate* between vector and hosts.
  - Sample insects in combination to positive finding.
  - Data on long-range spread as traffic, hitchhiking on lorries.
  - More information on *sub-species*.
  - Monitoring data are not gathered for model development, but for checking the containment – *monitoring for modelling improvement*
  - Need for more epidemiological field studies with holistic approach (pathogen, disease, cultivar, crop, vectors, agronomic practices)
RISK & IMPACT ASSESSMENT

- Use of satellite data to infer the extent of the impact in Puglia - 2017 – From ground zero - 538 km² – 6.5 million olive trees
- Risk assessment – interest of modelling approaches to infer the EU territory at risk, with the need to take into account the subspecies
- Impact estimates at the billion scale (5.5 billion/year – 300,000 jobs at risk - 70 agricultural products; Impact unacceptable ... Importance of mobilising host resistance
- Socio-patho-system – Corsica and Puglia – interest to broaden the view in terms of understanding and improving communication with stakeholders
- Need for transparency and improved communication
- Cost of surveillance and prevention much less than impact if the disease spreads
SURVEILLANCE

- **Progress in teledetection** – homogeneous cultivated areas
- Importance of the **asymptomatic period**
- **Interest in vector testing?**
- **Pest surveillance cards – EFSA toolkit**
- Improved link between research and surveillance schemes

- Possibilities of **integration of the different approaches** (teledetection, modelling approaches, on-site monitoring) ?
- **Cost of control** – how to incorporate this into the surveillance strategies – sustainable surveillance ?
  **Surveillance cheaper than other measures ...**
SUSTAINABLE CONTROL MEASURES

- Control through an **integrated approach** dealing with the pathosystem in depth understanding;
- **Voluntary System Preventing Pest in Nurseries**
- **N-acetyl cysteine**
- Potential **use of DSF or analogs**
- Biological control – Plant phytobiome approaches - *Paraburkholderia phytofirmans*
- **Plant resistance** – olive cultivars screened-Leccino – up to 100 cultivars under test but **need for field testing**
- Strategies for **insect vector population control**
- The development of efficient measures **takes time**, need for prioritisation of resources for long term work (breeding, field trials for tree hosts etc)
ACHIEVEMENTS AND NEW RESEARCH TARGETS

- **COPA-GOGeca**
  - Need for combined and integrated actions – involvement of farmers, **target end-users in a more direct way, bottom-up approach**
  - Richness and diversity of scientific expertise – clarity in communication of science, hope is there (possibility of resistance);

- **European Nursery Stock Association**
  - Emotions and feelings, **faith and hope**, promises...(Latency – time bomb), attention to environment, **help making production decisions**...demands for the search for alternative sustainable control measures (cold or heat treatment ?)

- **European Commission – DG Sante**
  - Research priorities – Major contribution, continue ongoing work – **emerging topics on prevention, early detection and control** – achievements so far...
Active participation to the conference demonstrates the high intensity of the research activity in EU

Networking in science is working, to be kept and intensified – involvement of young researchers and communication with stakeholders; Connexion with social sciences...

Impressive scientific progress, yet the road is still long – key issues-gaps have been spotted and need to be addressed (host range and pathogenicity, spread capacity, differences according to the pathosystems, surveillance and detection issues, sustainable control measures);

High expectations related to the impact: Dramatic data delivered on impact on olive orchards from the Apulian epidemics

Is our approach (research-based) efficient enough? Need for both in depth research on the biology of Xf and vectors AND long term field- and –applied science? Balanced approach...

Stay optimistic but lot of work ahead!

KEY MESSAGES