WEBINAR: SMART PLANT HEALTH, WHAT DOES THE FUTURE LOOK LIKE?

21 May 2025, 14:00 - 15:50 (CEST)

Questions and answers

This document compiles Questions & Answers from the webinar: Smart Plant Health, What does the future look like? which was held on 21 May 2025, 14:00 – 15:50 (CEST). Over 400 participants attended the session.

Questions are organized by technical topic and some questions and answers were further edited for enhanced clarity.

The agenda and presentations of the session can be found here, and for each question, the relevant presentation is hyperlinked. For further questions, you may contact the presenters or the IPPC Secretariat (ippc@fao.org).

1. Monitoring pest risk with Epidemic Intelligence from Open Sources (EIOS)

Presenter: Hannah Fielder (h.fielder@cabi.org), Lead Data Analyst, CAB International (CABI)

Website: https://www.cabi.org/

Co-reporter: Sara Tramontini (sara.tramontini@efsa.europa.eu), Scientific Officer, European Food Safety Authority (EFSA)

Website: https://www.efsa.europa.eu/en

Questions

- *How do you validate the credibility of published information?*

  Answer: For CABI, we aim to provide relevant articles and then encourage NPPOs to critically review the information provided in PRiM reports, with support from CABI colleagues. For EFSA, articles are reviewed carefully by plant health experts and a group within the European Commission before publication in newsletters.

- *How effective is this open access system in collecting information, given that it does not include protected data?*

  Answer: We curate the list of sources that are monitored in EIOS, to make sure we cover key open access resources. While we cannot use it to monitor closed sources, we find it does return a lot of very relevant information.

- *Regarding early warning systems, how are pest and disease alerts validated before being sent to users? What is the current level of accuracy in predicting outbreaks?*

  Answer: If by early warning you are referring to the 1st presentation of this workshop, about horizon scanning for plant pests, both CABI and EFSA apply curation processes to the extracted information, either through validation by NPPOs and/or through review and risk ranking by groups of experts. Concerning the accuracy, this is a continuously improved aspect, as each month more pest species and keywords are added to the webscraping tool, with the final scope to help risk manager preventing, more than predicting, outbreaks.

2. **Smart Surveillance and Integrated Response to Maize Lethal Necrosis (MLN) in Eastern and Southern Africa**

Presenter: Suresh Lingadahalli Mahabaleshwar (L.m.suresh@cgiar.org), Maize Pathologist – Sub-Saharan Africa, International Maize and Wheat Improvement Center (CIMMYT)

Website: https://www.cimmyt.org/

Questions

- *What impact does certified maize seed have on food security and food safety?*

  Answer: That is the milestone of sending the disease-free certified seeds, that is how we kept Southern Africa free from Maize Lethal Necrosis (MLN).

- *Could you elaborate on the challenges faced in training frontline personnel across borders, and how these were overcome?*

  Answer: Although the training involved a diverse group with varying needs, we tailored country-specific programs focused on practical field workshops, diagnostics, phenotyping, and MLN-free seed production. Timely monitoring was our greatest challenge — but thanks to the strong collaboration with trained NPPOs, National Agricultural Research and Extension Systems (NARES), and private seed companies, we successfully delivered on this critical task. Also putting up both physical and digital infrastructure to build emergency preparedness to counter potential risks of emerging diseases and pests outbreaks in future.

- *How can MLN-tolerant germplasm be made more accessible to farmers in Eastern Africa?*

  Answer: All MLN tolerant hybrids are available to all NARES and SME (Small and Medium Enterprise company) through Hybrid announcement in CIMMYT website, anyone who has the interest, call contact n.davis@cgiar.org.

3. **Ultrasound beetle detection**

Presenter: Berend de Klerk (berend@plense.tech), Co-founder & CEO, Plense Technologies

Website: https://plense.tech/

Questions

- *Are all beetle species sensitive to ultrasound detection?*

  Answer: We can clearly detect larger insects (longhorn beetles), and we are currently researching our limitation in beetle size. We also focus on internal insects, where our sensors are attached to the host material, so e.g. monitoring in forests is not applicable due to the scale.

- *Is this ultrasound technology applicable for monitoring Phytophthora diseases as well?*

  Answer: This technology could be used to monitor Phytophthora disease in the early stages of infection, as the disease results in a reduced water supply to the roots which causes xylem cavities which can be detected using the ultrasound technology. Therefore, we are not detecting the disease itself, but rather the earliest symptom.

- *Given the acoustic similarities that can occur in storage environments, how effective is ultrasound detection in reliably distinguishing live pulse beetle activity from background noise or non-infestation-related signals, especially under real field or warehouse conditions?*

  Answer: In storage environments (e.g. seeds or coffee), there are two approaches. First is with an insect trap, where you lure the insect into a trap and with acoustics measure if/how many

insects are trapped. The other approach would be to 'listen' to any insect sounds, but often background noise dominates the rather little sounds produced by insects. Although we are developing algorithms to distinguish insects from other sounds, the sound produced by the insect needs to be loud enough to be detectable.

- *How feasible is the field application of this technology, considering the number of plants typically cultivated in a field? Who are the intended users of the application, given that it may require intensive training?*

  Answer: Of course, it would not be feasible to scan every plant in the field. If we consider detection of fusarium, it could either be applied as fast phenotyping method for breeding purposes, or for high-value crops where early detection can save yields. A grower/farmer would then scan samples of certain areas.
  When considering internal insect detection, the user is more the exporter of fruits/vegetables that does not want to export quarantine organisms (e.g. citrus exporters that want to reduce the chance of FCM transport).

4. Smart FARM (Farmers Adopting Responsible Management)

Presenter: Ariestelo Asilo (telo@varacco.com), President, Varacco Inc.

Website: https://www.varacco.com/ / https://thinnkfarm.com/

Co-reporter: Carl Vincent Gapasin (carlvincent.gapasin@gmail.com), OIC Chief, Bureau of Plant Industry, Department of Agriculture, Government of the Phillipines

Website: https://buplant.da.gov.ph/

5. Development and Application of Beijing's Smart Crop Protection System

Presenter: Yunlong Li (lylong77@163.com), Professor-level researcher, Beijing Plant Protection Station

Co-reporter: Xiaoli Zhang (comeonzxl@126.com), Senior Agronomist, Beijing Plant Protection Station

Website: http://www.moa.gov.cn/

Questions

- *This AI-based crop solution system appears to be a breakthrough, especially considering the extensive database presented. Will it be made available across borders for use by farmers, trainers, and other stakeholders?*

  Answer: In China, Beijing's Smart Crop Protection System is accessed via the WeChat Mini Program. We are committed to expanding it use among international users and providing technical support. However, as international users cannot access China's WeChat Mini Program, developing a dedicated APP or web-based version is necessary to facilitate login and usage for overseas users.

- *What kind of costs are involved in enabling this app to support real-time, around-the-clock responses?*

  Answer: Beijing's Smart Crop Protection System was developed with funding from central and Beijing municipal fiscal projects and currently provides free services to users in China via its

WeChat Mini Program. To extend real-time, round-the-clock services to international users, three funding categories are required:

1. Redevelopment Costs for Overseas Systems: Develop an English/multilingual APP or web version due to the inaccessibility of the WeChat Mini Program abroad.
2. Computing Power Support: Secure additional funds to rent computing resources, as existing capacity supports only domestic users and may be insufficient for overseas demand, ensuring normal operation of AI functions (e.g., Intelligent Q&A, Pest Identification) for a potential large overseas user base.
3. System Localization: Funds are needed to supplement image databases and build pest early-warning models specific to crops and pests in target overseas regions.

6. IPPC ePhyto solution in Senegal

Presenter: Papa Massar Fall (fallmass18@yahoo.fr), Plant Quarantine Manager, Plant Protection Directorate, Ministry of Agriculture of Senegal

Website: https://dpvsenegal.sn/

Questions

- *Based on your experience and challenges encountered, what advice would you offer to other contracting parties that are hesitant to adopt ePhyto in their phytosanitary systems, especially regarding resource requirements?*

  Answer: I advise the contracting parties to ensure that they have the human resources to coordinate the activities, the financial resources to implement the activities, and the logistical resources to carry out the testing and production phases of the ePhyto solution.

- *What specific practical breakthroughs has the ePhyto system achieved in Senegal over the past few years?*

  Answer: We have noted efficiency in our work, with enormous savings in time and financial resources with the development of the invoicing section, as well as an increase in the confidence of our commercial partners.

For more information on the IPPC ePhyto Solution: https://www.ippc.int/en/ephyto/

If you have any further questions about the IPPC ePhyto Solution, please do not hesitate to contact the IPPC Secretariat (ippc@fao.org).

7. IPPC Plant Health Campus in India

Presenter: Jaiinder Pal Singh (ppa@nic.in), Plant Protection Adviser, Directorate of Plant Protection Quarantine & Storage under Ministry of Agriculture & Farmers Welfare, Government of India

Website: https://pqms.cgg.gov.in/pqms-angular/home

For more information on the IPPC Plant Health Campus:
https://elearning.fao.org/course/view.php?id=1255

If you have any further questions about the IPPC Plant health Campus, please do not hesitate to contact the IPPC Secretariat (ippc@fao.org).