UDK: 632.9.

BIOTECHNOLOGICAL ASPECTS OF PEST CONTROL

Nazirova Rakhnamokhan Mukhtorovna, Doctor of Technical Sciences, Fergana Polytechnic Institute, Fergana c.

Abstract: *The use of microbial preparations to combat harmful insects does not pose a danger to humans, since insect pathogens have a high degree of specificity. They do not accumulate in the environment. However, microbial insecticides act more slowly than chemicals and their effectiveness largely depends on environmental conditions.*

Key words: *microbiological method, genetic and cellular engineering, herbicides, insects, larvae, microbial insecticides.*

Currently, the microbiological method of combating harmful insects is becoming increasingly widespread. For this purpose, viruses, bacteria, fungi and protozoa are used. With their help, rapidly spreading diseases are artificially caused among insects [1].

The founder of the microbiological method of pest control is the great French microbiologist Louis Pasteur. In 1874, he proposed using entomopathogenic bacteria to combat the dangerous grape pest phylloxera [2]. Five years later, the Russian scientist I. I. Mechnikov used the fungus that causes green muscardine to destroy the grain beetle. A major contribution to the development of the microbiological method of pest control was made by the Canadian researcher F. Errel. He isolated cultures of non-spore-forming bacteria and used them to combat locusts in some countries of South America and North Africa [3]. A large number of entomopathogenic forms of spore-forming bacteria were identified and studied in 1922-1942 by Soviet scientists. Some of these forms of bacteria began to be used in the production of insecticidal preparations that destroy pests of corn, grapes and cotton. In 1959-1960. In the USSR, USA, and France, industrial production of special bacterial insecticides containing Bacillus thuringiensis spores was organized . Currently, microbial preparations have taken a strong place among the means of protecting plants from pests [4].

Microbiological preparations are often used in combination with sublethal doses of chemical insecticides. Sublethal concentrations of pesticides are not as dangerous to humans as regular doses. However, they weaken the defenses of harmful insects, making them more susceptible to infection.

It should be emphasized that the use of microbial preparations to combat harmful insects does not pose a danger to humans, since the pathogens of insect diseases have a high degree of specificity. In addition, as a rule, they do not accumulate in the environment. At the same time, microbial insecticides act more slowly than chemical preparations and their effectiveness largely depends on environmental conditions. In addition, they must be applied frequently enough for the preparation to act for a long time. The reason for this drawback is the high degree of specialization of entomopathogenic microorganisms: the death of harmful insects entails the death of the microorganisms themselves. The latter drawback of microbial insecticides can be eliminated using genetic engineering methods. For example, it is possible to introduce a gene that provides the synthesis of toxic substances into widespread saprophytic bacteria living on plants. In this case, fluctuations in the number of harmful insects will not affect the number of insecticidal bacteria.

The main obstacle to the widespread introduction of viral preparations into practice is the difficulty of cultivating viruses as obligate parasites. A characteristic feature of their production is the reproduction of viruses in living cells. To obtain viral insecticides, appropriate insect pests are used. But insects intended for the reproduction of viruses are by no means sterile; they are inhabited by a variety of microflora, including viruses. In this regard, strict and constant quality control is necessary during the production of viral insecticides. The presence of foreign microflora in insects leads to a decrease in the quality of the preparations. In addition, during the production of these preparations, a large number of insects have to be infected with the virus, and then extracted from the mass of dead larvae. All this affects the cost and quality of the preparation.

Herbicides can be obtained from not only microorganisms, but also from higher plants. The fact is that they synthesize a wide variety of substances, some of which are released into the soil through the roots. Among the root secretions of plants, there are compounds that have a detrimental effect on other plants. For example, agropyrene , released into the environment by the weed creeping couch grass, has a very intense herbicidal, bactericidal and fungicidal effect. If you distill essential oil from the rhizomes of couch grass, it will contain about 95% agropyrene . It has been established that agropyrene penetrates the roots and leaves of plants and first causes damage to the tips of the roots, and then the death of the root system. Penetrating into the vessels, it moves along the plant and poisons the youngest parts of the plant.

Currently, genetic and cellular engineering methods are increasingly being used to create plants that are resistant to diseases, pests and toxic substances. For example, using plasmids of the tumor-forming bacterium Agrobacterium tumefaciens, tobacco and tomato plants resistant to the antibiotic kanamycin were obtained . By transferring the gene for resistance to the herbicide glyphosate into the cells of tobacco, soybeans, cotton and tomatoes, it was possible to increase their resistance to herbicide treatment.

BIBLIOGRAPHY

1. Davronov QD Biotexnologiya : ilmiy , amaliy va uslubiy asoslari . T.: 2008. -214 p.
2. Davronov QD, Artikova RM, T.Yusupov . Qishloq xo'jalik biotexnologiyasi (Amaliy-laboratoriya mashg'ulotlari). ToshDAU . 2001, -63 b.
3. Evtushenkov A.N., Fomichev Yu.K. Introduction to biotechnology: Course of lectures: / A.N. Evtushenkov , Yu.K. Fomichev . - Mn.: BSU, 2002. - 105 p.19.