

CONTROL OF ORIENTAL FRUIT MOTH

Cydia molesta Busck with CIDETRAK® OFM MEC

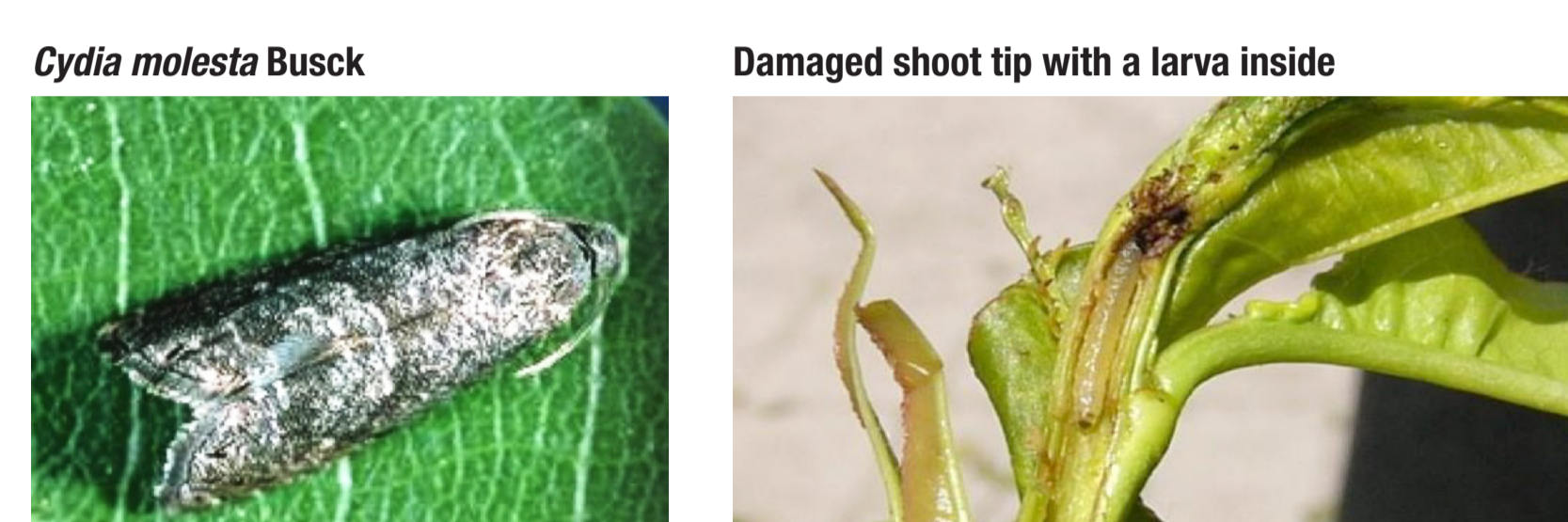
liquid formulation in Bulgaria

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Introduction

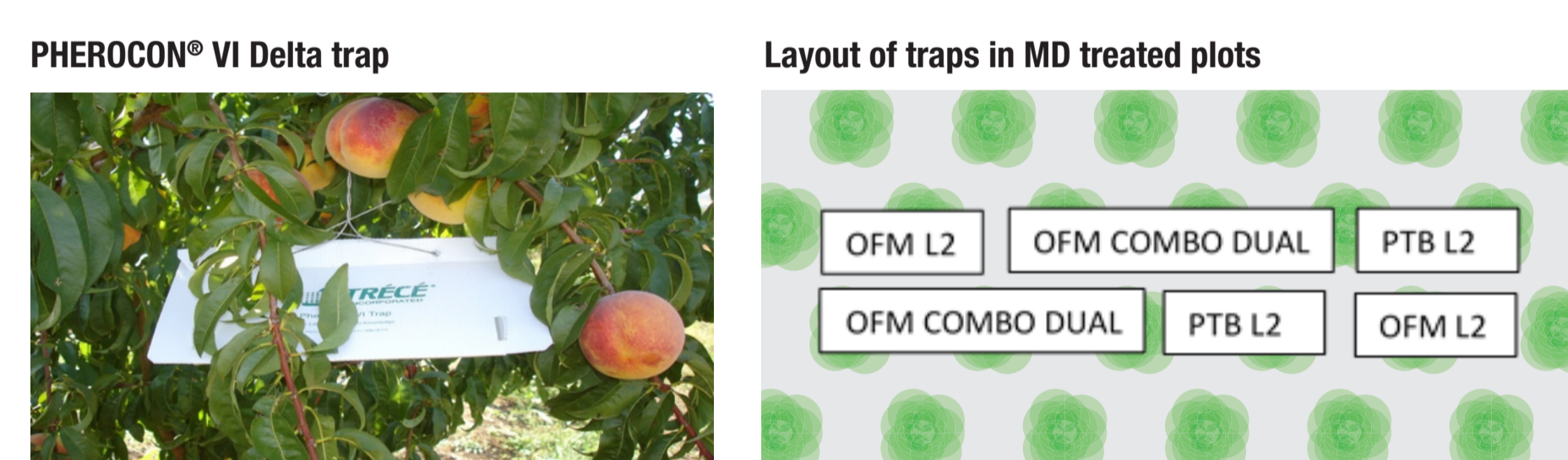


Peach is one of the major fruit species in Bulgaria. Oriental fruit moth (OFM), *Cydia molesta* Busck is one of the most important pest of this crop. Its control in commercial orchards has been carried out mainly by conventional methods, using chemical insecticides. Considering human health condition and preservation of natural environment, the use of chemicals in fruit growing must be limited. This may be achieved by more precise timing resulting in a reduced number of treatments and/or by introducing new, biological methods of pest management. The environmentally friendly methods related to microencapsulated pheromones are among the most promising.

Objectives

The aim of this study was to test the effectiveness of microencapsulated pheromones for control of OFM (oriental fruit moth) in peach orchards using CIDETRAK® OFM MEC liquid formulation. This product was developed and manufactured by Trécé Inc., USA.

Methods



The trials were carried out during the year 2018 in the north east region of Bulgaria. Monitoring of PTB and OFM flight was carried out using sex pheromone trapping in the year of the study. PHEROCON® VI Delta, sticky traps were installed in the trial orchards using a scheme provided by the producer. The traps were baited with standard PTB L2 – Anemone and OFM L2 – Orfamone and changed every 8 weeks. We used PHEROCON® OFM COMBO A&B DUAL lures, a new product developed by Trécé Inc., USA for the orchards with MD in the trial orchard in 2018. The lures were changed every 8 weeks. The traps were installed before PTB and OFM flights started. All pheromone traps were checked twice per week.

CIDETRAK® OFM MEC is a flowable formulation of microencapsulated **OFM** pheromone, which we applied in addition to the insecticide treatments in order to reduce their number. The **CIDETRAK® OFM MEC** was used on half of the trial orchard, while the other half was treated with insecticides only.

The damage to peaches was inspected during the season and at harvest on 2000 fruits.

Results and discussion

The results with **CIDETRAK® OFM MEC** in the trial peach orchards was positive. Fruit damage in the trial plots were compared with that in a reference orchard treated with conventional pesticides, which was located in the same region.

Damage in the trial plot increased slowly with time and even in late cultivars, fruit damage by OFM was below the economical threshold – from 0.0 to 0.1% in both plots of the same orchard - treated with insecticides only and with insecticides and **CIDETRAK® OFM MEC**. Nine chemical treatments were applied in a nearby conventionally treated orchard during this season, to control OFM, PTB and other pests. The significance of differences in the damage rate between the trial and the reference orchard was estimated by the use of Chi-square tests.

Table 1. Fruit damage (%) in the trial plots near Ruse in 2018

Index	Date	Damage rate by:			
		OFM – <i>Cydia molesta</i>		PTB – <i>Anarsia lineatella</i>	
		Plot A CIDETRAK® OFM MEC	Plot B Conventional	Plot A CIDETRAK® OFM MEC	Plot B Conventional
[%] Fruit damage	June 6	0.0	0.0	0.0	0.0
	July 18	0.0	0.0	0.0	0.0
	July 26	0.0	0.0	0.0	0.0
	August 9	0.0	0.0	0.0	0.0
	August 15	0.0	0.1	0.1	0.1
	at harvest	0.0-0.0	0.0-0.1	0.0-0.1	0.0-0.1

Table 2. Fruit damage (%) in the reference orchard near Ruse in 2018

Date	Cultivar	Damage by OFM [%] REFERENCE	Damage by PTB [%] REFERENCE
June 3 – 6	Maycrest	0.1	0.0
July 15 – 20	Redhaven	0.4	0.0
July 25 – 30	Suncrest	0.8	0.5
August 1 – 10	Moro	1.0	0.6
August 10 – 15	Cresthaven	1.1	0.7

Fig. 1. Flight dynamics of oriental fruit moth (*Cydia molesta* Busck) in the reference peach orchard in the Ruse region in 2018

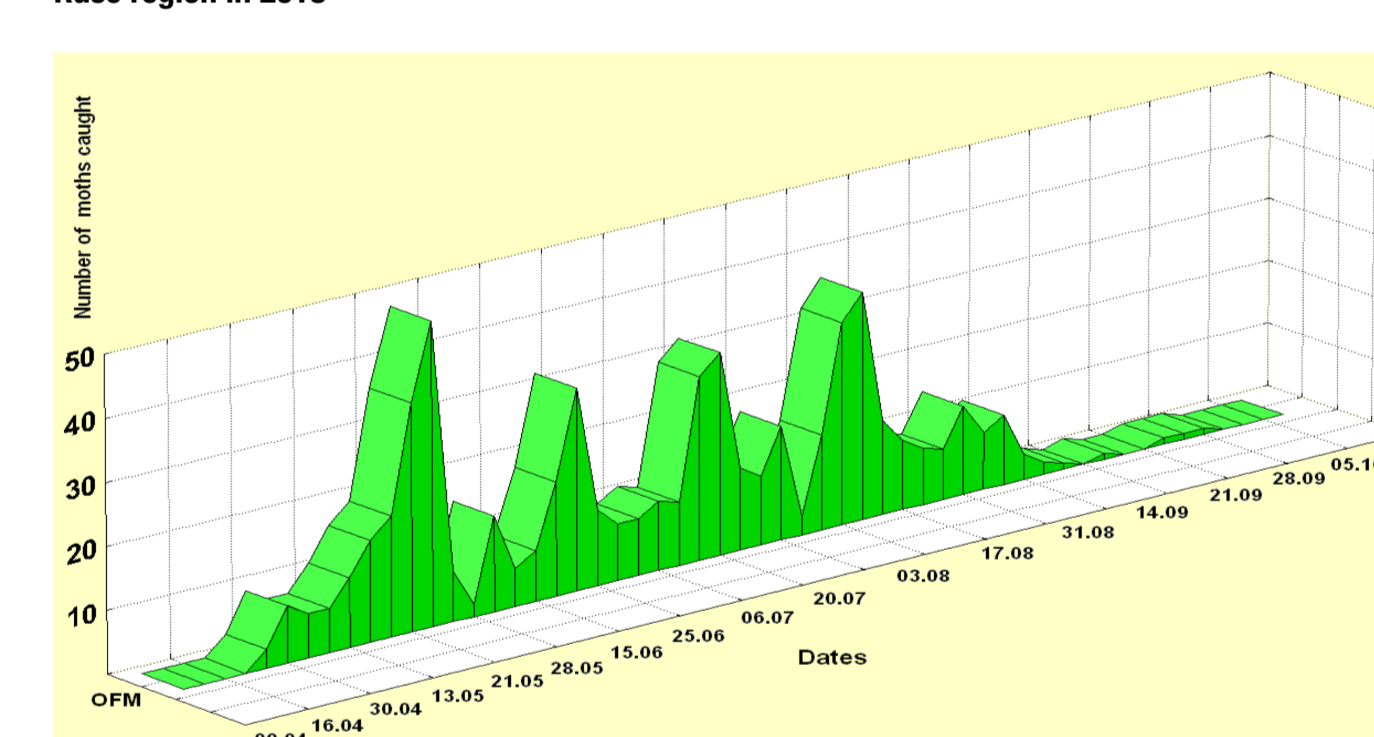


Fig. 2. Flight dynamics of peach twig borer (*Anarsia lineatella* Zell) in the reference peach orchard in the Ruse region in 2018

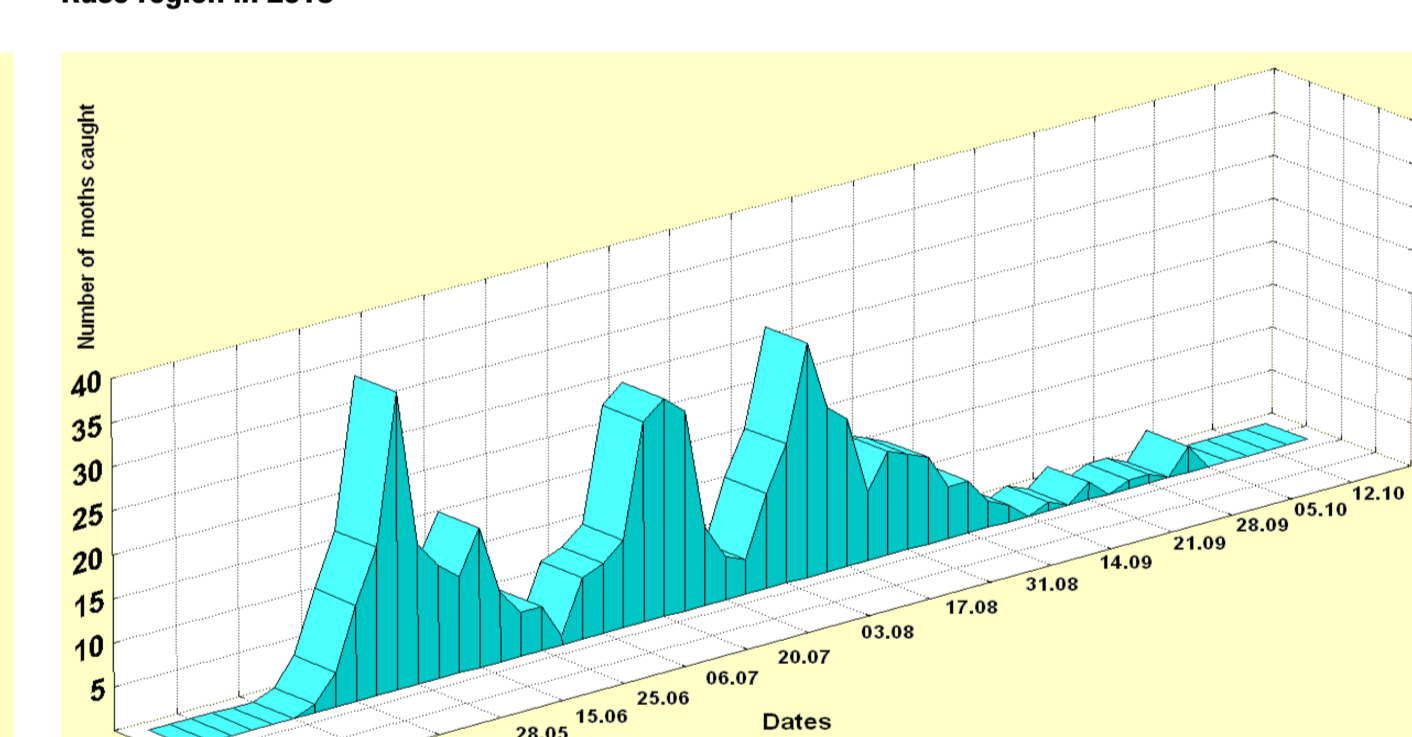


Fig. 3. Flight dynamics of oriental fruit moth (*Cydia molesta* Busck) with OFM COMBO DUAL lures and L2 caps in the experimental plot treated with insecticides and OFM MEC in 2018 in Ruse region

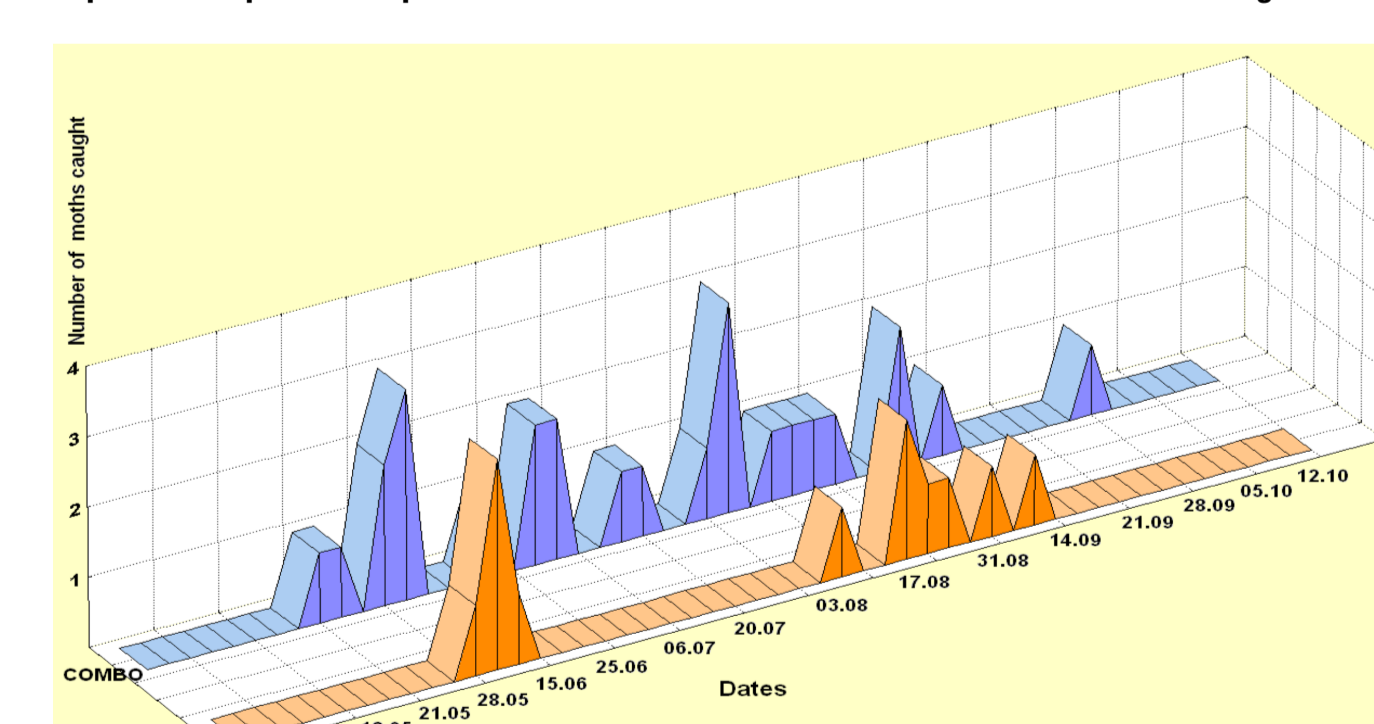
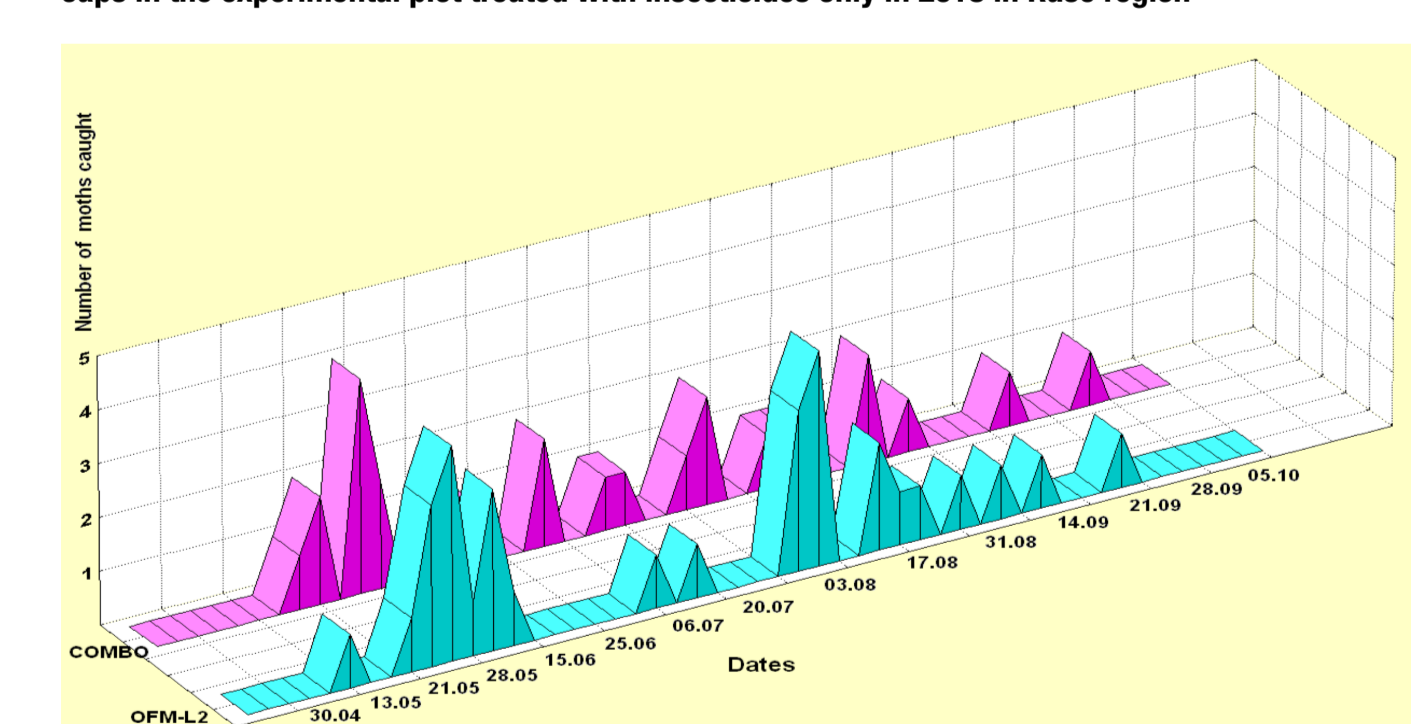


Fig. 4. Flight dynamics of oriental fruit moth (*Cydia molesta* Busck) with OFM COMBO DUAL lures and L2 caps in the experimental plot treated with insecticides only in 2018 in Ruse region



Conclusions

The present results confirm that, using **CIDETRAK® OFM MEC** liquid formulation in addition to insecticide treatments against oriental fruit moth can provide more effective control compared to insecticide treatments alone. This product can be used in Organic Farming and fits perfectly into any IPM system. The use of **CIDETRAK® OFM MEC** will help growers to decrease the number of chemical treatments in the field. This approach for controlling oriental fruit moth is safe to humans and to the environment.

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