# PEST FAUNA IN RAPESEED CROPS. ECONOMIC IMPORTANCE, PREVENTION AND FIGHTING

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***Abstract***
*The protection of rapeseed crops against pests is a necessity because, in years that are favourable to the attack,, such pests can almost completely compromise production. The following paper contains data obtained in 2015 regarding the prevention and fighting of the following species: flea beetles (Phyllotreta spp), pollen beetles (Meligethes aeneus), the turnip sawfly (Athalia rosae) and blossom feeder beetles (Epicometis hirta). The chemical treatment of the seed was employed, as well as treatments applied during the vegetation period; in the case of the latter, special attention was paid to the moment chosen for application. This is mainly due to the fact that rapeseed is attacked during its blooming period and chemical products may also destroy pollen carrying insects at the same time. Therefore, the employed products have been carefully chosen so that their level of toxicity may be as low as possible.*

**Key words:** pests, treatment, rapeseed, efficiency.

## INTRODUCTION

Rapeseed is cultivated on large surfaces worldwide, ranking fifth among the most economically important oleaginous plants (Roşca I., 2009). There was a time when the surfaces covered by rapeseed crops were reduced due to the fact that sunflower became more and more valued as an oil plant. However, in time, rapeseed returned to the attention of agricultural producers, because new variants were created, which proved to be more resistant to frost and with a lower content of erucic acid.

Protecting the plant against pest attacks is of the utmost importance to farmers, because the flea beetles of the *Phyllotreta spp*. genus can attack forcefully immediately after emergence, their attack sometimes leading to the entire crop being compromised. Moreover, during the vegetation period, the pollen beetle (*Meligethes aeneus*) can destroy the whole flower organs. It is a dangerous pest both in its adult and larval state, and its attack is in correlation with the evolution of abiotic factors, being present in crops mainly in wet and cool years, the attack being facilitated by low temperatures and high air humidity.

According to research conducted by Bărbulescu Al. and collaborators in 2000, the attack of the pollen beetle can reach a frequency of 100%.

The turnip sawfly (*Athalia rosae*) also hits during the vegetation period, its larvae chewing the leaves entirely; if the attack is a powerful one, nothing is left of the leaf but the midrib. In some years, losses can reach 64-68% of the entire production (Trotuș Elena, 2000). Lately, it has been noticed that the blossom feeder beetle (*Epicometis hirta*) causes ever larger damage and, although it is a polyphagous pest, it prefers rape flowers, on which the density of the pest is very high.

Production losses caused by specific pests to this crop can be significant, sometimes reaching 35% of the possible harvest (Ghizdavu I., 1997) or even 70%, leading to the whole crop being compromised (Ekbon and Borg, 1996).

The following paper presents the results obtained in 2015 in the fighting of the above mentioned pest species, through the treatment of the seed and treatments applied during the vegetation period.

## MATERIAL AND METHOD

In order to fight the flea beetles, the seed was treated with several homologated insecticides that can be found on the market, the results regarding their efficiency being compared to an untreated reference lot. Efficiency was established in the field, after the complete emergence of the plants, using the 25/25 metric frame to determine the species and the number of pests left after treatment.

Treatment against the species which attack during the vegetation period was applied as follows: for the pollen beetle, the moment chosen for treatment was the massive appearance of adults during formation of the flower buds.

For the turnip sawfly, treatment was applied when the larvae appeared and the economic threshold of damage was of 2 larvae/plant, whereas for the blossom feeder-when the pest appeared in large numbers, which coincided with the blooming of the rapeseed.

In order to establish efficiency, observations were made 24 and 48 hours after treatment.

## RESULTS AND DISSCUSIONS

Following efficiency testing, it was established that the frequency of attack was reduced after treatment from 98% attacked plants to 38%. Of course, the number of punctures on the leaves following the attack differed from one plant to another, but the numbers presented in the table are obtained based on averages per variant.

Regarding the degree of attack (G.A.%), this particular index was 10.7% in the reference lot and ranged between 1.3%-2.6% in the treated variants.

All the products led to a mortality of over 92.7%, which demonstrates that without efficient treatment, we cannot have a productive crop, because during the years that are favourable to the attack, the flea beetles are extremely aggressive, the plants basically withering away before even beginning to develop.

*Table 1*

Results obtained in fighting flea beetles (*Phyllotreta spp*) in rapeseed crops

| Variant | Dose l/t | Attack | | | |
|---|---|---|---|---|---|
| | | F% | I% | GA | E% |
| Chinoock 200 FS | 20.0 | 46 | 4.5 | 2.1 | 94.0 |
| Hinoock 200 FS Blue | 20.0 | 46 | 3.9 | 1.8 | 95.7 |
| Cruiser 350 FS | 3.5 | 38 | 3.5 | 1.3 | 96.8 |
| Seedoprid 600 FS | 6.0 | 39 | 4.0 | 1.5 | 96.0 |
| Nuprid 600 FS | 6.0 | 44 | 4.8 | 2.3 | 93.9 |
| Palisade 600 FS | 6.0 | 48 | 4.5 | 2.1 | 93.1 |
| Picus 600 FS | 6.0 | 53 | 4.9 | 2.6 | 92.7 |
| Reference lot | - | 98 | 20.5 | 20.7 | - |

LSD 5%-1.8 LSD 1%-2.5 LSD 0.10%-3.4

In the fight against the *Meligethes aeneus* and *Athalia rosae* species, we used seven treatment variants in different doses and one reference lot. Fastac 10 EC was used as standard product.

The data presented in table 2 reveals that the number of pollen beetle adults in one blossom decreased significantly after treatment. Whereas 92 adults were found in the reference lot, in the treated variants their number ranged between 10 adults after using the Actara variant and 27 adults after Fury 10 EC.

Mortality exceeded 70% in all variants, the most efficient products being Actara, Calypso and Mospilan. A natural mortality of 18% was also recorded in the reference lot.

*Table 2*

Efficiency of the products used in fighting the *Meligethes aeneus* and *Athalia rosae* species in rapeseed crops

| Variant | Dose l/ha | *Meligethes aeneus* | | | *Athalia rosae* | | |
|---|---|---|---|---|---|---|---|
| | | F% | Adults/ blssm. | E% | F% | No. of larvae | E% |
| Mospilan 20 SP | 0.15 | 25 | 12 | 87*** | 17 | 3 | $88^{oo}$ |
| Fastac 10 EC | 0.02 | 13 | 20 | 78 | 8 | 2 | 92 |
| Decis Mega 50 EW | 0.15 | 18 | 25 | $73^{oo}$ | 13 | 6 | $76^{ooo}$ |
| Lamdex 5 EC | 0.20 | 11 | 17 | 82** | 6 | 1 | 96** |
| Calypso 480 SC | 0.15 | 9 | 12 | 87*** | 9 | 1 | 96** |
| Actara 25 WG | 0.07 | 7 | 10 | 89*** | 6 | 0 | 100*** |
| Fury 10 EC | 0.20 | 21 | 27 | $71^{ooo}$ | 7 | 4 | $84^{ooo}$ |
| Reference lot | - | 81 | 92 | 18 | 37 | 25 | 7 |

| | *Meligethes aeneus* | *Athalia rosae* |
|---|---|---|
| | LSD 5% - 0.7 | LSD 5% - 1.5 |
| | LSD 1% - 3.9 | LSD 1% - 3.4 |
| | LSD 0.1% - 5.1 | LSD 0.1% - 4.2 |

Regarding the *Athalia rosae* species, it was noticed that the frequency of attack was between 6 and 17% in the treated variants compared to the reference lot, in which 37% of plants presented visible symptoms of attack. 24 hours after treatment, one to six larvae were still found on the plants, but these larvae probably die after a while, because some products have after-ingestion action.

The data is statistically processed through the variance analysis method, recording distinctly significant differences and very significant negative differences.

In fighting the blossom feeder beetle (*Epicometis hirta*), some tests with existing pesticides were performed, but some mixtures of products were also used, given the fact that this pest is particularly resistant.

It is worth mentioning that this year in May, rapeseed has been heavily attacked by the blossom feeder, its high density destroying most of the rapeseed flowers.

Although it is known as a pest which mainly attacks fruit trees, it has become a real danger to rapeseed crops, its massive presence being noticed and reported by several farmers in the area.

In 2002, Perju et al. recommend for the trees to be shaken down, then the beetles to be gathered and destroyed using mechanical or chemical methods.

This procedure is not possible when it comes to rapeseed, therefore the chemical way remains the only option, with the condition that it should be applied in due time, when the adults' flight is at its peak.

*Table 3*

Results obtained in fighting the blossom feeder (*Epicometis hirta*) in rapeseed crops

| Variant | Dose l/ha | Number of beetles after treatment/mp | Efficiency |
|---|---|---|---|
| Faster 10 EC | 0.2 | 4 | 92 |
| Reldan 40 EC | 1.1 | 2 | 95 |
| Nuprid 600 FS | 0.275 | 7 | 89 |
| Calypso 480 SC | 0.15 | 5 | 91 |
| Nurelle D 50/500 | 0.4 | 3 | 97 |
| Reference lot | - | 25 | - |

LSD 5%-2.8

Table 3 shows that the products' efficiency was over 89%, while the number of adults was reduced from 25 to 2-7 adults per square metre.

Beside the mentioned pests, other species have also been identified in rapeseed crops, such as *Ceutorhynchus assimilis*, *Entomoscelis adonidis*as well as *Pieris rapae*.

**CONCLUSIONS**

In order to protect rapeseed crops, seed treatment for the prevention and fighting against the flea beetle is extremely important and has been proven by efficiency figures.

Applying treatment during the vegetation period is a necessity because the species mentioned in this paper can cause tremendous damage if environmental conditions are favourable to the attacks the main condition is to respect the best moment for using the treatment and, if necessary, to repeat the treatment within 7 or 10 days.

Pest populations are significantly reduced after using treatment, but the economic threshold of damage must be taken into consideration for each species and one must choose products with low toxicity for humans, water, soil and especially pollen carrying fauna, given the fact that all the species mentioned in the paper attack during the blooming period and the fact that rapeseed is also a melliferous plant.

The recommended products for fighting pests in rapeseed crops are Chinoock, Cruiser and Sudoprid for treating the seed, whereas during the vegetation period Nurelle D, Calypso or Actara can be applied for successful results. The advantage held by the above mentioned products is that they can be applied in lower doses compared to the products that used to be employed years ago, which required 10-15 l/ha, thus the environment gets less polluted.

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