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INFLUENCE OF FUNGI TRICHODERMA LIGNORUM STRAINS ON THE DEVELOPMENT OF FUSARIUM WILT AND ROOT ROT DISEASES OF CUCUMBERS IN GREENHOUSES OF TASHKENT

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ANNOTATION

The article provides data on the composition of phytopathogenic fungi on cucumbers in greenhouses and influence of strains of the fungus Trichoderma lignorum on the development of fusarium wilt and root rot. The highest rate of disease development according to average data (2011-2019) is from the development of withering and lodging of seedlings - 24.0%, then there is fusarium wilting - 20.9%, root rot - 17.9%.

KEYWORDS: ***Cucumber diseases, phytopathogenic fungi, species, developmental intensity, disease prevalence, fusarium wilting, root rot, trichoderma lignorum.***

INTRODUCTION

Fusarium wilting (Fusarium wilt) is currently one of the most dangerous diseases of vegetable crops, including cucumber in Uzbekistan. [1].

The causative agents of fusarium wilt are fungi of the family Fusarium, ubiquitous, widespread in Uzbekistan, infect a wide range of feeding plants [3].

In addition to the composition of micromycetes, the tasks of the study included determining the frequency of occurrence or prevalence of diseases, as well as developing measures to combat them.

The measures against crop diseases is a complex of agrotechnical, chemical, biological and other measures. In addition to agrotechnical methods, selection and seed-growing activities, limiting the development of fungal diseases, an important role is assigned to biological and chemical methods of protection.

RESEARCH METHODS

The chemical method is the fastest, most available and most effective. The effectiveness of the above method is largely determined by the availability of the required range of pesticides, which is currently very high. [6].

The increasing application of the biological method deserves special attention, i.e. application of environmentally friendly measures to against plant diseases.

During our own experimentations of crops, we found the causative agents of fusarium - F. aurentiacum Sacc., F. javanicum Koord., F. monilioforme Schlecht., which caused damage to plants, manifested in the form of yellow spots. However, the form of lightning-fast wilting of adult plants, without loss of green color and preservation of foliage on cucumbers, upon identification, was identified by us as Fusarium oxysporum Shlecht. f. sp. cucumerinum Owen [5].

In total, 26 phytopathogenic species of fungi were identified on greenhouse cucumbers, of which Fusarium is the leader in terms of severity. Fusarium cucumber was observed everywhere in the Tashkent region, Uzbekistan. The data on the incidence of pathogens of various types of diseases on cucumbers is given in Table 1.

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Table 1.
Accounting for the incidence of pathogens of various types of diseases on a greenhouse cucumber in the conditions of the Tashkent region, Uzbekistan (%).

Culture	Pitioz	Thielaviopsis	Rhizoctonia	Rot	Fusarium	Verticillosis	Total - withering	Downy mildew	Powdery mildew	Alternaria	Cladosporium	Total - spotting	TOTAL CULTURE:
%	1,6	1,4	0,6	7,0	16,0	5,2	21,2	4,4	18,0	10,0	9,0	41,4	24,9
number of isolates, pcs	2	2	1	10	23	7	30	6	26	14	13	59	198

The table shows that the most common diseases on cucumbers in Tashkent region are fusarium wilting and powdery mildew. So, on cucumbers, powdery mildew was more common than fusarium (18 and 16%, respectively).

Due to the fact that greenhouse vegetables can be used for food almost immediately after harvesting, much attention has been paid recently to obtaining safe, environmentally products.

Photo 1, Greenhouses in Tashkent, Uzbekistan.

One of the questions we were facing was the approbation of the system of protecting greenhouse crops from the development of fusarium wilting and root rot, the fungus Trihoderma lignorium was used

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as an antagonist of pathogens of soil rot in the fight against fusarium.

For this purpose, strains of Trihoderma lignorium were isolated and studied from the soils of the educational farm of the Tashkent State Agrarian University and directly from the soil of greenhouses.

Three methods were used to study the possibility of effective use of strains selected for further work (No. 59 and No. 18).

In the first, the strain grown on a grain substrate in an amount of 30 g / m3 was laid in the soil to a depth of 6-8 cm, after which the seedlings were planted in lysimeters.

In the second variant, 10 g of the fungus obtained on a grain substrate was introduced into each well, followed by sowing seedlings.

The third option involved immersing the seedling roots in the Trihoderma lignorium culture liquid (2 ml per plant) followed by sowing.

The results are shown in Table 2.

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Table 2.
Influence of strains of the fungus Trichoderma lignorum on the development of fusarium wilt and root rot (2019 year).

Experience options	strain №	Variety	application rates	The development of the disease, %		Productivity, kg/ м²	Extra harvest kg/ м²	Biological efficiency,%	
				Fusarium	Root rot			Fusarium	Root rot
Control (without treatments)	-	Orzu	-	20,5	11,2	8,14	-	-	-
Option 1. Strains of Tr.lignorum introduced into the soil	№59	Orzu	30 г/м²	4,3	2,0	9,10	0,96	69,3	81,2
	№18		30 г/ м²	5,6	2,7	9,05	0,91	72,7	75,9
Option 2. Strains of Tr.lignorum introduced into the well	№59	Orzu	10 г/лунка	-	-	9,20	1,06	100	100
	№18		10 г/лунка	-	-	9,20	1,06	100	100
Option 3. Seedlings immersed in the culture fluid of the Tr.lignorum strain	№59	Orzu	2мл/ 1 рассаду	3,8	-	9,17	1,03	81,5	100
	№18		2мл/1 рассаду	4,7	-	9,17	1,03	77,1	100
the least significant difference 05						0,02			

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CONCLUSIONS

So, in the case of the introduction of the biomaterial into the well, the biological efficiency of both strains, both in the case of fusarium wilting and root rot, was equal to 100%. The yield was 9.20 kg / m2 and the additional yield was 1.9 kg / m2.

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