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Methods of fight against temperature diseases in natural damages

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This article analyzes soil samples of naturally occurring areas, and examines the effects of modern fungicides on fungi isolated from the infected plant when planting tomatoes on the affected area.

Introduction

It is known that as the population grows, their demand for vegetables and melons increases. The state support of the agrarian sector today gives ample opportunities for its employees. Nevertheless, the provision of the population of the Republic with quality food products, especially in the fight against agricultural pests and diseases, is of paramount importance.

At present, in order to provide the population with foodstuff, some work is being carried out in the country to increase production and saturate domestic consumer markets. According to regional data, the total area of farms of all categories will be 62,000 hectares in 2018 and 21,000 hectares, with tomatoes planting on 20,000 hectares on the main farm and 4.8,000 hectares. Also, tomatoes are grown on more than 5,000 hectares of greenhouses of all categories in order to provide the population with various vegetable products throughout the year.

Of these areas, 2.1 million tons were harvested, of which 758,000 tons were harvested by farms. The demand for tomato products grown in our country is growing every year. For example, in 2017, 52,000 tons of tomatoes were exported, while 43 tons were dried. As of December 15, 2018, this figure was 60,000 and 251,000 tonnes, respectively. [1]

Literature review

In tomato crop during the growing season and later in the harvest effective against various diseases and pests during storage where protective measures and other measures are not regularly applied. Many diseases are lost and diseases of the crop are acute decreases.

Foreign on the study of major diseases of tomato in countries Bilay et al, (1988), Maierso, (1990), Lawrense et al., (1996), Kosiak et al., (2004), Hannibal, (2010), Elansky and Dr., (2010), Orina, (2011) and a number of other scholars have achieved high results. However Toirov, on the above issues in the conditions of our republic, Rakhmatov, (2008), Mambetnazarov et al, (2016) and Boyjigitov, Mamatov, (2016) is known to be the research of scholars. However, there is not enough research.

Main part

Tomato seedlings with fungal, bacterial and viral diseases gets sick. Among these, fungal diseases

are the greatest harm deliveries. Mushrooms are harmful to the plant from the start to the end of the growing season.

The following main diseases of tomato are mentioned in the literature:

- root rot (fungal Thielaviopsis basicola);

- Fusarium withering (fungi Fusarium oxysporum f.lycopersici);

- verticillosis withering (fungi Verticillium alboatrum or V.dahliae);

- fitoftorosis (Phytophthora investans DB);

- cladosporiosis or brown spraying of leaves (Clodosporium fulvum COOKE);

- flour dew (fungus Leveillula taurica);

- alternariosis or black mold (fungus Alterneria alternata fsp. lycopersici);

- Gray rot (fungus Botrytis cineria);

- Rooster or brown rot (Phoma destructiva PLOWR);

- stem rot (fungal Didymella lycopersici);

- Bacteriophage or wormwood (bacteria Xanthomonas campestris pv. vesicatoria);

- mosaic of cucumber in tomato (Sucumis virus 1);

- Alfalfa mosaic in tomato (Medicago virus 2);

- tobacco mosaic in tomato (Nicotiana virus 1).

There are also diseases such as double-stranded tomato tops, blistering or bronzing, diseases caused by microorganisms such as stolbur, and fruit rot caused by environmental factors, fruit rash, diarrhea, lack of nutrients. [3]

Systematic implementation of timely detection and prevention of pests and diseases occurring in tomato plants is a guarantee of high quality and abundant yield.

In recent years in the conditions of the republic of Uzbekistan

In the tomato crop grown, diseases such as phytoftorosis, alternariosis and fusariosis are widespread and cause significant damage. Losses of up to 50-60% of the heavily infected areas do not allow the yield of some varieties. Tomatoes have a variety of diseases caused by various pathogens (fungi, viruses and bacteria), lack of nutrients or toxicity, and improper performance of agro-technical measures.

There are many populations of natural fungi in the soil that are parasitic in soil and live in soil that differ greatly in terms of morphology (conidiophores, macro and microconidia, shape and size of chlamydospores), and livelihoods. Some are pure saprotrops that feed on the residues of dead organic matter (plants and other organisms), while others are to some extent an adaptive facultative parasite in plants that causes tracheomycosis or wilt disease. Because phytopathogenic populations have the potential to infect one or more host plants, they are classified into specialized species (form speciales, abbreviated f. Sp.).

To investigate the prevalence and species composition of fungal diseases caused by tomato plants, the soil of the field under study was analyzed by microbiological analysis.

Chess sampling (5 sites) was carried out in selected containers from the selected cropland and underwent microbiological analysis in laboratory conditions. Examination of specimens using generally accepted methods revealed that mainly facultative saprotrof fungi grew from Asperegelium sp., Penicillium sp., Mucor sp., And Fusarium sp., From facultative parasitic fungi Table 1

At the depth of 10 centimeters on the selected sowing areas, the number of Aspergillus fungi colonies was 8.8 at 13, 10-20 centimeters, and 15.6 at a depth of 20-30 centimeters. Penicillium fungi were 21.4 at 0-10 cm depth, 8 - 10-20 cm deep and 15.4 grains at 20-30 cm depth. The fungus of the Fusarium category was 3.2 cm at a depth of 10 cm, and 2 - 20-30 cm at a depth of 10-20 cm.

The results of the analysis obtained from the soil samples indicate that the average Aspergillus spp. 12.36 crore, Penicillium spp. 15.01 units, Fusarium spp. 2,10 crore and Mucor sp. It was found to be 0.43.

Table 1 . Results of mycological analysis of soil samples, (26.01.2016)

Depth of soil, cm	The number of isolated fungi and colonies			
	Aspergillus spp.	Penicillium spp.	Fusarium spp.	Mucor sp.
0-10	13,3±23	21,4±12	3,2±21	0
10-20	8,8±3	8,0±56	2,2±45	0
20-30	15,6±12	15,4±34	1,3±31	1,23±11
Average	12,36	15,01	2,10	0,43

Table 1.

It is important to clearly define the timing of disease development and to carry out the correct scientifically-based measures to combat the disease.

There are more than 70 species of fungi in the Fusarium category, which can cause disease in organisms that consume fungi-related plant parts other than agricultural crops.

Mushrooms in this category live mainly on soil and plant residues. Mushrooms are spread by strong winds, water currents and mechanical weapons.

Several species of Fusarium species have been found to be spread on the fields under cultivation.

Fusarium merismoides Corda fungi cause disease in many plants, especially in tomatoes, damaging the root system of grapes and trees [4].

Fusarium torulosum (Berkeley & Curtis) Nirenberg (teliomorphic form Gibberella pulicarisvar. Minor Wollenweber) has been found to cause fungal diseases in tomatoes and trees [5].

Fusarium oxsysporum (Schlecht), a fusarious root cause of tomato f. sp. radicis lycopersici (Sacc.) Jarvis & Shoemaker fungi were first discovered in Japan in 1974. A few years later, it was designed in the Ohio and Florida greenhouses. The pathogen was identified in Israel in 1980 [6,8].

Fusarium oxsysporum (Schlecht) f. sp. radicis lycopersici (Sacc.) Jarvis & Shoemaker fungi are a major pathogen in greenhouse-grown tomatoes and are currently one of the major diseases in many countries (US, Mexico, Canada, Japan, Israel), resulting in a 40% reduction in yield.].

Fusarium oxsysporum (Schlecht) f. sp. radicis lycopersici (Sacc.) Jarvis & Shoemaker fungi Schinus

terebinthifolius, Schinus terebinthifolius, Mollugo verticillata, Stellaria media, Spergula arvense, Gnaphatium sp. , have been found to cause root rot and stem rot [9].

In Russia, soil fungi belonging to the class of fungi that have not improved fusarium disease in tomato F. oxsysporum (Schlecht) f. sp. It is noted that lycopersici (Sacc.), F.moniliforme, F.nivale, F.solarium fungi cause long-term storage of fungi in different phases of plants. [12].

Other forms of F. oxysysporum fungi in Uzbekistan (and other countries), including F. oxysporum f. sp. melonis melon and F.oxysporum f. sp. lycopersici is one of the main pathogens that causes vaginal disease in tomato crops, causing significant economic damage to the crop. Other specific types of fungi can damage cucumbers, watermelons, squash, onions, peas, potatoes, spinach, soybeans, bananas, berries, ornamental trees, flowers and other crops, and reduce the yield of wild-growing plants. Panama form of the fungus has destroyed banana trees on thousands of acres in Central America [2].

Fusarium solani, Fusarium spp., Rhizocrionia solani, Pythium spp., Phytopthora spp., Thielaviopsis basicola) cause some bacteria (Erwinia sp.). Seeds and shoots sprout under the soil, causing tomato germination. These diseases can cause the seeds and grass to rot under the soil. Usually, root and root damage is observed within 6 weeks from the date of transplanting the seedlings to the greenhouse. It is found in greenhouses and in open fields. Damaged seeds, seeds and young germination completely decompose [3].

There are 3 races (0, 1 and 2) in tomato that cause the disease; In Europe, varieties resistant to races 0 and 1 and root grafting have been identified. During the growing season, the disease is spread through soil-watering tools and irrigation, as well as during transplanting seedlings. The disease has a severe adverse effect on yield. In the middle of the growing season the yield of lightly damaged plants will drop by 11-12%, and by early August, the yield of heavily damaged plants will be completely lost. Fusariosis rift is very common in Uzbekistan (and in other Central Asian countries) [3].

Tomato plants are most demanding to moist soils during flowering and harvest growth. As a result of frequent changes in wet and cold air, damage to plant parts results in a lowering of susceptibility to fusariosis and verticillosis [10].

In tomato, fusariasis can be contagious throughout the plant. This disease is considered to be mostly harmful during the period of plant flowering. The fungal development is rapid at 70ºC and 90ºC, and in the case of humid conditions, the disease progresses rapidly [11].

Foci of fusariosis in tomato is caused by F.oxysporum fungi and lead to reduction of tomato yield up to 40%. Also, a special form of F. oxysporum causes fusarious macular disease.

Soil chambers were prepared on Petri plates to extract Fusarium and other fungi from plant members. To do this, you need to first Under pressure, the Petri plates were sterilized at 1210C with 1 filter paper ring and soaked in sterilized water.

To remove fungi from the root of the plant, the roots of the plant with signs of disease are dug up and washed several times in sterilized water. Cut into pieces 0.5-1 cm long with a sharp scalpel and put in a moist chamber made of Petri plates. The temperature in the thermostat should not exceed 27-300C, humidity should be 70-80%. Observation of growth and development of fungi in the roots was done 24-48 hours.

The affected plant is cut with scalpel after sterilization to remove fungi from the tissues of the leaves, stems and branches. The resulting thin incisions are transmitted to a wet chamber or to a vibrant feed medium in the test tube.

Our studies investigated the effects of fungicides on fungi that cause fusarious disease under laboratory conditions.

In this study, the effect of fungicidal preparations of 0.25% Ridomil Gold MTs, Pervikur 0.15%, Maxim XL and 0.25% Bioazotine on the growth and development of fungi causing fusariasis was studied. 0.25% Vitovax 200 F was selected as the default (Table 2).

The fungicides mentioned above were added to the potato nutrient medium and the growth and development of fungi was observed within 5 days. The diameter of the colony, where the growth of F. oxysporum fungal with nutrients supplemented with the drug, was investigated. The morphological signs of the mycelium and conidia formed by fungi of each species were monitored using a microscope (Table 2).

According to the results of control, F. oxysporum fungal colonies had a growth diameter of 4.7 cm.

The highest result was obtained in the variant with 0.15% Pervicur fungicide. At the same time, colonies of fungi increased to 0.5 cm in diameter.

With the remaining 0.25% Ridomil Gold MTs, 0.15% Maxim XL and 0.25% Bioazot, the fungal colon growth rates ranged from 1.1 cm to 2.1 cm.

In the variant using 0.25% Vitovax 200 F fungicide, it was observed that fungal colonies had a diameter of 0.7 cm.

According to laboratory results, the use of 0.15% Pervicurus and 0.25% Vitovax 200 F fungicides against F. oxysporum fungal infections caused by fusariasis is highly effective and protects the plant against fusarium disease.

Table 2 Effect of fungicides on growth and development of F. oxysporum fungi

T/p	Experience options	Working thickness of the drug, %	Diameter of colony growth, cm
1	Control- (fungicide not used)	-	4,7±0,5
2	Vitovax 200 F 34% susp.	0,25	0,7±0,2
3	Ridomil Gold MTs 68% s.d.g.	0,25	1,1±0,3
4	Pervikur 60.7% s.e.	0,15	0,5±0,1
5	Max XL 0.35 FS, 3.5% k.c.	0,15	1,8±0,2
6	Bioazot (Asperillum spp)	0,25	2,1±0,4

Table 2.

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