

## Modelling in Plant Health

### **How can models support risk assessment of plant pests and decision making?**

- Start of the workshop: Monday, 12<sup>th</sup> December 2016, 14:00  
(Registration from 13:00)
- End of the workshop: Wednesday, 14<sup>th</sup> December 2016, 13:00
- Venue: EFSA headquarters  
Via Carlo Magno 1/A, IT-43126 Parma, Italy
- Organising committee: Francesco Amoretti, Virag Kertesz, Ioannis Koufakis, Olaf Mosbach-Schultz, Françoise Petter, Gritta Schrader, Giuseppe Stancanelli, Muriel Suffert
- Contacts: [conferences@efsa.europa.eu](mailto:conferences@efsa.europa.eu)

## Final Programme

Monday, 12<sup>th</sup> December 2016

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**1<sup>st</sup> session: Status of modelling in risk assessment and across the world**

**14:00-** The talks in this session give an overview on the status of modelling approaches used in Plant Health, on different continents, and in other fields of risk analysis, as well as highlight the needs of risk managers.  
**15:55**

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Chair

Francoise Petter (EPPO)

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Time:	Presenter:	Title:
14:00- 14:15	Hans Verhagen (EFSA)	Introduction to the workshop
14:15- 14:35	Mike Jeger (EFSA, PLH Panel)	Models used in quantitative risk assessment in plant health
14:35- 14:55	Manuel Colunga (USDA APHIS, USA)	Modelling potential establishment hotspots of exotic pests of high significance "flying under the radar" in USA
14:55- 15:15	Darren Kriticos (CSIRO, AU)	Plant health modelling in Australasia
15:15- 15:35	Hans Thulke (UFZ; EFSA, AHAW Panel)	From sessile to free-moving hosts: modelling in support of animal health risk assessment
15:35- 15:55	Martin Ward (EPPO)	Challenges faced by risk managers - can models help?
<b>15:55- 16:30</b>	<b>Coffee break</b>	

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## Monday, 12<sup>th</sup> December 2016

### **2<sup>nd</sup> session: Quantitative pathway models in practise**

**16:30 - 18:30** - The talks in this session present quantitative pathway models supporting risk assessment and decision making in plant health

Chair Gianni Gilioli (EFSA, PLH Panel)	Discussant RA: Manuel Colunga (USDA APHIS, USA)	Discussant RM: Pasquale di Rubbo (EC, DG SANTE)
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Time:	Presenter:	Title:
16:30-16:45	Gritta Schrader (JKI, DE)	The EFSA quantitative approach to pest risk assessment - Methodological aspects and case studies
16:45-17:00	John Mumford (Imperial College, UK)	A model for quantitative pathway analysis of plant pest introduction to the EU territory by trade
17:00-17:15	Dirk Jan van der Gaag (NVWA, NL)	Modelling the probability of transfer of a pest from an imported commodity
17:15-17:30	Christelle Robinet (INRA, FR)	A pathway model for wood pests to support risk assessment and decision making on trade regulation
17:30-17:45	Nick Berkvens (ILVO, BE)	HARMVECT-a simulation-based tool for pathway risk maps of invasive arthropods in Belgium
17:45-17:50	Discussion from risk assessment / science view	
17:50-17:55	Discussion from risk management / stakeholder view	
17:55-18:30	Open discussion of the session	

**18:30-19:30** - **Poster session**

Tuesday, 13<sup>th</sup> December 2016

**3<sup>rd</sup> session: Approaches to model entry and spread**

**8:30 - 10:30** The talks in this session present how entry and spread of pests can be modelled, and show how new aspects, e.g. economics and vector behaviour can be incorporated in modelling for entry and spread and thus improve risk assessments.

Chair Salla Hannunen (EVIRA, FI)	Discussant RA: Wopke van der Werf (WUR, NL)	Discussant RM: Gerardo Sanchez (Ministry of Agriculture, Food and Environment, ES)
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Time:	Presenter:	Title:
8:30- 8:50	Vasthi Alonso Chavez (Rothamsted Research, UK)	Economic strategies to minimise the probability of introduction of invasive pathogens through trade
8:50- 9:10	Adam Kleczkowski (University Stirling, UK)	Bioeconomic modelling of spatial spread and control of forest epidemics: Policy-driven and voluntary strategies
9:10- 9:25	Anne Wilstermann (JKI, DE)	Spread model of bacterial canker of kiwifruit in Europe
9:25- 9:40	Xavier Tassus (ANSES, FR)	Modelling the dispersal of <i>Monochamus galloprovincialis</i> , the vector of the pine wood nematode, and assessing the effectiveness of clear-cutting measures
9:40- 10:00	Adam R. Zeilinger (UCLA, USA)	Vector behaviour and plant defence influence vector-borne pathogen spread: assessing risks of enhanced spread of <i>Xylella fastidiosa</i> from grapevines with novel defensive traits
10:00- 10:05	Discussion from risk assessment / science view	
10:05- 10:10	Discussion from risk management / stakeholder view	
10:10- 10:30	Open discussion of the session	
<b>10:30- 10:50</b>	<b>Coffee break</b>	

## Tuesday, 13<sup>th</sup> December 2016

### 4<sup>th</sup> session: Approaches to model pest establishment

**10:50 – 12:35** The talks in this section demonstrate how modelling the likelihood of pest establishment in pest risk assessments can be improved with new datasets and novel methods for taking into account key factors in pest biology, e.g. physiology, and pest ecology, e.g. climate. The communication of these enhanced pest risk assessments to decision-makers will be discussed.

Chair Richard Baker (DEFRA, UK)	Discussant RA: David Makowski (INRA, FR)	Discussant RM: Anita Benko (Ministry of Agriculture, Forestry and Food, SI)
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Time:	Presenter:	Title:
10:50-11:05	Alan Macleod (DEFRA, UK)	Exploiting the high resolution JRC-MARS European climatic dataset for pest risk mapping
11:05-11:20	Antonio Vicent (IVIA, ES)	Relative roles of climatic and spatial factors in the geographical range of citrus black spot
11:20-11:35	Juha Honkaniemi (Natural Resources Institute, FI)	Mechanistic modelling of root rot, wind and bark beetle dynamics in Finland
11:35-11:50	Juergen Kroschel (CIP, PE)	Application and use of insect phenology modelling for regional and global pest risk assessments
11:50-12:05	Gianni Gilioli (University of Brescia; EFSA, PLH Panel)	Physiologically based model to assess the probability of establishment of plant pests including a case study on <i>Pomacea spp.</i>
12:05-12:10	Discussion from risk assessment / science view	
12:10-12:15	Discussion from risk management / stakeholder view	
12:15-12:35	Open discussion of the session	
<b>12:35-14:00</b>	<b>Lunch break</b>	

Tuesday, 13<sup>th</sup> December 2016

**5<sup>th</sup> session: Approaches to model impact and control**

**14:00** The talks in this section describe new approaches that are developed to improve risk assessments and decision making in plant health. It is shown, with concrete examples, how impact and control of plant pests can be modelled.  
**16:00**

Chair Gritta Schrader (JKI, DE)	Discussant RA: Darren Kriticos (CSIRO, AU)	Discussant RM: Stephen Langrell (EC, DG SANTE)
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Time:	Presenter:	Title:
14:00- 14:15	Gianni Gilioli (University of Brescia; EFSA, PLH Panel)	The modelling elements in a new methodology by EFSA to assess environmental impact of plant pests
14:15- 14:30	Gaël Thébaud (INRA, FR)	Model-based identification and optimization of key parameters for <i>sharka</i> management strategy
14:30- 14:45	Helga Reisenzein (AGES, AT)	Modelling epidemiological and economic consequences of <i>Flavescence dorée</i> to Austrian viticulture
14:45- 15:00	Christopher Finn McQuaid (Rothamsted Research, UK)	Disease control strategies: a modelling case study
15:00- 15:15	Norma Mujica (CIP, PE)	Modelling for natural enemy distribution and potential efficacy in biocontrol
15:15- 15:30	Giovanni Strona (EC, JRC)	The neglected importance of network analysis to prevent, manage and understand crop pest outbreaks
15:30- 15:35	Discussion from risk assessment / science view	
15:35- 15:40	Discussion from risk management / stakeholder view	
15:40- 16:00	Open discussion of this section	
<b>16:00-</b>	<b>Coffee break</b>	
<b>16:30</b>		

Tuesday, 13<sup>th</sup> December 2016

**6<sup>th</sup> session: Models for pest prioritization**

**16:30** To use resources efficiently and prioritise actions, it is important to  
**18:00** assess which new and regulated pests pose a relatively high risk. The models used to prioritize plant pests and help decision making by the plant protection organizations in different countries will be presented and discussed.

Chair Muriel Suffert (EPPO)	Discussant RA: Martin Damus (CFIA, CA)	Discussant RM: Jens-Georg Unger (JKI, DE)
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Time:	Presenter:	Title:
16:30- 16:40	Salla Hannunen (EVIRA, FI)	FinnPRIO: The Finnish model for ranking invasive pests
16:40- 16:50	Christine Tayeh (ANSES, FR)	BiOR <sup>2</sup> : a database/software process dedicated to plant pests ranking in France
16:50- 17:00	Dirk Jan van der Gaag (NVWA, NL)	Pest risk ranking model in the Netherlands
17:00- 17:10	Trond Rafoss, (Norwegian PLH Panel, NO)	The ERIN system to identify, describe and rank new plant health threats in Norway
17:10- 17:20	Helen Anderson (DEFRA, UK)	The UK Plant Health Risk Register
17:20- 17:30	Manuel Colunga (USDA APHIS, USA)	A pest risk ranking model for exotic arthropods in the USA
17:30- 17:35	Discussion from risk assessment / science view	
17:35 17:40	Discussion from risk management / stakeholder view	
17:40- 18:00	Open discussion of this section	

20:00 **Networking dinner & Best poster award**  
 22:30

## Wednesday, 14<sup>th</sup> December 2016

### 7<sup>th</sup> session: **New modelling tools in Plant Health**

**8:30** The talks in this session should focus on new tools supporting risk modelling

**10:45** in plant health risk assessments and how they can help decision making

Chair	Discussant RA:	Discussant RM:
Stefan Niemeyer (EC, JRC)	Olaf Mosbach-Schulz (EFSA)	Panagiota Mylona (EC, DG SANTE)

Time:	Presenter:	Title:
8:30-8:45	Stephen Parnell (University Salford, UK)	Modern approaches to surveillance for invading plant pests
8:45-9:00	Emilio Rodríguez Cerezo (EC, JRC)	The Agro-Economic Modelling Platform of JRC a tool for assessing plant health impact?
9:00-9:15	David Makowski (INRA, FR)	What role for meta-analysis in plant health risk assessment?
9:15-9:30	Barney Caton (USDA, USA)	Model "Success" Depends on the Decision-Making Situation
9:30-9:45	Jonathan Yuen (SLU, SE)	Bayesian approach to modelling pest introduction
9:45-10:00	Nik Cuniffe (University of Cambridge, UK)	Risk based management of invading plant disease
10:00-10:15	Didier Verloo (EFSA)	EFSA's activities and plans around sharing and designing Risk Assessment Models
10:15-10:20	Discussion from risk assessment / science view	
10:20-10:25	Discussion from risk management / stakeholder view	
10:25-10:45	Open discussion of this section	
<b>10:45-</b>	<b>Coffee break</b>	
<b>11:15</b>		



## Wednesday, 14<sup>th</sup> December 2016

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### **Conclusive session: Where should modelling in Plant Health go?**

**11:15** This session concludes the meeting and discuss how models  
**13:00** can be put to practical use in plant health decision making

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Chair

Giuseppe Stancanelli (EFSA) & Martin Ward (EPPO)

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Time:	Presenter:	Title:
11:15	Hans Thulke	Models for policy advice - white
11:30	(UFZ; EFSA, AHAW Panel)	elephant or an elephant in the room
11:30	Thematic session discussants	Round table discussion
12:30		
12:30	Mike Jeger	Review of the workshop results
12:45	(EFSA, Plant Health Panel)	
12:45		Closing remarks
13:00		

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## Posters

- Pest risk mapping based on spatial and temporal distribution of crop production (Juha Tuomola; EVIRA, FI)
- A transmission model for the Potato yellow vein virus-*Trialeurodes vaporariorum*-potato pathosystem (Jürgen Kroschel; CIP, DE)
- Spatially explicit approaches for studying the influence of landscape on the spread of pests (Burkhard Golla; JKI, DE)
- Prioritising the quarantine pests listed on the EU Plant Health Directive for Denmark (Gabor Lövei; Aarhus University, DK)
- Assessing risks of outbreaks of disease vectors through Bayesian analysis of museum specimen data (Adam R. Zeilinger; UCLA, USA)
- ILCYM's Index Interpolator tool for regional pest risk assessments in mountainous regions (Jürgen Kroschel; CIP, PE)
- Plant health for human and animal health (Paola Battilani; Unicatt, IT)
- Modelling the expected entry rate of *Grapholita molesta* into Canada using @Risk (Martin Damus; CFIA, CA)
- Data fusion and expert elicitation for species distribution mapping for Pest Risk Assessment (Ciro Gardi; EFSA)
- Eco-climatic assessment of the potential establishment and spread of *Phytophthora ramorum* in Slovenia (Knapič Matej; KIS, SI)
- Dealing with uncertainties when modelling the spread of *Ditylenchus destructor* (Björn Niere; JKI, DE; EFSA PLH Panel)
- Simulation of potential natural spread of pine wilt nematode in Slovenia 2000–2100 (Nikica Ogris; GOZDIS, SI)
- Network approaches in plant health risk assessment (Marco Pautasso; EFSA)
- Analysing the influence of landscape characteristics on disease spread and management strategies (Coralie Picard; INRA, FR)
- An updated EPPO prioritization process to select high priority plant species for risk assessment following the criteria of the Regulation (EU) No. 1143/2014 (Muriel Suffert; EPPO)
- BiOR<sup>2</sup> : a database/software process dedicated to plant pests ranking (Tayeh Christine; ANSES, FR)
- Application of different evapotranspiration models to calculate the agricultural water demand in a tropical region (Tran Thi Hong Ngoc; An Giang University, VN)
- The risk assessment of introduction of citrus canker in the Mediterranean basin through Citrus rutaceous relatives: ORPRAMed project (Arturo Urso; UNICT-Di3A, IT)
- Statistical modeling of Alfalfa mosaic virus detection in alfalfa seed (Ana Vučurović; University of Belgrade, RS)
- The risks assessment of *Aceria kuko* (Kishida) and *Halyomorpha halys* (Stal) pests for the Romanian goji growers (Roxana Ciceoi; USAMV B, RO)
- Measuring the economic impact of *flavescence dorée* to Austrian viticulture and related economic sectors (Alexander G. Welzl; Economica, AT)
- Modelling landscape level impacts of western corn rootworm adaptation to crop rotation in Europe (Mark Szalai; Szent Istvan University, HU)
- The JRC MARS Bulletin – Crop monitoring for Europe (Stefan Niemeyer; EC, JRC)
- The MARS Crop Yield Forecasting System (Stefan Niemeyer; EC, JRC)
- A framework for simulating maize kernels mycotoxin contamination in Europe (Stefan Niemeyer; EC, JRC)
- Potential distribution and phenological development of the Mediterranean Corn Borer (*Sesamia nonagrioides*) under warming climate in Europe (Stefan Niemeyer; EC, JRC)

- CURRENT EU RESEARCH INITIATIVES ON XYLELLA FASTIDIOSA - The Project Horizon 2020 "Pest Organisms Threatening Europe" (POnTE) (Coordinator: Dr. Donato Boscia; CNR-IPSP, IT)
- CURRENT EU RESEARCH INITIATIVES ON XYLELLA FASTIDIOSA - The Project Horizon 2020 "XylellaFastidiosa Active Containment Through a multidisciplinary-Oriented Research Strategy" (XF-ACTORS) (Coordinator: Dr. Maria Saponari; CNR-IPSP, IT)
- Quantifying an Example Systems Approach Used to Mitigate the Risk of Establishment of Fruit Flies (Barney P. Caton; USDA, USA)
- Quantitative Uncertainty Analysis for a Weed Risk Assessment Model (Barney P. Caton; USDA, USA)