



# Expert knowledge elicitation process and data support to JRC activities on priority pests by EFSA – state of the play

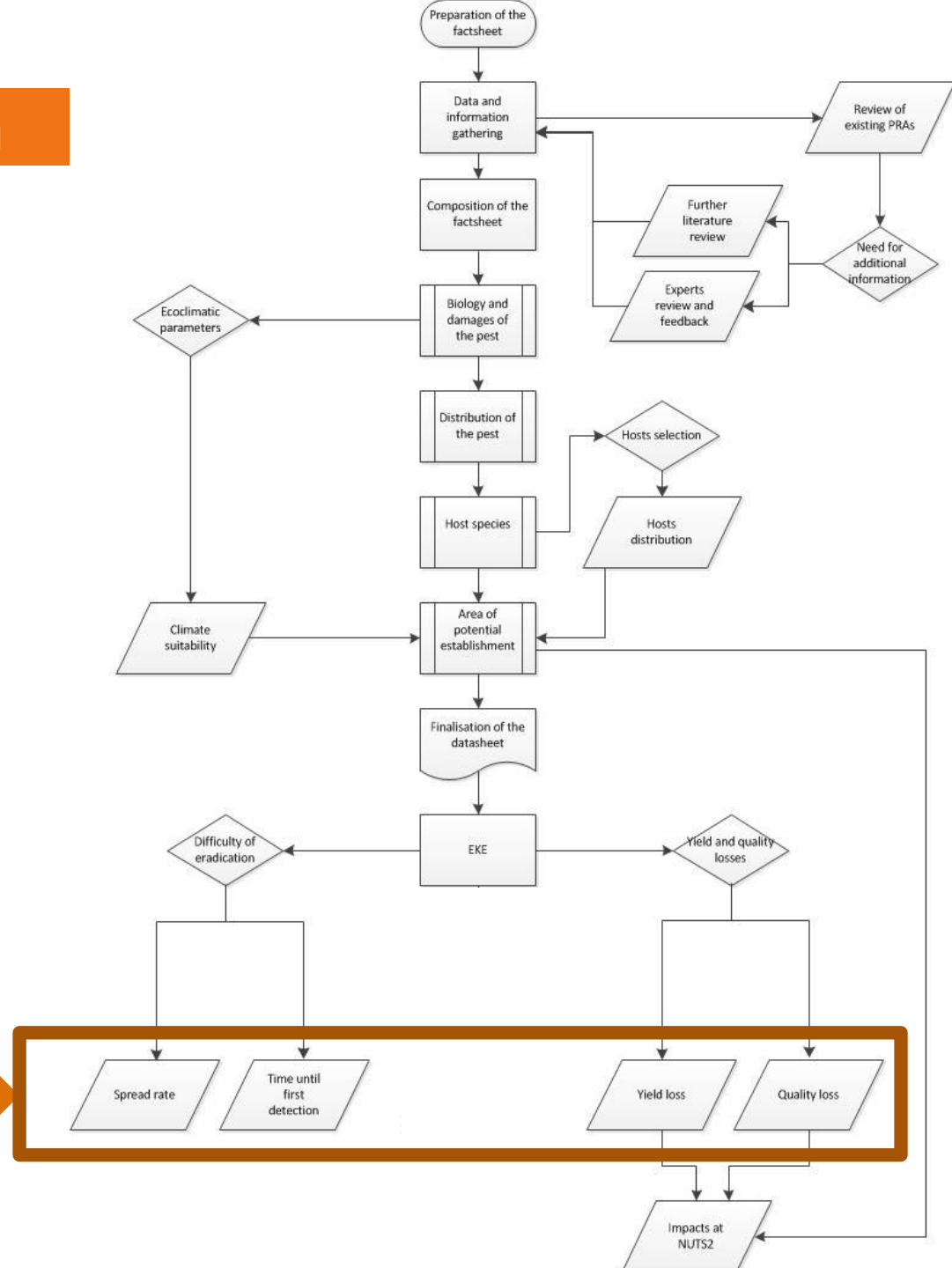
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Meeting of the Expert Group on Plant Health Legislation – 9 January 2019

# Quantitative approach

- Necessary to provide
  - Indication on the potential capacity of establishment in all EU NUTS2 regions
  - **Data** on potential consequences
- In order to allow economic evaluations
- Activity and decision flow
- Information on pest and commodity converge into 4 variables



# factsheets+reports (28 .doc)



- Information from publications and DBs:
  - Taxonomy and biology of the pest
  - Current distribution of the pest
  - Host plants (rationale and maps) → **decisional phase**
  - Increased number of treatments (rationale)
  - Mycotoxins
- Area of potential distribution (rationale and maps) → **decisional phase**
- Summary tables with evidence from literature needed to parameters estimation via EKE: → **decisional phase**
  - Impact (yield and quality)
  - Difficulty of eradication:
    - spread rate
    - time until first detection
- Specific scenarios conditions → **decisional phase**
- EKE report for each parameter (rationale and curves)
- Conclusions
- References

# Decisions supporting each EKE on impact

- Which hosts?
  - **Data availability** on host(s) distribution in the EU
  - **Level of damage** caused by the pest on that specific host (e.g. causing mortality of the plant vs quality losses)
  - Information on the **type of damage** of the pest on the specific host (e.g. on roots, leaves, fruits, flowers)
  - **Pest preferences**
  - **Economical/ecological importance** of the plant species in the EU (e.g. whether it is a major crop in the area of potential establishment)
  - **Grouping** of hosts by
    - Type of damage (e.g. *Spodoptera frugiperda* on maize products)
    - Similar level of susceptibility of the hosts
    - Feeding preference of the pest within the same taxonomic group (e.g. family, genus, species)
    - Environments of the production systems (e.g. row crops, greenhouse crops, orchards, forest plants, *nurseries*)
    - Final use of the product (e.g. forage crop, grain crop, fresh consumption, *ornamentals*)
  
- What is the area of potential distribution relevant to that impact?
- Is the general scenario enough to allow conducting the EKE on that impact?
- Is the evidence sufficient to conduct an EKE (e.g. *Anoplophora chinensis*)

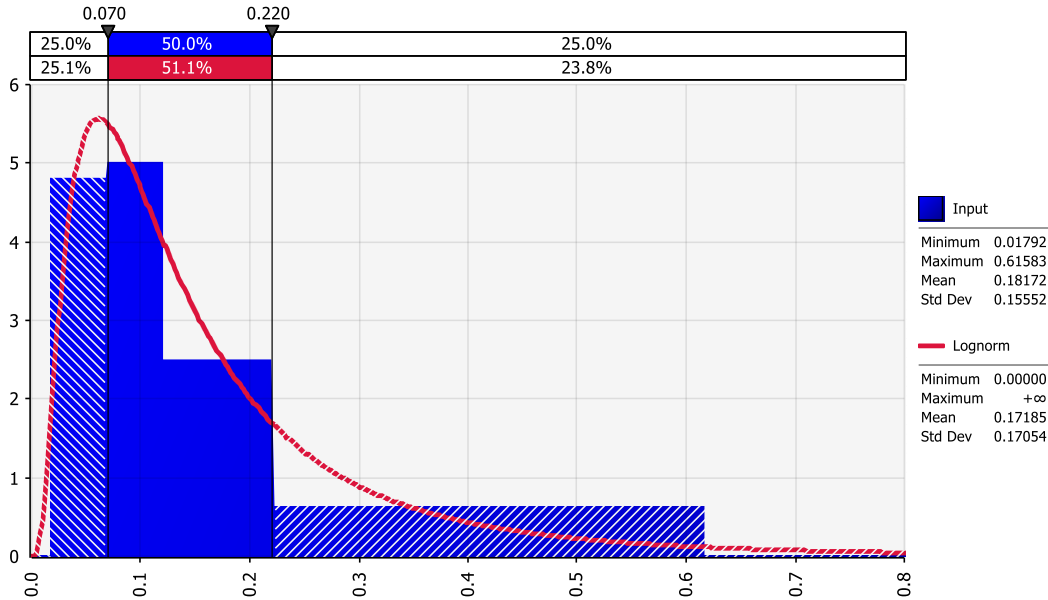
# datasheets (28 .xls)

- Impacts: estimated impacts are provided for the 2.5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 97.5<sup>th</sup> percentiles and fitted to the NUTS2 suitable for pest establishment in the EU. Yield and quality losses of a single host or category of hosts are provided in the same sheet.
- Spread rate and duration until detection are provided as single distributions (at 2.5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 97.5<sup>th</sup> percentiles) for the whole EU
- Increased use of treatments: CM indicator (0/1/2)
- Host plants
- Distribution: a map showing all the countries where the pest is present is copied from the EPPO Global Database
- Quarantine countries: a list of individual countries where the pest is specifically regulated as a quarantine species is extracted from the EPPO Global Database. However, considering that not all countries publish a complete list of quarantine plant pests, the list of countries where the pest is present is also extracted from EPPO Global Database and provided to JRC.
- (mycotoxins)
- Natura2000: a list of the Natura 2000 sites where the hosts of the pest are included in the list of “protected” or “important” species is provided together with the:
  - Number of sites where the host is a “protected” or “important” species within the area of potential establishment
  - Percentage of area of sites affected out of area of sites where host is present
  - Percentage area of sites where the host is a “protected” or “important” species within the area of potential establishment compared to the total area of all Natura 2000 sites
- Notes: any additional information that could guide JRC or any other user to help use the datasheet.

# from the EKE report to the datasheet

Percentile	1%	2.5%	5%	10%	17%	25%	33%	50%	67%	75%	83%	90%	95%	97.5%	99%
Expert elicitation	2%					7%		12%		22%					60%
Fitted distribution	1.8%	2.4%	3.1%	4.2%	5.5%	7.0%	8.5%	12%	17%	21%	27%	35%	48%	62%	84%

Fit Comparison for XChiQ1  
RiskLognorm(0.17185,0.17054)



Comparison of judged values (histogram in blue) and fitted distribution (red line)

estimated impacts are provided for the 2.5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 97.5<sup>th</sup> percentiles and **fitted to the NUTS2 suitable for pest establishment in the EU.**

Yield and quality losses of a single host or category of hosts are provided in the same sheet.

Spread rate and duration until detection are provided (at 2.5<sup>th</sup>, 25<sup>th</sup>, 50<sup>th</sup>, 75<sup>th</sup> and 97.5<sup>th</sup> percentiles) as **single distributions for the whole EU**

(b)

# An adaptable approach



- Elicitation by comparison
  - Same genus (e.g. *Agrilus anxius* and *Agrilus planipennis*),
  - Same biology and hosts (e.g. fruit flies, potato pathogens)
- Collaboration among EFSA WGs and projects
  - Pest categorisations
  - *Xylella* PRA
  - Survey cards
- Integration of information relevant to risk managers
  - Effect of current management options (e.g. certified material on *Clavibacter michiganensis*)
  - Ecosystem services (e.g. *Anoplophora*, *Agrilus*)
- Ad hoc estimations
  - Damages on nurseries and ornamentals
  - Damage on ecosystem services
  - Damage caused by transient populations
  - Urban and suburban areas affected by forestry pests.

# 28 pests

## DONE

### Insects

1. *Agrilus anxius*
2. *Agrilus planipennis*
3. *Anoplophora chinensis*
4. *Anoplophora glabripennis*
5. *Popillia japonica*
6. *Spodoptera frugiperda*
7. *Thaumatotibia leucotreta*

### Bacteria

8. *Candidatus Liberibacter* spp. (citrus greening)
9. *Clavibacter michiganensis* subsp. *sepedonicus*
10. *Grapevine flavescence dorée*
11. *Ralstonia solanacearum*
12. *Xanthomonas citri*

### Nematodes

13. *Bursaphelenchus xylophilus*

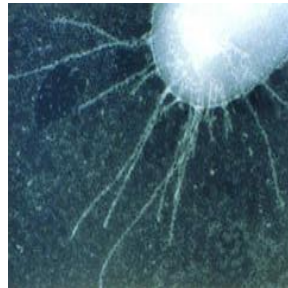
### Fungi

14. *Ceratocystis fagacearum*
15. *Phyllosticta citricarpa*
16. *Synchytrium endobioticum*
17. *Tilletia indica*

## ONGOING

### Insects

18. *Anastrepha ludens*
19. *Bactrocera dorsalis*  
(including *Bactrocera invadens*)
20. *Bactrocera zonata*
21. *Rhagoletis pomonella*



## TO DO

### Bacteria

22. *Xylella fastidiosa*

### Insects

23. *Anthonomus eugenii*
24. *Aromia bungii*
25. *Bactericera cockerelli*
- 26. *Conotrachelus nenuphar***
27. *Dendrolimus sibiricus*
28. *Thrips palmi*





# Expert groups

- Direct experience (e.g. EU outbreaks)
- Knowledge on EU cropping practices and control options
- Capacity to work in English
- Availability and willingness
- Training
- Independence of participants
- Limited possibility for WEB meetings



# Experts involved

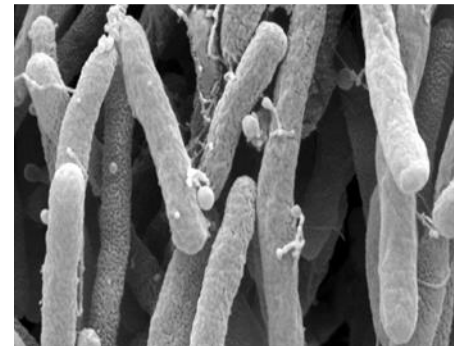
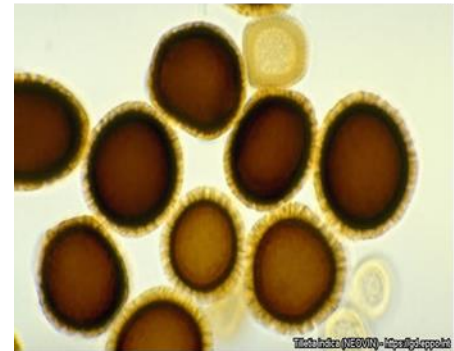
- 10 EFSA Personnel  
(PLH, AHAW, GMO, AMU, DTS, ED Office)
- > **50** experts
  - 2 Members of the Working Group
  - 10 Hearing Experts
  - 17 External Experts  
(including experts from USA and South America)
  - 9 PLH Panel Members
  - A tens of experts for Xylella only
  - At least other 5 to be invited

# Deliverables

- 1 scientific report (.doc): methodology
- 28 factsheets +reports (.doc): supporting document for the expert knowledge elicitation (EKE) and JRC:
  - summary of evidence extracted from literature
  - experts decisions and rationales
  - EKE results
- 28 datasheets (.xls): data obtained from EKE, DBs, publications, models, maps
  
- Deadlines
  - by end of March 2019/beginning of April: 28 datasheets + the scientific report to JRC and DG SANTE (in preparation to the draft delegated act for the Inter-Service consultation of May)
  - by 15 May 2019: 28 draft EKE factsheets+reports to DG SANTE (before the Inter-Service consultation)
  - by early June 2019: 28 final EKE factsheets+reports to DG SANTE (in support to the stakeholders consultation foreseen during the four weeks of June)

# What next

- Harmonisation of results
- Identification of the main elements of uncertainty and components of reasoning
- Better structured reasoning
- Conclusions



# EFSA/JRC collaboration

- Clear division of the tasks
- Full access to files and plans on EFSA document management system
- Regular exchanges via e-mail and phone calls
- JRC observers at meetings
- 1 week WG meeting at JRC premises in March 2019: finalisation and review of the datasheets



# Conclusions

- Quantitative tiered approach
- *Ad hoc* new protocol
- Structured
- Repeatable
- Traceable
- Possibility to extend the exercise to new pests or to update current ones
- First occasion for PLH EFSA team to provide data in support to the work of another institution
- Learning by doing → each pest can be considered finalised only at the very end of the mandate
- The factsheet are core part of the deliverables



**THANK  
YOU**