Relationship between the Polarimetric Determination of Starch and the Starch Iodine Index in Apple Variety Jonathan

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SUMMARY

Apple (Malus domestica) originated in Western Asia, where its wild ancestor, the Alma, is still found today. There are more than 7,500 known cultivars of apples, resulting in a wide range of desired characteristics (Muste, 2008). Total annual world apple production (2009) was around 71 million tonnes reaching the second place among fruits worldwide. Romanian annual apple production is around 0.5 million tonnes (FAO, 2011). Producers usually determine the maturity of apples from when the starch disappears from the fruit. Starch is main storage carbohydrate in plants. It accumulates during apple growth then is progressively hydrolysed during ripening. Hydrolysis occurs first in the core of the apple and continues into the cortex (Kingston, 1992). Although widely used, ethylene concentration, total acidity and firmness are not good indicators of fruit maturity, because they fluctuate depending on the orchard and climatic year. On the other hand, studying starch disappearance by starch iodine test is a simple and practical procedure for determining the stage of apple maturity (Travers et al., 2002). Starch iodine test rank the relative evolution of the quantity of starch, it doesn’t give direct access to the starch content of the fruit, because this test is influenced by the variety (OECD, 2011). In this study apples from Jonathan variety, from two different physiological stages were analysed by starch iodine test and in the same time starch content was determined by a polarimetric method. The results presented in this paper establish the relationship between the real starch content, the starch iodine index and the percentage of the apple surface area containing starch.

REFERENCES