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RESEARCH ARTICLE **Open Access**

BIOLOGICAL EFFECT OF CHEMICAL PREPARATIONS AGAINST THE MAIN DISEASES OF PINE

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Abstract
In the article Duplet TT 22,5% em.c. the drug was used in the growth period of 0,5 l/ha against phomoza and needle cast diseases in pine. The biological effectiveness of the drug against diseases was 84,7% for phomoza, 83,8% for needle cast, and other information were given.

Keywords Hawthorn, disease, drug, biological efficiency.

INTRODUCTION

Plant diversity is an important life source, actual and potential resource for all countries. Plants are important in the sustainable development of society, in solving its economic, cultural, aesthetic and ecological needs.

In the climatic conditions of our republic, the spread of diseases that harm conifers and the environmentally safe control measures against them have not been sufficiently studied. Coniferous trees are mainly distributed in mountainous and densely populated urban areas. If we take into account the limited possibilities of using highly toxic insecticides from an environmental point of view in carrying out measures to protect them due

to their strong damage by diseases, it is of great scientific and practical importance to carry out scientific and research work directed to the above problems. It is important to develop the theoretical and practical basis for the cultivation of conifer species new to the climatic conditions of Uzbekistan and protection from their main diseases.

In the conditions of our republic, pine trees and seedlings are affected by phomeosis the causative agent is (Phoma eguttulata), needle cast (Lophodermium seditiosum, Phacidium infestans, Hypodermella sulcigena, Nerpotrichia nigra). If these diseases are not dealt with in time, pines may lose their decorativeness and even completely dry out.

This year's research was carried out in Jizzakh region, Zomin district, in the area of Zomin nature park intended for economic activity, Duplet TT, 22,5% em.c. the drug was tested on the study of the biological effectiveness of pine against phamosis and needle cast diseases in eldar, common and Crimean species.

Chemical treatments were carried out using a motorized hand sprayer at the expense of 1000 liters of working fluid. The experiments were carried out from 8 to 10 in the morning, when the air temperature was 24 0C and the wind speed was equal to 1 m/sec. The scale for assessing the degree of damage to pine needles with fomosis and needle cast:

0 - healthy leaves;

1 - individual spots on the leaf surface occupy up to 1% of the leaf surface;

2 - individual spots on the leaf surface occupying 1-10% of the leaf surface;

3 - 15-25% of the leaf surface is infected;

4 - 26-50% of the leaf surface is infected;

5 - 50% of the leaf surface is infected, the spots coalesce and are covered with a dark coating of spores.

The scale for assessing the damage of shoots with phomos, needle cast's disease:

0 - healthy branches;

1 - small spots, rare small spots;

2 - spots small, isolated, tested;

3 - single spots (2-3) up to 5 mm in diameter, with a light coating of sporulation, tested;

4 - a significant number of spots, large (5-10 mm), joining, with a dark coating of sporulation, there may be cracks;

5 - numerous spots, large (10 mm), united, with a dark coating of sporulation, with deep cracks.

The percentage of development of the disease is determined using the following formula:

$$П = \frac{Э\ (а \cdot б) \cdot 100}{Н \cdot К}$$

П - percentage of disease progression, %;

Э (а·б) - the sum of the number of affected plants (a) multiplied by the corresponding damage indicator (s);

Н- total number of counters;

К- the highest damage rating on the scale.

The biological effectiveness of the drugs was calculated based on the disease development index

$$Б.Э = \frac{Пк - По}{Пк} x100$$

Б. Э.- biological efficiency, %;

$П_к$- the development of the disease in control, %;

По- disease progression in the experiment, %.

Implementation of experiments, subsequent records and calculation of biological efficiency were carried out based on the "Methodological instructions..." (2004) approved by the State Chemical Commission of the Republic of Uzbekistan. Since the effectiveness of the drugs depends on the time of treatment, that is, on the state of the disease, we performed 1 treatment. Treated with a motorized hand sprayer against

diseases.

Duplet TT, 22,5% em.c. the table 1 shows the results of the test to determine the biological effectiveness of the drug (125 g/l tebuconazole + 100 g/l triadimefon) against the disease of pine. It can be seen from the table that when the drug was used at the rate of 0,5 l/ha, the biological efficiency was 84,7% on the 14th day of the calculation. These obtained results are in the form of Score, 25% em.c. it is close to the indications of the drug when it is used at the consumption rate of 0,3 l/ha and was as follows. Here, on the 14th day of the calculation, the biological efficiency was 85,5%.

Table 1

Intensity and biological efficiency of pine with phomosis disease

(Production experience against pine phomos disease in Zomin district, Jizzakh region, 2022-2024.)

Options	Drug consumption rate, l/ha	Incidence (%)		Biological efficiency, %
		Disease	Disease progression	
Duplet TT, 22,5 % em.c.	0,5	9,29	1,8	84,7
Skor, 25 % em.c. (template)	0,3	10,1	1,5	85,5
Control (unprocessed)	-	9,1	11,1	-

Duplet TT, 22,5% em.c. test results to determine the biological effectiveness of pine against Needle cast's disease it is presented in table 2. It can be seen from the table that when the drug was used at the rate of 0,5 l/ha, the biological efficiency was 83,8% on the 14th day of the calculation. These obtained results are model Score, 25% em.c. It is close to the indications of the drug when it is used at the consumption rate of 0,3 l/ha and was as follows. Here, on the 14th day of the calculation, the biological efficiency was 85,2%.

Table 1

Intensity and biological efficiency of pine with Needle cast disease

(Production experience of pine against Schütte disease in Zomin district, Jizzakh region, 2022-2024.)

Options	Drug consumption rate, l/ha	Incidence (%)		Biological efficiency, %
		Disease	Disease progression	
Duplet TT, 22,5 % em.c.	0,5	6,1	1,2	83,8
Skor, 25 % em.c. (template)	0,3	8,2	1,5	85,2
Control (unprocessed)	-	8,8	9,1	-

In short, Duplet TT is 22,5% em.k. it was recommended to use the drug in the rate of 0,5 l/ha twice a year during the growth period against phomoza and Schütte diseases.

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