SJIF Impact Factor: 6.260| ISI I.F.Value:1.241 Volume: 4 | Issue: 11 | November | 2019 ISSN: 2455-7838(Online)
EPRA International Journal of Research and Development (IJRD)
Peer Reviewed Journal

MYCOBIOTA OF TOMATOES IN GREENHOUSES OF UZBEKISTAN

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ANNOTATION

The article provides data on the composition of phytopathogenic fungi on tomatoes in closed ground. In total, 21 species from 14 genera, 5 families, 4 orders, 3 classes of the kingdom of Fungi were identified. The maximum number of identified mycobiota - 17 species belongs to the class Deuteromycetes, 3 species to Oomycetes and 1 species to the Mukorovs.

The highest rate of disease development according to average data (1998-2018) is from the development of withering and lodging of seedlings - 24.0%, then there is gray rot - 20.0%, root rot - 17.5%, brown spotting - 14.5% powdery mildew -11.5% and alternariosis -11.0%.

The most common is brown spotting - 28.0%, followed by powdery mildew - 26.0%, seedling lodging - 25.5%, alternariosis and gray rot - 19.5% and root rot - 11.5%.

KEY WORDS: *Tomato, diseases, phytopathogenic fungi, species, developmental intensity, disease prevalence, wilting, seedling lodging, gray rot, alternariosis, brown spotting, powdery mildew.*

INTRODUCTION

Agriculture produces basic food products, as well as raw materials for food and other industries. The task of agriculture is not only to create a crop, but also to protect plants from pathogens and pests. Every year, work to protect agricultural and ornamental crops from pests is becoming increasingly important. So, according to the FAO, up to 1/3 of agricultural products received by humans is lost due to the development of pests.

Due to its nutritional value, the importance of vegetable, in particular, nightshade crops is not in doubt. The study of plant diseases, the composition of pathogens and their biology is the first step to further study the environmental laws of the formation of mycobiota, and also forms the basis for the development and optimization of a system of measures to protect the crop from harmful organisms.

Solanaceous vegetables are called juicy human-eaten fruits of crops belonging to the botanical family Solanaciae. This is one of the most widespread families in the world, uniting about 90 genera and at least 2500 species [5]. In culture, the most widely cultivated crops include common tomato Lycopersicum esculentum Mill. The wide distribution of solanaceous vegetable crops is due to the taste and dietary properties of their fruits, the content of valuable components and biologically active substances. In Uzbekistan, tomato is the main vegetable crop of protected ground [3]:

According to literary information, more than 18 types of phytopathogenic fungi that infect seedlings, vegetative plants, and also plant seeds live on indoor tomatoes [4]. Of these, 7 species affect seedlings, 9 species - seedlings, 15 species live on adult plants. In Uzbekistan, a comprehensive list of tomato diseases, consisting of 14 pathogens of fungal diseases, is given by B.A. Khasanov (2008).

PURPOSE OF THE STUDY

Since 1998, we have been working on the study of fungal diseases of tomatoes in the closed ground. In this connection, the composition of pathogens of fungal diseases was revealed, on the basis of which the most harmful of them were noted and measures to combat them were improved.

RESEARCH METHODS

The object of our research conducted at the Department of Plant Protection of Tashkent State Agrarian University, were diseases of tomatoes of the closed ground. Tomato diseases were reported everywhere in the Tashkent region.

In addition to the composition of micromycetes, the objectives of the study included determining the frequency of occurrence or prevalence of diseases..

The prevalence of the disease was calculated by the following formula [2]:

$$R = P * 100/ N,$$

where, R is the prevalence of the disease,%;

N is the total number of plants in the samples, pcs;

P is the number of diseased plants in the samples, pcs.

To take into account the intensity of the development of diseases, the Anpilogov scale was used [2], where the percentage of affected leaves, fruits, and seedlings is calculated (0 point - no lesions; 1 point - up to 1/5 of the entire plant area or up to 10% of the surface is affected leaf; 2 - affected up to 1/3 of the plant area or up to 25% of the leaf; 3 - affected up to 2/3 of the surface of the plant or up to 50% of the leaf surface; 4 - affected over 2/3 of the plant or more than 50% of the surface of the sheet) according to the formula:

$$R = \sum (AB1 + AB2 + AB3 + AB4) / K$$

Where, R is the intensity of the development of the disease,

A is the number of plants; B1; IN 2 ; IN 3; B4 - points from 1 to 4.

$\sum$ (AB) - the sum of the products of the number of plants by their corresponding score

K - the highest score of the scale of accounting for the intensity of the lesion

The results obtained and discussion. As a result of the research, 21 species from 14 genera, 5 families, 4 orders, 3 classes of the kingdom of Fungi were identified (Table 1).The maximum number of identified mycobiota - 17 species belongs to the class Deuteromycetes, 3 species to Oomycetes and 1 species to the Mukorovs.

All pathogens cause diseases: lodging, wilting, powdery mildew, spotting, fruit rot, seed infection. Moreover, the maximum number of pathogens causes fruit rot - 9 species, then go: seed infection and spotting - 6 species, lodging seedlings and wilting - 5 species, powdery mildew - 1 species.

In addition to identifying the composition of phytopathogenic micromycetes, one of the tasks was to identify the main, most harmful diseases of tomatoes in the closed ground, for which the distribution in the greenhouses of the Tashkent region and yield loss during the development of diseases was calculated (Table 2).

Table 1.

The composition of the revealed mycobiota of tomatoes of the closed ground and their manifestation in the conditions of the Tashkent region

Class	Order	Family	Genus	Species	Disease
Oomycetes	Peronosporales	Pythiaceae	Pythium Pringsh	P. debaryanum Hesse	Sprouting
			Phytophthora De Bary	Ph. infestans (Mont.) DB.	Sprouting Spotting Fruit rot
				Ph.parasitica Dast.	Fruit rot
Zygomycetes	Mucorales	Mucoraceae	Rhizopus Ehr.ex Cda	R.nigricans Ehr.	Fruit rot
Deuteromycetes	Hyphomycetales	Moniliaceae	Aspergillus Mich .ex Fr.	A.fumigatus Pres.	Seed infection
				A. niger V.Tiegh.	Seed infection
				A.melleus Jukawa	Seed infection
			Botrytis Pers. et Fr.	B.cinerea Pers. ex Fr.	Gray rot
			Oidiopsis Scalia	O. taurica Salm.	Powdery mildew
			Penicillium Lk ex Fr.	P.notatum West.	Seed infection
				P. citrinum Thom.	Seed infection
				P.griseo-roseum Dierck.	Seed infection
			Trichothecium Lk et Fr.	T.roseum Link ex Fries	Pink fruit rot
			Verticillium Nees ex Wallr.	V.album Licopoli	Wilt
				V.dahlia Kleb.	Wilt
		Dematiaceae	Alternaria Nees ex Wallr.	A. solani (Ellis et Martin) Sorauer	Fruit Rot, Spotting
				A. tenuis Nees ex Fries	Fruit Rot, Spotting
			Cladosporium Lk ex Fr	Cl. herbarum (Pers.) Lk ex Fr.	Spotting
			Fulvia Ciferri	F. fulva (Cooke) Ciferri	Spotting
		Tuberculariaceae	Fusarium Lk ex Fr.	F.oxysporum f. lycopersici (Sacc.) Sn. et Hans.	Withering, Sprouting
	Agonomycetales		Rhizoctonia DC. ex Fr.	R.solani Kuhn.	Rhizoctonia rot fruit
Total: 3	4	5	14	21	

The table shows that the highest rate of disease development according to average data (1998-2018) is from the development of wilting and lodging of seedlings - 24.0%, then there is gray rot - 20.0%, root rot - 17.5%, brown spotting - 14.5%, powdery mildew - 11.5% and alternariosis - 11.0%.

Prevalence data are different. So, brown spotting is the most common - 28.0%, followed by powdery mildew - 26.0%, seedling lodging - 25.5%, alternariosis and gray rot - 19.5% and root rot - 11.5%.

Table.2.
Prevalence and yield loss from the development of major diseases

Types of pathogens	Name of the disease	Prevalence of disease %	Disease intensity%
Fusarium oxysporum	Wilting and drowning of seedlings	25,5	24,0
Botrytis cinerea	Gray rot	19,5	20,0
Fusarium, Pythium, Rhizoctonia туркумлари	Root rot	11,5	17,5
Fulvia fulva = Cladosporium fulvum	Brown spotting	28,0	14,5
Oidiopsis taurica	Powdery mildew	26,0	11,5

CONCLUSIONS

It can be seen from the materials presented that at least 21 species of phytopathogenic fungi develop on tomatoes in greenhouses in the conditions of the Tashkent region.

The main most harmful diseases are: wilting and lodging of seedlings - 24.0%, then gray rot - 20.0%, root rot - 17.5%, brown spotting - 14.5%, powdery mildew - 11.5% and alternaria - 11.0%.

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