ICE2024 XXVII International Congress of Entomology
New Discoveries through Consilience
Dates : August 25[sun] - 30[fri], 2024
Venue : Kyoto, Japan [Kyoto International Conference Center]

Presentation information

Symposium

20.Others

[20-3] Biotremology II - Applied Biotremology

Mon. Aug 26, 2024 4:15 PM - 6:15 PM Room K

Chair: Valerio Mazzoni (Fondazione Edmund Mach), Takuma Takanashi (Forestry and Forest Products Research Institute), Johannes Strauss (Justus Liebig University, Giessen)

5:00 PM - 5:15 PM

[20-3-04] Feasibility and future perspective of vibrational mating disruption

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The relentless impact of flavescence dorée (FD) on European wine-producing countries has led to the emergence of the revolutionary vibrational mating disruption technique. Due to the incurable nature of FD, currently the only strategy to manage this disease is to heavily rely on insecticides to target the vector, *Scaphoideus titanus*. However, this heavy reliance on insecticides poses challenges for the sustainable management of vineyards. A glimmer of hope arises from the study of the intra-specific communication of this insect pest. Similar to the widely adopted pheromone mating disruption approach, this groundbreaking behavioral manipulation technique utilizes species-specific vibrational signals to disrupt insect pest reproduction. The path from proof of concept to field application is not without its challenges. Technical complexities associated with developing efficient and economically viable transducers for field deployment present a significant obstacle along the way. The efficacy of this technique hinges on ensuring the transmission of disturbance noise above the species safety threshold, thereby effectively disrupting the mating communication of *S. titanus*.To evaluate the feasibility of this game-changing technique, we devised a model to describe the population dynamics of the insect under various transducer effectiveness scenarios. By comparing the model results with data from vineyards where transducers were installed (spanning over 20 hectares in Italy) and control plots without transducers, we illuminate the practicality and sustainability of vibrational mating disruption in field conditions.Drawing upon practical experience, we outline the current constraints and chart a course for future research directions, aiming at making vibrational mating disruption a practical solution readily available to growers. This abstract serves as a gateway to a promising future, where the economic pressures imposed by

flavescence dorée meet their match in the form of an innovative and scientifically grounded control strategy.