SOME BIOECOLOGICAL PARTICULARITIES AND FIGHTING AGAINST THE MAIN SPECIES OF PESTS IN THE PEAS CULTURE

UNELE PARTICULARITĂȚI BIOECOLOGICE ŞI LUPTA ÎMPOTRIVA PRINCIPALELOR SPECIII DĂUNĂTOARE ÎN CULTURA DE MAZĂRE

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Abstract. *Increased productivity of pea crops is only possible through the use of intensive technologies, which involve the cultivation of potentially high yielding varieties and hybrids with increased resistance to harmful organisms, the improvement of integrated plant protection systems capable of providing large and stable crops. Integrated pest control requires the use of all prevention and prophylaxis, which involves rotation of crops, the use of healthy seeds, the correct application of soil work, the observance of the seasons and the depth of sowing, plant desiccation, weed control. A special place in the integrated protection system for canned peas is chemical products, the use of which is often inevitable*.
Key words: peas, pests, testing, insecticides

Rezumat. *Creşterea productivităţii culturilor de mazăre este posibilă numai prin utilizarea tehnologiilor intensive, care implică cultivarea unor soiuri şi hibrizi cu randament ridicat, cu o rezistenţă sporită la dăunători, îmbunătăţirea sistemelor integrate de protecţie a plantelor capabile să asigure culturi mari şi stabile. Controlul integrat al dăunătorilor necesită utilizarea tuturor metodelor prevenirii şi combaterii, ce implică rotaţia culturilor, utilizarea seminţelor sănătoase, aplicarea corectă a lucrărilor solului, respectarea asolamentului şi adâncimea de semănat, desicarea plantelor şi controlul buruienilor. Un loc special în sistemul integrat de protecţie pentru mazăre este produsul chimic, a cărui utilizare este adesea inevitabilă.*
Cuvinte cheie: mazăre, dăunători, teste, insecticide

INTRODUCTION

Increased productivity of peas crops is possible only through the use of intensive technologies, which involve the cultivation of potentially high yielding varieties and hybrids with increased resistance to harmful organisms, the improvement of integrated plant protection systems capable of providing large and stable crops. Integrated pest control of peas requires the use of all prevention and prophylaxis possibilities, which involves rotation of crops, the use of healthy seeds, the correct application of soil work, respecting the season and the depth of

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sowing, plant breeding, weed control. A special place in the integrated system for preserving peas is covered by chemicals, the use of which is often inevitable.

The peas can be attacked by a wide range of pests, among the most dangerous were: the green pea of the peas - *Acyrthosiphon pisum* Harr., The peat trips - *Kakothrips robustus* Uzel, the striped ladybug - *Sitona lineatus* L. , the striped and hairy ladybug of the pea leaves - *Sitona crinitus* Hrbst, the pea beetle beetle - *Bruchus pisorum* L., the pea pod moth - *Cydia nigricana* Fabr., the peacock of the pea pods - *Cydia dorsana* Fabr.

The use of chemical treatments is allowed only when the economic damage threshold is reached, which makes 20-25 adults per 1 m^2, and in dry years 10-15 individuals per 1 m^2 - for *Sitona* genus. For weavil peas beetle the economic threshold for damage is 150-200 adults per 100 mosquitoes with entomological mesh. The first chemical treatment occurs when the plantlets appear - against the Sitona genus. In the fight against pea beetle it is recommended to carry out 3 chemical treatments: first treatment - in the stage of picking - beginning of flowering; 2nd treatment takes place after flowering - beginning of fruit formation (20-25 eggs per 100 pods); 3rd treatment takes place at 10-14 days after the 2nd. In the beginning it is recommended the marginal treatment of the fields and when PED is exceeded, total treatments are made.

MATERIAL AND METHOD

Scientific research on determining the biological effectiveness of Factor 250 WG has been completed in 2013. The experiments were carried out in the preserved peas field of the "Bubuieci" Agricultural Enterprise in Chisinau. The peas were sown in the first decade of April, with the 15 x 8-10 cm sowing scheme. Experiences were mounted in 4 rehearsals. The size of a plot was 10 x 10 m, and the area was 100 m2. The location of plots in the experimental group was compact, randomized. As a strip of isolation between the parcels, 1 m wide stripes were left. The surface of all parcels was 1600 m^2 and the total area was 1840 m^2.

Experiences included four variants: Witness, untreated; Actara 25 WG standard, with consumption standard 0.1 kg / ha; Tiametoxam 250 WG preparation, with consumption standard - 0.08 kg / ha; Tiametoxam 250 WG preparation with consumption standard - 0.1 kg / ha.

In the process of selecting the batch for the installation of the experiments, the particularities of the development and hibernation of certain pest species were taken into account. The records for the purpose of determining the phytosanitary status were made by mowing the entomological mesh. Determination of the density of hibernating adults of weevil Sitona g. was made by recording them at 1 m^2 at the time of the emergence of the plantlets. For this, 16 surveys with the dimensions of 0.25 x 0.25 m were carried out on each plot. The pests were recorded before the treatment and on the 3rd, 7th and 14th day after treatment. The density of the green clover of peas, lamb beetles was made by making 100 mosquitoes with entomological mesh.

RESULTS AND DISCUSSIONS

At the beginning of the growing season of peas, in 2013, recordings were made that resulted in weevil from the genus Sitona, the numerical density of which was below the economic threshold of damage. In the second and third decades of May of the range of pests whose density exceeded the PED, there were green pea greens and pea seed beetles. Against these pests chemical treatment was done on May 13th. The results of the records and observations are shown in Table 1.

The results of the records until the treatment show that the numerical density of the green cow peas on the experimental lot was quite high. Recordings on the third day after treatment showed that no significant pest reduction was obtained in the experimental variants. In the 4th variant and the standard were found 2.03 and 2.54 specimens / 100 mosquitoes with the entomological mesh. In the third variant, 24.67 specimens / 100 mosquitoes were found, which exceeds the standard and the corresponding 4th variant of 9.71-12.15 times. Evidence, performed on seventh and fourteenth day after treatment, also demonstrated an essential difference between experimental and control variants. At the same time, the results of these records showed an increase of the numerical value of the pests in the 3rd variant, which is essentially different from the standard and the fourth variant.

The analysis of the density results, compared to the initial one, gave us the possibility to find out that on the 3rd day after treatment in all experimental variants remained living individuals from 1.28% - in the 4th variant, up to to 17.32% - in 3rd variant. This legality was also retained in the following 2 records. The difference between the experimental variants may be more prominent, comparing the results of the pest reduction to the control. This index comprised, on the 3rd day after treatment, from 84.11% - in the 3rd variant, to 98.82% - in the 4th variant. At 7 days after treatment, the pest density reduction of more than 90% was scored in the fourth and standard, where this index was 93.84-93.10%. At 14 days after treatment, the reduction in the numerical value of the pest was around 85.0% and made up 85.17% in the standard and 86.27% in the 4th variant. In third variant, this index accounted for 66.00%, which essentially deviates from the previous variants.

Based on the research and the results obtained, it was found that from all experimental variants the most effective is the Tiametoxam 250 WG insecticide, with a consumption standard of 0.1 kg / ha which ensures a significant reduction of the green pea of the peas, during 10-12 days and is at standard level. The same preparation with a consumption standard of 0.08 kg / ha, ensures a reduction of pest populations above 80.0% only in the first days after treatment. The results of the records before the flowering gave us the possibility to find out that besides the green puddings of the pea in the experimental group there were also found the adult pea lambs, the density of which comprised 15.95 to 17.25 individuals at 100 mosquitoes with entomological mesh. In connection with this, on June 4th, a second treatment directed to the control of adult pea beetle was carried out. The

record was made by mowing the entomological mesh. The results obtained and the calculation of the biological efficiency of the preparations are presented in Table 2.

Table 1

Biological effectiveness of insecticide Factor 250 WG in combating green pea of peas

Variant	Consumption norm of the preparation kg /ha	Numerical density of the pest in 100 moths with entomological mesh				Density of the pest,%, as compared to the original, at ... day after treatment			Reduction of pest density compared to control variant in% at ... day after treatment		
		Until treatment	at ... day after treatment								
			3	7	14	3	7	14	3	7	14
V_1 – Control	untreated	45.09	158.21	194.7	231.54	109.0	134.2	159.5	0.0	0.0	0.0
V_2 - Etalon, Actara 25 WG	0.1	154.26	2.54	13.11	27.19	1.65	8.50	17.63	98.49	93.10	85.17
V_3 - Tiametoxam 250 WG	0.08	142.37	24.67	45.12	68.02	17.32	31.69	47.78	84.11	74.25	66.00
V_4 - Tiametoxam 250 WG	0.1	157.98	2.03	11.98	25.78	1.28	7.58	16.32	98.82	93.84	86.27
DEM 05	-	-	1.96	2.07	2.13	2.65	2.89	3.15	1.81	2.18	2.33

The data presented in the table showed that the population of pups of pea beetle was fairly uniform. About this, testify the results of the records made before the treatment. At this time the pest density ranged from 15.95 in the third variant to 17.25 copies per 100 mosquitoes - in the 4th variant, thus exceeding the economic threshold of damage. The results of the records performed on the 3rd day after treatment showed that in all the variants treated there was an essential reduction of the numerical value of the pest and in the control variant this index increased by 3.28 individuals.

Comparing the experimental variants between them it is seen that the best results were obtained in the 4th and the standard where the adult density of pea beetles made 0.5 copies per 100 mosquitoes. In version 3, the number of live adults was 2.0 copies per 100 mosquitoes. The same legitimacy was also noted in the 7th and 14th day after treatment.

Comparing the number of living adults remaining in the variants treated with their initial value, it can be seen that even after this index the best results were received in the 4th variant and the standard (2.90, 3.03%), the deviation being insignificant. In the 3rd variant, this index constituted 15.54%, which is 7.75 times lower compared to the witness, but it yields the 4th variant and the standard, corresponding 5.35-5.12 times. The same trend was also highlighted as a result of the following 2 records.

A wider and more objective account of the biological efficacy of the preparations was obtained by analyzing the results of the reduction in adult pea

lamb density compared to the control. The results of the records, carried out on the 3rd day after treatment, showed that during this period in the 4th and the standard version this index constituted 97.59 and 99.85% accordingly, the deviation being nonessential. In third variant, the reduction in pest density is much lower (89.59%) and essentially yields to previous variants.

Table 2

Biological Efficiency of Factor 250 WG Insecticide in Combating Pea Grass(2013)

Variant	Consumption norm of the preparation kg / ha	Numerical density of the pest in 100 moths with entomological mesh				Density of the pest,%, as compared to the original, at ... day after treatment			Reduction of pest density compared to control variant in% at ... day after treatment		
		Until treatment	at ... day after treatment								
			3	7	14	3	7	14	3	7	14
V_1 – Control	untreated	6.00	19.28	21.16	25.34	120.5	132.25	158.38	0.0	0.0	0.0
V_2 - Etalon, Actara 25 WG	0.1	16.50	0.5	1.25	5.50	3.03	7.58	33.33	99.85	93.10	72.49
V_3 - Tiametoxam 250 WG	0.08	5.95	2.0	5.75	7.75	15.54	36.05	48.59	89.59	67.15	59.43
V_4 - Tiametoxam 250 WG	0.1	17.25	0.5	1.0	5.75	2.90	5.80	33.33	97.59	94.72	72.17
DEM 05	-	-	0.87	1.13	2.04	2.19	2.57	2.89	2.78	2.56	2.45

Evidence on the seventh day after treatment allowed us to note that even after this period, the reduction of the numerical value of adults in the treated variants was above 90%, ranging from 93.1% in the standard, up to 94.72% - in the 4th variant. In 3rd variant this index accounted for 67.15%.

On the 14th day after treatment, the reduction in pest density was 72.17% in the 4th variant and 72.49% in the standard. In 3rd version this index was below 60%.

Based on the researches carried out, during the 2013 growing season, it was found that the most effective in controlling the pests of preserved peas is the insecticide Tiametoxam 250 WG, with a consumption standard of 0.1 kg / ha, which ensures a pest reduction of 97.59 - 94.72%, during 7-10 days after treatment and is at the level of the standard. The same preparation, with a consumption standard of 0.08 kg / ha, essentially yields the previous version to the standard and provides protection for pea plants only within the first three days after treatment.

The weather conditions of 2013 have favored the development of the above-mentioned economic threshold for the green pea of peas and pea beetle pests.

Chemical treatment of pea plants with the insecticide Tiametoxam 250 WG at a dose of 0.1 kg / ha ensures a biological effectiveness of 98.82 - 93.84% in the

fight against green pea and 97.59 - 94.72% in the control of pea berries, 10-12 days after treatment.

The Tiametoxam 250 WG insecticide with a consumption standard of 0.08 kg / ha ensures satisfactory protection of pea culture only within the first days after treatment.

It is recommended to include the insecticide Tiametoxam 250 WG in the Integrated Pesticide Protection System by initiating a growth treatment to combat the green clover of the peas and a flowering treatment to control the pea beetle lamb withconsumption standard 0.1 kg / ha.

CONCLUSIONS

1. The weather conditions of 2013 have favored the development of the above-mentioned economic threshold for the green pea of peas and pea beetle pests.

2. Chemical treatment of pea plants with the insecticide Tiametoxam 250 WG at a dose of 0.1 kg / ha ensures a biological effectiveness of 98.82 - 93.84% in the fight against green pea and 97.59 - 94.72% in the control of pea berries, 10-12 days after treatment.

3. The Tiametoxam 250 WG insecticide with a consumption standard of 0.08 kg / ha ensures satisfactory protection of pea culture only within the first days after treatment.

4. It is recommended to include the insecticide Tiametoxam 250 WG in the Integrated Pesticide Protection System by initiating a growth treatment to combat the green clover of the peas and a flowering treatment to control the pea beetle lamb withconsumption standard 0.1 kg / ha.

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