

# **Resistance of cherries to negative temperatures in the field conditions of the Right Bank Forest-Steppe of Ukraine**

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Winter and frost resistance of cherries are important features that determine the limits of distribution of the variety and its industrial value. High or low winter resistance of plants depends not only on the climatic conditions of the place of cultivation, the weather conditions of the growing season, but also on varietal characteristics [1,2]. Evaluation of frost resistance by the field method requires a long period, until a severe winter comes and differences in plant resistance become apparent [3].

The research included varieties of cherries of different ripening periods of Ukrainian origin. The trees are planted according to the scheme of 6 x 4 m on wild cherry rootstock. The early-ripening group consisted of Dar Mlieva, Zoryana, Mliivska yellow varieties, mid-ripening varieties - Aborigenka, Alyonushka, Mirage, Melitopol speckled, late-ripening varieties - Amazon, Turquoise, Droган yellow, Donetsk coal, Meotida. The soils of the site are gray podzolized, the rows were kept under black steam. The field method was used during the research. Damage to parts of the tree was determined according to a 5-point system, the degree of damage to generative buds by spring frosts was determined as a percentage.

In January 2021, 2022, the lowest air temperatures were  $-17.3$  and  $-27.5^{\circ}\text{C}$ , respectively. At that time, the cherry trees were in a state of biological rest and had the highest winter resistance, so no significant negative impact of low temperatures was observed. The nature of freezing of trees depended mainly on the pomological variety. Among the early ripeners, the Dar Mliyeva variety was relatively resistant, and the least resistant was the Mliyivska yellow, whose one-year-old wood was damaged.

In the medium-ripening group, the Meotida variety showed the highest resistance to negative winter temperatures. Generative buds froze only in Alyonushka and Aborigenka varieties. In the latter, the maximum impact of low temperatures was observed, and the damage to one-year wood was the highest among all studied varieties.

Damage to generative buds was not detected in late-ripening varieties, but two-year-old wood was somewhat affected. The strongest freezing was observed for the Droган yellow variety, somewhat less for the Amazon variety. Within this group, trees of the Amazon variety were more damaged, and the Donetsk coal variety was the weakest.

During the period of research in 2022, late spring frosts with an air temperature of  $-5.0^{\circ}\text{C}$  were observed, which caused damage to generative buds.

The greatest damage to generative buds by late spring frosts was noted for the mid-ripening variety Mirage, somewhat less for the varieties Melitopolska krapchasta, Alyonushka, and Donetsk Ugolok. It was the smallest in Amazon, Turquoise and Meotida varieties. However, it did not affect the yield.

Thus, as a result of field studies of the winter hardiness of cherry varieties of different ripening periods, the early-ripening variety Dar Mlieva, the medium-ripening Meotida, and the late-ripening Donetsk coal showed the greatest resistance to winter damage.

### References

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