LATERAL GROWTH OF CHERRY TREES DEPENDS ON STRENGTH OF GROWTH AND YIELD

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The growth of the trunk diameter is one of the key indicators of the growth processes of the tree, which reflects the activity of lateral growth.

As a result of three-year observations of the growth of cherry trees in the thickness of the early, middle and late ripening periods, we can see that the increase in the diameter of the stem was directly dependent on the strength of the apical growth of the tree and inversely – on the level of crop load.

In 2021, the largest increase in the diameter of the stem of early-ripening varieties was noted for the Mliivska yellow variety, and the smallest – for the Dar Mlieva variety, although the growth of trees of the Dar Mlieva variety was stronger in height. The index of the cross-section of the tree trunk of the early-maturing varieties, respectively, was the highest in the strongest variety Dar Mlieva, which prevailed over other vigorous varieties of the early ripening period.

Fruit plantations in the 2023 season were characterized by high productivity, which in turn affected the decrease in the lateral growth of cherry trees. High productivity was observed in Dar Mliyev and Zoryan varieties, in which the increase in trunk diameter was insignificant (0,27 cm). The yield of the Mliivska yellow variety was significantly lower, which was accompanied by a more active thickening of the stem – by 0,77 cm.

In general, in an average of three years, the strongest thickening of tree trunks of early ripening cherry varieties was noted for the Mliivska yellow variety, while it was much weaker in other varieties.

Compared to trees of early-ripening varieties, trees of medium-ripening varieties were characterized by a more active increase in trunk diameter in 2022. The largest increase was noted in trees of the medium-sized Alyonushka variety, which also had a low yield load.

Among the mid-ripening varieties, the trees of the medium-growing variety Aborigenka were characterized by the lowest rate of increase in trunk diameter, which is 0,89 cm less than the highest rate in this group.

The increased productivity of trees in 2023 also caused a decrease in the lateral growth of the stem in trees of mid-ripening cherry varieties. For example, the productivity of the medium-growing variety Meotida was high, but the increase in the diameter of the trunk of trees was the smallest in the strong-growing variety Mirage with a yield lower by 16,3 t/ha than the best indicator in this ripeness group, and in the medium-growing variety Aborigenka with a significantly lower productivity – by 14,0 t/ha. The greatest thickening of the stem diameter in 2023 occurred for the Alyonushka variety – 0,59 cm, besides, the productivity of this variety was low, which obviously contributed to the growth of unproductive wood.

As a result of the research, the strongest growth of tree trunks of mid-ripening cherry varieties in thickness was noted for the Alyonushka variety, and the smallest – for the Aborigenka variety.

In the group of late-ripening varieties, in 2022, more active trunk thickening was obtained for the strong-growing variety Amazonka, which is natural, because the trees of the other studied late-ripening varieties are weak-growing. However, in 2023, a significant increase in trunk diameter was observed for the Drogan yellow variety against the background of the lowest yield load of trees of this variety.In general, over the years of research, the smallest increase in stem diameter was established for the low-growing variety Turquoise, and the largest – for the variety Drogan yellow. The highest yield load per unit cross-sectional area of the trunk was recorded for the Donetsky Ugolok variety, the lowest for the Drogan yellow variety.

Therefore, the value of the growth of the trunk diameter was inversely dependent on the load of the trees with the crop ($r = – 0,77+0,07$) and the strength of the apical growth of the cherry trees ($r = – 0,51+0,04$).

References

1. Shahini, S., Drobitko, A., Sharata, N., Rybachuk, V., & Ivanova, I. (2023). Analysis of modern technologies for growing cherry varieties in temperate climates. Scientific Horizons, 26(8), 62-71. doi: 10.48077/scihor8.2023.62.

2. Shubenko, L., Shokh, S., Karpuk, L., Pavlichenko, A., & Philipova, L. (2021). Features of growth processes of sweet cherry trees of various ripening terms in the conditions of the Right-Bank Forest-Steppe of Ukraine. Scientific Horizons, 24(7), 61-67. DOI: 10.48077/scihor.24(7).2021.61-67

3. Gerasko, T., Tymoshchuk, T., Sayuk, O., Rudenko, Yu., & Mrynskyi, I. (2023). Investigation of the response of sweet cherries to root mycorrhisation with biologics for sustainable horticulture development. Scientific Horizons, 26(5), 76-88. DOI: 10.48077/scihor5.2023.76