

Book of Abstracts



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SESSION V

AGRICULTURAL ENTOMOLOGY

***Tuta absoluta* as vector of the emerging Tomato Brown Rugose Fruit Virus**

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Tomato (*Solanum lycopersicum* L., Solanaceae) is one of the most important and widespread crops worldwide and it is constantly threatened by numerous pathogens, including Tomato brown rugose fruit virus (ToBRFV). ToBRFV was characterized in 2014 and currently it is one of the most significant challenges for the tomato production worldwide. It is an extremely infectious tobamovirus whose transmission mainly occurs through plant-to-plant contact or infected sap by adherence to different surfaces and tools. Moreover, it has been recently demonstrated the ToBRFV transmission due to the mechanical action of *Bombus terrestris* L. (Hymenoptera: Apidae), the only arthropod vector known to date. In this context, the potential role of other insects as vectors of this pathogen was investigated testing one of the main tomato pests, the South American tomato pinworm *Tuta absoluta* (Meyrick) (Lepidoptera: Gelechiidae). Laboratory tests were carried out using tomato seedlings and *T. absoluta* reared under laboratory conditions within insect-proof cages. Sap extract of ToBRFV ToB-SIC01/19 isolate was mechanically inoculated into healthy tomato plants through foliar micro-lesions that facilitate the virions' entry. RT-qPCR analysis were carried out to confirm the ToBRFV infection on the inoculated plants; subsequently, uninfected adults of *T. absoluta* were released and left ovipositing on infected plants. The obtained pest progeny resulted positive to ToBRFV presence in the emerging adults. In a second test, *T. absoluta* ToBRFV-infected adults were released on healthy plants, in order to evaluate their ability to transmit the virus. The latter hypothesis was confirmed. Finally, pupae obtained from larvae fed on infected plants have been disinfected and compared with not disinfected pupae. Similarly, adults obtained from disinfected and not disinfected pupae were analysed and compared. The results confirmed the ToBRFV presence in both adults and pupae of disinfected and not disinfected *T. absoluta*, showing that the ToBRFV is located within the insect body. In conclusion, this study demonstrated for the first time that *T. absoluta* is able to acquire and transmit ToBRFV, thus having a key role on the disease epidemiology. Further tests will be needed to verify the ToBRFV virions localization in the insect vector body.

KEY WORDS: South America tomato pinworm, insect vector, ToBRFV, tobamovirus.

ORAL PRESENTATION