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EFFECT OF THE FUNGUS STIGMINA CARPOPHILA (LEV) ON ALMOND FRUIT WEIGHT

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ABSTRACT

Almond lives on average 25-30 years. On one hectare of land with 100-120 almond trees, an average yield of 350-500 kg is obtained. 1000-1500 kg/ha can be obtained from the area with proper agrotechnics and care. However, under the influence of fungal diseases, the fruit of almonds is damaged and productivity decreases. Below is the effect of the fungus Stigmina carpophila (Lev.) on almond fruit.

KEYWORDS

Stigmina carpophila, almond, fungus, fruit weight, productivity.

Introduction

This disease occurs in almonds and all grain fruit trees and it is reported to be widespread in France, Italy, Germany, Yugoslavia, Poland, other European countries, Canada, USA and Asian countries [1]. This disease was detected in the territory of the former union in Russia, Azerbaijan, Georgia, Armenia, Moldova, Ukraine, Belarus and Central Asian countries [2; 3; 4; 5;]. *Stigmina carpophila* (Lev.) M.B. Ellis (synonyms: *Clacterosporium carpophilum*, *Wilsonomyces carpophilus*) is a fungus.

Method

Consideration of the hole spot disease of almond. 10 almond trees from up to 50 ha of almond orchards were examined for almond hole spot disease. If the area of the almond grove was more than 50 hectares, two more almond trees were examined for each additional 10 hectares. One branch was selected from four sides of each tree, and 25 leaves from each branch, i.e. 100 leaves per tree, were examined and counted.

The spread and development of the disease was determined by taking the account in this way. The following scale was used to determine the development of the disease:

0 – the leaves are healthy;
1 – there are several spots on the leaves that are not noticeable;
2 – there are 1-3 spots up to 0.5 cm in diameter visible on the surface of the leaves;
3 – on the surface of the leaves there are noticeable spots with a diameter of 0.5-1 cm;
4 – the surface of the leaves is covered with so many spots that it is difficult to count [6].

The method of determining the reduction of the yield due to the disease. The decrease in the productivity of seed-bearing fruit trees due to moniliosis disease was found based on the following formula [6];

$$B=100\ (A-a)/A$$

In this case, B- crop loss in %;
A- the number of healthy plants;
a- crop of diseased plants.

Results

To study the effect of the hole spot disease on almond yield, the effect of the disease on the weight of almond fruits was studied. For this, fruits were collected from almond trees of different ages and the fruits were separated according to the degree of damage by the hole spot disease. 100 almonds from healthy almonds and 100 almonds from each score depending on the level of disease were separated and their weight was measured. The weight of 100 healthy fruits collected from 6-year-old almond trees was 290.1 g (Table 1).

Table 1. Effect of disease development on almond fruit weight

№	Expression of disease develop-ment in scores	The effect of the disease on the weight of the fruit depending on the age of almonds								
		Up to 6 years old			Up to 8 years old			Up to 10-60 years old		
		Average weight of 100 fruits, g	lost fruit weight compared to healthy		Average weight of 100 fruits, g	lost fruit weight compared to healthy		Average weight of 100 fruits, g	lost fruit weight compared to healthy	
			g	%		g	%		g	%
1.	0	290,1	–	–	278,6	–	–	243,5	–	–
2.	1	288,3	1,79	5,2	276,5	2,08	5,8	241,0	2,51	6,1
3.	2	–	–	–	275,3	3,30	9,2	238,9	4,64	11,3
4.	3	–	–	–	–	–	–	232,2	11,29	27,5

The weight of almonds with disease level 1 was 288.3 g. It was found that 5.2% of the weight of almonds was lost due to the disease. 100 healthy fruits collected from 8-year-old almond trees weighed 278.6 g. Almonds with a disease score of 1 weighed 276.5 g and were found to have lost 5.8% of their weight due to the disease. The weight of fruits with disease level 2 was equal to 275.3 g, and it was noted that these fruits lost 9.2% weight compared to healthy ones. In our experiment, 100 healthy fruits collected from 10-60-year-old trees weighed 243.5 g. The weight of 100 fruits with a disease level of 1 point was 241.0 g, those with 2 points - 238.9 g, and those with 3 points - 232.2 g. When diseased fruits and healthy almonds were compared by weight, it was noted that 6.1% of diseased fruits lost weight compared to healthy ones when the disease level was 1 point, 11.3% when the disease level was 2, and 27.5% when it was 3 points.

Conclusion

Based on the data obtained from the experimental results, it can be concluded that almond fruits can lose their weight by 5.2-27.5% depending on the development of the hole spot disease, and this indicator can increase as the age of the almond tree increases.

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