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Management of *Tuta absoluta* on tomato and potato plants

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A thesis Submitted in partial fulfillment of the requirements Governing the Award for the Degree of

DOCTOR OF PHILOSOPHY IN AGRICULTURAL SCIENCES

(PESTICIDES)

Plant Protection Department

From

Faculty of Agriculture (Saba-Basha)

Alexandria University

2020

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5. SUMMARY and CONCLUSION

Field experiments were carried out during 2017 and 2018 seasons at El-Berka village, Abou Hommos city, Behaira province, Egypt to control *T. absoluta* on tomato variety namely; Malika F1 and potato variety namely spunta. **The aim of this study was:**

1. Study population fluctuations of *T. absoluta* on tomato and potato under open field conditions for two years (2017 and 2018) with sex pheromone to monitor and capture of *T. absoluta* males. Also, the climatic factors (temperature and relative humidity) on the population density and infestation percent of *T. absoluta* were studied.

2. Study the effect and efficiency of some chemical and bio pesticides to control *T. absoluta* by using four sequences as a model as follow:

Sequence (1): Flubendiamide → Chlorfenapyr →Emamectin benzoate → Chlorantraniliprole

Sequence (2): Chlorfenapyr → Flubendiamide → Chlorantraniliprole → Emamectin benzoate

Sequence (3): Chlorantraniliprole →Emamectin benzoate → Chlorfenapyr → Flubendiamide

Sequence (4): Emamectin benzoate → Chlorantraniliprole→ Flubendiamide → Chlorfenapyr

3. Calculate the generation number of *T. absoluta* per year under normal conditions.

4. Study the effect of tomato planting date on infestation with *T. absoluta* and also study the infestation level on different plant parts (Leaves, flowers and fruits).

<u>The obtained results can be summarized as follows:</u>

Cultivation data for tomatoes 2017

The average number of *T. absoluta* was 56.52 Male/3traps in the 1st week. thus the average number increased until reached the top number in the curve of the infestation by average of 103.44 Male/ 3 traps in 5th week while another increase was recorded on the week of 12th by an average of 155.38 Male/ 3 traps .

The statistical analysis of the obtained data revealed that positive correlation amang climatic factors (max temperature and min ones)and the males trapped to the pheromone mean while the relative humidity gave negative and non-significant with the number of male of *Tuta absoluta* .

Furthermore there are highly significant between the plant age and the number of *Tuta absoluta* mele Ev% (R^2×100) = 86.87.

Also there are high significant difference between combined (the plant age and climatic factors) and the number of *Tuta absoluta* mele Ev% = 91.00.

Cultivation data for tomatoes 2018

The average number of *T. absoluta* was 9.95 Male/ 3 traps in the 1st week, thus the average number increased until reached the top number in the curve of the infestation by average of 103.94 Male/ 3 traps in 10th week while another increase was recorded on the week of 17th by an average of 88.92 Male/ 3 traps .

The statistical analysis of the obtained data revealed that positive correlation among climatic factors (max temperature and min ones)and the males trapped to the pheromone mean while the relative humidity gave negative and non-significant with the number of male of *T. absoluta* .

Furthermore there are highly significant between the plant age and the number of *T. absoluta* male Ev% (R^2×100) = 70.03.

Also there are high significant difference between combined (the plant age and climatic factors) and the number of *T. absoluta* male Ev% = 72.72.

Cultivation data for potatoes 2017

The average number of *T. absoluta* was 16.86 Male/ 3 traps in the 1st week, thus the average number increased until reached the top number in the curve of the infestation by average of 110.68 Male/ 3 traps in 9th week while another increase was recorded on the week of 14th by an average of 110.03 Male/ 3 traps .

The statistical analysis of the obtained data revealed that correlation amang climatic factors (max.; min. Temp and RH.)and the males of *T. absoluta* . trapped to the pheromone mean Ev% = 49.3.

Furthermore there are highly significant between the plant age and the number of *T. absoluta* male Ev% = 58.57.

Also there are high significant difference between combined (the plant age and climatic factors) and the number of *T. absoluta* male Ev% = 87.52 .

Cultivation data for potatoes 2018

The average number of *T. absoluta* was 20.67 Male/ 3 traps in the 1st week, thus the average number increased until reached the top number in the curve of the infestation by average of 90.17 Male/ 3 traps in 10th week.

The statistical analysis of the obtained data revealed that correlation among climatic factors (max.; min. Temp and RH.) and the males of *T. absoluta* trapped to the pheromone mean Ev% =39.33.

Furthermore there are highly significant between the plant age and the males of *T. absoluta* male Ev% = 84.21.

Also there are high significant difference between combined (the plant age and climatic factors) and the males of *T. absoluta* male Ev% = 88.83.
Taking in consideration the infestation with *Tuta absoluta* on tomato and potato we can conclude that the infestation on tomato was high rather than potato.

1. Agrochemical performance for different adopted models against the tomato leafminer, *T. absoluta* infesting tomato plants on 2017 and 2018 seasons

Results indicated that the fourth model (Emamectin benzoate 5% SG, Chlorantraniliprole 20% SC, Flubendiamide5% SC and Chlorfenapyr 36% EC) give the highest percent reduction against *T. absoluta* in the first season of 2017. While, the third model (Chlorantraniliprole 20% SC,Emamectin benzoate 5% SG, Chlorfenapyr 36% EC and Flubendiamide5% SC) and the fourth model gives the highest pest mean reduction for *T. absoluta* in the second season of 2018

2. Generation number of the tomato leafminer, *T. absoluta* on tomato and potato

Ten of generations of *Tuta absoluta* were recorded per year. The longest generation period was on January while the shortest generation was on May.

3. The influence of planting date on the population density for *T. absoluta* on different tomato plant parts

- The results showed that the first planting date (Apri, 20th) recorded the lowest infestation while the last planting dates (May, 20th and July, 20th) achieved the highest infestation**.**

- In general the infestation density was higher in 201 7tomato growing season than 201 8 season.

- The first planting date (Apri, 20th) was the best time for planting tomato to minimize the infestation by *T. absoluta* compared with the second planting date (May, 20th) and the third planting date (June, 20th).

- The results showed the highest infestation was on leaves then fruits and the least infestation was on flowers.