Bioecology Fungi - Pathogens Flower Crops and The System to Combat Them

Misirova Surayyo Abdumutalovna

Namangan Engineering-Technological Institute, 160103
Namangan, Uzbekistan
Email: samisirova@mail.ru

ABSTRACT

For the first time, degree of damage of the disease *Botrytis cinerea Pers*. founded in decorative colors in the Tashkent region. Chemical preparations are most effective methods of struggle in the fight against diseases ornamental crops.

Keywords: Ornamental flowers, fungi types, *Botrytis* disease, degree of damage

1. Introduction

Many people enjoy growing this flower in gardens or large containers. Its demand as cut flower and also as an ornamental potted plant gaining importance in the world market and has a very good export potential be cause of its graceful appearance, hardiness and the ability to withstand during transport and long shelf life. The tremendous variability in gerbera with reference to flower color, shape and size makes it more useful for cut flowers, bouquet, decoration in marriage and landscaping in gardening. Apart from domestic consumption it has got ex port potential also. [1,2].

In the work of [3] the antifungal effect of twenty powdered spice plants and their extracts at concentrations of 6%, respectively was evaluated in relation to the radial mycelial growth of various soil borne fungi causing damping –off disease. The spice powder or extract were added to the culture medium PDA to obtain the proposed concentrations.

Puccinia horiana, the causal agent of chrysanthemum white rust, is a pathogen of quarantine status in many countries where *Chrysanthemum morifolium* cultivars are grown. Historically, identification protocols for white rust relied upon macroscopic symptom development and microscopic examination of infected leaves for teliospores. Symptoms become visible 7 to 10 days after initial infection under favorable conditions followed by the production of telia. Infected plants can therefore evade detection before symptoms and fruiting bodies are evident. Conventional and real-time polymerase chain reaction (PCR) assays were developed to detect *P.horiana* using primers designed to amplify portions of the internal transcribed spacer (ITS) regions of the nuclear ribosomal DNA (rDNA). The species-specific primers could detect the pathogen from 1 ng of DNA isolated from infected leaf tissue in conventional PCR assays and from 1 pg in real - time PCR assays. While both assays were capable of detecting *P. horiana* in symptomatic tissue, the greater sensitivity offered by the real-time PCR assay makes it more reliable for detecting the pathogen during the latent stage of infection. The *P. horiana* primers did not amplify the rDNA target using DNA isolated from leaf tissue infected with *P. chrysanthemi* [4].

Te assortment of cultural tulips during four centuries has greatly changed; numerous cultivars and groups have been lost. Especially

many cultivars disappeared in the 16th–17th centuries when the lack of knowledge tulips with variegated fowers which became color-broken because of viral infection were highly valuated, propagated and widely distributed [5,6]. Information of the tulip growing tradition in Lithuania, development of introductive investigations, which is divided into two periods is presented in this work. Within the frst period including years, 1972–1992, scientifc investigations on tulip introduction and bulb reproduction were carried out at the Vilnius Section of Bulbous Flowers of Kaunas Botanical Garden [5,6].

The influence of the fungicides sprayed determined and coarse droplet nozzles on the healthiness of the Dark Tripoli grown in fields. This brand is shown an average influence of fungicide on pathogens [7].

Decreased local species diversity is a widespread impact of human activity and may result in decreased primary production. The two major proposed mechanisms for this effect of diversity on productivity are that lower species richness decreases the probability that species with key traits will be present in the community and that a less diverse community of competing species would utilize resources less completely. In addition to these mechanisms resulting from altered competitive interactions, losses of species diversity may alter interactions such as mutualism, predation, herbivore, or infectious disease in ways that decrease primary production, but this possibility has received little attention [8]. In this work, reported a test of the long-standing hypothesis that decreased plant species diversity increases the severity of diseases, particularly those caused by specialist plant pathogens.

For breeding promising varieties to introduce into production requires a lot of time. Thus, according to L.A.Abdurahmanov and A.V.Abramov (1991), for the Botanical Garden of the Republic of Uzbekistan days after receipt of a sample its final assessment of introduction of 7 - 10 years. To speed up the process for many valuable ornamental plants, including hybrid tea roses vegetative, greatly contributes to propagation by stem cuttings based on the ability of living tissues and regeneration of adventitious roots [9] .

The advantage of these measures is a high efficiency and speed of action, availability, ease to use. However, along with the positive aspects of the use of the chemical method has significant drawbacks, which is at risk of pesticide contamination of the environment, but with the right application and the selection of the range of products you can minimize the negative effects of pesticides [10].

The chemical method is the fastest, easily accessible and in the case of ornamental floriculture profitable. The effectiveness of the above method is largely determined by the presence of the necessary range of pesticides, which is currently very high.

Reliable plant protection can only be achieved using a system of integrated protection of the struggle, a combination of agro-technical, mechanical, chemical and biological weapons, if possible, depending on the specific task at hand [10].

In the works of [11,12] determined samples of 658 herbaria from 15 decorative flowers of plants in the field and greenhouses in Tashkent region. Of them pathogen disease separation determined 65 types of fungi to 9 form and 1 variants.

A few details on the effectiveness of fungicides to fight diseases of ornamental crops, and the lack of data on the use of new fungicides to combat fungal diseases, have formed the basis for the study of the impact of these chemicals on plant disease susceptibility. We have studied the possibility of applying fungicides in plant protection capabilities ornamental crops.

The aim of this work was to study the efficacy of fungicides to combat disease and rot of planting material in a Tashkent region.

2. Material and Methods

The material works were decorative plants: gladiolus, narcissus and tulips.

Prophylactic methods are called, a warning of occurrence and spread of the disease. According to many authors [13-17], phytosanitary measures are aimed at suppressing the sources of infection. The

sources, due to which there is an infection of plants in the next growing season, can be infected plant residues, wintering diseased plants, seeds and planting material and other. Hence, the basis of these methods is to create unfavorable conditions for the existence of pathogens and increased resistance of cultivated plants to diseases.

The humidity in the greenhouse was maintained in the range 90-95%, the temperature is not higher than 30 ^{0}C.

Growing in winter conditions (landing in November-December) was produced in containers made of polyethylene film containing a greenhouse, since the spring directly at the place of use.

A comparative study of bio-morphological characteristics of grafted and own-rooted plants, each variant of the experiment were observed at 25 plants most ornamental varieties of roses each group, grown by the same technology. Statistical processing was performed by G.F.Lakinu [18].

There are numerous reports of high antagonistic activity of *Trichoderma* against a number of pathogenic microorganisms such as root rot pathogens of crops, *Rhizoctonia, Sclerotinia, Blight Wheat, Verticillium*, *Fusarium* wilt of cotton, *Fusarium* diseases of vegetables and potatoes. S.N. Moskovets and others have established the efficacy of the fungus *Trihoderma lignorium* to combat diseases of crop plants [19].

Mathematical processing of digital research results carried out using conventional statistical methods [20,21] with the use of specialized computer software package EXCEL and Maple 9.5.

3. Results

3.1. Determining degree of damage the disease *Botrytis cinerea Pers*. found in decorative flowers

***Botrytis cinerea Pers*. of tulips.** Tulips, like any other ornamental plants, damaged a large number of different diseases. There are many different fungal diseases of tulips, but the greatest harm it causes Botrytis cinerea Pers.

The causative agent, a parasitic fungus Botrytis, a close relative of the types of fungus that cause rot of onion, cabbage and many other ornamental and food plants. Other species are also found in the botrytis tulips and cause rot, and even spotted a specific botrytis. However, a gray rot is most common. Typically, the source of infection, patients are planted bulbs or soil that contains the infected plant residues. Botrytis cinerea Pers. affects all aerial parts of tulips (leaves, stems, flowers, and buds) and bulbs. The ubiquitous fungus spores can get to the bulb as in the growing season and during storage, and then either immediately begin to develop, either waiting for the right conditions. Most noticeably Botrytis cinerea Pers. appears in rainy and cool weather - ideal conditions for the growth and development of fungus-parasite. Usually in this case the disease spreads very quickly.

Although *Botrytis cinerea Pers*. can affect tulips at all stages of development, they are particularly susceptible during budding. The incubation period under favorable conditions amounts to only 1-3 days. The spread of the disease contribute to high humidity of soil and air, dense plantation, the lack of brightness, excess nitrogen in the soil and spring frosts.

This disease is usually well discernible even in the early stages of development. Affected bulbs are on the outer scales yellow-brown spots in a reddish halo. On other affected parts of the plant appear yellowish gray sunken spots of various sizes and shapes. If conditions are wet, the spot sizes are rapidly increasing, and they are covered with gray bloom of spores. Over time, the tissue of diseased plants dry up gradually soften and become ash-gray. It looks as if the plant is burned and covered with ash. Hence another name for this disease - "burn tulip."

With strong development of the disease is curved stem tulip, buds do not develop, and if the colors and images, they are deformed, ugly forms. Patients tulips die prematurely, so their vegetation period is considerably reduced. As a result, the bulbs can not grow to normal size and gradually shrinking.

During storage, the disease may continue to develop rapidly: the affected bulbs to soften, darken and shrivel, sometimes Donets bulbs crack from the center to the edges. In severe

cases tulip bulb botrytis rot during storage, resulting in destroying it. But if the disease is barely noticeable, inexperienced grower may accidentally miss spotting appeared in the rejection of the bulbs. It is extremely dangerous if the infected bulbs are planted in the soil in the spring it will weakened, twisted shoots, which will gradually become brown, covered with gray bloom and die. The spores of the fungus from such plants are carried by wind and infect healthy plants.

Botrytis cinerea Pers. **Narcissus.** Narcissus - beautiful spring bulbs, universal possibilities for use. They are indispensable in gardening, give wonderful Slitter material, suitable for winter forcing. They differ unpretentious to the growing conditions. The scale cultivation belongs to the three leading cultures of the world, along with roses and chrysanthemums. Narcissus - genus of the family Amaryllidaceae, herbaceous bulbous perennial plants. It consists of the bulbs, leaves, flower shoots, flowers and fruit. The above-ground part of his annually dies, retained only underground - bulb, which is a modified shoot with short flat stem and fleshy leaves colorless (scales), adapted for the accumulation of nutrients. Scales closely overlapping one another and form around the point of growth almost clasped concentric circles. At the base of each of the scales formed axillary buds that give to rise to daughter plants. They are formed from young tissues bulbs, allowing for a long time daffodils renewed vegetative. The bulb is always in a state of development. After the death of aerial organs in the kidney renewal actively proceed the processes of formation of flower shoots and flowers, and laid new kidney regeneration. New Scale and axillary's buds are formed in the central portion of the bulb. Expanding, bulb consumes nutrient reserves of the peripheral scales that are constantly dying, turning into a protective shell. Axillary's buds are released and become independent plants (the children). The size and shape of the bulb depends on its age and varietals characteristics. There are circular single-vertex, bimodal and many peaks bulb. Subsidiaries bulbs from the fit to the parent have a flattened shape.

The root system is fibrous and daffodils formed of updated annually paranasal threadlike roots, which are located at the bottom of the outer part of the stems. They are laid in a summer of rest and appear on the bulb in the fall. Besides the usual roots of daffodils there is also retractable to facilitate burial bulbs in the soil. They appear in small and medium-sized bulbs, as well as a shallow (up to 10cm) landing. The lifespan of roots 11-12 months, then they gradually die off. In August, it begins the growth of new roots, and in the autumn they grow most rapidly. In years with excess moisture dying old roots delayed. With long-term storage of the bulbs in high humidity regrowth of roots it begins in the store. This, of course, very bad, since the grading and planting the roots can break off. They subsequently resumed due to inventory bulbs, but these plants are poorly developed.

Narcissus in comparison with other bulbous crops suffer less from diseases and pests. *Botrytis cinerea Pers.* - a disease rapidly developing spring in cold rainy weather, especially in depressed areas with heavy soils. The plant infected in the field and during storage of bulbs in cold and wet conditions, the disease progresses. Leaf hits the ground, especially on one side, which are formed brown sunken spots, which subsequently grow. The leaves turn yellow from the bottom up and dry out before flowering. With an excess of moisture in the areas of dead leaf appears gray powder, small spots on the flowers, bulbs on wet rot. On the surface of the affected tissues are formed black sclerotia.

Gladiolus genus belongs to the family Iridaceae. There are about 180 species of gladiolus, distributed mainly in subtropical and tropical areas of South Africa. In Europe, this flower gardens have been cultivated since the late seventeenth century, when it was imported from South Africa. All modern varieties are a cultural sight - Gladiolus hybrid. In order to get a nice healthy flower, and then a healthy planting gladiolus - a new bulb, which is formed at the end of the growing season - when growing gladioli is necessary to consider several factors.

Gladiolus demanding on soil fertility, but can not tolerate an excess of mineral salts. The

best soil for growing gladioli - loam or sandy loam with high humus content. The optimum soil acidity pH 5.5 - 6.0, but not greater than 6.5. Raising or lowering the pH leads to a significant defeat bulbs bacterial and fungal diseases.

I daresay that few gardeners and farmers have the opportunity to test the acidity of the soil on the site. Nevertheless, in their garden plots we grow beautiful flowers, including gladiolus, and vegetable crops. Of course, if you have the opportunity to consider all factors when growing crops and provide them with optimal conditions, the plants are more resistant to diseases and adverse weather conditions.

The life cycle is closed and gladiolus does not stop even when the bulbs are in winter storage. How healthy and beautiful will be your gladioli flowers next season depends on how you grow gladioli in nineshnem - how to care for them during the growing season, flowering, after flowering. Insufficient attention you can get a beautiful flower (if there was a healthy planting material), while digging to discover the ugly underdeveloped bulb.

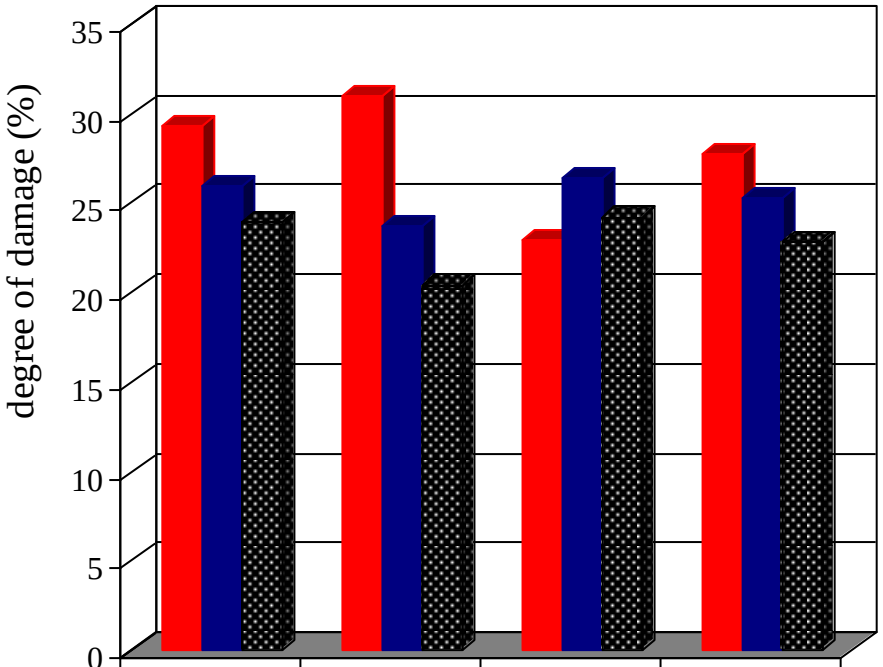
I repeatedly had to deal with similar examples. Man gained a healthy beautiful gladiolus bulb planted, happy bloom and in the autumn when digging was disappointed to view the new bulbs. Although there are cases when a complete disregard all methods of farming in growing gladioli growers receive and beautiful flower and beautiful planting. Obviously, these people have favorable conditions for growing gladiolus against their will. I was convinced from personal experience: miss fines in growing gladioli - lost grade or, in the best case, season.

Botrytis cinerea Pers. gladioli refers to fungal diseases. The cause of the disease is a fungus *Botrytis cinerea Pers.* Therefore, the disease is sometimes called by the name of the fungus, the pathogen – or *Botrytis cinerea Pers*.

In the process of doing research work in the region is the most common and most dangerous pathogen fungi species of flower plants to determine the level of disease initiation of patient given special attention. We have obtained the results shown in Figure 1.

The results obtained are as follows:

	For the 2017 year:	For the 2018 year:	For the 2019year:
Gladiolus (Tourn.) L.	29.3%	31.0%	22.9%
Narcissus L.	25.9%	23.7%	26.4%
Tulipa L.	23.9%	20.4%	24.2%



	1	2	3	4
Gladiolus (Tourn.) L.	29,3	31	22,9	27,7
Narcissus L.	25,9	23,7	26,4	25,3
Tulipa L.	23,9	20,4	24,2	22,8

Diagram 1. Determining degree of damage the disease *Botrytis cinerea Pers.* occurring in the decorative flowers

3.2. The effectiveness of application of fungicides in the fight against rot and disease planting material

One important factor negatively affecting the life of the plant reducing their productivity, longevity and decorative qualities are fungal diseases.

Plant diseases are not frozen, not a static phenomenon but a dynamic process, during which the physiological, biochemical, anatomical and morphological changes, manifested by certain specific symptoms and eventually caused the decrease in the quantity and quality of the crop. This disruption of normal metabolism, cells, organs and whole plant, arising under the influence of the phytopathogen and leads to a decrease in productivity of plants or their complete destruction.

Diseased plants - a kind of biological system in which the growth and development of two organisms - plants and the pathogen. The pathogen enters the plant violates the integrity of the cells takes one nutrients moves from cell to cell and eventually may spread throughout the plant. Simultaneously, the causative agent of constant exposure to the plant cell by using its product life. Stay in the plant pathogen breaks the normal process of life of the latter.

The concept of plant diseases is one of the main provisions of general plant pathology and is essential for building a system of measures, which lay the foundation conditions for the appearance and character of the disease.

As mentioned above, one of the most effective methods of combating plant diseases, especially fungal nature is a chemical method or the use of fungicides - substances toxic to pathogens. Since, in the list of pesticides permitted for use in Uzbekistan is practically not given data on the use of fungicides on flower - ornamental plants, one of the

challenges facing us was to identify suitable drugs for the prevention of and the fight against major diseases flower crops.

Also it should be noted that the importance of preventing diseases in plants is given protection during their most delicate development - when planting them in the ground, often observed when high rot.

In this connection, we have studied in the dressing bulbs and corms of flowering plants (narcissus, tulips, gladioli), and presuming carnation cuttings. Chemical treatment of bulbs and tubers are recommended fungicide after digging or before planting. To protect the cuttings before planting should be within 10-15 minutes to maintain them in suspension formulations.

Etching planting material has a protective function in keeping the germination and seedlings from root rot. The search for effective disinfectants in the fight against *Fusarium* and other root rots is of great economic interest.

With a view to finding an effective disinfectant contact has been tested a number of drugs that have shown good results against root rots of many crops.

To do this in advance, 1 month before sowing, carried dressing corms bulbs and flower crops.

In the fight against *Fusarium* were tested the following disinfectants: Barak, 60% wp (1.0 and 2.0 kg / t according to the recommended application rates), Maxim, 2.5%, KS (0.2 and 0.4 l / t), 200 Vitavaks 75% wp (3.0 and 4.0 kg / tonne) and TOPS-M, 70% wp (1.0 to 1.5 kg / tonne). As a reference, used fundazol, 50% wp (2.0 kg / tonne) which gives good results in combating root rot of many crops.

The experiments were laid in lysimeters of 1 m^2. For five days before the sowing of the plants in the soil were added pure culture of *Fusarium* grown on sterilized oat, based on 30 g of each hypsometer. The test was conducted in 4 x times again.

Shoots, depending on the culture there for 6-8 days. The surveys were carried out, starting with mass destruction, every 3 days.

The data presented in Table 1 show that in the control variant without treatment susceptibility gladiolus *Fusarium* reached 31.0%, daffodils - 35.5 -28.5% and tulips.

Of the tested disinfectants on gladioli in the first place performance is Maxim. At a rate of 0.4 l / t biological efficacy of this drug reached to 85.1%, and normally 0, 2 l / m 81.2%.

The second highest cost efficiency protecting Topsin-M. At a rate of 1.5 kg / t of *Fusarium* susceptibility of 4.6%, where the biological efficiency was 77.2%. With decreasing flow rate of 1.0 kg / ton, decreased biological efficacy and did not exceed 59%. Biological efficacy Vitavaks (4.0 kg / tonne) and Barrack (2.0 kg / t) was 73.5 and 65.3% respectively.

Table 1

The biological efficacy of disinfectants against Fusarium
(Namangan region Yangikurgan district "Sanjarbek and Parizoda" private floriculture farms, 2017-2018 years)

variants	*The appli- cation rate, l / kg / ha*	*The number of shoots, pc*	*Of these diseased, pc*	*degree of damage %*	*The biological efficacy,%*
1	2	3	4	5	6
Gladiolus					
Control	-	386	120	31,0	-
Fundazol (standart)	2,0	436	34	7,7	75,1
Maksim	0,2	448	26	5,8	81,2
	0,4	449	21	4,6	85,1
Topsin-M	1,0	408	52	12,7	59,0

	1,5	401	25	6,2	77,2
Vitavaks	3,0	415	46	11,0	64,5
	4,0	422	35	8,2	73,5
Baraka	1,0	412	51	12,3	60,3
	2,0	423	46	10,8	65,3
Narcissus					
Control	-	456	162	35,5	-
Fundazol (standart)	2,0	551	37	6,7	81,1
Maksim	1,0	559	32	10,0	83,9
	1,5	571	29	5,7	85,9
Topsin-M	1,0	544	49	9,0	74,6
	1,5	436	34	7,7	75,1
Vitavaks	3,0	530	71	13,3	62,5
	4,0	536	54	10,0	71,8
Baraka	1,0	519	110	21,1	40,5
	3,0	536	101	18,8	47,0
Tulips					
Control	-	291	83	28,5	-
Fundazol (standart)	2,0	348	16	4,5	84,2
Maksim	1,0	334	26	7,7	72,9
	1,5	349	22	6,3	77,8
Topsin-M	1,0	316	34	10,7	62,4
	1,5	328	32	8,5	73,5
Vitavaks	3,0	318	33	10,3	63,8
	4,0	326	28	8,5	70,1
Baraka	1,0	314	52	16,5	42,1
	2,0	326	38	11,6	59,2

Disinfectants Maxim also showed good results against Fusarium daffodils and tulips. The biological efficacy of disinfectant was 85.9 and 77.8%, which is above or close to the standard - fundazol (81.1 and 84.2%, respectively).

Thus, in the fight against dangerous disease ornamentals Fusarium in manufacture can be recommended seed protectants Maxim in a rate of 1.5 l / m and Topsin-M 1.5 kg / t.

In the case of processing plants cloves, widely used where cuttings was conducted a similar experience. As a fungicide used fundazol, 50% wp at application rates of 1.0 and 2.0 kg / ha, Topsin-M, 70% wp (1.0 and 1.2 kg / hectare) and Bayleton 25% wp (0.75 and 1.0 kg / ha).

Table. 2
The biological efficacy of fungicides against rot in the cuttings carnations (Namangan region Yangikurgan district "Sanjarbek and Parizoda" private floriculture farms, 2017-2018 years)

(Namangan region Yangikurgan district "Sanjarbek	**variants**	**The application rate, l / t kg / ha**	**The number of shoots, pc**	**Of these diseased, pc**	**degree of damage %**	**The biological efficacy, %**

and Parizoda" private floriculture farms, 2017-2018 years) №						
1.	Control	-	358	98	27,3	-
2.	fundazol (standart)	1.0	459	17	3,7	86,4
		2,0	389	11	2,8	90,4
3.	Bayleton	0,75	425	20	4,7	82,7
		1,0	327	18	5,5	84,1
4.	Topsin-M	1,0	401	25	6,2	77,2

From Table 2, it is clear that in the absence of keeping the cuttings in suspension preparations the percentage of infected plants was 27.3%.

From the three investigated fungicide fundazol showed the best results, the biological effectiveness of which was equal to 86.4 - 90.4%, followed by Bayleton (82.7 - 84.1%). Biological efficiency Topsina-M was 77.2%.

The results indicate that the proposed increase in the manifestation of a measure to prevent rot in the technology of cultivation of carnations reduce their appearance is at least 4 times.

4. Conclusions

Chemical preparations are most effective methods of struggle in the fight against diseases ornamental crops. The protection from *Fusarium* ornamentals in the manufacture can be recommended by planting material against disinfectants - Maxim at a rate of 1.5 l / t Topsin-M and 1.5 kg / t. In the case of processing plants cloves, where cuttings is widely used as a fungicide before planting, it is recommended to use fundazol, 50% wp at application rates of 1.0 and 2.0 kg / ha, Topsin-M, 70% wp (1.0 and 1.2 kg / hectare) and Bayleton 25% (0.75 and 1.0 kg / ha).

References:

1. Sunil Kumar, K.S.Tomar, R.C.Shakywar (2012). Response of gerbera varieties against powdery mildew disease under polyhouse condition. *Hortflora research spectrum*. 1(3), pp.286-288.
2. Dipak T.Nagrale, Anil P.Gaikward, Lalan Sharma (2013). Morphological and cultural characterization of *alternaria alternata (Fr.)* Keissler blight of gerbera. *Journal of applied and natural science*. 5(1), pp.171-178.
3. Nehal S. El-Mougy, Mokhtar M. Abdel-Kader (2007). Antifungal effect of powdered spices and their extracts on growth and activity of some fungi in relation to damping –off disease control. *Journal of plant protection research*. 47(3), pp. 267-278.
4. Kerry F. Pedley (2009). PCR-Based Assays for the detection of *puccinia horiana* on chrysanthemums. *Plant disease*. 93(12), pp. 1252-1258.
5. R. Juodkaitė, A. Baliūneinė, J.R.Naujalis, M.Navalinskienė, M.Samuitienė (2008). Selection and presentation of tulip (*Tulipa L.*) species and cultivars to the Lithuanian plant genetic resources. Biologija. 54(2), pp.139-146.
6. R. Juodkaitė, J.R.Naujalis, M.Navalinskienė, M.Samuitienė (2005). Evaluation of tulip (*Tulipa* L.) decorative capacities and resistance to *Tulip breaking potyvirus* in the tulip collection of the Botanical Garden of Vilnius University. *Biologija*. 51(4), pp.64-70.
7. Stanislaw PARAFINIUK, Marek KOPACKI (2012). Biological efficacy of the chemical chrysanthemums protection

with the use of fine and coarse droplets. *Journal of Central European Agriculture*. 13(3), pp.554-559.
8. Charles E. Mitchell, David Tilman, James V.Groth (2002). Effects of grassland plant species diversity, abundance and composition on foliar fungal disease. *Ecology*. 83(6), pp. 1713-1726.
9. Abdurakhmanov L.A., Abramov A.B (1991). Dynamics and flowering of some varieties of hybrid tea roses in the Botanic Garden. *Fan, Tashkent, (1991) p. 41-44.*
10. Sinadsky Y.V, Korneev I.T, Dobrochinskaya I.B (1982). Pests and diseases of decorative flower plants. *Science, Moscow, (1982) p.592*
11. Misirova S.A (2015). Systematic types of fungi of allocated and determined types from decorative flowers in conditions region Tashkent. *Agricultural science*, 6 (11), pp.1387-1392. http://dx.doi.org/10.4236/as.2015.611134
12. Misirova S.A (2016). Determining of the measure Disease Control ornamental crops during the growing season in the conditions Tashkent region. Global journal of bio-science and biotechnology. 5(1), pp.427-429.
13. Van der Plank (1966). Plant diseases (epiphytotics and fighting take off). *Kolos, Moscow, (1966) p. 359.*
14. Tarr S (1985). Basics of plant pathology. *Mir*, *Moscow* (1985) *p. 587.*
15. Roberts D (1981). Basics of Plant Protection. *Mir*, *Moscow* (1981) *p. 254.*
16. Popkov K.V (1989). Basics of plant pathology. *Agropromizdat, Moscow (1989) p.399.*
17. Ruzaeva I.V (2007). Resistance to diseases of garden roses. *Samara Bend. Byul. Russia* 16(1-2) (19-20), pp. 91-109.
18. Lakin G.F (1990). Biometrics. *Higher School, Moscow (1990) p.352.*
19. Moskovets S.N, Sergeev, L.A (1961). The value of the fungus *Trichoderma koningii Oudem*. in the fight against diseases of crop plants. *House, Armenian SSR (1961) p.133*
20. Zaitsev G.N (1984). Mathematical Statistics in experimental botany. *Science, Moscow, (1984) p. 424.*
21. Borovikov B (2001). STATISTICA: the art of data analysis on the computer. *Peter, St. Petersburg, (2001) p.656.*