



CHEMICAL PROTECTION OF THE GARDEN FROM FUNGAL PATHOGENS

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Abstract. This article provides data on the disease of moniliosis on apple trees, its harmfulness and measures to combat it. Based on the data presented, the use of modern fungicides against the disease is discussed. The biological effectiveness of the drug Kumir 345 g/l s.k. the results of the experience conducted in the gardens of the Andizhan region.

Keywords: apple tree, disease, pathogen, moniliosis, mycelium, conidia, fungicide, damage, biological.

Introduction.

The main task of the agro-industrial complex is to improve the quality of products, eliminate their losses at all stages of production, transportation and storage. Among the orchards grown in the republic, seed fruit- apple trees, followed by pears and quince, occupy the leading place. The presence of vitamins, organic acids, sugars, trace elements and biologically active substances necessary for the normal development of the human body increases their value. Among the seed fruits, the presence of varieties intended for storage until the new harvest allows them to be consumed almost year-round. Seed fruits are an invaluable raw material in the preparation of canned and confectionery products.

However, let's not forget that diseases caused by fungi are the most common in terms of the degree of damage and spread in these gardens. Fungal diseases not only reduce the mass of the crop, but also negatively affect its quality. Fruit rot (moniliosis) is the nightmare of any gardener. The fungal infection spreads rapidly through the garden, destroying apple trees, pears, plums, cherries. In warm and humid years, you cannot count up to 80% of the harvest. Monial burn, apple scab develops intensively in years with wet cool weather during flowering and immediately after it.

Fruit rot of seed breeds or moniliosis is caused by the fungus *Monilia fructigena* Pers. ex Fr. A very common disease in gardens, which affects the fruits of apple, pear, quince and all stone crops. The greatest damage and harmfulness are associated with the development of the fungus on fruits. The lesion begins with small brown spots that quickly grow and cover the entire surface of the fetus. The pulp acquires a brownish-brown color, softens, becomes loose, spongy and loses its taste qualities. Infection occurs in the garden, on a tree, when yellowish-brown pads of the conidial sporulation of the fungus are formed on the surface of the fruit, located in the correct concentric circles. The mycelium of the fungus spreads in the substrate. The pads consist of a dense plexus of hyphae, from the ends of which small conidiophores with branching chains of conidia located on them depart.

Place and methodology of research

Infection of fruits is facilitated by mechanical damage to the skin, including injury to fruits during sorting, packaging, etc. Reinfection during transportation and storage is possible with direct contact of a sick fetus with a healthy one. In the presence of mycelium or sporulation of the pathogen on the surface of the affected fetus, the possibility of re-propagation increases significantly (Pidoplichko, 1977).

The production test of the preparation Kumir 345 g/l s.k. was carried out in the Izbaskansky district, farm N.Kodirov (gardens of the) As a reference for comparison with moniliosis, 40% Sillite was taken with a flow rate of 2.0 l/ha. To account for the intensity of the development of moniliosis, 100 fetuses were taken for each the score of the 4-point scale according to the formula:

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

To Where, R is the intensity of the disease development,

A – the number of plants;

B1; B2; B3; B4– points from 1 to 4.

$\sum (AB)$ – the sum of the products of the number of plants by their corresponding score

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

To calculate the biological effectiveness of the studied drug against moniliosis, 100 fruits were taken in 3 repetitions, from which fruits with rot were selected and the average percentage of lesions was calculated.

Processing, by immersion, of the apple harvest was carried out on 08/16/2021, in the evening, at a temperature of about 24oC. The experiment was carried out in 3 repetitions.

Drug testing, accounting and processing of digital material were carried out according to the "Methodological guidelines ..." of the State Chemical Commission (2004).

To determine the infestation of fruits, a scale was used, recommended for taking into account the development of diseases on fruit and berry crops. The biological effectiveness of the fungicide Kumir 345 g/l s.k. against diseases determined

$$C = \frac{Ab-Ba}{Ab} \times 100$$

Where: C is biological efficiency, %;

A – The average lesion of plant organs (leaves, shoots, fruits) in the experimental version before treatment, score;

a – the average lesion of the corresponding plant organs in the experimental version after treatment (in terms of 15, 30 or 45 days), score;

B – The average lesion of plant organs (leaves, shoots, fruits) in the control variant before treatment, score;

b – The average lesion of the corresponding plant organs in the control variant after treatment (by the terms after 15, 30 or 45 days), score.



The development of apple scab and the biological effectiveness of the fungicide Kumir s.k. Against Disease (Izbaskansky district, farm N. Kodirov Production Experience, 2021)

№	Varian	Consumption rate, kg, l/ha	KBL, %	IP, %	IB	BE, %
1	Kumir s.k. 345 g/l s.k.	5,0	8,2	1,0	0,082	91,2
2	blue vitriol 98% (etalon)	20,0	8,6	1,2	0,103	89,4
3	Kontrol (b/o)	-	36,4	11,3	4,113	-

Abbreviations: KBL = number of diseased leaves (=distribution diseases), %; IP - intensity (degree) of damage, points; IB – disease index ($IB = CBL \cdot IP / 100$); BE – biological efficiency, %; b / o - without processing.

Biological efficiency of fungicide Kumir s.k. 345 at a consumption rate of 5.0 l/ha was 92.0%. Efficacy of the reference preparation copper sulphate 98% r.p. at a rate of 20 kg/ha against the leaf form of the disease was slightly less and amounted to 90.5% (Table 2).

The development of apple moniliosis and the biological effectiveness of the fungicide Kumir s.k. against the disease (production experience, Izbaskansky district, farm N.Kodirov)

№	Variant	Consumption rate, kg, l/ha	KBL, %	IP, %	IB	BE, %
1	Kumir s.k. 345 g/l s.k.	5,0	5,4	1,0	0,058	92,0
2	blue vitriol 98% (etalon)	20,0	5,5	1,2	0,066	90,5
3	Kontrol (b/o)	-	22,6	12,5	2,848	-

Abbreviations: KBL = number of diseased leaves (=distribution diseases), %; IP - intensity (degree) of damage, points; IB – disease index ($IB = CBL \cdot IP / 100$); BE – biological efficiency, %; b / o - without processing.

Conclusions and conclusion

1. Biological efficiency of the fungicide Kumir s.k. at a rate of 5.0 l/ha against apple scab on the leaves was 91.2%.
2. Biological efficiency of the fungicide Kumir s.k. at application rates of 5.0 l/ha against apple moniliosis on the leaves was 92.0%, respectively.
3. Fungicide Kumir s.k. did not show phytotoxicity, its preparative form is convenient for use, there are no comments.
4. We recommend including Kumir s.k. fungicide in the "List ...". for use against scab and moniliosis of apple trees with a consumption rate of 5.0 l/ha.



References:

1. Isina Zh.M. 2008. Apple fruit rot and the spread of moniliosis in the regions of Kazakhstan. Page 46-48 in the book: Collection of materials of the International scientific-practical conference "Achievements and problems of plant protection and quarantine", dedicated to the 50th anniversary of the formation of KazNIIZ and plant quarantine. Part two. November 6-8, 2008 Almaty, Rakhat, 213 pp.
2. Pikushova E.A., Veretelnik E.Yu. 2009. Guidelines for educational practice in the course "Plant Protection". Kuban GAU. Krasnodar, 2009, 71 p.
3. Khasanov B.A., Ochilov R.O., Boyzhitov F.M. 2019. Moniliosis of fruit trees. Tashkent: "Niso Poligraf", 2019, 167 p., 24 colors. ill.
4. Chumakov A.E., Minkevich I.I., Vlasov Yu.I., Gavrilova E.A. 1974. Basic methods of phytopathological research. Ed. A.E. Chumakov. VASKHNIL, VIZR. Moscow: Kolos, 1974, 192 p.
5. Batra L. R. 1991. World species of Monilinia (Fungi): their ecology, biosystematics and control. Mycology Memoir, Berlin: J. Cramer, 1991, no. 16, ix + 246 pp. (monograph). www.cabi.org/isc/abstract/19922316131. Accessed 07/22/2017.
6. Biggs A. R. 1991. Apple scab. Pages 6-9 in: Jones A.L., Alderwinckle H.S. (eds.). Compendium of apple and pear diseases. A.P.S. Press; APS, Minnesota, USA, 1991, 100 pp. + vi.
7. Honey E.E. 1928. The monilioid species of Sclerotinia. Mycology, 1928, vol. 20, no. 1, pp. 127-157.
8. Honey E.E. 1936. North American species of Monilinia. I. Occurrence, grouping, and life-histories. amer. J. Botany, 1936, vol. 23, no. 2, pp. 100-106.
9. Index Fungorum, 2014. <https://wikimonde.com/article/Monilinia> Accessed 11.06.2017.
10. Index Fungorum, 2017. Accessed 24.07.2017. <http://www.speciesfungorum.org/Names/Names.asp?strGenus=Monilinia>
11. List, 2020. List of apple diseases. Wikipedia, 2020. https://en.wikipedia.org/wiki/List_of_apple_diseases. Accessed 10/17/2021.
12. Monilinia List, 2017. Accessed 07/22/2017. <http://www.catalogueoflife.org/col/search/scientific/genus/Monilinia/match/1>.
13. Mycobank, 2017. Accessed 07/23/2017. <http://www.mycobank.org/BioloMICS.aspx?TableKey=14682616000000067&Rec=39154>

