RESEARCH CONCERNING THE INFLUENCE OF CHEMIC PRODUCTS IN THE COMBAT OF INSECTS IN THE COLZA CULTURE AND THE BEES FAMILIES IN THE YEAR 2007

CERCETĂRI PRIVIND INFLUENȚA PRODUSELOR CHIMICE ÎN COMBATEREA DĂUNĂTORILOR DIN CULTURA DE RAPIȚĂ, ASUPRA DEPOPULĂRII FAMILIILOR DE ALBINE ÎN ANII 2007

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Abstract: *The main propose of this research was the observation of bees returning from the colza culture to the hide with pollen depending on the hoer. In the period April-may 2007 5 bee families out of the own bee culture where studied on their behavior during the blooming period of the colza culture, the aspect that the culture was treated with Friponil insecticide (Regent) for the insects combat (Athalia Rosae and Meligethes aeneus). During the 3 days of counting bees, they had a normal behavior in the hide till the colza was treated, the maximum number of bees counted was of 562 for the first week during the interval 9:15-9:30 at the family number 2 and in the second week 580 at the sane family and in the same time period, and after the 6th day of treatment another research was made and the conclusion was that in all the hides the number of bees coming in from the fields was very low, maximum 60 bees at the bee family number 1 during 9:15 - 9:30 during the afternoon no bee was observed coming in with pollen. Now we can affirm that the Fipornil insecticide (Regent) is extremely harmful as well for the nectar collecting bees as well as for the pollen collecting bees, their def occurred after short time. Because this insecticide is causing extreme damage to the bee families, this has to be replaced with products without, or with less toxicity factor. In this domain there where many researches made, but none of them was centered on the number of bees coming with pollen in the hide after the culture has been treated.The originality of the research consists in the way of the research that is the number of bees and the measurement of the surface with offspring razed up by the bee families during this period. I give bug attention to this work because trough this kind of research there can be proofed if a product is toxic for the bees or not.*

Rezumat: *Scopul cercetărilor a fost observarea albinelor care se întorc în stupi cu polen în funcție de oră din lanul de rapiță înflorit, în condițiile în care acesta a fost tratat cu insecticidul fipronil (Regent). În perioada aprilie-mai 2007, 5 familii de albine din stupină proprie au fost cercetate sub aspectul comportamentului în perioada de înflorire a culturii de rapiță în condițiile în care a fost tratată cu fipronil (Regent) pentru combaterea dăunătorilor (Athalia rosae şi Meligethes aeneus). În cele trei zile în care au fost numărate albine, în stupină acestea au avut un comportament normal înainte de a fii tratată rapița, numărul maxim de albine identificate a fost de 562 pentru prima săptămână în intervalul 09^{15}-09^{30} la familia cu numărul 2, iar în cea de a doua săptămână de 580 la aceiaşi familie şi în acelaşi interval de ore cercetat, iar după ce a fost tratată în a 6 zi au fost făcute din nou cercetări şi s-a observat că în toți stupii numărul albinelor intrate venind de la cules era foarte mic fiind maximul de 60 de albine la familia cu numărul 1 în intervalul de ore 09^{15}-09^{30} la orele după amiezei nu s-a observat nici o albină intrând în stup cu polen. Din aceste date putem afirma că insecticidul fipronil (Regent) este deosebit de dăunător atât albinelor culegătoare de nectar cât şi a celor de polen, moartea acestora producându-se la scurt timp. Deoarece acest insecticid produce mari pagube familiilor de albine, trebuie substituit cu produse fără sau în lipsa acestora cu toxicitate foarte redusă (tolerante). În acest domeniu au mai fost făcute cercetări, dar în nici una dintre aceste cercetări nu s-a ocupat de identificarea albinelor care intră în stupi cu polen provenit de la cultura la care s-a făcut tratamentul. Originalitatea lucrării constă în modul de cercetare, respectiv numărarea albinelor şi măsurarea suprafețelor de puiet crescut de către familiile de albine în această perioadă.*

***Key-words** : substances, bee, research, numbering, depopulation*
***Cuvinte-cheie**: substanţă, albină, cercetare, numărat, depopulare.*

INTRODUCTION

The bees have a role not to replace in the colza fertilization. High production can be obtained by using of an proper chemic protection (M BURA-2005).

If the producer dose not respect all details of the treatment, or under ay circumstance the bees are poisoned (N. POPESCU-1997).

The bee farmer desires compensations, but the producer dose not accept it without the proof of the connection between the plants treatments and the intoxication of the bees.

All dough the visual symptoms of the dieing bees are typically for intoxication, the usual laboratory analysis are most of the times negative. The bee farmer doesn't get any compensations and the producer doesn't haw any interest in improving the methods of plant protection (R. WOLFGANG – 1996).

The necessity of gathering in groups is caused by their organism, witch trough him itself can not give the bees itself the possibility to keep the own body temperature to ensure its survivor.

The intoxication of the bees cannot be combated nowadays, death occurring in short time. The substances used in plant protections are casing a intoxication effect on the bees trough contact, with other words the substance penetrate the bees CHITINOS tissue though the PORI and intoxicates the insect. Others have effect through ingestion, whit the injection of the poison in the digestive system most of them have a mixed effect, in the ingestion but also at contact (A. L. MARGHITAS,2002).

We need improved methods of analyze of the pesticides leftovers at bees and plants.

STUDY METHODS AND MATERIALS

The studies took place in the village Bulgarus in Timis County. For the experiment 5 bee families and a field of colza where the bee families where transported and 3 weeks after the colza bloomed it was treated with Fipronil (Regent) for DAUNATORI combat (*Athalia rosae* – the colza wasp and Meligethes aeneus – the shiny beetle). Research took place during 5 weeks.

The experiment took place from April to May 2007 for the colza blooming, and during the 5 weeks blooming period of the acacia.

After the treatment of the plants the bees where closed for 48 hoers, not to have direct contact with the treated flowers.

For each particular hide the number of frames covered with offspring was counted during 3 weeks, and the offspring was measured with the ruler in length and height of the frame on each side, in order to tell the surface covered with it. As well the covered offspring as well as the uncovered offspring where measured. Three observations where made on the offspring at an interval of 7 days for 3 weeks for each particular family.

In the coming days pollen collectors where installed and pollen was collected from all the studied hides. The collected pollen was send to the laboratory for analysis.

RESULTS AND DISCUSSIONS

After the first week of observation it could be observed that the bees returning to the bee hide where nectar and pollen loaded, the number of bees observed is shown in the following table.

In the first day of study the number of bees coming in the hide pollen loaded was studied before any treatment against harmful insects on the colza field was made. Bees coming with pollen in the hide where observed and counted for 15 minutes 4 times a day for all of the 5

bee hides. So they where a closely observation on the way the bees behave when they return with pollen from the field to the hide if there are dieing bees around the hide and if they come continually during the day or just at specific hoers. During the first they we could observe that the bees are coming continually during the hole day.

Table 1

Number of bees witch entered the hide colza pollen loaded on Saturday 14.04.2007

Family /hour	**Number of pollen collecting bees**				
	F_1	**F_2**	**F_3**	**F_4**	**F_5**
09^{15}-09^{30}	116	562	460	255	395
12^{00}-12^{15}	180	460	450	390	430
17^{00}-17^{15}	157	350	200	165	156
18^{10}-18^{25}	45	160	120	130	116

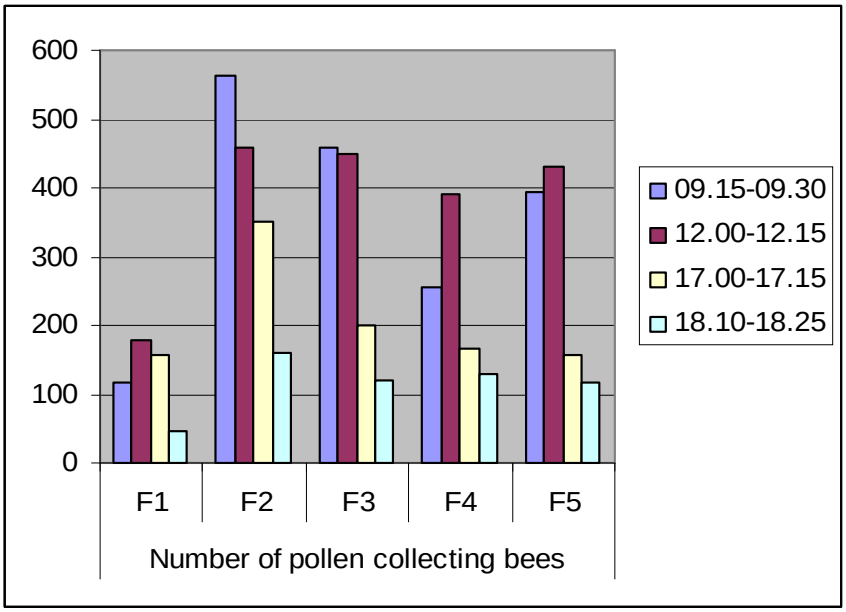

Fig.1 The graphic representation of the number of bees (*Apis mellifera)* witch entered the hide with colza pollen on Saturday 14.04.2207

From now on we can observe that before the treatment of the pants the bees where bringing pollen to the hide, the maximum number of bees was observed during the interval between 9:15 and 9:30, when a number of 562 bees caring pollen in the hide, the minimum number of bees coming in the hide vas counted in between 18:10 – 18:25, period when the a minimum number of 45 bees coming in the was counted for all the studied hides. Out of this figure we can conclude that in this moment everything is normal.

In the second week of research the counting of the bees entering the hide with pollen was continued ordered by hoers, and the obtained data is present in table nr 2.

Table 2

Number of bees (*Apis mellifera)* entering the hide with colza pollen on Saturday 21 . 04. 2007

Family / hoer	**Number of bees (*Apis mellifera)* collecting pollen**				
	F_1	**F_2**	**F_3**	**F_4**	**F_5**
09^{15}-09^{30}	380	580	485	460	480
12^{00}-12^{15}	285	450	530	450	450
17^{00}-17^{15}	260	245	232	280	115
18^{10}-18^{25}	120	140	100	115	145

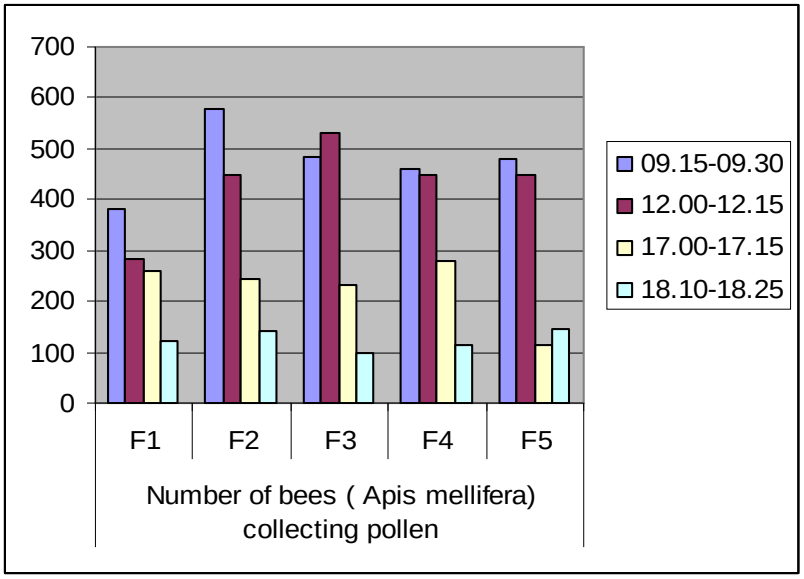

Fig. 2. The graphic representation of the bees (*Apis mellifera)* witch entered the hide with colza pollen on Saturday 21. 04. 2007

Out of the second figure we can observe that the bees continually bring pollen during the whole day, and are not stopped by any outside factor. The maximum number of bees counted in that day was of 580 bees counted in between 9:15 – 9:30, and the minimum number was a total of 100 bees counted at the bee family number 3 during the interval 18:10 – 18:25.

In the 3rd week of study after the treatment of the colza culture, on 23.04.07, the second day after freeing the bees, these where studied closely. All the bees witch came from pollen collecting, as well as the bees coming in with pollen, those where rare, where watched; dead bees where discovered around the hide, much more than normal, an the number of bees coming to the hide during that day is showed in table number 3.

Table. 3

Number of bees (*Apis mellifera)* witch entered the hide with colza pollen on Friday 27.04.07

Family/ hoer	**Number of bees (*Apis mellifera)collecting pollen***				
	F_1	**F_2**	**F_3**	**F_4**	**F_5**
09^{15}-09^{30}	60	20	23	10	46
12^{00}-12^{15}	42	4	10	5	28
17^{00}-17^{15}	31	13	3	3	20
18^{10}-18^{25}	15	1	3	0	10

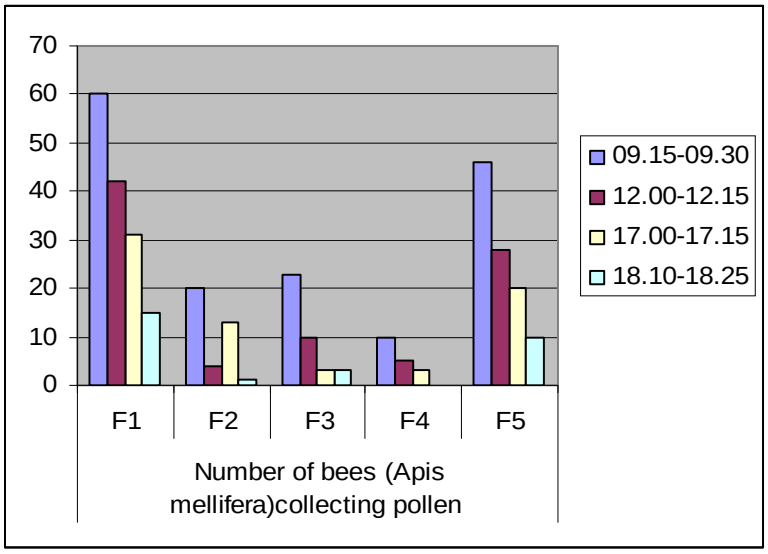

Fig.3 Graphic representation of the bees (*Apis melifera*) witch entered the hide with colza pollen on Friday 27.04.2007

Out of this figure we can observe that the bees witch came in the hide with pollen was decreasing at all the studied hides. The maximum number of bees was counted at the hide nr 1 during the interval 9:15 – 9:30 when a number of 60 bees were counted, and the minimum number of bees counted coming in that hide was of 10 at the hide nr 3. For the interval 12:00 – 12:15 the maximum number of bees witch came in the hide was 42 bees counted at the bee family number 1 and the minimum number of bees counted was recorded at the hide number 2 with a minimum of 4 bees. During the interval 17:00 – 17:15 the maximum number of bees counted was of 31 bees coming to the hide number 1 and the minimum number was of 3 bees at hide number 3 and 4.the last counting of the bees in that day, in the interval between 18^{10}-18^{25} showed a maximum number of 15 at the bee family number 1, and a minimum number was registered at bee family number 4 which had no bee in that day. We can say that the bees who were seen coming into the hive pollen loaded must have been picked up the pollen from other sources than colza pollen; one possibility is that of the flora pollen and that's way the bees didn't had nothing.

From the gathered data we can say that Fipronil is toxic for the bees. The toxicity can be observed also after 6 day from applying it on the fields .It has a acute toxicity for the bees and for this reason it must be banned from the colza field and find another alternative for keeping off the pests, for this we can refer to the integrate methods.

CONCLUSIONS

- The Fipronil(Regent) has a acute toxicity for the bees and that's why it must be forbidden using it on the flowered colza fields.
- From the gathered data we can say that Fipronil is toxic for the bees the toxicity can be observed also after 6 day from applying it on the fields, and the maximum number of bees identified was 60 between the hours 09^{15}-09^{30}.
- The pesticide Fipronil is very noxious to the nectar and pollen gathering bees,

their death occurring in short time.

- The data gathered ten days after the chemical treatment shows that this family really lost a lot of working bees ,which had also a impact on the younglings ;the values registered in this period were very low,120 mm^2 .

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