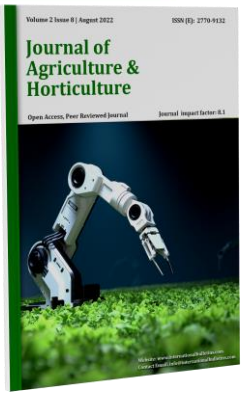

SOME UNDERGROUND PESTS OF POTATOES

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Abstract: The article provides information about the attack by larvae of the click beetle, one of the pests of potatoes, considered one of the main food plants of the population.

Аннотация: В статье приведены сведения о поражении личинками щелкуна – одного из вредителей картофеля, считающегося одним из основных пищевых растений населенияю.

Keywords: click beetle, larva, vertical, horizontal, crop, insect, beetle, cutworm.

Ключевые слова: жук-щелкун, личинка, вертикальная, горизонтальная, урожай, насекомое, хрущ, совка.

Introduction. Providing the population with quality food products will always remain one of the urgent problems. Various measures are developed by experts to solve the problems. In particular, one of the conditions for obtaining a high and high-quality harvest from crops is timely implementation of measures to control agricultural crops against pests and weeds. One such type of crop is potatoes, which can be observed to be heavily damaged by several types of insects. Failure to carry out measures to fight against them in time leads to a decrease in potato productivity in terms of quantity and quality.

Globally, 6-6.5% of the potato crop is destroyed by pests every year (Khojaev, 2014). Simworms are the worms of click beetles, and false simworms are the worms of black beetles. In the conditions of our republic, these pests develop once a generation in 4-5 years, Turkestan beetle (A. meticulosus) and mustache beetle (C.cerambycinus) damage potatoes more than beetles (Rashidov, 2008; Khojaev, 2014). In the conditions of our republic, we can see the remarkable works of the authors about the pests that feed on different parts of the potato plant. Simworms begin to feed on plants from the second age. In unfavorable conditions, the insect falls into 0.5 cm and deeper layers of the soil. The most comfortable humidity for them is usually 50-60%. S.Ahmadjonova, R.Hamzayev (2019.). In the valley regions, it is observed that the larvae of ground beetles - maggots cause a lot of damage to the roots of young seedlings of the plant. As the authors noted (S.Ahmadjonova, D.Rahimova, 2020), in addition to potato sprouts, caterpillars are a serious pest of alfalfa, sesame, grain, vegetables, and sugarcane crops. Here are the ways to fight against worms. The authors' (S.Ahmadjonova, F.Halimovlarin, 2019) pamphlet entitled "Feeding of Agriotes meticulosus (Coleoptera: Elateridae) in natural and artificial biocenoses" describes the beetles and methods of biological control against them. General information about the beetles is given. According to the observations of S.Ahmadjonova, F. Halimov (2019), earthworms are among the pests with a wide food spectrum. It is noted that Agriotes meticulosus significantly damages tomato and cucumber seedlings in greenhouses and open fields.

Materials and methods.

The researches were carried out mainly on the basis of field observations in farms where potatoes are grown. Farms belonging to Mullazoir village of Uchkoprik district and Muyan district of Kuvasoy city. Experiments were conducted here to study the species composition, stages of development, and characteristics of damage caused by potato pests. In the work, the main rule accepted in general entomology and the procedure of experimenting in the chess method were observed.

Analysis results. In order to study the species composition of potato plant pests in valley conditions, observations were made in 2021-2023 in the fields planted with potatoes in the Fergana regions. In the course of the research, it was observed that potato plants are severely damaged by several species in the areas where potatoes are grown in valley conditions. One of these pests is the larva of the Turkestan click beetle - the worm (Agriotes meticulosus Cand). Although this pest is destroyed by natural forces and adverse soil factors, additional agrotechnical, biological and chemical processing can increase the yield. leads to quality and high quality.

The population density of earthworms directly depends on the type of crop planted in the previous season. For example, the number of worms in 1 m2 of the land freed from corn and wheat in the fall is 2-5 worms, and in the rested, plowed land that has not been planted with autumn crops, up to 0-2 worms can be found. A large number of earthworms from the village gather around the remains of plants left in the field. Acceleration of the rotting process in plant residues leads to warming of the soil layer, and the worms gather in such places and feed on humus. In the first days of the spring season, caterpillars feed on humus and germinating seeds of wild grasses. According to the nature of feeding, the larvae of the beetle can be included in the phytophagous trophic group.

Tomorrow's potatoes will be planted in open areas from the second half of February, when the air temperature rises to +9+100C. (22-26.II). When the nodules planted in the fields were examined in the control group, it was noted that the nodules planted with cutting were less damaged than the ones planted without cutting.

Developmental phenology of beetles
(Fergana region, 2022)

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Conditional tags:● - Eggs; ♥ - Imago; ≈ - Larva; Θ – Gumbak;
º- Emergence of beetles from mushrooms.

It is known from the researches that at first, cutworms gather around the cut and planted potatoes in groups of 2-3 and in the process of gnawing the nodule, the nodule injury

becomes severe and the larvae cannot gnaw, and on the contrary, the larvae form a unique path of 3-5 cm in the entire planted nodule. It gnaws up to a length of up to 100 cm and creates hollow corridors. By moving up and down several times in this direction, it can bring the inner part of the node into a labyrinth state or create one or two corridors. The damaged nodule is late in development or does not appear on the surface at all. After the potatoes are harvested, the worms fall under the soil or get into the nodule. If the soil is sufficiently moist, they will remain somewhat dormant inside the nodule and may seek other, more moist food, but in dry conditions, the worms will rapidly attack the nodule. Worms mainly damage seed nodules, because they are easy to gnaw due to their high moisture content, newly formed nodules do not attract worms. Newly matured nodes are severely damaged by the worms.

By the end of March, the number of worms increases significantly. In particular, 1 sq.m. observed on March 15. 7-10 worms were counted from the field, and it turned out that the most damaging worms are mainly 3-4 years old. In this period, the complete absence of weeds around the seedlings causes the nodes to be more severely damaged by cutworms. In April, the nodules develop rapidly, and the aboveground part takes hold, but young nodules do not form in the affected nodules. The feeding rate of the larvae depends on the relative humidity of the soil, in dry soil, earthworms lose a lot of water and restore moisture in their bodies by feeding on wet plants. Therefore, as the moisture in the soil decreases, the feeding of the earthworms accelerates, and the damage to the nodules increases. Therefore, softening the surroundings of potato crops, adding organic fertilizers and watering will reduce the degree of damage caused by earthworms, and applying inorganic fertilizers will accelerate the migration of larvae. This situation can cause one crop area to be cleared and another to be damaged.

It should be noted separately that the movement of the worms in the horizontal direction is much slower. When food is sufficient and humidity is moderate, horizontal migration of worms is not observed at all.

Conclusion. In conclusion, it can be said that earthworms are sensitive to soil moisture and soil temperature, and this situation has caused active vertical migration in them. Cutworms are omnivorous pests with a wide spectrum of food. The analysis of the obtained results shows that these pests damage cultivated plants during the entire vegetation period of the potato plant, causing poor quality and low yields.

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