



Research Article

FIGHT AGAINST THE COLORADIA BEETLE IN THE CONDITIONS OF UZBEKISTAN

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Dilshod Obidzhanov

Doctor of Philosophy of Agricultural Sciences (PhD), Scientific Research Institute of HV and V named after Academician M.Mirzaev, Uzbekistan

ABSTRACT

If possible, potato fields should be located at a distance from the plantings of the last year's crop, which are the reserve of the wintering pest. This is due to the fact that the overwintered beetles that emerged from the soil require a certain time to reach the host plant. So, in the conditions of the Tashkent region, the spatial isolation of new plantings from the wintering places of the pest made it possible to delay the settling of seedlings for 1-2 weeks and, in some cases, reduce the need for chemical treatments due to this. The positive effect of a four-field crop rotation on reducing the rate of seedling settlement by beetles, the number and harmfulness of larvae in comparison with the polyculture of potatoes was traced in a stationary experiment. The most effective was the alternation: wheat-potato.

KEYWORDS

Potatoes, crops, pest, plantings, abundance, harmfulness, larvae, Colorado potato beetle, insecticides, efficiency.

INTRODUCTION

Potatoes are one of the staple foods for humans and animals. In the world, it ranks fifth as a source of energy for people and fourth in terms of consumption after rice, wheat and corn [3;9]. The potato is the most productive of all crops in the temperate zone. It provides the highest yields, and gives 1.5-2.0 times more carbohydrates per unit area than cereals [4].

In the system of protecting potatoes from the Colorado potato beetle, until recently, preference was given to extermination measures that make it possible to reduce the number of the Colorado potato beetle to an economically imperceptible level. Modern research proves the effectiveness of the use of resistant varieties with different mechanisms of resistance to the Colorado potato beetle. According to many authors, this makes it possible to reduce the consumption rates of preparations by 2-3 times and reduce the frequency of treatments, and thereby reduce the risk of pollution of the environment and finished products with insecticides. At the same time, in each region it is important to select zoned potato varieties that have maximum potential productivity in specific soil and climatic conditions.

If we consider the problem as a whole, it is impossible not to notice that the cultivation of potatoes in the extreme, sharply continental conditions of Central Asia is not convenient. In other words, the climatic

conditions of Uzbekistan and neighboring countries are not favorable for potato cultivation. Under conditions of high summer temperatures and low relative air humidity, potatoes do not bear fruit and degenerate. Therefore, in our conditions, it is customary to sow potatoes twice a year - early - March-June and late - July-October. Nevertheless, a certain part of the potato is degenerating and we are forced to import seed potatoes.

The same applies to the list of potato pests and its replenishment with new species. So, in the 60s of the last century, it was believed that the Colorado potato beetle could not adapt to extreme conditions of existence, for example, in Uzbekistan. But, contrary to this, the species penetrated through the quarantine barrier and successfully took root in the territory of the republic in 1978-1980. And since then, the Colorado potato beetle in the status of adventitious species began to develop in the territory according to the canons scientifically defined in the article by N.A. Vilkova et al. (2005). The high eurybiontness and ecological plasticity of the species [6;7] contributed to the fact that the Colorado potato beetle adapted perfectly, expanded its range and harmed the potato growing of the republic. True, the high harmfulness of the species, characteristic of the beginning of the penetration of the species [2;8;10], changed after the



2000s with a more moderate density and percentage of plant colonization.

Place and technique of researches. Monitoring of potato infestation by pests was carried out throughout the territory of the republic, and experiments and route observations were carried out in the fields in the Khorezm, Tashkent and Fergana regions. In the research work, various methods recommended for these purposes were used (Gar, 1974; Armor, 1979; Recommendations of the Research Institute of OBK and K, 1986; Khodzhaev, 2004).

Results of experiments and discussions. The experiments touched literally all the main types of potato pests. Along with the study of the biological

characteristics and harmfulness of the Colorado potato beetle, we continued research to improve the control measures against this species. Today, many farms are content with a single treatment against the beetle and associated pests or do not treat at all, despite the fact that in the 2000s a sharp drop in the effectiveness of the insecticides used, especially pyrethroids, was noticed [5; 8]. If in the 1980-1990s, using karate (0.1 l / ha) for wrestling, they obtained almost 100% effectiveness against the Colorado potato beetle, then in the past 2015, 73.6-85.8%. It follows from the data in the table that modern insecticides with the participation of representatives of neonicotinoids (enjoxam, imido),

The biological effectiveness of insecticides against the Colorado beetle on potatoes

Production experience, farm Yangiobod Kadirov Maksud. Kibrasky district. 2017-2019

| Experience options | Consumption rate of the drug, l (kg) / ha | Average number of pests per plant bush (ind.) | | | | | Efficiency, in % | | | | | |
|---------------------|---|---|---|---|-----|-----|------------------|------|------|------|------|------|
| | | Before processing | After processing, on the day of registration: | | | | | | | | | |
| | | | 1 | 3 | 7 | 14 | 21 | 1 | 3 | 7 | 14 | 21 |
| Imido, 35% d.c. | 0.2 | 20.5 | 0.2 | 0 | 0.1 | 0.1 | 0.2 | 99.1 | 99.8 | 99.6 | 99.4 | 99.0 |
| Enjoxam, 24.7% s.c. | 0.15 | 17.3 | 0.3 | 0 | 0.1 | 0.2 | 0.3 | 98.4 | 99.9 | 99.5 | 98.5 | 98.2 |

| | | | | | | | | | | | | |
|--------------------------------|-----|------|------|-----|------|------|-----|------|------|------|------|------|
| Barey, 20% d.s. | 0.1 | 22.2 | 2.2 | 1.2 | 0.9 | 1.1 | 1.3 | 90.1 | 94.6 | 96.1 | 95.1 | 94.2 |
| Karate, 5% k.e. (reference) | 0.1 | 16.2 | 4.3 | 2.3 | 2.8 | 3.4 | 4.4 | 73.6 | 85.8 | 82.9 | 79.1 | 73.1 |
| Control (no processing) | – | 23.8 | 23.8 | 24 | 24.1 | 23.9 | 24 | – | – | – | – | – |

Conclusion. Based on the results of the conducted research, the following conclusions and recommendations can be made for production.

1. Potato fields should be located, if possible, at a distance from the plantings of the last year's crop, which are the reserve of the wintering pest. This is due to the fact that the overwintered beetles that emerged from the soil require a certain time to reach the host plant. So, in the conditions of the Tashkent region, the spatial isolation of new plantings from the wintering places of the pest made it possible to delay the settling of seedlings for 1-2 weeks and, in some cases, reduce the need for chemical treatments due to this. The positive effect of a four-field crop rotation on the reduction in the rate of seedling settlement by beetles, the number and harmfulness of larvae in comparison with the polyculture of potatoes was traced in a stationary experiment. The most effective was the alternation: wheat-potato.

2. In the fight against the Colorado potato beetle on potatoes in the conditions of Uzbekistan, insecticides from different chemical classes Barey, 20% d.c. (0.1 l/ha), Enzhoksam, 24.7% d.s. (0.15 l/ha) and Imido, 35% s.a. (0.2 l/ha).
3. These insecticides should be applied in the budding phase, when the pest reaches a density of 1 beetle and 1 larva per bush, re-treatment should be carried out, with a population of at least 5 beetles and 5 larvae per bush in the flowering phase.

REFERENCES

1. Vilkova N.A., Sukhoruchenko G.I., Fasulati S.R. Strategy for the protection of agricultural plants from adventive insect species - phytophages on the example of the Colorado potato beetle // Bulletin of plant protection. - Moscow, 2005. - No. 3. - S. 3-15.
2. Vlasova V.A., Petropavlovskaya T.P. Dangerous pest //Zh. Plant protection. - Moscow, 1986. - No. 6. - S. 38-39.



3. Polukhin N.I. Potatoes in Siberia / N.I. Polukhin. Krasnoobsk, 2006.-S.Z-4.
4. Techniques and methods of biologization of potato production in the Far East. Khabarovsk, 2003. - S. -5-24.
5. Sukhoruchenko G.I., Dolzhenko V.I., Vasilyeva T.I., Ivanov S.G., Zverev A.A. The problem of resistance of the Colorado potato beetle to modern insecticides // Modern protection systems and new directions in increasing the resistance of potatoes to the Colorado potato beetle (ser. gene. engineer and ecology). - M .: "Science", 2000. - No. 1. - S. 93-100.
6. Ushatinskaya R.S. Colorado potato beetle // M.: "Nauka", 1981. - 377 p.
7. Fasulati S.R. Polymorphism and population structure of the Colorado potato beetle *Leptinotarsa decemlineata* Say (Coleoptera, Chrysomelidae) in the European part of the USSR // Ecology. - 1985. - No. 6. - S. 50-56.
8. Obidzhanov D., Erkinov Kh. Potato pests in uzbekistan. //The American Journal of Agriculture and Biomedical Engineering (ISSN - 2689-1018). July 30, 2021. R. 11-20.
9. Shpaar D. Potatoes. Cultivation, harvesting, storage / D. Shpaar. -Torzhok: Variant LLC, 2004. S. 43-71.
10. Obidzhanov D., Zokirov Sh., Erkinov Kh. Colorado beetle and potential in potatoes effective struggle//The American Journal of Agriculture and

Boimedical Engineering. (ISSN - 2689-1018)
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