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MAIN PARASITES OF CROPS

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ОСНОВНЫЕ ПАРАЗИТЫ СЕЛЬСКОХОЗЯЙСТВЕННЫХ КУЛЬТУР

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Abstract. The article talks about the characteristics of main parasites of crops, their characteristics. Efforts to control these plant parasites involve integrated pest management strategies, including sustainable crop varieties, cultural practices, biological control, and judicious use of chemical interventions. Continued monitoring and research is critical to developing sustainable solutions to reduce the impact of these pests on global agriculture.

Аннотация. Описываются особенности паразитов сельскохозяйственных культур, дана их характеристика. Постоянный мониторинг и исследования имеют решающее значение для разработки устойчивых решений по снижению воздействия этих вредителей на глобальное сельское хозяйство.

Keywords: crops, agriculture, plants, parasites.

Ключевые слова: сельскохозяйственные культуры, сельское хозяйство, растения, паразиты.

Global agriculture and grain production play an important role in feeding the world's population and supporting economies. Agriculture is the main source of food for the world's population. Plants, including grains, fruits, vegetables and other agricultural products, contribute to the daily nutrition of billions of people. Cereals are a staple food for many peoples. Major grains include rice, wheat, corn (maize), barley, oats, and rye [1].

Ensuring global food security is a major challenge. Sustainable and efficient grain production is vital to meet the nutritional needs of a growing population. Agriculture, including grain growing, is an important economic sector in many countries. It provides employment to a large part of the population and contributes to the overall economic development of the states. Modern agriculture has witnessed significant technological advances, including precision farming, genetically modified crops and smart farming practices. These technologies aim to improve efficiency, reduce environmental impact and increase productivity [3].

Agriculture faces a variety of challenges, including climate change, water scarcity, soil degradation and pests. Adapting to these challenges and adopting sustainable practices are critical to the future of agriculture. International trade in agricultural products, including grain, is important for many countries. It enables the exchange of goods, strengthens food security and creates economic opportunities [5].

The development of world agriculture shows differences between different countries and regions. Countries that are developing or trying to develop are at different stages based on different economic, social, and environmental conditions and partnership opportunities [4].

Materials and methods

Several plant parasites pose significant threats to world agriculture and grain production, affecting crop yields and food security. Plant parasites are organisms that damage the vital functions of plants. These parasites can damage the health of the plants, reduce their productivity and even cause the plants to die [2]. Some important plant parasites include:

Root-knot nematodes (*Meloidogyne spp.*) — These microscopic worms penetrate the roots of plants, causing the formation of characteristic galls that prevent the absorption of water and nutrients.

Rusts (e.g., *Puccinia spp.*) — Rust fungi affect a variety of crops, including wheat, barley, and corn. They cause yellow to red-brown lesions on the leaves and reduce the photosynthetic capacity.

Smuts (e.g., *Ustilago spp.*) — Smut fungi target cereal crops, replacing the grains with masses of dark, dusty spores [7].

Xanthomonas oryzae pv. *oryzae* (nodule bacterial blight) — This bacterium affects rice plants causing blight symptoms such as water-soaked lesions and leaf wilting.

Barley yellow dwarf virus (BYDV) — This virus affects cereal crops such as wheat and barley, causing growth stunting, yellowing and reduced grain yield.

Maize dwarf mosaic virus (MDMV) — Affecting maize, this virus causes stunted growth and mosaic patterns on the leaves.

Phytophthora infestans (late blight of potatoes and tomatoes) — This pathogen causes devastating diseases in potatoes and tomatoes that cause significant yield losses [8].

Aphids (e.g. *Rhopalosiphum padi*) — These sap-sucking insects attack cereals such as wheat and barley and transmit various plant viruses.

Hessian fly (*Mayetiola destructor*) — Affecting wheat, the larvae of this fly feed on young plant tissues, causing stunted growth and reduced grain yield.

Witchworms (*Striga spp.*) — These parasitic plants penetrate the roots of crops such as corn and sorghum, causing competition for food and water and reduced yields.

Heterodera spp. — Cyst nematodes infect the roots of various plants, including soybeans and cereals, causing stunted growth and reduced yield.

Efforts to control these plant parasites involve integrated pest management strategies, including sustainable crop varieties, cultural practices, biological control, and judicious use of chemical interventions. Continued monitoring and research is critical to developing sustainable solutions to reduce the impact of these pests on global agriculture [9].

Results and their discussion

Encouraging the growth of plant parasites or pests in agriculture is unethical and responsible, as these organisms have detrimental effects on crops and can cause significant economic losses, nutrient deficiencies, and environmental damage. Agricultural practices aim to minimize the impact of pests and diseases to ensure sustainable and productive crop yields. However, it is very important to approach it scientifically in order to develop effective pest control strategies [6, 10].

Researchers can study the biology, behavior, and ecological interactions of plant parasites to develop more targeted and sustainable control methods. Some actions and suggestions for studying plant parasites for research purposes may include:

Comprehensive ecological studies are needed to understand the life cycles, habitats, and interactions of plant parasites within ecosystems.

The genomic composition of plant parasites should be investigated to identify vulnerabilities or targets for potential control measures such as biopesticides or genetically resistant crops [11].

Biological control methods, including the use of natural predators, parasitoids, or pathogens, should be explored and developed to control plant parasites without relying heavily on chemical pesticides.

Integrated pest management strategies combining different approaches such as cultural practices, biological control and targeted use of pesticides should be developed and promoted to minimize the impact of plant parasites.

It is important to emphasize that the primary goal of research in this area is to increase agricultural sustainability and food security, rather than deliberately increasing plant parasites. Ethical considerations and a commitment to responsible agricultural practices are central to all agricultural scientific endeavors [12].

References:

1. Dzhafarov, I. Kh. (2001). Sel'skokhozyaistvennaya fitopatologiya. Baku. (in Azerbaijani).
2. Dzhafarov, I. Kh. (2009). Bolezni polevykh rastenii. Baku. (in Azerbaijani).
3. Dzhafarov, I. Kh. (2007). Obshchaya fitopatologiya. Baku. (in Azerbaijani).
4. Mamedov, G. Sh., & Khalilov, M. Z. (2004). Ekologiya i okruzhayushchaya sreda. Baku. (in Azerbaijani).
5. Mamedov, G. Sh., & Ismailov, M. M. (2006). Nauchnye osnovy i printsipy raionirovaniya pochv Azerbaidzhana po ustoichivosti k zagryazneniyu organicheskimi veshchestvami. Baku. (in Azerbaijani).
6. Alekperov, Kh. M. (1965). Fauna i ekologiya nazemnykh pozvonochnykh Azerbaidzhana. Baku. (in Russian).
7. Abdinbekova, A. A., Akhmedov, B. A., Mustafina, M. K., & Askerzade, Kh. Z. (1984). Sezonnaya i sutochnaya letnyaya dinamika khlopchatobumazhnykh babochek v usloviyakh Mil'-Muganskii zony Azerbaidzhana. *Izvestiya AN Azerbaidzhan*, (3), 23-27. (in Russian).
8. Artokhin, K. S. (2012). Vrediteli zernovykh kul'tur. Moscow. (in Russian).
9. Peresypkin, V. F., & Kirik, N. N. (1991). Bolezni ovoshchnykh i sel'skokhozyaistvennykh kul'tur. Bolezni ovoshchnykh i plodovykh kul'tur. Kiev. 3. (in Russian).
10. Gannibal, F. B., Orina, A. S., & Levitin, M. M. (2010). Al'ternariozy sel'skokhozyaistvennykh kul'tur na territorii Rossii. *Zashchita i karantin rastenii*, (5), 30-32. (in Russian).
11. Gorbachev, I. V., Gritsenko, V. V., & Zakhvatkin, Yu. A. (2002). Zashchita rastenii ot vreditel'ei. Moscow. (in Russian).
12. Polyakov, I. Ya. (1975). Prognoz razvitiya vreditel'ei sel'skokhozyaistvennykh rastenii. Leningrad. (in Russian).

Список литературы:

1. Cəfərov İ. X. Kənd təsərrüfatı fitopatologiyası. Bakı: Nauka, 2001. 280 s.
2. Cəfərov İ. X. Çöl bitkilərinin xəstəlikləri. Bakı: Nauka, 2009. 322 s.
3. Cəfərov İ. X. Ümumi fitopatologiya. Bakı: Nauka, 2007. 392 s.
4. Məmmədov Q. Ş., Xəlilov M. Z. Ekologiya və ətraf mühit. Bakı: Nauka, 2004. 504 s.
5. Məmmədov Q. Ş., İsmayılov M. M. Azərbaycan torpaqlarının üzvi maddələrlə çirklənməyə davamlılığına görə rayonlaşdırılmasının elmi əsasları və prinsipləri. Bakı: Qarağac, 2006. 204 s6.

Алекперов Х. М. Фауна и экология наземных позвоночных Азербайджана. Баку: Изд-во Акад. наук АзССР, 1965. 203 с.

7. Абдинбекова А. А., Ахмедов Б. А., Мустафина М. К., Аскерзаде Х. З. Сезонная и суточная летняя динамика хлопчатобумажных бабочек в условиях Миль-Муганский зоны Азербайджана // Известия АН Азербайджан. 1984. №3. С. 23-27.

8. Артохин К. С. Вредители зерновых культур. М.: Печатный город, 2012. 532 с.

9. Пересыпкин В. Ф., Кирик Н. Н. Болезни овощных и сельскохозяйственных культур. Болезни овощных и плодовых культур. Киев: Урожай, 1991. Т. 3, 206 с.

10. Ганнибал Ф. Б., Орина А. С., Левитин М. М. Альтернариозы сельскохозяйственных культур на территории России // Защита и карантин растений. 2010. №5. С. 30-32.

11. Горбачев И. В., Гриценко В. В., Захваткин Ю. А. Защита растений от вредителей. М.: Колос, 2002. 468 с.

12. Поляков И. Я. Прогноз развития вредителей сельскохозяйственных растений. Л. : Колос, 1975. 239 с.

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