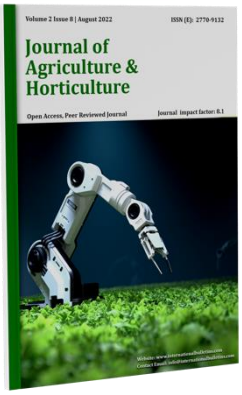

TOLERANCE OF MELON VARIETIES TO THE WILT PATHOGENESIS FUSARIUM OXYSPORUM

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Abstract: It was found that the Kokcha variety is the most susceptible to fusarium wilt disease and the Zar Gulobi variety is the most resistant to the disease, followed by the Oq Urug and Obi Novvot varieties.

Key words: melon, variety, plant, fusarium, susceptible , pathogen, wilt, tolerance.

Introduction. The causative agent of fusarium wilt is the fungus *Fusarium oxysporum* (Mitrokhin, 1975). I. Barbarin (1912) for the first time, isolated the fungus *Fusarium vasinfectum* from wilt infected plants brought from Central Asia (N.S. Mirpulatova, 1973).

These fungi are widespread in nature, they infect about 1,000 cultivated and wild species of plants during the growing season, and during the storage of the crop, they cause great damage to its quality (Sidorova, 1983).

In the conditions of Uzbekistan, wilt disease has been studied mainly in cotton, and its economic damage to other crops has not been sufficiently studied. In addition to cotton, these fungi cause the wilting of tomatoes, cucumbers, melons, watermelons, peppers, potatoes, eggplants, zucchini, fruit, and other trees. In recent years, fusarium wilt has been observed in plants planted on lands freed from cotton. Wilt fungi are soil pathogens that infect plants through the roots.

The growth of pathogenic fungi in the soil and their penetration into plant roots largely depends on the fungistatic potential of the soil (Lockwood, 1964; Mishustin, 1972; Marupov 1975; 1993; Voznyakovskaya, 1983; Voznyakovskaya, Trufanova, 1988).

In the research of R.M. Jackson (1957) and A. Marupov (1992), celofan disk and membrane chambers containing microsclerotia of V. dahliae were placed in sterilized and unsterilized soil, and the pathogen was observed to grow only in sterilized soil free of saprophytic microorganisms. In sterilized soil where the saprophytic microflora is lost and propagules of the pathogenic fungus are introduced, the pathogen develops normally and infects the plant, the infected plant dies.

The most radical means of combating wilt diseases is the creation of resistant varieties. However, the gradual increase in wilt disease in new varieties from year to year makes it necessary to change varieties more often. Therefore, it is a continuing problem to create disease resistant varieties.

According to Academician S.S. Sodikov and S.M. Mirakhedov (1962), the resistance of cotton varieties to wilt is a hereditary characteristic, to one degree or another, it is characteristic of each variety and depends on its genetic characteristics.

Also, the resistance of plants to wilt disease is inextricably linked with the virulence of the causative fungus, its species and its amount in the soil (Mirpulatova, 1973; Marupov, 1975; 2003).

Adaptation of the pathogen population to a new species indicates its narrow specialization in parasitic feeding, but the internal content of this process has not yet been fully elucidated. Specialization of the pathogen to new varieties leads to the emergence of new forms, physiological races and biotypes of wilt pathogens within the species (Sidorova, 1983; Guseva, 1988).

A. Marupov, Q. Sattarov, Yo. Tosheva (2025) studied. According to their information, Navruz and Zilol varieties are the most resistant to fusarium wilt disease, on the contrary, Ezgu and Shirin hybrids are the most resistant to the disease.

Wilt pathogen *Fusarium oxysporum* of melon varieties determination of tolerance is an important factor in the fight against the disease. However, adaptation of wilt pathogens to new cultivars results in a gradual increase in the disease from year to year, necessitating frequent cultivar changes.

Based on the above scientific opinions, we believe that it is one of the important factors to pay attention to their genetic creation when studying the resistance of each type of plant varieties to wilt disease.

Research methodology. The research was conducted based on the methodology of A. Marupov (2025). Pure sand was taken and passed through a sieve (sieve) with a size of 0.25 μm. Then 2 kg of sifted sand was taken out and washed 3 times in ordinary household (water supply) running water. It is dried at room temperature, then dried in a dryer at a temperature of 100 C0 for 1 hour. Then to clean the sand from microorganisms, autoclave it for 1 hour at 1.5 atm. pressure sterilized. After 24 hours, it was sterilized again as above to remove the remaining active thermophilic microorganisms. Then 1 kg of sterilized sand is filled in each piece of special containers (tubs) 4 cm high, 30 cm long, and 15 cm wide.

Before sand inoculation, the density of the fungus suspension was determined using the following formula using the method of Benken A.A., Khokhryakov M.K., Malinin V.M., (1974) in the Goryaev chamber. Determined by the formula Ps = A x 250000. Ps is the average infection number in 1 cm3 suspension, A is the average number of spores in a large square. Then Fusarium sp. was added to the sand in each tub. 10 ml of suspension of biomaterials of the fungus with a titer of $5x10^5$. inoculated from. The seeds of Zar Gulobi, Oq Urug, Kokcha, Obi-Novvot varieties of melon were sown 20 pieces in each tub to a depth of 1.5-2 cm. Then sterilized water was poured into the bathtubs through the iron troughs installed in the middle so that the sand did not reach the surface. Seed germination energy and germination were determined for 2-5 days. Symptoms of the disease of the disease level of plants in the dynamics, from the date of planting, every day for 10 days, and every 5 days in between, it was monitored and recorded.

Research results. As can be seen from the results of the study (Table 1), melon seeds were sown on January 11, and the growth energy was 8 out of 20 seeds on January 13 in the Obinovvot variety. 2 and 3 seeds were observed in the white seed and Kokcha varieties, and 1 seed in the Zar Gulobi variety. As it can be seen, it was observed that the variety with the best growth energy is Obinovvot and the lowest variety is Zar Gulobi.

Fertilization of seeds was observed on January 15. The number of sprouted plants was Zar Gulobi - 1, Oq Urug - 2, Kokcha - 3 and Obi-Novvot - 8. For the first time, 1 seedling lost

due to the disease was observed in Kokcha variety on January 15, 3 on January 20, 2 on January 27, 3 on January 31, 2 on February 3 and 1 on February 7, total of 12 seedlings were observed on February 13.

inovvot - made 8 units. For the first time, 1 seedling lost due to the disease was observed in Kokcha variety on January 15, 3 on January 20, 2 on January 27, 3 on January 31, 2 on February 3 and 1 on February 7, total of 12 seedlings were observed on February 13 observed. The first lost seedling in Obi-Novvot and White seed varieties was observed on January 20, i.e. 5 days later than in Kokcha variety.

Figure 1. Damage of melon varieties by fusarium wilt.

Table 1

**Determining the quality of seeds of melon varieties, pieces.
PPQSRI, laboratory research, 2025.**

N/N	Melon varieties	Number of seeds sown (pieces)	The seed		Dynamics of Seedlings Losing Seed							Number of plants, piece 03.02.2025			
			germination energy	germination	15.01 2025	20.01 2025	27.01. 2025	31.01. 2025	03.02. 2025	07.02. 2025	13.02. 2025	The number of seedlings infected with wilt		Number of healthy seedlings	
												piece	%	piece	%
1	Zar Gulobi	20,0	1,0	19	0,0	0,0	1,0	0,0	1,0	0,0	0,0	2,0	10.0	18,0	90
2.	Oq Urug	20,0	2,0	16	0,0	1,0	1,0	0,0	1,0	0,0	0,0	3,0	16,6	17,0	85
3.	Kokcha	20,0	3,0	18	1,0	3,0	2,0	3,0	2,0	1,0	0,0	12,0	60,0	8,0	40
4.	Obi-Novvot	20,0	8,0	20	0,0	2,0	0,0	0,0	1,0	0,0	0,0	3,0	16,6	17,0	85

**** Note: Melon seeds are planted on January 11.***

Table 2

Tolerance of melon cultivars to the wilt pathogen Fusarium oxysporum.
PPQSRI, laboratory research, 2025.

N/N	Melon varieties	Sown seeds (units)	The seed		The dynamics of wilt symptoms in plants, %							Wilt damage, %
			germination energy	germination	15.01. 2025	20.01. 2025	27.01. 2025	31.01. 2025	03.02. 2025	07.02. 2025	13.02. 2025	13.02.2025
1	Zar Gulobi	20	1,0	19	0	0	5,0	0	5,0	0	0	10,0
2.	Oq Urug	20	2,0	16	0	5,0	5,0	0	5,0	0	0	16,6
3.	Kokcha	20	3,0	18	5,0	15,0	10	15,0	10,0	5,0	0	60,0
4.	Obi-Novvot	20	8,0	20	0	10,0	0	0,0	5,0	0	0	16,6

In the Zar Gulobi, this indicator was the lowest on January 27, 1 unit. In the background of strong artificial fusarium infection, it was observed that the best quality variety Zar Gulobi lost 10.0% seedlings and 16.6% seedlings lost in Oq Urug and Obi-Novvot varieties.

As can be seen from the table, the susceptibility of varieties to wilt disease directly depends on the quality of the seeds. In the cultivar Kokcha, wilt disease symptoms were first observed in 5.0% only 5 days after seed germination. After that, 5.0 and 10.0% disease symptoms were observed after 10 days in Obi-Novvot and Oq Urug cultivars. In hybrid Zar Gulobi variety, disease symptoms were recorded in 5.0% after 15 days.

On February 13, i.e. 30 days after the germination of the seeds, the rate of wilt disease in the plants was 60% in the Kokcha variety. It was observed that the infected plants of the Kokcha variety completely withered after 30 days. This was observed in 10% of plants of Zar Gulobi variety. Oq Urug and Obi-Novvot varieties had a rate of wilt infection of 16.6%.

Conclusion. Thus, it was determined that Kokcha variety is the most resistant to wilt disease and Zar Gulobi is the most resistant to the disease, followed by Oq Urug and Obi-Novvot varieties. The results of the experiment once again showed that the genetic background of varieties is important in their resistance to wilt disease.

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