International Journal of
Biological Engineering and Agriculture

ISSN: 2833-5376
Volume 2 | No 11 | Nov -2023

Studying the Resistance to Klephsterosporiosis and Flour-Haw Disease in Almond Varieties

Abdullaev Karim Saifullaevich., Hazratkulov Shermamat Azamovich., Abdullayev Olimjon Alijanovich.

Horticulture, Viticulture and Winery Research Institute named after Akademik M. Mirzaev, Bostonliq mountain scientific experimental station. Director., Deputy Director and targeted doctoral student

Annotation: In the article, local varieties of almonds are moderately resistant to cluster sporosis, and varieties Zavetny and Malika are resistant to wheat flour disease, leaf damage from 20.1% to 22.3% and fruit damage from 17.6% to 19.7% and the development of the disease was 11 ,3-13.1% in leaves and 10.0-11.3% in fruits. Based on the results of the main study, experiments were carried out and the results of studying resistance to Stigmina carpophila (synonym Clasterosporium carpophilum), the causative agent of deuteromycete fungus, and the disease were described.

Keywords: lanceolate, fungus, Clusterosporiasis, Conidiophores, disease, damaged, light brown, infections, Powdery mildew, based on formula, plant organs.

Research methods and methods. In 2023, the researches were carried out in Turkmeneskiy otlichniy and Zarina, Krasiviy, Zavetniy, Malika varieties belonging to the Bostonliq mountain scientific-experimental station within the system of the research institute of horticulture, viticulture and winemaking named after Academician M. Mirzaev, located in Bostonliq district of Tashkent region.

In order to determine the spread and development of klyasterosporiosis, powdery mildew disease in almond trees, leaves and fruits from 10 branches were examined from 4 sides of the plant. The degree of moniliosis damage in flowers, leaves and branches was determined according to the following scale:

Consideration of leaf and fruit damage by klyasterosporiosis, powdery mildew disease in almond trees. 4 sides of the Almond tree chosen at the time of reckoning

50 leaves and 50 fruits are considered without interruption. The degree of damage is assigned to each leaf and fruit according to the following scale of points:

Determination of damage to almond leaves by klyasterosporiosis

Scale 1:

Points:

0 – no damage;

0.1 – no more than 5 small spots on the leaves;

1 – spots occupy up to 10% of the leaves;

2 – spots cover 10 to 25 percent of the leaves;

3 – spots cover 25 to 50 percent of the leaves;

4 – spots occupy more than 50 percent of the leaves.

Determination of damage to almonds by powdery mildew

2nd scale:

Points:

0 – no damage;

0.1 – 1 to 3 small, barely visible spots on fruits;

1 – spots cover up to 5% of the surface of fruits;

2 – spots covered the surface of fruits from 5 to 25 percent;

3 – spots covered the surface of fruits from 25 to 50 percent;

4 – spots cover more than 50 percent of the surface of fruits.

According to the information of the FAO, the annual yield of almond trees in our republic is reduced by up to 20% as a result of the damage caused by various fungal diseases. Currently, the creation of modern methods of protecting plants from diseases is an urgent problem in all fruit tree-growing countries of the world. Currently, fruit trees are grown in all subtropical and tropical countries of the Northern and Southern Hemispheres. Currently, among the countries of the world that have great experience in growing fruit trees: the United States, southern Europe, Japan, China, Turkey, and Central Asia. placed More than 30 types of fungal pathogens of fruit trees have been identified in foreign countries. Among the common and very dangerous diseases of Danak fruit trees are powdery mildew, spotting, moniliosis and leaf blight.

Significance. Scientific research on identifying diseases caused by fungi of almond trees, identifying cultural-morphological, biological characteristics of pathogenic species, and developing measures to combat them is considered urgent in Uzbekistan . It spreads to other plants with its causative conidia. The strongest development of the disease is observed in September. Damaged leaves turn yellow and fall prematurely, the photosynthetic ability of trees decreases, they lag behind in growth, and the yield decreases. At the end of summer, black dots - cleistothecia of the causative fungus are formed in the dust. The fungus hibernates by means of cleistothecia.

The almond tree [Amygdalus communis L] is not very large, 4-6 m tall. The branches of the tree are broadly oval or broom-shaped, in most cases mat-like. The body has a diameter of 25-35 cm.

The branches are straight growing or bent, without thorns, often consisting of shortened twigs. The bark is green, gray or gray-brown on one-year branches, gray-black on old branches and trunk, with strong concave lines.

The leaves are long lanceolate, light or dark green in color, soft, sometimes leathery. It alternately forms the appearance of a shortened bud on long branches, and on shortened branches. The edges of the leaves, which are located on long branches, are small serrated. Leaf shedding occurs in October-November. When there is a lack of moisture, leaf shedding begins in July-August [Khasanov B.A. , Ochilov R.O., Kholmurodov E.A., Gulmurodov R.A., 2010; Khamroev A.Sh. et al., 1995].

Under natural conditions, the development of the fungus and the growth of conidia occur at a temperature of 6-25oC [Moore [48], Burr [43, 44], Kokhabidze, [23].

Clyasterosporiosis disease. The disease is caused by the deuteromycete fungus Stigmina carpophila (synonym Clasterosporium carpophilum). Pustules (sporodochia) are kidney-shaped, olive-brown or black, located partly in the tissue, partly on the substrate, 50-250 µm in diameter. Conidiophores are cylindrical or bottle-shaped, hyaline or ellowish-brown, bent once or more, 14-45x3-11 µm (longer in nutrient media). The conidia are cylindrical, tufted, inverted tufted, ellipsoidal, elongated egg or ovoid, first colorless, then ellowish-brown, 23-65x10-18 µm, the fungus grows well in nutrient environment containing oats and rice.

Disease symptoms. The disease usually affects leaves, sometimes branches, buds, flowers, buds, fruits and branches of trees. They have light-brown spots with a reddish-purple, reddish-brown or dark-red border around them. At first, the spots are small dots, then they grow wide, dry up and fall off, the leaves become loop-holes. It reaches 2-5 mm, glue flows from them. In 2-3 weeks, most of the affected leaves fall off the tissue covered with spots, as a result, the wintering shoots wake up, the trees become frost-resistant, and the next ear's harvest is reduced. Affected shoots turn brown and die. Some infected buds may appear healthy but fail to open the following spring. Damaged flowers fall off. The tips of the affected branches dry up. Apply in the season (in the rate indicated above) during the growing season before the budding in the spring, when the disease is expected to develop strongly; where the first treatment is given when the first signs of summer infection appear, and subsequent treatments are given every 10-20 days. Avoid thickening of branches, prune affected branches in spring and autumn before leaf shedding and remove them from the garden; disinfecting the cut areas by applying a mixture of milk of lime and 1% copper or 3% iron sulfate; application of tree rejuvenating pruning method; compliance with agrotechnical rules (tillage, timely fertilizing and watering); it is recommended to plant resistant varieties.

Almond powdery mildew is caused by the ascomycete fungus Phyllactinia suffulta. The disease occurs in Central Asia. Mostly the leaves are affected. In June, on the underside of the leaves, a soft, inconspicuous, white powder, similar to a spider's nest, is formed, consisting of mycelium of the fungus and conidial sporulation organs. It spreads to other plants with its causative conidia. The strongest development of the disease is observed in September. Damaged leaves turn ellow and fall prematurely, the photosynthetic ability of trees decreases, they lag behind in growth, and the yield decreases. At the end of summer, black dots - cleistothecia of the causative fungus are formed in the dust. The fungus hibernates by means of cleistothecia.

A method of determining the development of the disease

The development of diseases of each type of walnut and almond trees is found on the basis of the following formula:

$$P = \frac{[a \cdot в] \cdot 100}{H}.$$

in this:

P- development of the desease; % ;

[a . в] - the sum of the number of control plants multiplied by the incidence rate;

H - total number of plants counted

[Dementeva M.I., 1970].

Studying the resistance of almond varieties to klyasterosporiosis disease. In 2022, Bostonliq mountain scientific-experimental station of Bostonliq district of Tashkent region studied the resistance of almond varieties Krasiviy, Zavetniy, Malika, Turkmenesky otlichniy and Zarina to klyasterosporiosis, powdery mildew and moniliosis diseases.

According to the observations, in 2022, 16.2% of the leaves and 13.7% of the fruit of the Zarina variety of almonds were infected with closterosporosis, and the development of the disease was 9.5% of the leaves and 8.2% of the closterosporosis was found to be resistant to the disease.

Study of resistance of almond cultivars to klyasterosporiosis disease

Bostonliq mountain scientific-experimental station, Bostonliq district, Tashkent region

№	Area, ha	Sort	Parts of the plant	2022 ear	
				damage, %	development of the desease, %
1		Krasivyy	leaf	56,3	27,4
			fruit	51,2	25,7
		Zavetnyy	leaf	20,1	11,9

	1,0		fruit	17,6	10,0
		Malika	leaf	22,3	13,1
			fruit	19,7	11,3
		Turkmenskyy otlichnik	leaf	47,6	24,5
			fruit	41,4	22,7
		Zarina	leaf	16,2	9,5
			fruit	13,7	8,2

Almond cultivars Zavetniy and Malika are moderately resistant to klyasterosporiosis, with 20.1% to 22.3% damage to leaves and 17.6% to 19.7% damage to fruits, and 11.3% to 13.1% disease development on leaves. and in fruits it was from 10.0% to 11.3%.

Krasiviy and Turkmensky otlichnyy varieties were found to be highly affected by klyasterosporiosis disease. Damage ranged from 47.6% to 56.3% in leaves and 41.4% to 51.2% in fruit, while disease development ranged from 24.5% to 27.4% in leaf and from 22.7% to 25% in fruit.

In summary, it was found that Zarina variety is resistant to klyasterosporiosis, Zavetniy and Malika varieties are moderately resistant, Krasiviy and Turkmeneskiy varieties are unbearable varieties.

Study of resistance of almond varieties to powdery mildew

The resistance of almond varieties to powdery mildew was studied. According to the observations, the Turkmensky otlichnyi and Zarina varieties of almonds are resistant to powdery mildew disease, the damage was 13.5% to 14.8% in the leaves and 11.4% to 12.2% in the fruits, and the development of the disease was 6, 9% to 7.2% and 5.8% to 6.1% in fruits.

Varieties Krasiviy and Zavetniy are moderately resistant to powdery mildew disease, the damage in leaves is from 15.3% to 16.1% and in fruits from 12.9% to 13.4%, the development of the disease is in leaves from 7.4% to 7.8% and it was found that it was 6.5% to 6.7% in fruits.

Malika variety was resistant to powdery mildew, the damage was 19.5% in leaves and 16.4% in fruits. Disease progression was 8.1% to 8.7%, respectively.

Study of resistance of almond varieties to powdery mildew

Bostonliq mountain scientific-experimental station, Bostonliq district, Tashkent region

№	Area, ha	Sort	Parts of the plant	2022 ear	
				damage, %	development of the desease, %
1	**1,0**	Krasiviy	leaf	16,1	7,8
			fruit	13,4	6,7
		Zavetniy	leaf	15,3	7,4
			fruit	12,9	6,5
		Malika	leaf	19,5	8,7
			fruit	16,4	8,1
		Turkmeneskiy otlichnik	leaf	14,8	7,2
			fruit	12,2	6,1
		Zarina	leaf	13,5	6,9
			fruit	11,4	5,8

Conclusion. Among almond varieties, it was found that Zarina variety is resistant to klyasterosporiosis, Zavetniy and Malika varieties are moderately resistant, Krasivyy and Turkmeneskiy varieties are resistant varieties. According to the above-mentioned results of almonds, it was found that Turkmeneskiy otlichniy and Zarina varieties of almonds are resistant to powdery mildew, Krasiviy and Zavetniy varieties are moderately resistant, and Malika variety is resistant.

List of used literature

1. Abdurasulov A.A. Recommendations for establishing orchard-type almond plantations in Uzbekistan. - Tashkent, 2010. - 8-12 p.

2. Hasanov B. A., Ochilov R. O., Kholmurodov E. A., Gulmurodov R. A..
3. Fruit and nut trees, citrus, berry bushes and vine diseases and their control. Tashkent, 2010. Study guide.
4. Dementeva M.I. Phytopathology. M. Kolos. 1970