IPM-Popillia

Project information

Coordinator: *Eidgenoessisches Department für Wirtschaft, Bildung und Forschung (BERN, CH)*

Duration: *52 months, from September 2020 to December 2024*

Total Budget from EU: *€ 5.491.850,00*

IPM Popillia
Integrated Pest Management of the Japanese Beetle

Description and mission

Abstract

The Japanese beetle, Popillia japonica, is one of the worst invasive pests of North America. Costs to control the pest in the US exceed $450 million per year. P. japonica was detected near Milano in 2014 and is now starting to spread in Europe. It is an enormous threat to Europe, since (1) it can feed on more than 300 host plants, including many important crops, (2) it is a good flyer and can be relocated via movement of goods and people, (3) climate suitability puts at risk an area ranging from the Atlantic to the Black Sea, and from the Mediterranean to Great Britain and Southern Scandinavia. EFSA and the JRC of the European Commission nominated P. japonica a candidate high priority pest in the EU in the new EU Plant health Law.

IPM-Popillia has the aim to counteract this invasion. The project will provide fast and reliable monitoring tools, including an app-based citizen science approach to rise public awareness. Its main deliverable will be an IPM-Toolbox for control of P. japonica, relying exclusively on environmentally-friendly control measures. Several teams of the consortium will collaborate in the core of the recent outbreak area, doing practical research in a European environment that can be applied immediately. The ambition of IPM-Popillia is to show that it is possible to control the new pest, and meet the requirements of quarantine regulations, and at the same time respect the environment and the principles of the sustainable use directive.

IPM-Popillia will provide an integrated pest management strategy against P. japonica at a very early time point of the invasion process. So far, the new pest is still confined to one single and a comparatively small area of about 6'000 square kilometers on mainland Europe. This timeliness is exceptional when compared to previous invasions into Europe, and will significantly enhance chances for successful containment, provided that the starting signal is given now.

Our role in the project

Task 1.1: Innovative tools for P. japonica detection and monitoring

Leader: P4, Pessl Instruments

The monitoring of regulated organisms is time-consuming and labor-intensive. As a consequence, regional plant health services need to limit the number of traps included in a monitoring program with regards to the manpower available for trap maintenance. This comes at the cost of the area covered and the density of the monitoring grid. P4 develops a tool, which is suitable for phytosanitary monitoring purposes of P. japonica as well as for observing seasonal dynamics of already established populations, based on remotely controlled trap systems. These traps will include electronic devices with 10 MP lenses on the top of the housing and will be self-sufficient through battery and solar panel. The trap system will be equipped with a lure, attracting the target species entering the trap system. After entering into the trap insects will get fixed and photographed. The photos will serve as a base of the development of an automatic detection tool specifically for P. japonica. Deep learning systems using artificial neural networks will train the system to detect and separate the targeted insect from non-targets. Further steps, e.g. alerts based on positive detection results by the software will be introduced. In addition, the traps will be equipped with sensors collecting climatic data, like temperature, relative humidity, or wind, which will be used to get more detailed insight into the flight behavior of P.japonica.

The prototype traps produced by PESSL will be installed within infested zones on the Azores, in Italy, and in Switzerland, to evaluate the innovative monitoring tool under field conditions. In addition to the remote-controlled evaluation, catches of these traps will also be evaluated manually by experts. The results of these monitoring efforts will be compared with automated monitoring results and will provide feedback for optimizing the detection software.

Partners

- WBF-Agroscope (Switzerland)
- Unisi (Italy)
- e-nema (Germany)
- PESSL (Austria)
- SPOTTERON (Austria)
- Vignaioli Piemontesi (Italy)
- INRA (France)
- CREA (Italy)
- TUM (Germany)
- SFTi (Switzerland)
- Regione Piemonte (Italy)
- FGF (Portugal)
- Jardin Suisse (Switzerland)