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

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SECOND EUROPEAN CONFERENCE ON *XYLELLA FASTIDIOSA*

- THANKS to the co-organizers:

SCIENTIFIC COMMITTEE

- 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

ORGANIZING COMMITTEE

- François Casabianca, Institut National de la Recherche Agronomique (INRA) (FR)
- Alice Delbianco, Animal and Plant Health Unit (ALPHA), European Food Safety Authority (EFSA)
- Vanessa Descy, Corporate Services (CORSER), European Food Safety Authority (EFSA)
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- 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 Czwienczek
- Baldissera Giovani
- Olaf Mosbach-Schulz
- Marco Pautasso
- Maria Saponari
- Makrina 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
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- Françoise Petter, European and Mediterranean Plant Protection Organization (EPPO), France
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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 extend 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 disesae 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 developement of efficient measures takes time, need for prioritisation of resources for long term work (breeding, field trials for tree hosts etc)***


GALLIPOLI 8
Mancaversa 6
MATINO 8
LECCE 45
LIDO PIZZO
Marina di Gallipoli

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**, promisses…(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…**

KEY MESSAGES

- 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 adressed (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!

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