FIGHT AGAINST POWDERY MILDEW OF APPLE TREES (RESEARCH ACTIVITIES)

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Annotation. The article shows the results of the experiment conducted to identify the biological effectiveness of the fungicide Kumir SK in the fight against powdery mildew of apple trees in the conditions of the Ferghana Valley.

Keywords: horticulture, structure, agriculture, Pathogenic fungi, pathogen-Erysiphemali. powdery mildew

Since 2014, the areas allocated for gardens have been expanding in Uzbekistan, and intensive gardens have been created on an area of 5.6 thousand hectares. Gardens on the area of 4.1 thousand hectares and vineyards on the territory of 6 thousand hectares were reconstructed; 410 hectares were developed for greenhouses.

One of the most important tasks for improving the quality and quantity of fruits facing gardeners is to reduce losses from harmful organisms, in particular from the development of various plant diseases, the causative agents of which can be fungal, bacterial, viral, phyto-plasma organisms and nematodes.

The main focus in solving these problems is on chemical plant protection, on the one hand, this method is the most effective and easy to use, but it has many negative aspects. First, the constant use of the chemical method, including non-selective drugs, leads to environmental pollution, toxic effects on other living organisms, including humans

Preventive and agrotechnical measures carried out correctly and in time against plant diseases have a positive effect on reducing the population of pathogens, but with a massive and strong development of diseases, they are not enough. In this connection, the expansion of the range of fungicides allowed for use in Uzbekistan and their effective use is an important task in horticulture.

The most widespread and harmful diseases of fruit orchards in Uzbekistan are scab, moniliosis, powdery mildew, as well as bacterial burn, which has been widely observed in our country in recent years.

Powdery mildew of apple trees. The naturalist J. Duby, who gave a description of the pathogen and named the fungus-Erysiphemali, first noted powdery mildew on apple trees in 1830 in France. In 1888, English scientists J. Ellis and R. Everhart gave a complete description of the causative agent of powdery mildew of apple trees and introduced the name Sphaerotheca leucotrica. The still existing species name of this pathogen was

introduced in 1900 by E. S. Salmon, who, based on the marsupial stage, identified it as Podosphaera leucotrica (Ellis et Everhart) Salmon (Groshev, 2002).

Powdery mildew of apple and pear is widespread in Central Asia and is found in all regions of Uzbekistan. The disease affects the buds, leaves and fruits, as well as young branches and shoots. A whitish to gray powdery coating appears on the leaves. In the future, the plaque captures the entire surface of the leaf, forming whitish spots, the affected leaves and shoots turn brown and dry out. The affected branches lag behind in growth, are covered with a whitish-pink coating-mycelium, on which in mid – summer the sexual stage of the fungus-kleistothecia with bags and ascospores inside is formed.

The mycelium infects the buds in spring and summer, shortly after the leaves are unfolded. In the spring, infected shoots develop later by 5-8 days compared to healthy ones. The affected organs are covered with a plaque-mycelium with conidiophores (asexual stage of development), the fruitfulness decreases. The pathogen can infect young apple fruits and remain alive until harvest. Infected fruits reduce the rate of maturation, become covered with plaque, whitish spots, and may crumble (Khasanov, 2010).

The disease is more often observed in mountainous areas and less often in the flat part of our republic. In the foothill areas of the Ferghana valley, the prevalence of the disease in 2005 was 65.7-69.1%, in 2006-68.2-72.3%, in 2007-47.4-49.8%, where the degree of development was 27.4-31.8%, 30.3-32.4% and 10.6-15.4% by year. For lowland areas, the prevalence was 38.6-74.8%, 47.1-61.4% , and 30.4-43.1%, and the degree of development of powdery mildew was 11.0-15.4%, 15.3-18.5%, and 4.0-8.5%, respectively.

In reducing the harm from the development of the disease, the chemical method of control is given. In former times, in the fight against powdery mildew, sulfur preparations were used, since the pathogen is more resistant to copper preparations.

The use of fungicides is indicated for the suppression of both primary and secondary infections. However, some researchers indicate a single treatment to combat the primary infection (Popushoy, 1963), while others indicate a 2-3-fold treatment (Kobakhidze, 1964; Voronin, 1977).

The experiments were conducted in the apple orchard of the farm "Rohatoi" of the Kuva district of the Fergana region. The zone is located in the foothill farming zone. The gardens were laid out 5 years ago, the apple variety "Golden Delicious". The experiment consisted of 3 variants of 4 repetitions. In each variant, 6 apple tree trees were selected. Treatments with the fungicide Kumir, SC were carried out using a motorized knapsack sprayer, with an estimated flow rate of 1000 l/ha of working fluid. The experiments were conducted in the morning hours, from 8 to 10 hours, when the air temperature did not exceed 25 ° C and the wind speed was 1 m/s.

To account for the intensity of disease development was used the scale Anpilogova (Giants and others, 1980), where calculated the percentage of infected leaves according to the formula:

$R = \sum (AB1+AB2 +AB3+AB4)/To$

Where, R is the intensity of the disease development,

A – the number of plants; B1; B2, B3; B4-points from 1 to 4.

∑ (AB) - the sum of the products of the number of plants by their corresponding score

K – the highest score on the scale for measuring the intensity of the lesion

To calculate the biological effectiveness of Kumir 30% CS ke against powdery mildew, treatments were carried out starting from the appearance of plaque on the leaves (Khasanov et al., 2010).

To determine the biological effectiveness, the formula recommended for taking into account the development of oidium on leaves according to A. E. Chumakov, I. I. Minkevich, T. I. Zakharova, 1973 (Zakharenko and Chenkin, 1985) was used.

$$C = \frac{Rc - Ro}{Pk} \times 100$$

where: C – biological efficiency,%; Pk-indicator of the development of the disease in the control; Po – indicator of the development of the disease in the experimental area (in the experiment), according to the terms in 15, 30 or 45 days, score.

Experience diagram:

1. Kumir 30% CS – 0.25 l / ha
2. Kumir 30% CS – 0.3 l / ha
3. Skor CE - 0.15 l / ha (standard)
4. Control – without processing

The experiments were conducted against the background of infection of apple trees with powdery mildew at the level of 7-15%. The final analysis showed that when treated with the fungicide Kumir KC 30% KE at a consumption rate of 0.25 l / ha against powdery mildew on apple leaves, the development of the disease was reduced by 83.8 %, the efficiency analysis on shoots showed a reduction in the development of the disease by 82.2 %, and on fruits by 79.8 %.

Based on the above, the following conclusion can be drawn: the biological effectiveness of the fungicide Kumir KS 30% KC against powdery mildew of apple trees in the consumption rates of 0.25 l/ha was 84.5-79.8%, in the norms of 0.3 l/ha the biological effectiveness was 92.0% on the leaves, 90.2% on the shoots and 84.0% on the fruits, respectively.

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