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CRITICAL ANALYSIS OF THE DAMAGE AND OCCURRENCE OF FUNGAL DISEASES IN TOMATO AND CUCUMBER PLANTS GROWN IN GREENHOUSES OF TASHKENT REGION

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----------ABSTRACT----------
In this written article, based mainly on our long-term scientific research and observations, a critical analysis of the damage and occurrence of fungal diseases in tomato and cucumber plants grown in the greenhouses of Tashkent region is recorded. The literature on the occurrence of fungal diseases in the main greenhouses of Tashkent region in other countries of the world was analyzed.
KEY WORDS: ***tomatoes, cucumbers, greenhouses diseases, fungi diseases, pathogenicity, toxicity, damage***

INTRODUCTION

Tashkent region, therefore in greenhouse conditions in different greenhouse tomato and cucumber plants and the fungal diseases that occur from loss occurring in the different soils that we have accomplished the analysis. The interaction of the soil types in their fungi with other groups of microorganisms in the soil and the quality of their relations, and the physiologist bio ecological biochemical properties and distribution as a result of the study to develop measures to fight with them, and practice them the opportunity to be born.

The types of fungi in different types of soils in Uzbekistan were studied in detail by our mycologists in comparison to other Central Asian republics [1].

Analyzing the published literature, it became clear that the soil of greenhouses in the conditions of Uzbekistan has not been mycological studied by anyone until now. Therefore , we set ourselves the goal of studying this problem.

To achieve our goal, we took two types: glass and film greenhouses. We presented the obtained scientific results in Table 1.

The obtained results showed that when we compared the amount of soil fungi in greenhouses, there was almost no difference in glass and film greenhouses [2].

RESULTS OF STUDY

Analyzing the data obtained as a result of our scientific work and the published scientific works of expert scientists, and based on the results of our own experiments, in order to eliminate existing disease-causing phytopathogenic fungi in the soil or reduce their damage, first, after the end of the vegetation period of the plants, the soil inside the greenhouse is deepened by 40 cm. the drive was appropriate. Because in this, fungal infections in the upper parts of the soil and diseased plant residues fall into the lower layers of the soil. They die there because there are no conditions for their growth and development.

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Table 1.
The amount of soil fungi in the greenhouse in Tashkent region
(2020-2021 average)

The layer from which the sample soil was taken (cm)	The amount of fungus in 1 g of soil (in thousands)	
	In film greenhouses	In mirrored greenhouses
Tomato		
0-10	70.3	68.3
10-20	93.9	92.0
20-30	99.0	100.0
30-40	82.1	79.3
40-50	59.6	69.4
Average number:	80.8	81.7
Cucumber		
0-10	54.4	67.0
10-20	75.1	74.3
20-30	90.7	76.5
30-40	58.6	56.4
40-50	35.0	36.7
Average number:	62.8	62.2

Secondly, the leaves of the tomato and cucumber plants in the greenhouse should be collected and taken out of the greenhouses immediately. Because they become a food environment and a source of infection for fungal species in the soil.The root of the tomato plant is strongly developed and widespread in the Tashkent region. It goes down to a depth of 1-2 meters below the plowed layer of the soil . Although the root of the cucumber is well developed, it spreads on the surface, it is placed mainly in the plowed layer or a small part in the layer up to 0.5 m deep.

Slightly lower amount of fungi in the top 10 cm of soil is, in our opinion, due to relatively lower soil humus and moisture in this layer.

The number of fungal species is low in the lower layers of the soil, firstly, as we mentioned above, it depends on the root system of plants, and secondly, as it goes deeper into the lower layers of the soil , the amount of oxygen decreases and the aeration system deteriorates.

In the course of our scientific work, we isolated fungi belonging to 3 classes, 4 orders, 6 families and 20 genera from the soil.

Table 2.
Systematic position of fungal genera isolated from greenhouse soil
(2020-2021 **).**

Classes	Arrangements	Families	Categories
Zygomycetes	*Mucorales*	*Mortierellaceae*	*Mortierella Coem.*
		Mucoraceae	*Actinomucor Schost.*
			Mucor Mich. ex Fr.
			In Rhizopus Ehr.ex C
Ascomycetes	*Sphaeriales*	*Chaetomiaceae*	*Chaetomium Kunze ex Fr.*
Deuteromycetes	*Hyphomycetales*	*Moniliaceae*	*Acremonium Link ex Fr.*
			Aspergillus Mich .ex Fr.
			Botrytis Pers. et Fr.
			In Cephalosporium C
			In Gliocladium C
			Penicillium Lk ex Fr.
			Trichoderma Pers.ex Fr.
			Trichothecium Lk et Fr.
		Dematiaceae	*Alternaria Nees ex Wallr.*
			Cladosporium Lk ex Fr
			Helminthosporium Lk ex Fr.
			Humi s ola Traaen

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			Stemphylium Wallr.
		Tuberculariaceae	*Fusarium Lk ex Fr.*
	Myceliales		*Rhizoctonia DC. ex Fr.*
3	4	6	20

When we scientifically analyzed the data in Table 3, it became clear that the occurrence of fungal genera in the soil layers was different. 19 of them were found at a depth of 20-30 cm, 16 at a depth of 10-20 cm, 13 at a depth of 0-10 cm, and finally 5 at a depth of 40-50 cm.

Alternaria , Aspergillus , Fusarium , Penicillium , Trichoderma in all depths of the soil representatives of the categories were separated.

When talking about the types of fungi isolated from the soil of greenhouses, it should be mentioned that fusarium wilt disease (*Fusarium wilt) in tomato plants grown in glass greenhouses oxysporum*), alternariosis (*Alternaria longipes*), brown spotting (*Cladosporium fulvum*) diseases are increasing every year.

When we scientifically analyzed the sampled soils, it became clear that the distribution of fungal species was also different depending on the soil layers.

MATERIAL AND METHODS OF WORK. METHOD OF PLANTING SOIL SAMPLES

We planted the brought soil samples in laboratory conditions using two methods: we planted small parts of the soil directly in the artificial nutrient medium and by the method of serial dilution of the soil suspension.

In the first one, we crushed the soil in a sterilized porcelain container, planted the small particles in the artificial environment in the previously prepared Petri dish, and placed it in a thermostat with a temperature of 23-25 ^{0}C. After 5-6 days, we planted the grown colonies in test tubes with a medium with a microbiological hook in front of an alcohol lamp, and then identified their species.

In the second, we took 10 g of sample soil in a clean sterilized container, put it in a sterilized porcelain container, wet it with a little sterilized water, and ground it for 5-7 minutes. Then we put it in a sterilized flask with a clean spatula. We rinsed the porcelain container several times with sterilized water and poured it into the flask. There is 99 ml of water in the flask, and we put 10 g of soil into it. The concentration of water was 1:100. Mix the flask thoroughly for 10-15 minutes. Then we took 1 ml of the suspension from the flask and poured it into a test tube with 9 ml of sterilized water . After that, we poured another 9 ml of sterilized water into a test tube to make a 1 ml suspension.

Thus, each time a suspension with a concentration 10 times less than the previous one was formed in the test tube. Then we poured 0.1 ml of the suspension from the last test tube onto a Petri dish with artificial nutrient medium with a sterilized pipette. We applied the suspension to the entire surface of the plate with a sterilized spatula. We planted each prepared suspension in 5 Petri dishes. Planted Petri dishes at 23-25 ^{0} We put the top part down on the thermostat with S. We counted the fungal colonies after 5-6 days and identified the fungal species.

We determined the amount of fungi in 1 g of soil using the formula [10]

$$A + \frac{c.\ c\ .\ d}{s}$$

A – amount of fungi in 1 g of soil;
v – the number of colonies in the plate;
v – amount of suspension in ml planted in a plate ;
d is the planted concentration of the soil sample;
s - soil moisture.

To determine soil moisture, we put 10 g of sample soil in a sterilized box and dried it in a drying cabinet at 105 ^{0}

effect of bacteria on the growth of fungi in the cultivated soil samples , we added citric acid or lactic acid when preparing the nutrient medium to make the medium pH 4.5-5.0 [9]

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