DISEASES OCCURRING IN AUTUMN POTATO VARIETIES GROWN IN THE CONDITIONS OF BLACKPINK AND THEIR INFLUENCE ON PRODUCTIVITY

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Abstract. *This article presents information about diseases and their damage in potato varieties grown in the conditions of Karakalpakstan. In the research, the distribution of diseases of Santa and Gala varieties of autumn potatoes was studied. Experiments were conducted under field and laboratory conditions. Samples were collected from infected plants in the field and analyzed in the laboratory. Alternaria solani, Ph. infestans, Fusarium sp. When the bacteria isolated from infected plants were analyzed using Maldi-TOF device, it was found that Bac.mojavensis, Bac.licheniformis, Bac.subtilis, Bravibacillus brevis bacteria belonging to the genus Bacillus were present.*

Keywords: *potato, leaf, stem, nodule, fusarium, phytophthora, alternaria, Bac.mojavensis, Bac.licheniformis, Bac.subtilis, Bravibacillus brevis.*

Introduction

One of the important tasks before the agrarian sector is to fully provide our population with food products. Among food products, vegetable crops occupy the main place. Currently, special attention is paid to planting and growing vegetable crops in our republic, and their areas are expanding year by year.

One of the urgent issues of the present day is the development of scientifically based control measures that are ecologically safe and do not have negative effects on nature and humans in the fight against fungal and bacterial diseases of the potato plant belonging to the ‘Ituzumdosh’ family. Currently, potatoes are mainly affected by diseases such as fusarium, phytophthora, alternariosis, gray rot, cladosporiosis. Research Santa and Gala potato samples with disease symptoms were isolated from Amudarya district and Nukus district of the Republic of Karakalpakstan. These signs were determined by visual observation of potato tubers and seeing the spots on the inside of the cut. Affected potatoes were harvested and brought to the laboratory for examination. Laboratory experiments were conducted at the Institute of Microbiology of the Academy of Sciences of the Republic of Uzbekistan.

Research methods and materials. It is important to use special techniques to isolate fungi and bacteria from plant parts. For this, any plants must be cleaned of external microflora. 3% hydrogen peroxide is used to sterilize external microflora. The studied part of the plant is kept in the prepared solution for 1-2 minutes, then it is washed several times in sterilized water. It is also possible to use 1:3000 diluted formalin solution (for 30 minutes), 1% bromine water (several seconds), 2% manganese potassium solution (1-5 minutes). A branch of some shrubby and tree-like plants is first soaked in alcohol and then burned in a flame to extract the internal infection.
Infected potatoes were cleaned of external microflora, and first, potato leaves, stems and nodules were thoroughly washed in running tap water. Then it was wiped with sterile cotton soaked in 96%

ethyl alcohol and burned. [2]. Externally sterilized potato tubers, leaves and stems were cut using a sterile scalpel. Potato slices containing damaged and healthy tissues were planted in Chapeka nutrient medium and the samples were incubated at 25°C for 48 hours.

Research results.

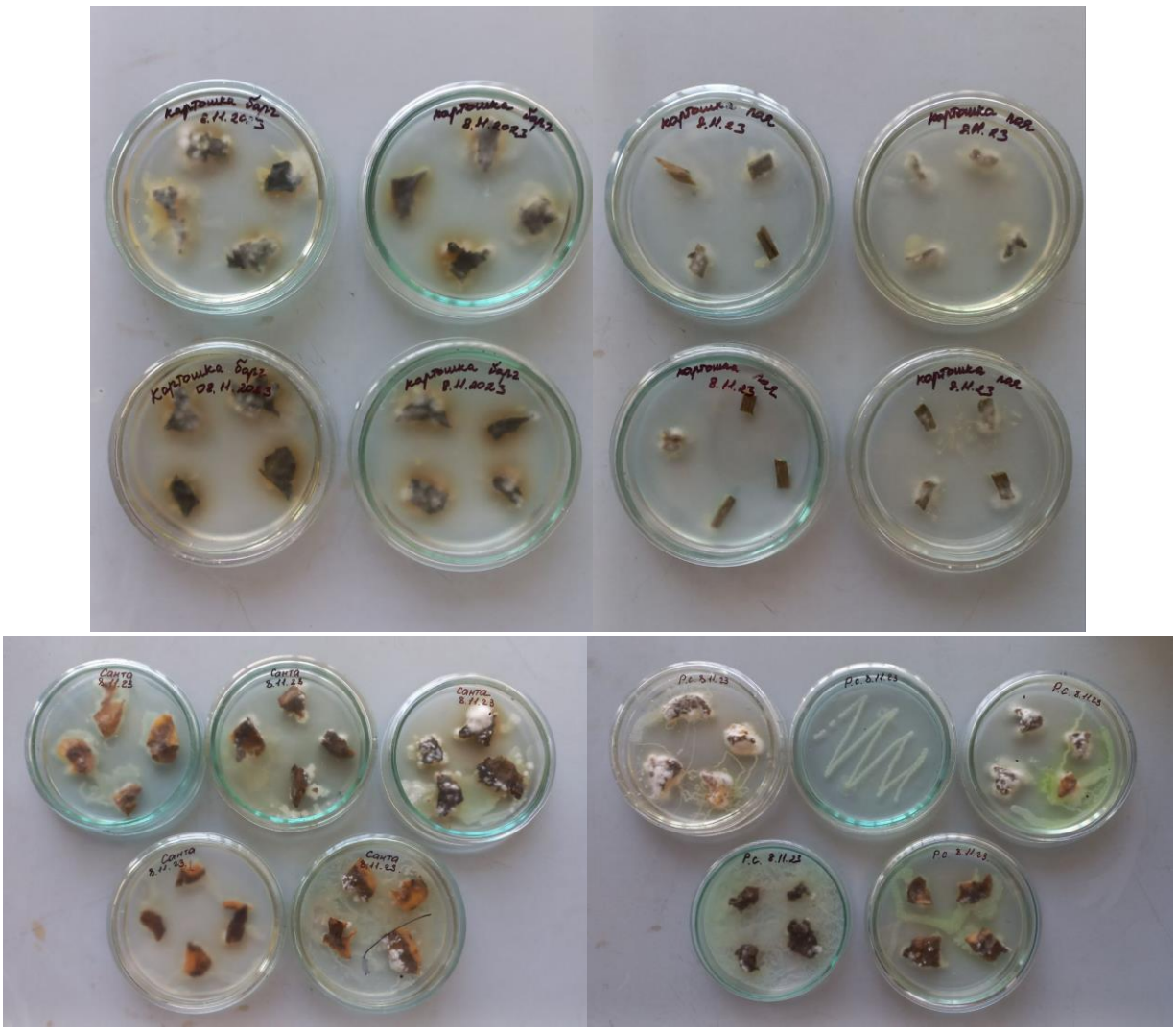
On the outside of the selected potato plant, sunken spots of various sizes with a brown appearance were detected. When the nodules were cut, it was found that there were rusty, brown spots along the circumference and in the middle of the potato.

Fig. 1. Damaged potato pieces

It is known from the literature that the growth of fungal sporangia is closely related to external conditions, especially temperature. Zoospores are formed at low temperature (4-18°C), when the temperature rises (20-27°C), zoosporangia do not form zoospores, but the embryo tube grows and penetrates into the plant tissue [5]. In the course of research, pathogenic microorganisms were isolated from diseased plants grown in a thermostat at an air temperature of 20-25°C.

Microscopic analysis of samples planted in Chapeka nutrient medium revealed the presence of Alternaria solani, Ph. infestans, Fusarium sp. When the bacteria isolated from infected plants were analyzed using the Maldi-TOF device, the presence of bacteria belonging to the genus Bacillus, Bac.mojavensis, Bac.licheniformis, Bac.subtilis, and Bravibacillus brevis was found (Fig. 2).

In these pictures, we can see that several types of microorganisms were isolated from the potato when the diseased part of the Santa and Gala varieties of potatoes was planted in an artificial nutrient medium. From these isolated microorganisms, pure cultures were isolated and morphologically identified using a microscope. These diseases damage potatoes during the growing season. Diseases can reduce the yield by 20-25% during the growing season of potatoes, especially in years with high rainfall. In the studies, the prevalence of fusarium disease in the autumn potato crop was 15-20%, Alternaria disease was 15-18%, Phytophthora disease was 15%, and bacterial diseases were 20%.



Growth of diseased potato parts in Chapeka nutrient medium

Controlling the spread of potato diseases and determining which disease-causing microorganism is infected is one of the important activities. Because in the fight against the disease, it is recommended to use preparations containing substances that affect these pathogens.

Conclusion

In conclusion, in order to obtain a high and quality harvest from the potato crop, the correct application of agrotechnical measures, planting the crop in the specified periods, choosing disease-resistant varieties, and planting the potato seeds with effective seeders before planting are important measures.

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