

AGRICULTURAL SCIENCES

PATHOLOGIES CAUSED BY FUNGI IN AZERBAIJAN AND THEIR RESEARCH

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Abstract

The nature of the Republic of Azerbaijan is under the influence of the changing ecological conditions of the globalized world day by day, the quality change in the country's economy as a result of regaining independence of Azerbaijan in 1992 made it necessary to reconsider the measures implemented in relation to these phytopathological studies. Thus, as a result of changes such as the country's transition to a market economy, the transfer of land to private ownership, and the replacement of collective farms and state farms by private farms, a number of state organizations that are supposed to control the country's phytosanitary status have not been determined in time in the newly formed economic system, and their material and technical base has not been determined in time. the collapse of the established communication mechanism and the impossibility of creating a new one in a short period of time put those organizations in a de facto inactive state. All this greatly increased the probability of the spread of diseases and the emergence of new diseases. Among them, the diseases caused by fungi are of special importance due to both the distribution area and the danger.

Keywords: ecological conditions, mycological research, vegetation, mycobiota

Before proceeding to the analysis of the mycological research conducted in Azerbaijan, which has a rich vegetation[2] and forests occupy up to 11% of its territory,[4] it would be appropriate to dwell on one issue. In general, until the middle of the last century, the pathologies caused by fungi were studied in the context of mycological research and the obtained results were given together. However, over time, according to the level of development of science, researches began to be grouped according to their nature, so that similar cases did not pass by Azerbaijan, and researches in this direction were started from the middle of the second half of the last century. Although many of the earlier studies were episodic in nature, serious studies were also carried out towards the end of the last century. This can be clearly seen from the information given below.

From the results of the research conducted in this field, it can be said that rust, antimony, powdery mildew, trachymycosis, anthracosis, Dutch disease, cancer, necrosis, wilting (verticellosis), curling of leaves, etc. are common in Azerbaijan. The causative agents of diseases such as covers biotopes.

The mycobiota of dry subtropical plants such as figs, almonds, pistachios, figs and turnips were studied according to their taxonomic structure, frequency of occurrence, the pathologies they cause and their prevalence, as well as their phytotoxic activity. It was determined that the mycobiota of subtropical fruit plants, such as figs, oleanders, almonds, pistachios, and peanuts, includes 89 species, which, according to their taxonomic affiliation, belong to 4 subdivisions (Zygomycota, Ascomycota, Basidiomycota, and

Deuteromycota) of the true fungi division (Euomycota) of the fungi kingdom (Mycota) 5 belongs to 52 genera of the class, 15 orders, 21 chapters. 3 of the fungal species included in the mycobiota of the studied dry subtropical fruit plants (*Aspergillus versicolor* (Vuill.) Tiraboschi, *Ascochyta fagi* Woronich and *Coniofoa puteana*(Fr.)Karst) were recorded for the first time for the mycobiota characteristic of Azerbaijani nature [2].

Vegetables and melons cultivated in different zones of Azerbaijan were also analyzed according to the species composition of their mycobiota, as well as the transmission of pathologies by seeds, a description of many types of fungi spread in these plants was given, and the spread of new species for the mycobiota of Azerbaijan was discovered [5-6]. In addition, diseases caused by fungi in some agricultural plants cultivated in Azerbaijan were identified [5] and the dynamics of some of them were studied. In the studies carried out in the Mugan plain, the plants typical for the area, including cultivated ones, were purposefully studied according to the species composition of mycobiota, areal classification, and diseases caused by phytopathogens involved in the formation of mycobiota. It became clear that 172 species of fungi are involved in the formation of the overall mycobiota of the Mugan Plain, and among them *Aspergillus ustus*(Bain)Thom et Church, *A. sulphureus*(Fres) Thom et Church, *Aschophyta cytisi* Lib., *A. gladioli* Trav., *A. iridis* Oud. ., *Fusarium culmorum*(W.G.Sm.) Sacc., *Puccinia iridis*(DC.)Wallr. and *Thanatephorus cucumeris* (Frank) Donk. such species were recorded for the first time in the territory of the Republic of Azerbaijan. About 40 pathologies caused by the fungi

recorded in this area were also among the results obtained in the studies conducted in the Mughan plain[1].

From the research conducted in the area called "Sultanbud forest" of Aran Karabakh, it was clear that 137 species of true fungi are involved in the formation of the mycobiota of cultivated and growing plants there, of which 8 are (*Podosphaera clandestina* (Fr.) Leveille, *Sphaerotheca fuliginea* Poll., *Uromyces trifolii* -repentis (Cast.) Liro, *Meruliopsis taxicola* Fr., *Alternaria mali* Roberts, *Colletotrichum trifolii* Bond. et Truss and *Diplodina lycopersici* Hollos) were recorded for the first time in Azerbaijan. In addition, it became clear that the pathogenic representatives of the fungi registered in the studied areas were found to cause about 95 pathologies, and a 3-point system was proposed for evaluating their degree of danger[2].

As it is known, many species of fungi cause various diseases both in cultivated[3,4] and wild plants[5,6], as a result of which the biological productivity of plants decreases, and the product produced by them changes in quality and quantity, and in most cases this change is unambiguous. It is characterized negatively in terms of practical demand. One of such diseases and one of the most dangerous diseases of recent times is fusariosis, and this disease is found all over the world[2]. Fungi belonging to the genus *Fusarium* are involved in the occurrence of this disease. The dangerous aspect of the disease caused by these fungi is that it is most often found in cereal plants[4], and cereal plants are the main food source for humans and a number of other animals. On the other hand, as a result of this disease, not only the biological productivity of plants decreases, but at the same time, the product obtained from plants affected by this disease is also enriched with metabolites formed as a result of the life activity of fungi belonging to this genus. Such metabolites include mycotoxins (for example, deoxynivalenol-DON, diacetoxypyrenol-DAS and zearalenone-F-2, fumanisin B-1, etc.) that it is dangerous is one of the accepted realities of today. Research materials related to the study of this mushroom can be found in the research conducted in Azerbaijan. For example, in the studies conducted in the Mughan plain, it was determined that these fungi cause fusarium disease in the studied areas, and it was determined that 6 species of the genus *Fusarium* are involved in the occurrence of this disease [1]. In general, it has become clear that 9 species of fungi belonging to the genus *Fusarium* are widespread in Azerbaijan, and almost all of them are involved in the occurrence of fusarium disease in one or another combination[7]. For this reason, one of the results of the conducted research determined that the

determination of the permissible limit of the amount of fungi belonging to the genus *Fusarium* and the amount of mycotoxins they produce in cereals is important for ensuring the microbiological safety of cereal products. During the analysis of the results of some studies, it became clear that the phytopathogenic activity of fungi in cereals is related to various diseases caused by them, and the most common fungal diseases are root rot, fusarium, septarius, white rot, rust, powdery mildew, various types of spotting, wilting, etc. is determined to be. It has become clear that the situation of a number of agrophytocenoses currently used for the cultivation of agricultural plants in Azerbaijan is not so dangerous from the mycological point of view, but the characterization of the spread of a number of diseases as a rising line[1], the lack of advanced normative documents that allow for a comprehensive assessment of the dangerousness of fungi, make the situation worse. can make it inevitable to change at any moment.

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