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BIOLOGICAL CHARACTERISTICS OF FUNGAL SPECIES THAT CAUSE DISEASES OF ONION FLOWERS AND MEASURES TO COMBAT THEM

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Abstract:

The experiments were carried out in floriculture farms located in the Namangan region during 2017-2019, and laboratory work was carried out at the floriculture centers of the Namangan region. 19 species and 5 forms of pathogenic fungi were identified in 7 species of bulbous flowers grown in the conditions of the Namangan regions of the Republic of Uzbekistan. Infection of selected bulbous flowers with 27 species of pathogenic fungi was revealed. It was revealed that the selected 7 species of bulbous flower plants were infected with the most dangerous diseases, such as botrythiosis and rust diseases; 5 species of bulbous flower plants were infected; Fusarium wilt-4; Fusarium rot-4; powdery mildew-1; scleratinosis-2; penicilliosis-3, powdery mildew, black aphids and downy verticilliosis were infected in only one bulbous flower plant. In the conditions of the Namangan region of the Republic of Uzbekistan, on 7 species of bulbous flower plants , the *Trichoderma viride* fungus was used as a biological method , and such fungicides as Maxim, Bayleton, Fundazol were used as a chemical method in the fight against identified diseases.

Keywords: Competitive environment, management mechanism, organizational-economic mechanism, regional construction complex, growth pole, coordination, clustering, subcontracting, economic mechanism

1. INTRODUCTION

More than 1,500 types of pests and micro-organisms that cause disease in ornamental flowers are currently being controlled around the world. Of the micro-organisms that cause disease, 92% are various fungi. Therefore, the identification of decorative flower diseases that cause various fungi, their bioecological properties, distribution rules and the improvement of measures to combat them makes it possible to improve the efficiency of floriculture.

Scientists carried out research on the cultivation of flower varieties that are new to the climatic conditions of Uzbekistan, developed measures to combat the types of pathogenic fungi and achieve resistance to other factors, and developed agricultural techniques for growing healthy decorative flowers. In this regard, much attention was paid to increasing research work to improve and introduce into production methods for creating flower varieties that are resistant to diseases and pests, suitable for soil climatic conditions and methods for preventing diseases caused by pathogenic fungi.

At present, in a number of developed countries of the world, including Holland, England , France, and the USA, effective methods for growing flower plants, determining their diseases and combating them have been put into production. It was determined that the species of pathogenic fungi such as *Fusarium , Botrytis , Sphaerotheca , Puccinia* are geographically widespread and change their shape depending on climatic conditions. For this reason, in order to improve effective methods of controlling fungi that cause diseases in many flower plants planted and cultivated in the Republic of Uzbekistan, their bioecological properties, the laws of distribution and control against them, research work was carried out.

The bulbous crops of spring flowering include the following plants: tulips, hyacinths, daffodils, decorative onions, fritillaria, muscaria, pushkinia, crocuses, blueberries, snowdrops and others. They have approximately the same pests, diseases and symptoms of their manifestations. The exceptions are fritillaria and onions, which do not eat mice and bypass the Khrushchev. About 30 species of fungal, viral and bacterial diseases and harmful insects are known on bulbous crops. Some are rare, others are more common. But there is one general rule: the healthier the bulbs, the better the preparatory work with the soil before planting, and the more favorable the climatic conditions, the less all kinds of diseases attack.

RESEARCH OBJECTIVES:

1. C collection of herbarium samples of an infected bulbous flower and its affected parts and identification of the types of pathogenic fungi.
2. Determination of the analysis of species of fungal pathogens.
3. Determining the degree of infection of selected plants with the most dangerous types of pathogenic fungi;
4. Improvement of control measures against the most common species of fungal pathogens in bulbous flowers.

2. RESEARCH METHODS.

The studies were carried out according to currently existing methods in accordance with the standards in this field of science. When collecting herbarium samples of bulbous flowers infected with various fungi pathogens in the field, the method of M.K.Khokhryakov was used. When isolating and determining the types of fungi from the seeds of bulbous flower plants in the laboratory, methods were applied ON THE. Naumov, A.Ya. Semenova, A.P. Abramova, M.K. Khokhryakova. Determination of fungal species in the cells of infected plants was carried out by determinants (identifiers) developed by V.I. Bilay, P.N. Golovin, T.A. Dobrozrakov, M.K.

Object of study Bulb flowers such as carnation, hyacinth, gladiolus, iris, lily, tulip, narcissus and phlox are widespread in certain regions and highly valued by consumers.

According to the laws of nature, plants, microorganisms, and fungi change their bioecological features. Therefore, the study of fungal species is a continuous process.

On a planetary scale, in the conditions of Italy, the causative agent of the disease *Phytophtora cotianae* var was recorded on the lily plant Cristinzio Genera *. parasitica* . Scientists A. Francaschini, Serrs S., A. Foddai found that soil fungi of the species G *erber jamesonii hubrida* , including species belonging to the *Fusarium family,* cause the greatest harm.

In the conditions of our republic, scientists have been studying diseases of agricultural cult for many years. Including P.K. Ozolin P.N. Golovin, N.G. Zaprametov, M.A. Karimov, S.S. Ramazanova, B.O. Khasanov and their numerous students, having studied the biological, ecological, physico-biochemical characteristics of fungal species that cause the greatest harm to agricultural crops, the laws of their distribution and taxonomy, based on this, developed measures to combat them and put them into practice. The studies were carried out in the following sequence: Collection of herbarium samples of infected bulbous flower plants and their parts was carried out by the method of M.K.Khokhryakov; isolation of fungi from seeds of bulbous flower plants and determination of their species by the methods of N.N. Naumova, A.Ya. Semenov, A.P. Abramova, M.K. types of fungi in the cells of infected plants were determined using the determinants of V.I. Bilay, P.N. Golovin and T.A. Dobrozrakov.

Taking into account the re-infection of bulbous plants, the average Gaussian scale was used as a calculated option. Along with the study of the species order of fungi, the degree of occurrence and spread of diseases was determined using the following formula:

$$P = \prod_k \cdot 100 / N$$

Where, *P* - the spread of the disease,%; *N* is the number of plants in the experiment, pieces; P-total number of infected bulbous plants in the experiment, pcs. In the fight against infected bulbous flower plants, the methods of S.N. Maskovets, I.S. Fedorinchik and Kh.T. Tillaev were used. The experiments were carried out in floriculture farms located in the Namangan region during 2017-2019, and laboratory work was carried out on the floriculture centers of the Namangan region (Fig. 1).

Fig.1. Location of the study (Namangan region, Republic of Uzbekistan)

3. RESULTS AND DISCUSSION

3.1. Fungal diseases of bulbous flowering plants and their systematic arrangement. Table 1 the systematic arrangement of fungal species isolated from bulbous flower plants is given. This table shows 19 species and 5 forms of pathogenic fungi isolated from bulbous flower plants grown under conditions in Namangan regions for 3 years and revealed that they belong to 4 classes, 7 subspecies, 7 families and 12 orders.

The largest group is made up of fungal species included in the class *Deuteromycjtina ,* consisting of 19 species and 5 forms. Then follows the class *Basidiomycotina* - 4 species; *Ascomycotina* - 3 species. The smallest group is *Mastigomycotina* , consisting of 1 species. The most common in the study were fungal species of the *Fusarium family* , having 4 species and 4 forms. Of these, *F.oxysporum f. sp . gladioli (Mass.) Snyd. et Hans, F. oxysporum f. sp. lili Jmle, F. oxysporum f. sp. narcissi, Snyd. Et Hans, F. oxysporum f. sp . tulipae Apr. _* cause fusarium wilting .

Table 1.
Systematic arrangement of fungal species isolated from bulbous flowers (2017-2019)

Class	Order	Family	Category	Types of fungi, their forms and variations
one	**2**	**3**	**four**	**5**
Mastigomycotina	*Peronosporales*	*Peronosporaceae*	*Peronospora*	*P. lili.* Stenina
Ascomycotina	*Erysiphales*	*Erysiphaceae*	*Erysiphe*	*E.cichoriacearum* f. *Phlogis* Jacz.
			Sclerotinia	*S. gladioli* (Mass.) Dray.
				S. tuliporum Kleb
Basidiomycotina	*Ustilaginales*	*Ustilaginaceae*	*Urocystis*	*U. gladioli W. G.* Smith.
	Uredinales	*Pucciniaceae*	*Uromyces*	*U. lilii* (Link.) Fuck.
			Puccinia	*P. gladioli* Cast.
				P. iridis (DC.) Wallroth
Deuteromycotina	*Moniliales*	*Moniliaceae*	*Oidiopsis*	*O. phlogis* Golov.
			Penicillium	*P. gladioli* Mc. Cull. et. Thom.
			Botrytis	*B. gladiolorum* Timmer.
				B. narcissicola Kleb.
				B. tulipae (Lib.) Horkins.

	Acervulales	*Tuberculariaceae*	*Fusarium*	*F. oxysporum* f. sp . *gladioli* (Mass.) Snyd. et Hans.
				F. oxysporum f. sp. *lili* jmle.
				F. oxysporum f. sp. *Narcissie* Snyd. Et Hans.
				F. oxysporum f. sp . *tulipae* Apr. _
	Pycnidiales	*Sphaerioideae*	*Pyllosticta*	*P. paeoniae* Sacc. Et Speg.
			Septoria	*S. paeoniae* West.
Total: 4	**7**	**7(11)**	**12(28)**	**19 types, 5 shapes**

And also, in the experiments, the types of fungi that cause diseases of bulbous flower plants, the degree of infection of bulbous flowers, which plant organs are infected, the interaction of pathogens and hosts plants, the spread of diseases and the damage they cause to the floriculture industry (table-2). In particular, 5 species of bulbous flower plants were infected with botrytiosis and rust diseases; Fusarium wilt-4; Fusarium rot-4; powdery mildew-1; scleratinosis-2; penicilliosis-3, powdery mildew, black aphids and downy verticilliosis were infected in only one bulbous flower plant. In general, 7 species of bulbous flowers selected for research purposes were found to be infested with 27 species of disease-causing fungi. In the process of conducting research, for the first time in the conditions of the Republic of Uzbekistan, Namangan region, 27 identified diseases were analyzed and a characteristic of the morphological properties of fungal species was determined.

Table 2 .

Names of diseases identified in bulbous flower plants (2017-2019)

Names of bulbous flowers	**Names of diseases**										
	Botyritiosis	**Verticilliosis**	**rust**	**Aphid black**	**Penicilliosis**	**Scleratiniasis**	**downy mildew**	**powdery mildew**	**Fusarium wilt**	**fusarium rot**	**Total**
Gladiolus	+		+	+	+				+		5
Lily	+		+			+	+		+	+	6
Tulip	+				+				+	+	four
Hyacinth			+		+	+				+	four
Narcissus	+		+						+		3
Iris	+		+							+	3
Phlox		+						+			2
Total	**5**	**one**	**5**	**one**	**3**	**2**	**one**	**one**	**four**	**four**	**27**

3.2. Improvement of control measures against the most common types of fungal pathogens in bulbous ornamental flowers.

Numerous data are known that fungi of the *Trihoderma family* have high antagonistic properties against fungi that cause diseases and diseases caused by phytopathogenic microorganisms found in agricultural crops. To determine the efficacy *of T.viride* against Fusarium rot disease, Trichoderma grown on oats isolated from bulbous flower plants was used at 60 and 120 kg/l and pure fungal spores at 4 and 8 g/l. The highest biological efficiency was 68.6%, with an increase in the application rate to 120 kg/ha, more healthy plants were obtained (Fig. 2).

In the conditions of the Namangan region of the Republic of Uzbekistan, fungicides were used as chemical control measures against diseases of ornamental bulbous flower plants, which are included in the list of "Chemicals approved for use by the State Chemical Commission", special attention was paid to determining their economic efficiency. Basically, the following fungicides Baraka (1.0-2.0 kg / t), Maxim-2.5% (0.2 and 0.4 l / t), Vitavax 200-75 are used against the Fusarium rot disease of decorative bulbous flower plants (3.0-4.0 kg) and Topsin-M 70% w.p. (1.0-1.5 kg/t). Fundazol 50% w.p. is used as a reference against root rot disease of many plants. (2.0 kg/t) which gives good results (Fig.3).

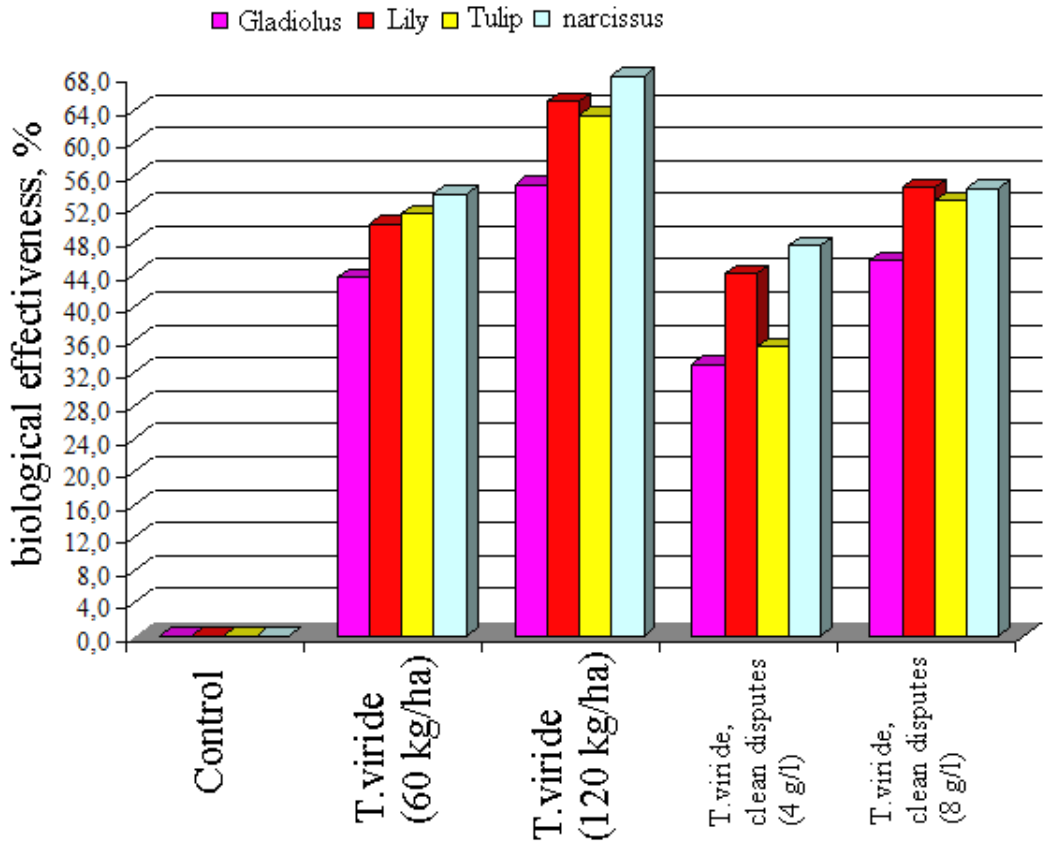

Fig.2. Biological effectiveness of the fungus *T. viride* against Fusarium rot of bulbous flower plants (Namangan region of the Republic of Uzbekistan, 2017-2019)

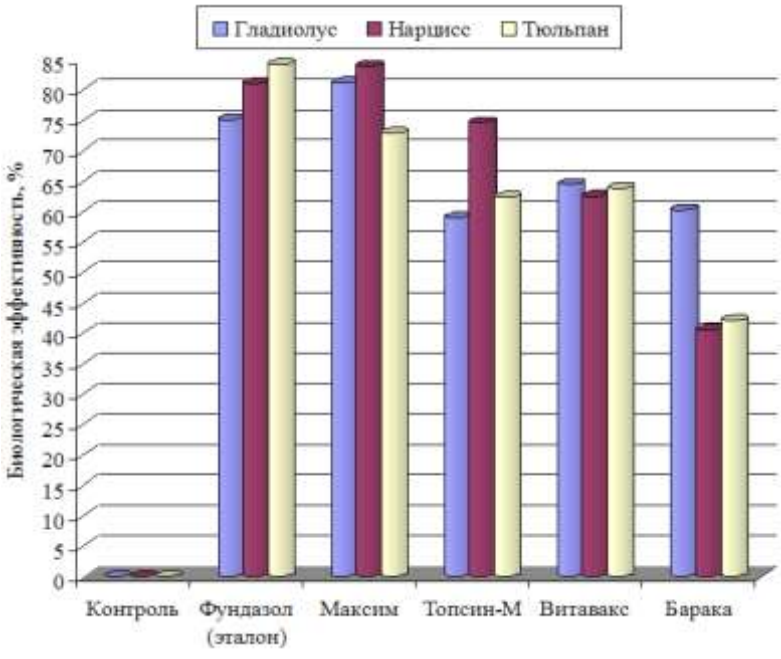

Fig.3. Biological effectiveness of the drug used against Fusarium root rot (Namangan region of the Republic of Uzbekistan, 2017-2019)

4. CONCLUSION

On the basis of the studies carried out, the following conclusions can be drawn: 19 species and 5 forms of pathogenic fungi were identified in 7 species of bulbous flowers grown in the conditions of the Namangan regions of the Republic of Uzbekistan. Infection of selected bulbous flowers with 27 species of pathogenic fungi was revealed. It was revealed that the selected 7 species of bulbous flower plants were infected with the most dangerous diseases, such as botrythiosis and rust diseases; 5 species of bulbous flower plants were infected; Fusarium wilt-4; Fusarium rot-4; powdery mildew-1; scleratinosis-2; penicilliosis-3, powdery mildew, black aphids and downy verticilliosis were

infected in only one bulbous flower plant. In the conditions of the Namangan region of the Republic of Uzbekistan, on 7 species of bulbous flower plants , the *Trichoderma viride* fungus was used as a biological method , and such fungicides as Maxim, Bayleton, Fundazol were used as a chemical method in the fight against identified diseases.

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