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MYCOLOGY OF FODDER PLANTS IN DIFFERENT AREAS OF AZERBAIJAN THE RESULTS OF STUDIES DEVOTED TO THE EVALUATION

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МИКОЛОГИЯ КОРМОВЫХ РАСТЕНИЙ В РАЗЛИЧНЫХ РАЙОНАХ АЗЕРБАЙДЖАНА РЕЗУЛЬТАТЫ ИССЛЕДОВАНИЙ, ПОСВЯЩЕННЫХ ОЦЕНКЕ

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Abstract. Both cultivated and wild fodder plants are the main group of plants necessary for the development of animal husbandry. Although it is impossible to give a specific number about the number of species of fodder plants in Azerbaijan, there is no doubt that their number of species is expressed in hundreds. Thus, the number of species of annual grasses in the CIS includes up to 1000 species. As it is known, some species mentioned above as fodder plants also carry other qualities. For example, corn, sunflower, wormwood, three-leaf clover, etc. plants are also medicinal plants and are used as diuretics, pain relievers, etc. in folk medicine. It is widely used as a tool with properties. At the same time, due to these properties, these plants have become the subject of various aspects (botanical, pharmacological, mycological, etc.) studies, and this situation is still ongoing.

Аннотация. Как культурные, так и дикорастущие кормовые растения являются основной группой растений, необходимых для развития животноводства. Хотя невозможно назвать конкретные цифры о количестве видов кормовых растений в Азербайджане, нет сомнения, что их количество исчисляется сотнями. Таким образом, количество видов однолетних трав на территории СНГ насчитывает до 1000 видов. Как известно, некоторые виды, упомянутые выше как кормовые растения, обладают и другими качествами. Например, кукуруза, подсолнечник, полынь, клевер трехлистный и т. д. растения также являются лекарственными растениями и используются в народной медицине как мочегонные, болеутоляющие средства и т. д. Он широко используется как инструмент со свойствами. В то же время, благодаря этим свойствам, эти растения стали предметом различных аспектов (ботанических, фармакологических, микологических и др.) исследований, и эта ситуация продолжается до сих пор.

Keywords: fodder plants, microbiota, fungi, pathogens.

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Ключевые слова: кормовые растения, микробиота, грибы, возбудители болезней.

As mentioned, forage plants contain enough nutrients for various organisms, including disease-causing organisms, which makes the spread of these organisms inevitable. Microorganisms in plants, including food crops, also differ in the form of propagation, which allows them to be divided into two types: epiphytic and pathogenic.

The effect of epiphytes on plants does not affect their biological productivity, they just use plants as a stop and feed on exudates and dead body particles that are formed and excreted as a result of their life activity.

Pathogens, by causing various pathologies in plants, cause a change in their biological productivity, as well as a change in the quality indicators of raw materials and products used for practical purposes [1].

Unfortunately, in all cases, these changes are evaluated in a negative direction from a practical point of view. For this reason, the study of plants in this direction is one of the current research directions in most countries of the world. Thus, due to the influence of phytopathogenic microorganisms (bacteria, fungi, fungi-like organisms, viruses, etc.), the loss of plant-based agricultural products worldwide is 20-40% [2, 10] as a result of pests and diseases, and at least 14.1% are caused by pathogens (https://lyl.su/16SL).

This is 220 billion US dollars per year. This is a significant loss in modern times, not least because the Earth's population continues to grow, and within a fixed area, hundreds of millions of people are already experiencing food insecurity. Therefore, it is important, more precisely necessary, to conduct research aimed at preventing that loss.

İf bacteria, fungus-like organisms, fungi and viruses are included in the disease-causing organisms, 70-80% of plant diseases are caused by fungi [3].

Fungal diseases differ from others not only because of their high specific gravity in common diseases, but also because of their dangerousness, that is, the amount of damage they cause. Thus, during the epiphytoty of fungal diseases, yield loss can be 50% or more (Agroatlas) and they even cause the complete destruction of plants. In addition, there is no plant species or variety in nature, as well as man-made, that carries resistance genes that fungi cannot cause disease or exploit.

Therefore, this issue should be studied in order to keep it under control, to make their activities manageable or completely limited. The first stage of the work carried out in this direction is the determination of the species composition of the causative agents of those diseases and the correct and timely diagnosis of the diseases caused by them.

First, by summarizing the results of research conducted in this direction, we can note that the number of species of fungi known to science, which have the ability to cause pathology in agricultural plants to one degree or another, is slightly more than 19 thousand [4].

These fungi can show life activities both in living plants and in their body remains. When favorable conditions arise, they seriously affect the productivity of plants by causing various diseases, or more precisely, reduce them [1].

As mentioned above, this reduction, i.e. crop loss, is repeated every year and averages at least 10-15% per year [5].

In recent times, the attitude to the diseases of agricultural plants caused by fungi has become more serious, which is due to the fact that they not only reduce the productivity of plants, but also deteriorate the quality indicators of the products produced, as well as they are a weak , more precisely, fragile link for the development of sustainable agriculture.

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Material and methodology

One of the points that attract attention from the conducted studies is that one or more fungi are involved in the occurrence of this or that disease, and these or other disease agents either have substrate specificity, or the substrate list includes hundreds of plants [5, 6]. For example, F. *incarnatum, F. oxysporium, F. proliferatum, F. solani, F. verticilliodes*, etc., belonging to the *Fusarium* genus, cause fusarium disease. as many species are involved.

Although fodder plants are widespread in Azerbaijan, although they contain enough nutrients for the spread of fungi, their research is poorly done, and it seems that, like our research, these plants have not become the subject of systematic neither mycological nor phytopathological studies. In the studies conducted, it is mainly related to those in the background of common plants. More precisely, during the mycological research of plants of various purposes, the name of fungi found on fodder plants, and sometimes the frequency of their occurrence on those plants is also mentioned. It would be appropriate to touch on some of these studies.

In the studies conducted on the study of the mycobiota of cultivated plants in the Kura-Araz plain of the Republic of Azerbaijan, the distribution of 112 types of fungi was determined, the ecotrophic relationships of those fungi were clarified, their distribution on host plants was clarified, and the phytosanitary status of agrocenoses was evaluated as the conclusion of the research [7].

Wheat, barley, corn, sugar beet, etc. were sampled in these studies. such plants were also included and their mycobiota in a specific region was also studied in terms of the set goal.

As a result of the research conducted on the mycobiota of cultivated plants in the territory of Lankaran-Astara IR, it was determined that 85 types of fungi and mushroom-like organisms were distributed in the cultivated plants, and most of them belonged to the anamorphs of cyst fungi. , and plants such as sugar beet [8].

The frequency of occurrence of recorded fungi on wheat, diseases recorded in wheat and other fodder crops (fusarium, spotting, rust, wilting, rust, powdery mildew, septoriosis, etc.) were determined.

During the study of the mycobiota of dye plants in the western region of Azerbaijan, i.e. in Ganja-Gazakh IR, it became clear that 81 species of fungi participate in the formation of the mycobiota of plants of this type, and 72.9% of them belong to cystic fungi. Recorded fungi cause various diseases (alternariosis, septoriosis, spotting, rust, powdery mildew, fusarium, antimony, etc.) in the studied plants, among these plants are sunflower, aspen, carrot, wormwood, alfalfa, beetroot, gangal, etc. such as fodder plants [3, 7, 11].

In addition, the fungi recorded in these dye plants, including fodder plants, were also characterized by their enzymatic activity, and it was determined that most of them include hydrolases (amylase, xylanase, pectinase, protease and cellulase) that catalyze the breakdown of complex polymers in the plant cell wall in the enzyme system.

During the study of the mycobiota of medicinal plants, it became clear that 186 species of fungi (Mycota) and mold-like organisms (Chromista) are involved in the formation of the mycobiota of more than 100 plants of this genus . Fodder plants are mentioned among these medicinal plants, and even the number of species participating in the formation of mycobiota of some of them (alfalfa, corn, wormwood) is also mentioned.

In a similar way, that is, during the study of the mycobiota of cultivated and wild plants (essential plants, cultivated plants, etc.) in this or that area, as well as various biotopes (subjected to man-made and anthropogenic influences), the naming of fodder plants is also used in other studies. are found [1] and mainly in those works fodder plants are mentioned as the substrate from which fungi are isolated.

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Thus, based on the results of research directly or indirectly related to the study of the mycobiota of fodder plants in Azerbaijan, it can be noted that this issue is one of the poorly researched areas in Azerbaijan and our research, this issue has not been systematically studied. This is confirmed by the following considerations:

Firstly, the studies dedicated to the mycobiota of fodder plants of Azerbaijan and considered systematic were mainly conducted in the territory of a specific IR, and in those studies, the mycobiota of fodder plants is not comprehensive in terms of ensuring their mycological safety.

Secondly, barley, wheat, corn, sugar beet and alfalfa can be attributed to fodder plants that have been well studied at a relatively certain level in the works conducted in this regard, which were mainly carried out in the territory of 2-3 IRs. Although its territory is so large, it does not allow us to summarize the results of the research conducted in that IR in the conditions of Azerbaijan, where the environmental conditions are different, and make a final opinion about the country.

Third, fungi and their host plants have not been spared the changes that have occurred at a time of global challenges. Thus, adventive species, formation of forms resistant to preventive control measures (resistance), expansion of host plant list, etc. the occurrence of cases from time to time even comprehensively studied senoses, biotopes, plants, etc. A return to the study of objects is already a reality. The study of this issue is more important for Azerbaijan, at least because fodder plants cultivated in Azerbaijan have not been systematically studied, at least in terms of the species composition of their mycobiota.

Finally, the last one, that is, the fourth one, is related to the fact that today there is a difference between the living things that actually exist in nature and those that are known to science, and this difference is in favor of the actual ones, and it is one of the realities that the scientific community accepts unequivocally today. In the example of mushrooms, it would be appropriate to touch on this with quantitative indicators. Thus, the fact that the number of species of fungi identified by classical mycological methods is between 120-170 thousand has been confirmed in a number of sources [9].

According to the literature data on the actual number of fungi in nature, it is between 1.2-3.8 million according to classical approaches, and according to molecular-genetic approaches, it is likely to be more. If we add to these that the presence of new species for the mycobiota typical of Azerbaijan among the fungi recorded in the research conducted in this or that biotope in most cases is also confirmed, then conducting research in this direction is also from the point of view of the generally poor study of the mycobiota typical of Azerbaijan. is relevant. In a word, the study of the mycobiota of fodder plants is relevant both in terms of their poor study in isolation, as well as the general poor study of the mycobiota characteristic of the nature of Azerbaijan.

By the way, it would be appropriate to touch on one point related to the poor study of the mycobiota specific to the nature of Azerbaijan, which is related to the number of species of fungi in the country. Thus, it is not possible to say a specific number about the number of species of mushrooms that are currently distributed in the nature of Azerbaijan. The reason for this is different and all of them lead to the idea that there is currently no source that contains a specific number. It is true that currently there is such a specific number of xylotrophic macromycetes distributed only in Azerbaijan, and their number of species equal to 214 is confirmed by literature information.

About the number of other mushrooms today, only an approximate figure can be given, which will be around 10 thousand species at best. Determining this number is somewhat difficult for another reason, which is also related to the fact that the systematics of fungi is a dynamically developing field.

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