

## **EFFECTIVENESS OF MODERN FUNGICIDES AGAINST POWDERY MILDEW FOUND IN INTENSIVE APPLE ORCHARDS**

Umarov Zafar Abdishukurovich

Horticulture, Viticulture and Winemaking

Research Institute Named after Academician M. Mirzaev Doctor of philosophy in agricultural

### **ANNOTATION:**

**In our study, Antalya has a 25% em.k. 0.015%, Luna Ekspiriens 40% sus.k against flour dew disease, which occurs in apple orchards grown intensively. 0.1% li, Serkadis Plus 125 g/l sus.k. 0.1% and Scorart 25% em.k. When using 0.02% fungicides, the damage ranged from 6.0% to 6.5% in the leaves, from 4.1% to 4.5% in the fruits, the disease progressed from 2.2% to 2.8% and 1, respectively. Biological efficiency ranged from 87,9% to 90,6% in leaves and from 90,9% to 91,6% in fruits, from 2% to 1,3%.**

**Keywords: flour dew, fungicide, pest, fruit, drug, disease, biological effectiveness.**

### **INTRODUCTION**

Apples grown in Uzbekistan contain an average of 80,5-86,5% water, 9,6-14,8% sugar, 0,31-0,91% organic acids,

Contains 0,27-0,48% soluble pectin, about 0,025-0,06% additives, 0,1-0,45% mineral salts and a number of vitamins. Summer, autumn, depending on the time of ripening and divided into winter varieties. Today, 29 varieties of low-grained apples M9 (stunted), 1 MM104, 6 MM106 (semi-stunted) low-grained apple varieties suitable for soil and climatic conditions of the country are included in the State Register of agricultural crops recommended for planting in Uzbekistan. Intensive apple orchards established in the country cultivate low-growing varieties such as Redchief, Idared, Scarlet spur, Star crimson, Pink lady, Golden, Jeromine, Gala and Fuji imported from Europe [16]

But the apple trees grown in these intensive gardens are affected by squid, powdery mildew, moniliosis, black cancer, bacterial cancer, bacterial blight and many other diseases.

Flour dew disease. Apple powdery mildew is widespread in all countries of the world, including Central Asia and all regions of Uzbekistan.

The fungus that causes apple powdery mildew was first identified by R. Magnus [20]. In the late 19th century, the disease was observed throughout Germany, from where it spread to Central European countries, Sweden, England, Eastern Europe, and Russia.

The disease is caused by a fungus belonging to the class Podosphaera leucotricha ascomycetes. Cleistothecia are slightly rounded, 75-96 microns in diameter, dark brown, in groups or individually, with 3 to 12 tumors in clusters at the top, brown, 150-850x6-10 microns, colorless, blunt or dichotomous branching. The sacs are 55-70x44-50mkm, round or short elliptical in shape, with 8 spores. Ascospores 22-36x12-15mkm, ovoid or ellipsoid-shaped. Conidia 19-38x9-17mkm, ellipsoid-shaped, colorless, the lower part is cut, forming long chains [6].

Especially young seedlings are strongly affected. In nurseries, the disease causes great damage to young shoots, damaging all the leaves and stunting the growth of the twig, the twigs turn brown and dry out, the seedlings may wither completely [19].

When the air temperature is 10 - 25°C (optimum 20 - 22°C) and the relative humidity is 70 per cent, 50 per cent of the conidia grow within 24 hours. Conidia almost do not grow at high temperatures (30°C and above) in drop humidity. Enzymes are formed in the aphids of the overgrown conidia, which dissolve the plant bark and from there into the apricot plant tissue, the aphids form gaustoria within the plant epidermis. Gaustorians absorb nutrients from the tissue and delivered them to the mycelium located on the leaf. When the side and fruit buds that appear during the growth of the plant are damaged, they enter a period of mycelial dormancy and do not grow until the next spring [2, 18].

In Central Asia, including Uzbekistan, apple powdery mildew was first studied by N.G. Zaprometov [7, 8].

Some scientists claim that there is no absolutely resistant variety of apple flour to dew disease. Depending on their resistance to disease, they are divided into three groups: strongly susceptible, moderately susceptible and relatively resistant varieties [1, 2].

Renet Simirenko, Parmen Zimniy Zolotoy, Aport Alexander, Renet Burkhardt, Zailiyskoe, Boyken, Beloe Astrakhanskoe, Jonathan, Baldwin, Kortland, Idared, Roume Buty, Monroe, Grainstein, Steiman, Steiman, Steiman, Steinman and Prima is severely damaged. Relatively resistant varieties include Kandil Sinap, Zarya Alatau, Antonovka, Muscat Renet, Delishes, Goulden Delishes, Winesap, York Imperial, Nittani and Lamburne.[2].

Treatment of trees with drugs after pruning and flowering of damaged branches reduces the risk of primary and secondary infection by two times compared to a single pruning, and by 3-4 times compared to control [3, 9].

Sulfur powder has been used against flour dew diseases since the late 19th and early 20th centuries [3, 13, 14],

Many researchers have recommended the use of anti-disease chemicals for the following periods: before bud burst, after flowering, and 10 to 14 days after the second treatment. The main purpose of the first treatment is to limit the spread of conidia as a source of primary infection, the second to protect young leaves from secondary infection, and the third to prevent mass development of the disease due to secondary infection [4, 3, 5, 12, 7].

Flour treatment with Morestan and Morocid three times during the growing season reduced the incidence of the disease from 47-50% to 14-17% [11].

In the Crimean conditions, when the trees were chemically treated 6 times with the drug Benomil against powdery mildew, the disease was reduced by three times compared to the standard variant [8, 10, 11].

In Tashkent region, the technical efficiency of this measure was 73,7-90,3% when cutting branches of trees infected with dew and sprinkling apple trees with 1% colloidal sulfur and 0,5% thiovit.

Spread of 1% colloidal sulfur, 0,3% Benlat, 0,5% Thiovit and 0,1% Morestan against flour dew reduced the spread of the disease by 3.6-5 times [4, 12].

When apple flour was treated twice with Abika-peak against dew disease, its efficiency was 99,6%. In years when the weather was bad, the yield from orchards treated against apple disease with abica-peak was 15.7 t/ha. The amount of fruit that met the standard requirements was 99,2%. This figure is 8.6 t/ha under control and only 50,8% [14].

Flour dew disease fungicide (Bayleton 20% n.kuk., 0.4 kg/ha, Vectra 10% sus.k., 0.3 l/ha, Impact 25% sus.k., 0.1 l/ha, OOO, 0.5-1.0,

Saprol 20% em.k., 1.0 l/ha, Topaz 10% em.k., 0.2-0.3 l/ha, Topsin-M 70% n.kuk. 1.0 kg/ha, apparent sulfur, 15-30 kg / ha, etc.) is most effective when spraying is started in early spring, every 7 days until the petals fall, and then every 12-14 days until mid-summer [19]. The biological effectiveness of Bayleton (0.4 kg / ha), Impact (0.2 l/ha) and Topaz (0.4 l/ha) fungicides against powdery mildew ranges from 84,0% to 90,5% in leaves and fruits. 85,0% to 91,0%, disease progression ranged from 3,0% to 7,6% [10, 14].

### RESEARCH METHODS:

The biological effectiveness of fungicides used against the disease is calculated by the following formula:

$P_n - P_t$

$B.s. = \frac{P_n - P_t}{P_n} \times 100$

$P_n$

B.s – Biological efficiency, %,

P.n – controlled disease progression, %,

P.t.–disease progression in practice, %.

Variational statistical analysis of the data obtained as a result of research was carried out using the methods recommended by B.A. Dospikhov [4], the cost-effectiveness of drugs used in diseases Sh.T.Khodjaev [17].

### RESULTS OF THE STUDY:

The fungicides recommended by the State Chemical Commission against powdery mildew in intensive apple orchards were tested in 2018 in the Champion variety of apple in the intensive orchard of 4.0 ha of farm "Karimov Uktam Amirovich", Kitob district, Kashkadarya region (table).

Antalya against flour dew 25% em.k (with 0.015%), Luna Ekspiriens 40% sus.k. (0.075 - 0.1% li), Serkadis Plus 125 g/l sus.k. (0.1% li), Penkomayt 10% em.k. (0.02 - 0.03% li), Scorart 25% em.k. (0.02% li), Zur 76% n.kuk. (With 0.3%) and Crezoxime with 50% s.d.g.

(0.02%) fungicides were tested at different rates. By default, the score is 25% em.k. (With 0.02%).

In the control variant, the Champion variety of apple was affected by dew disease with 55,0% of leaves and 23,2% of fruits, while the development of the disease was 32,0% and 14,4%.

Luna Ekspiriens 40% sus.k. (0.1% li), Serkadis Plus 125 g/l sus.k. (0.1%) and Scorart 25% em.k. (0.02%) showed the highest biological efficacy against intensive apple tree flour dew disease in the variants using fungicides.

The incidence ranged from 6,0% to 6,5% in leaves, from 4,1% to 4,5% in fruits, and the progression of the disease was 2,2% and 2,8%, respectively, and from 1,2% to 1,3%. The biological efficiency ranged from 87,9% to 90,6% in leaves and from 90,9% to 91,6% in fruits.

Biological efficacy of fungicides applied against apple flour dew disease. Kashkadarya region, Kitob district, "Karimov Uktam Amirovich" (Champion variety), 2018

The remaining fungicides are Antalya 25% em.k (with 0.015%), Luna Ekspiriens 40% sus.k. (0.075%), Pencomayt 10% em.k. (0.02 - 0.03% li), Zur 76% n.kuk. (With 0.3%) and Crezoxime with 50% s.d.g. (0.02%) tested fungicides also showed high efficacy against powdery mildew and their biological efficacy ranged from 84.9% to 88.7% in leaves and from 86.8% to 89,5% in fruits.

By default, the score is 25% em.k. When using the fungicide (0.02%), the incidence was 6.1% in leaves and 4.9% in fruits, the development of the disease was 2.9% in leaves and 1.4% in fruits. Biological efficiency was 87,5% in leaves and 90,2% in fruits.

## CONCLUSION:

In our study, fungicides tested against flour dew disease Antalya 25% em.k. (0.015% li), Luna Ekspiriens 40% sus.k. (0.075 - 0.1% li), Serkadis Plus 125 g/l sus.k.(0.1% li), Penkomayt 10% em.k. (0.02 - 0.03% li), Scorart 25% em.k.(0.02% li), Zur 76% n.kuk. (0,% li) and Krezoksim 50% s.d.g. (0.02%) showed high efficacy. The biological effectiveness of fungicides ranged from 84,9% to 90,6% in leaves and from 86,8% to 91,6% in fruits.

Table Biological efficacy of fungicides applied against apple flour dew disease. Kashkadarya region, Kitob district, "Karimov Uktam Amirovich" farm (Champion variety), 2018

T/r	Preparations	Working solution thickness,%	The plant members	Damage, %	Disease development, %	Biological efficiency, %
1	Control - (chemically untreated)		leaf	55,0	23,2	-
			fruit	32,0	14,4	-
2	Score 25% em.k. (diphonoconazole) (default)	0,0 2	leaf	6,1	2,9	87,5
			fruit	4,9	1,4	90,2
3	Antalya 25%em.k. (diphonoconazole)	0,0 15	leaf	7,0	3,5	84,9
			fruit	5,5	1,7	88,1
4	Luna Ekspiriens 40% sus.k. (fluopiram 200 g/l + tebuconazole 200 g/l)	0,0 75	leaf	7,3	2,6	88,7
			fruit	4,8	1,5	89,5
		0,1	leaf	6,5	2,2	90,6
			fruit	4,1	1,2	91,6
5	Serkadis Plus 125 g/l (fluxapiraxad 75g/l + diphonoconazole 50 g/l)	0,1	leaf	6,1	2,6	88,8
			fruit	4,2	1,2	91,6
6	Pencomayt 10% em.k. (penconazole)	0,0 2	leaf	8,5	3,4	85,3
			fruit	6,6	1,9	86,8
		0,0 3	leaf	7,6	3,1	86,6
			fruit	6,1	1,7	88,1
7	Scorart 25% em.k. (diphonoconazole)	0,0 2	leaf	6,0	2,8	87,9
			fruit	4,5	1,3	90,9
8	Zur 76% em.k. (ziram)	0,3	leaf	6,3	3,0	87,1
			fruit	5,9	1,8	87,5
9	Krezoksim 50% s.d.g. (cresoxime-methyl)	0,0 2	leaf	6,8	3,3	85,8
			fruit	6,5	1,9	86,8

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