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USE OF ECOLOGICAL METHODS TO CONTROL PATHOGENS AND PESTS IN APRICOT THE SOUTHERN AREA OF ROMANIA

Cristina MOALE, Leinar SEPTAR

Research - Development Station for Fruit Growing Constanta, 25 Pepinierei Street, 907300, Valu lui Traian, Constanta, Romania

Corresponding author email: moalecristina67@gmail.com

Abstract

The southeastern part of Romania is the area that offers the most favorable ecoclimatic conditions for apricot cultivation. The territory of the RSFG Constanta is influenced, from a climatic point of view, both by the Black Sea as well as the Danube, which means that spring arrives later summers are droughty and autumns are long and warm. The dynamics of the population of harmful microlepidoptera was realized with the help of AtraLIN, AtraMOL, AtraNUB pheromone traps. Trapping by specific sex pheromones initiated in 2020-2022 in an apricot plantation at the Research Station for Fruit Growing (RSFG), to monitor three pests, peach twig borer (Anarsia lineatella), oriental fruit moth (Cydia molesta) and (Hedyia nubiferana). The results of the three-year study showed that in 'Elmar' cultivar The amount of catches was higher for Anarsia lineatella (AtraLIN)in the Olimp cultivar, 341 butterflies in the year 2022 and the lowest amount of catches was for Hedyia nubiferana (AtraNUB), 267 butterflies in the year 2022.

Key words: *Prunus Armeniaca, symptoms, variety sensitivity monitoring, feromonal traps, ecological products.*

INTRODUCTION

The apricot tree culture is widespread in Europe, Asia, America and Oceania; almost 40% of the global production of 3,473,710 tons obtained in 2008 was produced in Europe, followed by Asia with 32%. The largest producer in the world is Turkey (528,000 tons), other large producers being Spain (159,000 tons), the USA (81,000 tons), Italy (212,000 tons), France (180,000 tons), Greece (68,500 tons) and so on. In Romania the apricot tree production in 2008 was of 32,100 tons (Stanica F. et al., 2011). Cytospora was first introduced by Ehrenberg (1818), which is one of the most important pathogenic fungi of hardwoods and coniferous trees in the world (Adams et al., 2005; Fan et al., 2020). About 150 species epithets of Cytospora are associated with dieback and stem canker on over 130 species of woody hosts (Adams et al., 2005; Fan et al., 2020). Among those who have previously dealt with the genetic resistance to diseases and pests în Romania are: Trandafirescu et al. (1989, 2005, 2006), Balan, et al 2008 and the creating of apricot tree cultivars Topor et al. (1997; 2006; 2007). For this reason, cultivating new cultivars that are resistant to the attack of these pathogens is the most important method to both prevent and control such attacks. Many researchers have recorded data concerning the reproduction of sources that are resistant to the attack of pathogens, such as: Crossa (1969), Keil (1976), Pascal et al. (1994), Trandafirescu (1989, 2006). Apricot breeding has been conducted by many researchers from the entire world where apricot tree finds good conditions to grow. Researchers from Italy (Penonne, 1999; Nicotra et al., 2006; Guerriero et al., 2006), France (Audergon et al., 1999), Spain (Egea et al., 1999), Greece (Syrgianidis et al., 1999), Bulgaria (Tsoneva, 1999), New Zealand (Hofstee, 1999), Slovak Republic (Benedicova, 2006) and many others have their own apricot breeding programs. In Romania, the apricot breeding program started in 1952, being under the leadership of Cociu (2006).

MATERIALS AND METHODS

The experimental plot is situated within the Research Station for Fruit Growing (RSFG) Constanta, with its headquarters in the village of Valu lui Traian, Constanta county, Dobrogea region, Romania. The geographical coordinates are: 44°10’ North, 28°29’ East, 70-72 m altitude. During the period 2020-2022, 2 apricot tree cultivars 'Elmar' and 'Olimp', were

studied, organised in a demonstrative plot that was created in 2011. The plot has 20 trees per row, with a planting distance of 4/4 m (625 trees/ha), with the canopy shape a vase and the parent stock a wild apricot tree. The system used for the soil management system was with cultivated strips both between the rows as well as in the row. The soil is a calcareous chernozem (CZka), with a loamy texture and a high, alkaline pH (8.2) in its entire profile. All in all, the climatic conditions were favourable to the growth and fructification of the apricot trees.

'Elmar'- cultivar was obtained at R.S.F.G Constanta - Valu lui Traian, in 2008.

The flowering period is early, abundant; fruit ripening period: early (June 17-23); the cultivar is self-fertile, does not require pollinators; tolerant to the main specific apricot diseases, free of viruses. The fruit has an oval shape; the average weight is 45-55 g; skin: medium orange. It ensures benefits per hectare as a result of the high productivity of the fruit quality (attractiveness, size, taste, aroma) (Figure 1).

'Olimp' - cultivar was obtained at R.S.F.G Baneasa - Bucharest. The tree has medium vigor, reverse-conical crown, bears fruit predominantly on bunch branches (may bunches), late. The cultivar is partially self-fertile. The fruit is spherical - ovoid in shape, 65-75 g with an orange epidermis, with a little red on the sunny side. Ripening period: August 10-12 with disease and frost resistance (Figure 2).

Observations were carried out concerning the behaviour of two apricot tree cultivars towards the attack of the main pathogen agents: *Stigmina carpophila*, *Cytospora cincta* and *Monilinia laxa*. These observations were focused on the evolution of the diseases on the leaves, fruit and shoots following. From a technological point of view, 8-10 treatments with insecticides and fungicides have been administered each year in the experimental plots, so as to protect against diseases and pests. The system used for the soil management system was cultivated strips both between the rows as well as in the row.

Figure 1. 'Elmar' cultivar

Figure 2. 'Olimp' cultivar

The occurrence of the disease *(Monilinia laxa)* at the apricot tree is highly influenced by the atmospheric conditions: at a temperature of 4-6°C accompanied by precipitations, the disease is triggered within 48 hours, while at a temperature of 10°C, the disease is evident within 18 hours (Trandafirescu and Teodorescu, 2006). The behaviour of apricot tree cultivars towards the attack of the pathogen agents - 1) *Stigmina carpophila* (Lév.) M.B. Ellis, 2) *Cytospora cincta* Sacc and 3) *Monilinia laxa* (Aderhol et Ruhl.) - was studied under conditions of natural infections, according to the test created by Crossa Raynaud (1968).

The evaluation technique consisted in writing down the frequency of the attacked organs and the intensity with which the symptoms manifested themselves and these two aspects were utilised in assessing the behaviour of the cultivars.

The field observations were centred on the calculation of the pathogens' frequency (F %) and intensity (I) on different tree organs such as: leaves, flowers, shoots, branches and fruits. For the intensity of the diseases marks were granted on a scale from 0 to 4 (Table 1). Depending on the frequency and intensity of the disease, the studied cultivars and hybrids were categorised into 4 classes and 8 groups of resistance according to the following scale.

Table 1. Cultivar Repartition into Classes and Groups of Resistance

Resistance class	Resistance group	Frequency (F%)	Intensity (I%)
1= tolerant (T)	1	0	0
2= medium resistance (MR)	2	0.1-11.0	+
	3	11.1-25.0	+
3= sensitive (S)	4	25.1-34.0	++
	5	34.1-50.0	++
4= very sensitive (VS)	6	50.1-59.0	+++
	7	59.1-75.0	+++
	8	75.1-100	++++

WA = cultivars without attack (F%= 0 and I= 0); T = tolerant cultivars (F%= 0.1-5% and I= +); WeA = weakly attacked cultivars (F%= 5.1% - 10% and I= +); MA = moderately resistant cultivars (F%= 10.1% - 25% and I= +); S= sensitive cultivars (F%= 25.1 – 50% and I= ++++); VS = highly sensitive cultivars (F%= 50.1% - 100%, I= ++++)

The monitoring of the dynamics of the population of harmful microlepidoptera is carried out with the help of AtraLIN, AtraMOL, AtraNUB pheromone traps, on the 'Elmar' and 'Olimp' apricot cultivars, for the monitoring of harmful insects, *Anarsia lineatella, Cydia molesta* and *Hedya nubiferana* before the start of the flight in the experimental lots at the RDSFG Constanta, during three years 2020, 2021 and 2022. The synthetic sexual pheromones were procured from the Cluj-Napoca Chemistry Institute, http://iccrr.institute.ubbcluj.ro/contact.html.

The control of the traps was carried out weekly, the captured butterflies being recorded and removed so as not to influence the subsequent observations. The traps were installed in the crown of the trees at a height of 1.5 m, in May. The control of the traps was carried out weekly, the captured butterflies being recorded and removed so as not to influence the subsequent observations. The replacement of pheromone capsules was ensured every 4 weeks, respecting the distance of at least 50 m between traps. A pheromone-soaked bait is placed in the sticky tape trap. Spreading in the environment, it attracts the males into the trap. The butterflies stick to the special glue, which has no smell and no harmful substances added. Pheromones are allowed for wide use, they do not pollute the environment and are harmless to humans and animals. The catches recorded in each trap were entered in the tables, and based on the butterflies caught at each observation, the flight curve was made, in order to more easily follow the evolution of the population of harmful microlepidoptera. The obtained data highlight the beginning, the end and the maximum flight of each generation, elements necessary to establish the optimal moments of treatment.

RESULTS AND DISCUSSIONS

Table 2 presents the relative sensitivity of the two cultivars from the demonstrative plot created within the laboratory responsible with improving the apricot tree concerning the attack of the pathogens: *Stigmina carpophila* (Lév.) M.B. Ellis, *Cytospora cincta* Sacc, *Monilinia laxa* and *Monilinia fructigena* Aderh Ruhl Honey under natural conditions of infection. The analysis of the data in this table highlights a variation in the apricot tree cultivars behaviour towards a pathogen or another. The observations that were carried out under conditions of natural infection with *Stigmina carpophila* (Lév.) M.B. Ellis for the two apricot tree cultivars displayed the different degrees of resistance.

'Elmar' cultivar was Tolerant (T) in the studied years 2020, 2021 and 2022 towards *Stigmina carpophila* (Lév.) M.B. Ellis. 'Olimp' cultivar displayed a Medium Rezistance (MR) in the studied years 2020, 2021 and 2022.

'Elmar' cultivar was Tolerant (T) in the studied years 2020, 2021 and 2022 towards *Cytospora cincta.* The 'Olimp' cultivar displayed a Medium Rezistance (MR) towards *Cytospora cincta* in the studied years 2020, 2010 and 2022.

During the study period 2020-2022 both 'Elmar' and 'Olimp' manifested a good resistance towards *Monilinia laxa*, being basically in the class Tolerant (T) and mean resistance (MR) to *Monilinia fructigena*.

That is why fruit-growing practices on the one hand and especially the RSFG Constanta programme for improving the apricot tree on the other highlighted as main objective for researches the promoting of cultivars and the identification possible genitors with genetic resistance towards the attack of the pathogens *Stigmina carpophila (Lév.) M.B. Ellis, Cytospora cincta* Sacc, *Monilinia laxa* and *Monilinia fructigena* Aderh Ruhl Honey.

Table 2. The behaviour of apricot tree cultivars towards the attack of the main pathogens in the period 2020, 2021 and 2022

No.	Cultivar	Year	Attack intensity (notes)			
			Stigmina carpophila	*Cytospora cincta*	*Monilinia laxa*	*Monilinia fructigena*
1.	Elmar	2020	T	T	T	MR
		2021	T	T	T	MR
		2022	T	T	T	MR
2.	Olimp	2020	MR	MR	T	MR
		2021	MR	MR	T	MR
		2022	MR	MR	T	MR

The monitoring of the dynamics of the population of harmful microlepidoptera was carried out with the help of AtraLIN, Atra MOL, AtraNUB pheromone traps, in the apricot varieties 'Elmar' and 'Olimp', during 1.05-8.09.2020-2022 period.

In the apricot orchard from the experience, the attack with *Anarsia lineatella* was monitored and the flight dynamics and the total catches for the period May- September 2020 were realized.

It is observed that the maximum of the flight curves, determined with the aid of the atraLIN pheromone trap installed in the crown of the trees at 'Elmar' variety was registered in the third decade of June 2020, 23 butterflies/trap/week (Figure 3).

In the experimental apricot orchard, the attack of *Cydia molesta* was monitored and the flight dynamics and the total catches were realized for the period May-September 2020.

It is observed that the maximum of the flight curve, determined using the atraMOL pheromone trap for *Cydia molesta*, was recorded in the secand decade of June on the 'Elmar' variety, 35 butterflies/trap/week (Figure 4).

In the experimental apricot orchard, the attack of the green bud moth *(Hedyia nubiferana)*, was monitored. The maximum flight curve, determined using the atraNUB pheromone trap, was recorded in the third decade of June 2020, 37 butterflies/trap/week (Figure 5).

From the analysis of Figure 6, it can be seen that the maximum value of the amount of catches, 255 male butterflies/trap/season, was recorded for the bud moth (*Hedya nubiferana*), followed by the peach moth (*Cydia molesta*) with an average amount of catches of 227 male butterflies/trap/season. From the same figure, the minimum level of the sum of the captures of the peach shoot moth (*Anarsia lineatella*) can be noted, namely 208 male butterflies/trap/season.

The monitoring continued also in the year of 2021. In the apricot experimental orchard, the attack by *Anarsia lineatella* was monitored and the flight dynamics and the total catches for the period May- September 2021 were realized.

It was observed that the maximum of the flight curve, determined with the aid of the atraLIN pheromone trap installed in the crown of the trees for *Anarsia lineatella* at variety 'Elmar' was registered in the second decade of June 2021, 27 butterflies/trap/week (Figure 7).

In the apricot orchard where the experiment was set up, the attack with *Cydia molesta* was monitored and the flight dynamics and the total catches were made for the period May-September 2021. It is observed that the maximum of the flight curve, determined with the aid of the atraMOL pheromone trap for *Cydia molesta*, was recorded in the third decade of June at the 'Elmar' variety, 25 butterflies/trap/week (Figure 8). In the apricot orchard, the attack of the green bud moth (*Hedyia nubiferana*), a species with only one generation per year, was monitored. The maximum flight curve, determined using the atraNUB pheromone trap, was recorded in the third decade of June 2021, 24 butterflies/trap/week (Figure 9). From the analysis of figure 10, it can be seen that the maximum value of the amount of catches, 192 male butterflies/trap/season, was recorded for the bud moth (*Cydia molesta*), followed by the peach moth *(Hedya nubiferana)* with an average amount of catches of 183 male butterflies/trap/season. From the same figure, the minimum level of the sum of the captures of the peach shoot moth (*Anarsia lineatella*) can be noted, namely 178 male butterflies/trap/season.

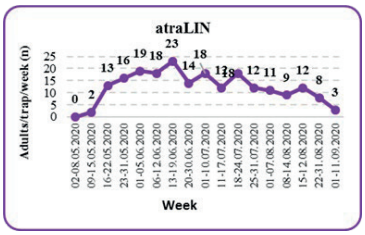

Figure 3. *Anarsia lineatelala* flight dynamic established with atraLIN at RSFG Constanta, 2020, 'Elmar' apricot cultivar

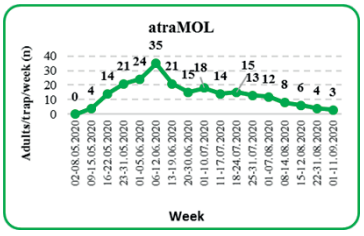

Figure 4. *Cydia molesta* flight dynamic, established with atraMOL pheromone trap at RSFG Constanta, 2020 'Elmar' apricot cultivar

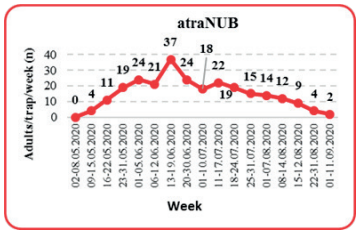

Figure 5. *Hedya nubiferana* flight dynamic established with atraNUB feromone traps at RSFG Constanta, 2020, 'Elmar' apricot cultivar

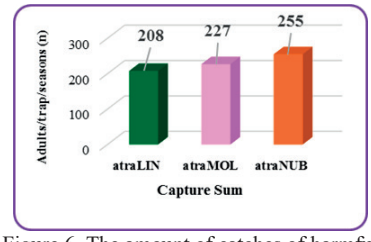

Figure 6. The amount of catches of harmful microlepidoptera at RSFG Constanta, 2020, 'Elmar ' apricot cultivar

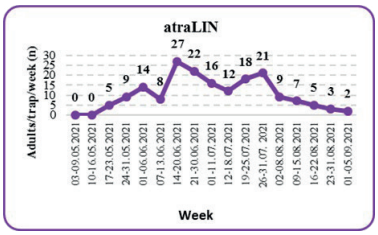

Figure 7. *Anarsia lineatelala* flight dynamic established with atraLIN pheromone traps at RSFG Constanta, 2021, 'Elmar' apricot cultivar

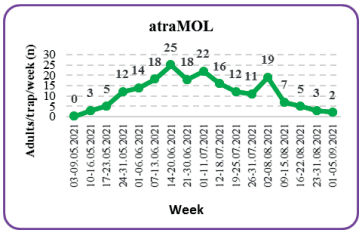

Figure 8. *Cydia molesta* flight dynamic, established with atraMOL pheromone traps at RSFG Constanta, 2021, 'Elmar' apricot cultivar

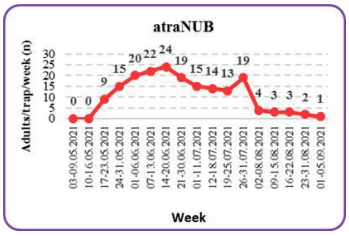

Figure 9. *Hedya nubiferana* flight dynamic, established with atraNUB pheromone traps at RSFG Constanta, 2021, 'Elmar' apricot cultivar

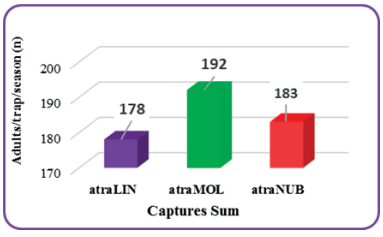

Fig. 10. The amount of catches of harmful microlepidoptera at RSFG Constanta, 2021, 'Elmar' apricot cultivar

In the apricot experimental orchard, the attack by *Anarsia lineatella* was monitored and the flight dynamics and the total catches for the period May-September 2022 were realized. It is observed that the maximum of the flight curves, determined with the aid of the atraLIN pheromone trap installed in the crown of the trees. The apricot of the flight *Anarsia lineatella* at 'Elmar' cultivar was registered in the second decade of June 2022, 44 butterflies, (Figure 11). In the apricot orchard, in the experiment area, the attack with *Cydia molesta* was monitored and the flight dynamics and the total catches were realized for the period May-August 2022. It is observed that the maximum of the flight curve, determined with the aid of the atraMOL pheromone trap for *Cydia molesta*, was recorded in the second decade of June, at 'Elmar' variety, 41 butterflies/trap/week (Figure 12). In the apricot orchard, the attack of the green bud moth (*Hedyia nubiferana*), a species with only one generation per year, was monitored. The maximum flight curve, determined using the atraNUB pheromone trap, was recorded in the second decade of June 2022, 27butterflies/trap/week (Figure 13). From the analysis of figure 14, it can be seen that the maximum value of the sum of the catches, 341 male butterflies/trap/season (2022), was recorded for the peach shoot moth *(Anarsia lineatella),* followed by the bud moth(*Cydia molesta*) with a sum of medium-high 255 male butterflies/trap/season, which indicates a reserve from the previous growing season. The same figure also shows the minimum level of the amount of peach moth (*Hedya nubiferana*) catches, namely 193 male butterflies/trap/season.

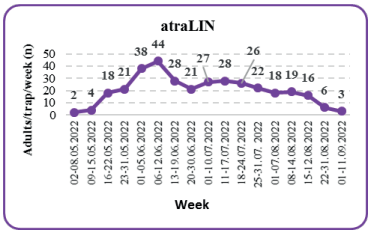

Figure 11. *Anarsia lineatelala* flight dynamic established with atraLIN at RSFG Constanta, 2022, 'Elmar' apricot cultivar

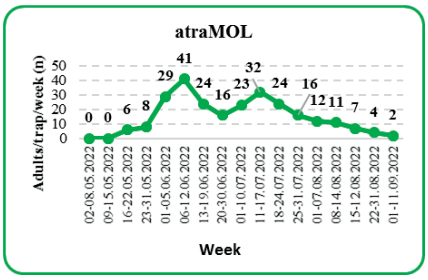

Figure 12. *Cydia molesta* flight dynamic, established with atraMOL pheromone trap at RSFG Constanta, 2022 'Elmar' apricot cultivar

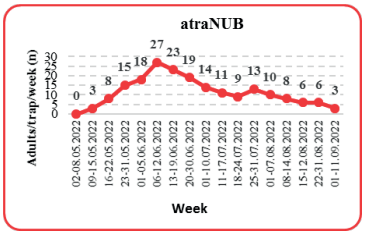

Figure 13. *Hedya nubiferana* flight dynamic established with atraNUB feromone traps at RSFG Constanta, 2022, 'Elmar' apricot cultivar

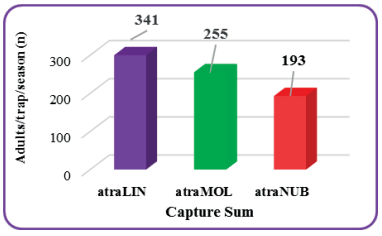

Figure 14. The amount of catches of harmful microlepidoptera at RSFG Constanta, 2022, 'Elmar' apricot cultivar

In the apricot orchard from the experience, the attack with *Anarsia lineatella* was monitored and the flight dynamics and the total catches for the period May- September 2020 were realized. It is observed that the maximum of the flight curves, determined with the aid of the atraLIN pheromone trap installed in the crown of the trees at 'Olimp' cultivar was registered in the first decade of July 2020, 39 butterflies/trap/week (Figure 15). In the experimental apricot orchard, the attack of *Cydia molesta* was monitored and the flight dynamics and the total catches were realized for the period May-September 2020. It is observed that the maximum of the flight curve, determined using the atraMOL pheromone trap

for *Cydia molesta*, was recorded in the second decade of July on the 'Olimp' cultivar, 41 butterflies/trap/week (Figure 16). In the experimental apricot orchard, the attack of the green bud moth (*Hedyia nubiferana*), a species with only one generation per year, was monitored. The maximum flight curve, determined using the atraNUB pheromone trap, was recorded in the third decade of July 2020, 45 butterflies/trap/week (Figure 17). From the analysis of Figure 18, it can be seen that the maximum value of the amount of catches, 312 male butterflies/trap/season, was recorded for the bud moth (*Hedya nubiferana*), followed by the peach moth (*Cydia molesta*) with an average amount of catches of 308 male butterflies/trap/season. From the same figure, the minimum level of the sum of the captures of the peach shoot moth (*Anarsia lineatella*) can be noted, namely 301 male butterflies/trap/season.

The monitoring continued also in the year of 2021. In the apricot experimental orchard, the attack by *Anarsia lineatella* was monitored and the flight dynamics and the total catches for the period May-September 2021 were realized. It was observed that the maximum of the flight curve, determined with the aid of the atraLIN pheromone trap installed in the crown of the trees for *Anarsia lineatella* at cultivar 'Olimp' was registered in the third decade of July 2021, 31 butterflies/trap/week (Figure 19). In the apricot orchard where the experiment was set up, the attack with *Cydia molesta* was monitored and the flight dynamics and the total catches were made for the period May-September 2021. It is observed that the maximum of the flight curve, determined with the aid of the atraMOL pheromone trap for *Cydia molesta*, was recorded in the third decade of July at the Olimp cultivar, 44 butterflies/trap/week (Figure 20). In the apricot orchard, the attack of the green bud moth (*Hedyia nubiferana*), a species with only one generation per year, was monitored. The maximum flight curve, determined using the atraNUB pheromone trap, was recorded in the fourth decade of July 2021, 51 butterflies/trap/week (Figure 21). From the analysis of Figure 22, it can be seen that the maximum value of the amount of catches, 303 male butterflies/trap/season, was recorded for the bud moth (*Hedya nubiferana*), followed by the peach moth (*Anarsia lineatella)* with an average amount of catches of 280 male butterflies/trap/season. From the same figure, the minimum level of the sum of the captures of the peach shoot moth (*Cydia molesta*) can be noted, namely 271 male butterflies/trap/season.

It is observed that the maximum of the flight curves, determined with the aid of the atraLIN pheromone trap installed in the crown of the trees. The apricot of the flight *Anarsia lineatella* at 'Olimp' cultivar was registered in the second decade of July 2022, 39 butterflies, (Figure 23). In the apricot orchard, in the experiment area, the attack with *Cydia molesta* was monitored and the flight dynamics and the total catches were realized for the period May-September 2022. It is observed that the maximum of the flight curve, determined with the aid of the atraMOL pheromone trap for *Cydia molesta*, was recorded in the first decade of July, at 'Olimp' cultivar, 47 butterflies/trap/week (Figure 24). In the apricot orchard, the attack of the green bud moth (*Hedyia nubiferana*), a species with only one generation per year, was monitored. The maximum flight curve, determined using the atraNUB pheromone trap, was recorded in the third decade of July 2022, 35 butterflies/trap/week (Figure 25). From the analysis of figure 26, it can be seen that the maximum value of the sum of the catches, 302 male butterflies/trap/season (2022), was recorded for the peach shoot moth (*Cydia molesta*), followed by the bud moth *(Anarsia lineatella),* with a sum of medium-high 292 male butterflies/trap/season, which indicates a reserve from the previous growing season. The same figure also shows the minimum level of the amount of peach moth (*Hedya nubiferana*) catches, namely 267 male butterflies/trap/season.

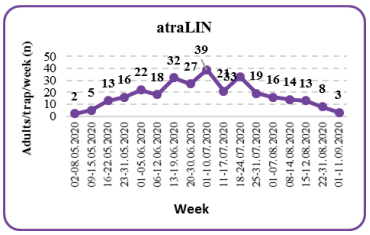

Figure 15. *Anarsia lineatelala* flight dynamic established with atraLIN at RSFG Constanta, 2020, 'Olimp' apricot cultivar

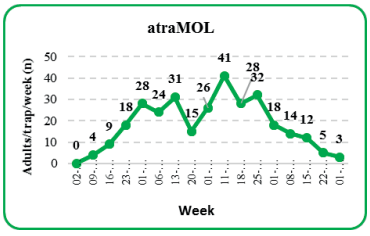

Figure 16. *Cydia molesta* flight dynamic, established with atraMOL pheromone trap at RSFG Constanta, 2020 'Olimp' apricot cultivar

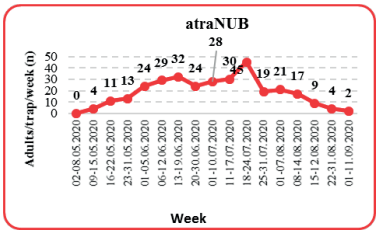

Figure 17. *Hedya nubiferana* flight dynamic established with atraNUB feromone traps at RSFG Constanta, 2020, 'Olimp' apricot cultivar

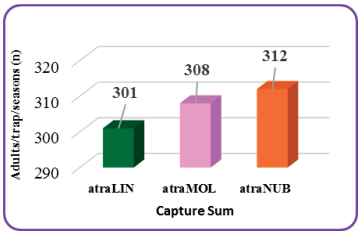

Figure 18. The amount of catches of harmful microlepidoptera at RSFG Constanta, 2020, 'Olimp ' apricot cultivar

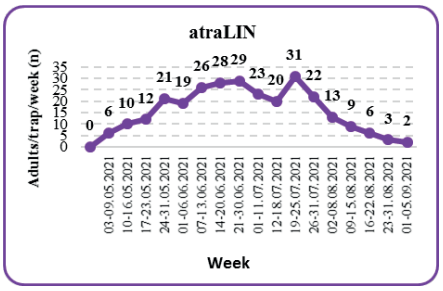

Figure 19. *Anarsia lineatelala* flight dynamic established with atraLIN pheromone traps at RSFG Constanta, 2021, 'Olimp' apricot cultivar

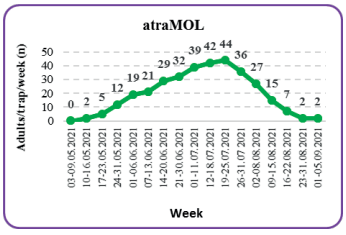

Figure 20. *Cydia molesta* flight dynamic, established with atraMOL pheromone traps at RSFG Constanta, 2021, 'Olimp' apricot cultivar

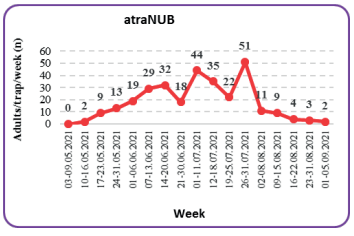

Figure 21. *Hedya nubiferana* flight dynamic, established with atraNUB pheromone traps at RSFG Constanta, 2021, 'Olimp' apricot cultivar

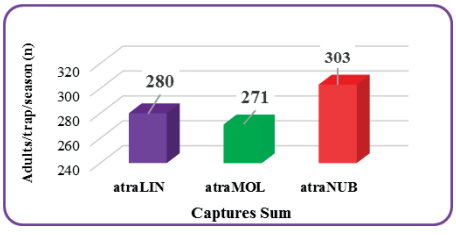

Figure 22. The amount of catches of harmful microlepidoptera at RSFG Constanta, 2021, 'Olimp' apricot cultivar

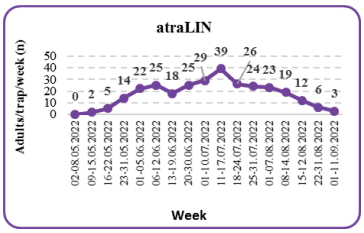

Figure 23. *Anarsia lineatelala* flight dynamic established with atraLIN pheromones trap at RSFG Constanta, 2022, 'Olimp' apricot cultivar

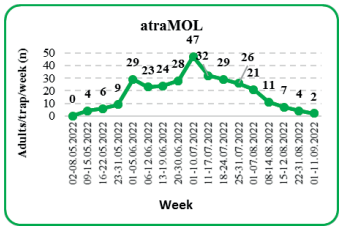

Figure 24. *Cydia molesta*, flight dynamic established with atraMOL pheromones trap at RSFG Constanta, 2022, 'Olimp' apricot cultivar

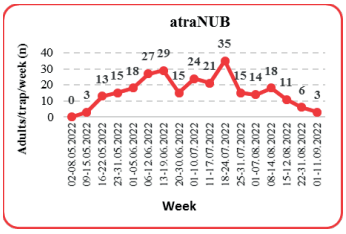

Figure 25. *Hedya nubiferana*, flight dynamic established with atraNUB feromones trap at RSFG Constanta, 2022 'Olimp' apricot cultivar

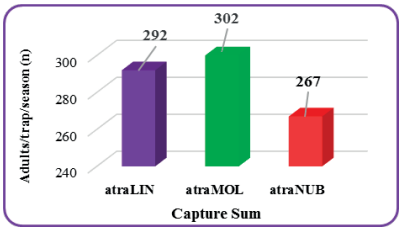

Figure 26. The amount of catches of harmful microlepidoptera at RSFG Constanta, 2022, 'Olimp' apricot cultivar

CONCLUSIONS

Monitoring harmful microlepidoptera in apricot orchards ispossible by using pheromonal traps specific to each species.

The synthetic sex pheromones atraLIN, atraMOL and atraNUB showed high potency of attraction, proving to be useful in knowing the level of peach moth populations (*Anarsia lineatella*), the peach moth *(Cydia molesta*), and the bud moth (*Hedya nubiferana*), the dynamics of populations and the application of chemical treatments at optimal times.

At 'Elmar' cultivar, the sum of catches per trap was higher in 2022, 341 male butterflies/trap/season was recorded for the apricot shoot moth (*Anarsia lineatella*, atraLIN), followed by the bud moth (*Cydia molesta*) with a sum of medium-high 254 male butterflies/trap/season and the minimum level of the amount of catches was recorded for the peach moth (*Hedya nubiferana*), namely 193 male butterflies/trap/season.

At 'Olimp' cultivar, the amount of catches per trap was higher in 2020, the maximum value of the amount of catches, 312 male butterflies/trap/season was recorded for the peach shoot moth (*Hedya nubiferana*), followed by the peach moth (*Cydia molesta*) with a medium-high capture amount of 308 male butterflies/trap/season, which indicates a reserve from the previous growing season and the minimum level of the capture amount was recorded for the bud moth (*Anarsia lineatella*), namely 301 male butterflies/ trap/season.

The results of this study provide an understanding of the key issues of environmental impact related to the maintenance of pathogens and pests below the economic threshold of damage, the reduction of toxic substances accumulated per ha, the environmental pollution, while also achieving balanced nutritional conditions for trees, in the species apricot, species with a good culture favorability in Dobrogea.

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increase profitability and ensure environmental protection).

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