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DETERMINATION OF CHERRY FRUIT RESISTANCE TO CRACKING

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The cracking of fruits in rainy weather is an urgent problem of cherry growing in the conditions of the Right Bank Forest-Steppe of Ukraine. In some years, damage due to cracking can completely destroy the crop [1]. The degree of cracking depends on humidity, temperature, size, fruit density and yield [2]. Resistance to cracking is largely determined by pomological variety and term of maturity (late-ripening fruits are more damaged), but the same varieties demonstrate themselves differently in different areas [3]. The reason of cracking is excessive absorption of water by the surface of the fruit under the action of osmotic pressure caused by sugars. There is the cracking index which is defined asthe period of time from immersion of the fruit in distilled water to the appearance of cracks. However, varieties with a higher index are small-fruited, low-yielding and with mediocre taste.

It is known that varieties differ in the intensity of absorption, the structure of the peel and its elasticity. In our studies, more cracked fruits were observed in late-maturing varieties than in early ones. This was affected by the amount of precipitations during the ripening period (in July they were more abundant than in June). However, fruits of the same varieties show different resistance to cracking in different areas [1].

The aim of the research was to establish the resistance of cherry fruits to cracking by immersing them in distilled water. And also to investigate the dependence of resistance to cracking on the cherry fruit peel thickness and elasticity.

The objects of the research were cherries of varieties with different terms of maturity of Ukrainian breeding: Aborygenka, Alyonushka, Amazonka, Biriuza, Dar Mlieva, DonetskiUgoliok, DroganaYellow, Zoryana, Mliivs'ka Yellow, Meotida, Mirage, Melitopols'ka Mottled. The variety Zoryanawas used as the control for the early-ripening group, Meotida was used for the middle-ripening group and Drogana Yellow for the late-ripening group.

The resistance of fruits to cracking was studied using the "Wide Unified Classification of CMEA of the genus Cerasus Mill." 50 fruits were immersed in distilled water in accordance with the method. As a result of 6, 12 and 24 hours of exposure, cracked fruits were grouped on a scale: slight cracking – 1-20 %, medium – 21-40 %, high – 41-70 %, very high – 71-100 %. The thickness of the fruit peel was determined with a micrometer.

It was found that after 6 hours of soaking in water fruits of Dar Mlieva and Zoryana were equally damaged (35 % and 36 % of the total amount in the sample, respectively) among the early ripening varieties. After a short immersion, the least damage was observed in the fruits of the variety MliivskaYellow (15 %).

Keeping the fruit in water for 12 hours had the greatest effect on the variety Zoryana, which had 68 % cracked fruits. After 24 hours of exposure, the damage degreesof the fruits of Dar Mlieva and Zoryana varieties were almost equal (70 %). In contrast, after keeping in water for 24 hours, more than half of the amount of the cherries of MliivskaYellow remained intact (59 %).

The intensity of water absorption and its distribution, the structure of the peel, its thickness and elasticity affect the resistance of cherry fruits to cracking. The peel thickness of fruits of the early-ripening variety MliivskaYellow was least (0,0639 mm), so it is likely that the peel of this variety had better elasticity and was less damaged by prolonged external saturation with moisture. In the variety Zoryana the peel thickness was the greatest(0,1053 mm, the maximum among the early-ripening group), so the number of damaged fruits was higher.

In the medium-ripeninggroup, fruits of the Alyonushka variety had the greatest peel thickness (0,1186 mm). Respectively, the cracking degree of the fruits of this variety was the highest.

In the late-ripening varieties, the DonetskiUgoliok variety withstood-bestshort-term immersionin water. During 6, 12, and 24-hour exposures, this variety had the most uniform fruit cracking, respectively 22, 25, 24 %.

In contrast to early and medium-ripening varieties, the group of the late-ripening varieties had an inverse relationship: higher resistance to cracking was found in the Amazonka variety, in which the thickness of the