



IPPC Webinar series

Fall Armyworm a global threat to prevent

2nd Webinar - Fall armyworm prevention and preparedness 19 November 2021 Questions & Answers

This document compiles Questions & Answers from the second session of the webinar series "*Fall armyworm, a global threat to prevent*" held on 19 November 2021 from 12 to 14 UTC GMT+1. One hundred and twenty (120) participants from 65 countries worldwide attended the webinar.

The webinar's agenda, the list of speakers, the record and presentations can be found at <https://www.ippc.int/es/news/workshops-events/webinars/fall-armyworm-faw-training-part-1-22-october-part-2-19-november-and-part-3-10-december/>

Questions are organized by technical topic: dispersal means and establishment conditions, diagnostic and identification, surveillance, discussion on eradication feasibility and management.

FAW dispersal means and establishment conditions

1. *Although FAW flies for 100 km by night, it could be restricted to one area in the country even if no measures are taken to protect the other areas. How to explain that fact?*

Answer:	Yes. FAW can travel very long distances at night, so it is challenging to protect or restrict FAW from moving into new areas due to the vast host range of FAW. The best approach for preparedness is to conduct early warning surveillance using traps and visual surveillance to detect and manage the FAW detection and incursion as quickly as possible to initiate a response effort.
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	This may be due to geographical barriers (e.g. mountains, deserts or sea) or different climatic conditions. For example, interceptions were recorded in the Canary Islands of Spain and not in continental Spain (which is very far from the islands).
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2. *What caused FAW widespread distribution across many continents?*

Answer:	It depends on many pathways, in particular natural migration helped by strong winds. FAW has a strong flight capacity e.g. it is a regular annual migrant in the Americas and flying up
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into southern Canada from USA practically every summer. The use of the pre-oviposition (maturation) period for widespread dispersal seems very effective. Trade is another significant pathway, can be accidentally transported as contaminants of traded commodities, especially in parts of plants.

3. Is climate change attributed to the spread of the FAW?

Answer: It could be.
FAW is one of the case study pests identified in the attached

IPPC Secretariat. 2021. *Scientific review of the impact of climate change on plant pests – A global challenge to prevent and mitigate plant pest risks in agriculture, forestry and ecosystems*. Rome. FAO on behalf of the IPPC Secretariat.
<https://www.fao.org/3/cb4769en/online/cb4769en.html>

4. You mentioned that FAW would stop its establishment in winter, but I found in Nepal that FAW infestation is high during winter (4-5°C). Could you please share your experience on this?

Answer: Panelists suggests confirming that it is effectively FAW by molecular diagnostics, and it is important to find out where the insect was found and life stage; there could also be micro-climate associated factors.

The FAW-Spedcom (Euphresco) project is studying the cold hardiness of FAW. Studies on the tolerance of FAW to low temperatures are suggesting differences amongst populations. Preliminary results of studies conducted by this project partners in South Africa indicate that FAW could be tolerant to low temperatures due to temperature plasticity. Invasion of cooler areas may occur in the future. Studies conducted in Botswana show that stress associated with low temperatures is limited and that overwintering is possible.

In general, the literature has reported survival below 10°C is typically unlikely. Find more information in this document prepared by EFSA:

EFSA PLH Panel (EFSA Panel on Plant Health), Jeger M, Bragard C, Caffier D, Candresse T, Chatzivassiliou E, Dehnen-Schmutz K, Gilioli G, Gregoire J-C, Jaques Miret JA, Navarro MN, Niere B, Parnell S, Potting R, Rafoss T, Rossi V, Urek G, Van Bruggen A, Van der Werf W, West J, Winter S, Day R, Early R, Hruska A, Nagoshi R, Gardi C, Mosbach-Schultz O and MacLeod A, 2018. Scientific Opinion on the pest risk assessment of *Spodoptera frugiperda* for the European Union. EFSA Journal 2018;16(8):5351, 120 pp. <https://doi.org/10.2903/j.efsa.2018.5351>

Diagnostic and identification

5. How can we find an identification key for *Spodoptera larva*?

Answer: Identification leaflets on FAW are available - see the references in the FAW IPPC Guidelines - for example FAO & CABI (2019), Australian Grains Research &

Development Corporation (GRDC, 2020), CottonInfo (2020) etc. A reliable morphological identification is best carried out on adult stages. Morphological identification is less time-consuming than molecular identification, and in addition it can be done with relatively simple equipment and very few chemicals. For morphological and molecular identification see the EPPO Diagnostic protocol PM 7/124 (1) *Spodoptera littoralis*, *Spodoptera litura*, *Spodoptera frugiperda*, *Spodoptera eridania* available at https://www.eppo.int/RESOURCES/eppo_standards/pm7_diagnostics

6. What is LAMP test, and is it the way to save time for recognition compared to PCR and other methods?

Answer: LAMP = Loop-Mediated Isothermal Amplification. It is faster than PCR, it typically takes around 20 minutes with a color change to confirm positive detection.

7. I would be very grateful if somebody could give me some FAW larvae and butterflies! I am working in the laboratory, so reference materials are crucial!

Answer: CSIRO keeps FAW and other noctuid species in the lab. Depending on what is needed, contact weetek.tay@csiro.au.

Surveillance

8. Iraq has started the scouting and monitoring program for that FAW existence...but without using any specific pheromones and traps...just by our background knowledge on the fields...

Answer: Scouting and monitoring of FAW larvae through visual surveillance is a practical method of early detection surveillance. The FAW guideline has further details on visual detection methodology that can be used to support these early detection activities without the use of pheromone lures and traps.
In addition to visual inspections and trapping for an effective surveillance, it is important to conduct a communication and information campaign on this new and emerging pest and to collect reports from the field, from advisors and producers.

9. I wonder if there is any possibility to get more details on strategic, tactical, and operational information?

Answer : There is very useful technical and operational information on surveillance planning, design, and delivery through the two FAW manuals referenced in the surveillance presentations (from EFSA pest survey card and Australian FAW trapping and surveillance manual)

European Food Safety Authority (EFSA), Kinkar, M., Delbianco, A., & Vos, S. (2020). Pest survey card on *Spodoptera frugiperda*. *EFSA Supporting Publications*, 17(7), 1895E.
<https://efsa.onlinelibrary.wiley.com/doi/abs/10.2903/sp.efsa.2020.EN-1895>

Department of Primary Industries and Regional Development, Government of Western Australia (*Sin e die*). Fall armyworm surveillance, trapping manual.

https://www.agric.wa.gov.au/sites/gateway/files/DPIRD%20Fall%20armyworm%20surveillance-trapping%20training%20manual_1.pdf

Discussion on eradication feasibility

10. For your information, we had in Germany one introduction, probably with sugar corn from North America. We did the eradication measure successfully. It was only a minor outbreak in the sweet corn field next to the packing station. The people collected the larvae by hand. The wintertime (frost) gave us the security that no individuals could survive.

Answer:	The panelists asked to provide some information around the eradication measures applied in Germany for the successful eradication and added that it was a good outcome. However, the harsh winter in Central Europe would have contributed significantly to the success of managing this pest. FAW is noted in the EPPO Global Database as 'eradicated' in Germany, it is to be noted that this is a country where climate conditions are not suitable for FAW establishment.
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11. I don't think the eradication principle to any pest is possible but keeping that pest existence level within the ecosystem equilibrium as possible and yet under the economic threshold.

Answer:	Full eradication of FAW is indeed not feasible nor economically realistic as re-infestation is likely given that this is a migratory pest.
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12. Has it been possible to get rid of the pest, so far, in a country already affected?

Answer:	Biological factors (high reproductive rates and short generation time) have made the eradication of FAW impossible. In Germany, one introduction, probably with sugar corn from North America, was recorded. Germany undertook eradication measures successfully – FAW is noted in the EPPO Global Database as 'eradicated' for Germany but we need to remind that however Germany is a country where climate conditions are not suitable for FAW establishment.
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Management

13. We wish to know the FAW management tactics

Answer:	Third webinar session includes information on the Sustainable FAW management. https://www.ippc.int/en/news/workshops-events/webinars/fall-armyworm-faw-training-part-1-22-october-part-2-19-november-and-part-3-10-december/
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