



Improvement the Monitoring of Peach Leaf Curl Disease

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Abstract: The article describes the results of the research on the level of damage of the peach leaf blight disease to Lola, Muyassar, Sharq, Farkhad peach varieties and its development.

Keywords: Peach, leaf blight disease, Lola, Muyassar, Sharq, Farkhad varieties, leaf, branch, fruit.

Introduction. In the intensive orchards of Uzbekistan, peach is one of the most promising fruit trees due to its early maturity and high and stable yield. Its fruits are distinguished by a delicate aroma and pleasant taste. Depending on the sown area and variety, it contains from 9.3 to 21.5% of dry matter and from 90.7 to 78.5% of water. The dry matter contains sugar from 6% to 15%, starch 0.35-1.26%, ash - 0.28-0.74%, pectin - 0.5-0.9%. The chemical composition of peach determines its nutritional value and dietary medicinal value [3].

In Uzbekistan, stone fruit trees are of great importance in horticulture, and their area is 70 thousand hectares. In subsequent years, weather stress and its changes cause frostbite and death of the peach tree. The arrival of a warm winter ensures a good wintering of peach pathogens [1,2].

Changes in the biological characteristics of the causative agent of peach leaf curl disease in subsequent years under the influence of environmental changes, changes in the field resistance of the variety require the improvement of its phytosanitary monitoring.

Objects and methods of research. The main purpose of the research is to study the biological and ecological features of the peach leaf curl disease in the conditions of the Samarkand region and improve the monitoring of the field resistance of its varieties, preserve the tree on the basis of environmental and phytosanitary control and ensure the formation of a quality crop under various climatic changes. To achieve the goal in the conditions of the Samarkand region, the tasks of studying the biological and ecological characteristics of the fungus *Taphrina deformans Tul.* (synonymous with *Exoascus deformans*), the causative agent of the peach leaf curl disease, determining the degree of damage to the spread and damage of the disease, determining the field resistance of peach varieties to the disease were solved.

To assess the infestation of peach varieties with leaf curl disease, the varieties Lola, Muyassar, Shark and Farhad, zoned in the Samarkand region, were taken. Field work was carried out in the Samarkand branch of the Research Institute of Horticulture, Viticulture and Winemaking named after Academician M. Mirzaev. The assessment of the disease in points was carried out on the basis of the "Broad unified classifier of the CMEA of the genus *Persica Mill.*" [4,5,6]. The degree of damage was assessed on a 9-point scale: 0, no visible damage at all; 1-very weak; 3-weak (leaves, stems, fruits up to 10%); 5-medium (leaves, stems, fruits up to 25%); 7-strong (leaves, stems, fruits up to 50%); 9- very strong (leaves, stems, fruits over 50%).

Research results and their analysis. In peach orchards of the Samarkand region, among its phytopathogens, the prevalence and harmfulness of leaf curl is considered high [1,2].

The development of the fungal causative agent of leaf curl disease depends on many external and internal factors. Especially during the period of budding and leaf formation, the temperature and humidity of the air, the resistance of the variety and the age of the tree are of great importance [7,8,9]. The spread and development of the leaf curl pathogen also depends on the duration of the period of leaf damage. Of course, the outbreak of the disease directly depends on the occurrence of favorable conditions for the development of the fungus and the indicators of the formation of the leaf surface. The duration of the period from peach budding to leaf formation depends on temperature and humidity. Many researchers pointed out that the development of peach phenological periods is important for the emergence and development of the causative agent of leaf curl disease [2,8,10].

Table 1. Dynamics of the rate of development of peach leaf curl disease, %

Varieties	April	May	June
Lola	18,6	5,1	2,2
Muyassar	22,3	6,4	3,5
Farhad	23,4	6,9	3,9
Shark	21,2	6,1	3,2

In the 2022 season, the duration of budding and leaf growth in peach varieties grown in the Samarkand region was 35-50 days.

It was noted that the development of peach leaf curl disease began in April and was at its maximum level in May. At the end of May, as a result of the disease, the leaves began to fall off. The prevalence of the disease was 30-35%. In 2022, heavy rainfall in April-May led to an outbreak of leaf curl disease on peach trees. At the same time, the fungus showed its reproductive property, that is, the formation of ascospores, at a high level.

The air temperature during the period of budding and leaf formation is also considered a determining factor in the development of peach leaf curl fungi. It is noted that the development of the fungus slows down at air temperatures above 25⁰C. Accordingly, under our conditions, a decrease in the development of the disease was observed at the end of May. When applying fungicides against peach leaf curl disease, it is advisable to start it during periods of development, that is, before the budding process.

When applying fungicides against peach leaf curl disease, it is advisable to start it during periods of development, that is, before the budding process. In the weather conditions of 2022, among the 4 studied peach cultivars Lola, Muyassar, Farhod and Shark, resistant to the leaf curl phytopathogen, was not noted. It was revealed that varieties Farhod and Shark are less infected, and varieties Lola and Muyassar are moderately infected. The results recorded in the studies are consistent with the results of experiments in this direction, conducted by other scientists, and descriptions of the variety [1,2].

Table 2. The degree of damage to peach varieties by leaf curl disease

No signs of damage (0 points)	Very little damage (1 point)	Weak damage (3 points)	Average damage (5 points)
-	-	Farhod	Lola
-	-	Shark	Muyassar

The results obtained in the research depend not only on the biological characteristics of peach varieties, but also on the natural growing conditions and agricultural technology.

It has been established that the development of peach leaf curl disease in the mountainous and foothill regions of the Samarkand region is different compared to the flat terrain. Observations noted that the duration of the development of the disease in these areas was 10-15 days longer than in the flat area. The study of this disease in mountainous and foothill areas has a special topic, and its deep scientific and practical substantiation is the task of future research.

Conclusion. In the peach orchards of the Samarkand region, leaf curl disease (*Taphrina deformans Tul.*) is a harmful tree disease. The disease is widespread in all peach orchards in the region. The rate of its spread is 35-40%, while up to 30% of the crop dies. The development of the disease depends on weather conditions and the duration of the period of budding and leaf formation. This period is 30-45 days in the region. Among peach cultivars, Farhod and Shark cultivars are affected to a lesser extent, while Lola and Muyassar cultivars are moderately affected. The research results are recommended to be used in the fight against the disease.

To obtain a high-quality harvest from them, it is important to carry out agrotechnical measures in a timely manner and at the required level, as well as to effectively deal with harmful organisms with appropriate means.

References.

1. Boyzhigitov F.M., Khakimov A.A., Peach leaf curl // 1-international conference.-2016.-p.1756-1759.
2. Boyzhigitov F.M. The main diseases of stone fruit crops and the development of measures to combat them // Abstract of the dissertation of the Candidate of Agricultural Sciences, Tashkent.-2011.-23 p.
3. Hasanov B.A., Ochilov R.O., Kholmurodov E.A., Gulmurodov R.A. Mevali va yongok mevali darakhtlar, citrus, rezavor mevali butalar hamda tok kasalliklari va ularga karshi kurash.//Toshkent, 2010.-b. 46-48.
4. Chumakov A.E., Minkevich I.I. and others. Basic methods of phytopathological research// Scientific works of VASKhNIL.-Moscow, 1974.-p.57.
5. Khloptseva I.M., Sharova N.I., Korneichuk V.A. A wide universal classifier of the CMEA of the genus *Persica* Mill.//Leningrad.-1988.-48 p.
6. Khokhryakova T.M., Volvach P.V., Borsukova O.N., Minkevich I.I. Guidelines for the accelerated assessment of the resistance of fruit crops to fungal diseases // Leningrad. - VIZR, 1971. - 89 p.
7. Leve, V.C. Diseases of fruit crops / V.C. Leve, V.N. Pathak // Indian Phytopathology. 1979. - Jfs 4. - P. 663 - 664.
8. Ellis M.A. New fungicides for stone fruit disease control // Plant Disease. 1983. - JVb 11. - P. 46 - 49.
9. Shaw D.A. Influence of wetness period and temperature on infection and development of shot-hole disease of cherry caused by *Stigmata carpophila* / D.A. Shaw, J.E. Adaskaveg, J.M. Ogawa // Phytopathology. 1990. - Vol. 80, JVfe 8.-P. 749-756.
10. Schneider M. Grey rot of stone fruits progress in control with fungicides / M. Schneider. - Geneva, N.Y., 1974. - 8 p.
11. Zehr, E.I. Control of grey rot in peach orchards // Plant Disease. 1982. -JNfo 12.-P. 1101-1105..