EUROPEAN JOURNAL OF LIFE SAFETY AND STABILITY (EJLSS)
ISSN2660-9630
www.ejlss.indexedresearch.org Volume 22, October-2022 ||

Agricultural Crop Damage Pests and their Modeling

Botiralieva Maftuna Botirali kizi
Teacher of Kokan branch of Tashkent state technical university

Abstract: *This article provides complete information about pests of agricultural crops, types of pests, biological effects on agricultural crops, and mathematical modeling for pest identification.*

Keywords: *Pests, plants, agriculture, microorganisms, mathematical model, object.*

Date of Submission: 05-9-2022 ***Date of Acceptance: 07-10-2022***

Pests and various diseases that affect the development of agricultural crops are considered a huge disaster on earth. it causes the loss of a very large part of the crop during the storage of products. Harmful organisms not only destroy 60-80% of the crop, but also cause massive outbreaks of various dangerous infectious diseases in plants, animals and humans.

That is why chemical control of pests and diseases is widely used. Although the chemical method is widely used in the world experience in the fight against pest insects and other arthropods, it was found that such insect-acaricides are not sufficiently selective and effective, that is, pesticides kill biological agents, primarily the mass development of pests. destroys entomophagous insects, insectivorous birds, etc.

In addition, many pests have a negative impact on the phytosanitary status of agrobiocenoses and the economy of agricultural crops due to their resistance to pesticides. This requires replenishing the arsenal of chemical warfare agents at the expense of non-traditional groups and chemical compounds, and accordingly, the cost of pesticide production will increase exponentially. But new pesticides may lose their effectiveness even before they are used in practice due to the emergence of perekryost and group resistance.[1]

According to the latest data, 428 species of arthropods have developed resistance to different groups of pesticides, 260 of which are pests of agricultural crops.[2] All this has aroused a sharp interest in biological protection among experts in the field of plant protection, and it is appropriate to mention predators, parasites or pathogens that limit the amount of pests of agricultural crops as influencing factors.

Biological protection of plants in a broad sense means the use of living organisms, substances produced by their activity, or synthetic analogues in order to reduce the damage caused by pests and pathogens, to reduce the amount of their populations. In a narrow sense, the classic biological method means the use of living organisms: parasites, predators and pathogenic microorganisms in the fight against harmful organisms. The essence of the biological protection method is to use the antagonistic relationship between pests of agricultural crops and their parasites and predators (entomophages and acariphages), especially insects, mites and pests, and bacterial, fungal, viral and complex diseases.

The Republic of Uzbekistan, with its spring-summer-autumn high-temperature natural-climatic conditions, practically ensures the cultivation of most agricultural products throughout the year. However, in the summer-autumn period, the damage caused by harmful arthropods to food crops - corn, vegetable-police, garden, fruit and technical crops - cotton, hemp, etc. is very significant. chemical control was carried out. But the widespread use of toxic chemicals, especially highly toxic compounds, has caused irreparable damage to the environment, pollution of water bodies, a sharp decrease in the number of beneficial arthropods and other animals, worsening of the ecological situation in villages, and diseases among the population. Led to Fungal microbiopreparations There are a number of biopreparations made on the basis of fungi, intended for use against pathogens of plant diseases.[3]

Usually, such biopreparations are produced by specialized firms or regional biolaboratories according to the requests of agricultural producers. Fungal preparations used to protect plants from diseases can be divided into two groups:

- ✓ preparations based on living cultures of antagonistic microorganisms and hyperparasites;
- ✓ preparations based on antibiotics synthesized by fungi.[4]

Antibiotics can be prepared only in enterprises with specialized, complex technological equipment of biological production. Biopreparations based on living cultures can be produced in biolaboratories or companies. All biopreparations made on the basis of these fungi are called trichodermins, and their preparation forms are different depending on the strain used, the composition of the nutrient medium, the cultivation method, and the titer of the finished preparation.[5] Learning is understood as mathematical modeling. Its purpose is to determine the optimal conditions for the process, control it based on a mathematical model, and transfer the results to the object.

The concept of a mathematical model is the main concept of the mathematical modeling method. A mathematical model is an approximate description of some phenomenon or process of the external world, expressed using mathematical notation. Mathematical modeling includes three interconnected stages:

1) creating a mathematical description of the studied object;
2) choosing a method of solving the system of mathematical description equations and introducing it in the form of a modeling program;
3) determining the similarity (adequacy) of the model to the object.[6]

At the stage of creating a mathematical description, the main events and elements of the object are first isolated, and then the relationships between them are determined. Then, for each extracted element and event, an equation (or system of equations) is written that represents its function.[7]

In addition, equations of connection between various isolated phenomena are included in the mathematical description. Depending on the ratio of the process, the mathematical description can be expressed in the form of a system of algebraic, differential, integral and integro-differential equations. The stage of choosing a solution method and developing a modeling program involves choosing the most efficient (effective means the speed of the solution and the accuracy of the solution) solution method from among the available methods.

References

1. Y. Qoriyeva, I. Nematov on the educational subject “Foreign investments”: educational - methodological complex T.: TDIU, 2008.- P.24

2. Khamraev A.Sh, Nasriddinov K. Biological protection of plants. Tashkent: “People’s Heritage” publishing house named after Abdullah Qadiri, 2003. – P. 287
3. Yakhyaev, Kh. K., & Abdullaeva, Kh. Z. (2016). The automated monitoring system of development and distribution of crop pests. Science and World, 2, (5), pp. 94-96
4. Nosyrov B.N. (2014). Mathematical model and forecasting system for the main development and distribution of an agricultural pest. Actual directions of scientific research of the XXI century: theory and practice, 2, (4-1), pp. 241-243.
5. Yakhyaev, Kh. K., & Kholmuradov, E. A. (2005). Automation of forecasting the development and spread of pests and diseases of agricultural crops. Tashkent, FAAK AN RUz.-P. 169
6. K. Yakhyaev (2012). Algorithms for diagnosing the phytosanitary state of cultivated plants. Information Technologies, Systems and Devices in the Agroindustrial Complex, pp. 242-248
7. Azhbenov, V. K. (2000). Mass reproduction and migration of locusts in Kazakhstan. Steppe Bulletin, (6). pp. 16-20