

T04-P6

### EFFECT OF WEED MANAGEMENT ON THE DENSITY AND DIVERSITY OF PHYTOSEIID MITES PREDATORY IN TUNISIAN OLIVES TREES

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Phytoseiid predatory Mites (Mesostigmata) have been extensively studied due to its potential as biological control agents. Several species were characterized by their effect on phytophagous mites and small insect crop pests.

The present study aims to determine the impact of weed management in Tunisian olive trees on diversity and densities of Phytoseiidae and to assess dispersal of Phytoseiidae between trees and weeds in four modalities of weed management corresponding to the most used in Tunisia. Samples were collected weekly from October 2016 to October 2017. They were composed of 50 branches on trees per locality and all the weeds of the inter-rows included in a quadrat of 30 x 30 cm were haphazardly defined. These results provide informations on how weed could be managed to ensure predator occurrence and efficiency. Positive correlations were observed between Phytoseiidae densities on inter-rows herbaceous plants and on olive trees. Indeed, the modality ploughed ground seems to be the most encouraging modality in regards to dispersal and the density of Phytoseiidae on olive trees since the number of captured Phytoseiidae in this modality was higher than in the other three ones. These results allow as to better understand the relationship between Phytoseiidae and their habitat, to improve the farming practices and to promote a better biological control of the eriophyids mites. In fact, the installation of the wildflower strips bands between the trees could support biological control and thus potentially reduce farmers' dependence on insecticides.

T04-P7

### THE EFFECTS OF THE CONSUMPTION RATE OF THREE PREYS ON THE BIOLOGICAL FEATURES OF ORIUS LAEVIGATUS (HETEROPTERA, ANTHOCORIDAE)

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The consumption of different pests such as olive Psyllid (Euphyllura olivina COSTA) and eriophyids mites (Acari, Eriophyidae) as a prey that are still lacking in the literature influences certain biological characteristics and the predatory capacity of *Orius laevigatus* (Fiber, 1860) (Heteroptera, Anthocoridae). Eggs of *Ephestia kuehniella* (Zeller, 1879), adults and nymphs of olive Psyllid and eriophyids mites of olive were used as prey and were provided daily for all the mobile stages of the predator.

We inferred from the results that the type of prey, offered to our predator, affects the development time of the nymphal stage was 47.40, 9.27 and 11.40 days for feeding on eggs of *E. kuehniella*, adults of eriophyid mites and nymphs and adults of olive psyllid, respectively. Fertility was the highest, when females fed on *E. kuehniella* (Zeller) with a mean of 160 eggs/female. Pre-oviposition and oviposition period varied also significantly depending on prey species especially when fed on eggs of *E. kuehniella* by *Orius laevigatus* females, led to a shorter period of pre-oviposition (3.4 days) and a longer laying period (40:36 days) compared to the consumption of other types of prey. Mites' consumption (886.92 adults/nymphal stage) was 21 times higher than that of *E. kuehniella* eggs (39.47 eggs/nymphal stage) and 19 times (31.53 adults and nymphs/nymphal stage) greater than that of the Psyllid. These data can be used to adjust food supply in a rearing system to the requirements of each developmental stage for a biological control of these pests in the olive orchards.

T04-P8

### METHODOLOGICAL DEVELOPMENT FOR THE ESTIMATION OF LOSSES DUE TO THE OLIVE PSYLLID EUPHYLLURA OLIVINA COSTA (HOMOPTERA, APHALARI)

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The discreet and sometimes unpredictable nature of psyllid outbreaks makes it difficult to assess its harmfulness, especially since its damage, with the exception of widespread infestation, is often masked by the self-regulation processes specific to the olive tree.

Three distinct methods have been adopted for the assessment of losses caused by the olive psyllid: fall of flowering inflorescences and reduction of fruit set in the region of Sfax during 6 years. These methods are respectively based on the comparison between treated and infested branches:

- On the same trees (during 2 years),
  - Between treated and infested plots (during 2 years),
  - Between branches with different degrees of infestation and treated branches (during 2 years).
- The results showed that damages caused by the psyllid are more important when the rate of inflorescences infestation as well as the larval density per inflorescence examined are high. Fruit set losses reach 35% when the inflorescences infestation rate exceeds 70%, which corresponds to a density of 4 to 5 larvae per examined inflorescence.

For infestations close to 50% and for an average density of 2 larvae per examined inflorescences, the statistical analysis showed no significant effect of the psylla, neither on the fall of inflorescences nor on fruit set.

On the other hand, a highly significant linear regression was established between the fruit loss and the examined inflorescences larvae density.

Finally, the methodological approach based on the comparison between differently infested branches and treated branches could be used as a reliable and rapid method for estimating the pest's damages on the olive tree.

T04-P9

### A NEW REAL-TIME PCR METHOD DEVELOPED FOR THE DETECTION OF THE MAIN VIRUSES PRESENT IN OLIVE ORCHARDS

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Sensitive detection of viruses in olive orchards is actually of main importance since these pathogenic agents cannot be treated, their dissemination is quite easy, and they can have negative effects on olive oil quality. Traditionally, techniques based on serology have been used widely for the detection of olive viruses, but more recently, molecular biology-based methods that include the highly laborious dsRNA analysis, have started to be performed. The low viral titres in olive tissues is the major constrain of the techniques and do not always allow the successful, accurate and reproducible detection. Phytosanitary certification programs depend on a reliable and sensitive detection of these viruses. In plant virology, real-time PCR (qPCR) is increasingly being used to improve the sensitivity and accuracy while maintaining reliability. The work describes the development and application of new SYBRGreen qPCR assays for the detection of the *Olive leaf yellowing-associated virus*, *Olive latent virus-1*, *Tobacco necrosis virus-D* and *Olive mild mosaic virus*, the main viruses that affect the olive trees. The main goal is to increase the accuracy of detection of olive viruses and, consequently, to improve their control. The work involves i) design of specific primers for each target virus; ii) studies on the sensitivity of the technique and primers specificity; iii) validation of the technique with plant material from different orchards. This work enables for the first time a reliable, sensitive and reproducible estimation of virus accumulation in infected olive trees that will allow gaining new insights in virus biology essential for disease control.

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