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Yield formation of sweet cherry cultivar ‘Summit’

D.T. Hue, K.-P. Götz, and F.-M. Chmielewski

Humboldt-University of Berlin, Faculty of Life Sciences, Institute of Agricultural and Horticultural Sciences, Professorship of Agricultural Climatology, Berlin, Germany (dathihue@cms.hu-berlin.de)

Compared to field crops, yield models for fruit crops are rare or not available, so that it is difficult to calculate possible changes in fruit yield due to climate change. Thus, the aim of this work was to describe the yield formation of a sweet cherry cultivar ‘Summit’ at Berlin (Germany), in order to understand this process more in detail. For this purpose different potential yield factors, such as the total number of cluster/tree, the number of buds/cluster, the number of flowers/cluster, the fruit set/cluster and the number of ripe fruits/cluster were observed and individual fruit growth parameters such as fruit fresh weight (FW), fruit dry weight (DW), fruit diameter (D) and fruit length (L) were weekly analysed between fruit set and picking ripeness in 2013-2015. The results of the first three years showed that the time between the beginning of blossom and picking ripeness, relevant for yield formation, varied between 60 and 76 days. Among the yield factors mainly the buds/cluster and the fruit set/cluster showed significantly different numbers in the studied years. However, the number of ripe fruits/cluster did not significantly differ between the years, so that the annual variability of the investigated yield factors until fruit set (buds/cluster, flowers/cluster, fruit set/cluster) was not decisive for the final cherry yield. The temporal development of the fruit growth parameters differed slightly between the years. In 2015, FW, DW and D at picking ripeness differed significantly from the two previous years. Fruit length (L) was even significantly different in all three years, with the highest value also in 2015, resulting in the significantly highest cherry yield per cluster in this year. These investigations will be continued for further years, in order to achieve more robust results and to analyse environmental factors which mostly influence the variability of yield factors, in order to develop a cherry yield model.