

Determination of Starch Changes During Growth and Development of Three Plum Varieties

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ABSTRACT

The aim of this study is the evaluation of changes which occurred in starch content during the growth and the development of three varieties of plums Stanley, Vânăț de Italia, Tuleu Gras. Depending on variety, the maximum amount of starch was reached in phases 3 and 4; the values have declined as the fruit was approaching the maturity stage. The amount of starch during plum fruit growth and development is influenced by the harvesting phase, variety and the interaction between variety and harvest stage.

Keywords: starch, plums, polarimetric method, harvesting phase.

INTRODUCTION

Plums (*Prunus domestica* L.) are one of the most cultivated fruits in Romania. During the process of growth and maturation of fruits, various changes occur including physical and biochemical changes (Muste, 2008). It is well known that changes in starch content are an interesting biochemical process in the growth and maturation of the fruit. It is well known that starch is closely related to sugars, being a polysaccharide reserve, representing a transitional form in plums.

AIMS

This study determined the changes which occurred in starch content during the growth and the development of three varieties of plums.

MATERIALS AND METHODS

The species which were analyzed were three varieties of plums (Stanley, Vânăț de Italia, Tuleu Gras), harvested during their period of growth

and development, in six stages of development. The starch was determined by Ewers Polarimetric Method with some modifications (Mureșan et al., 2015).

RESULTS AND DISCUSSION

The amount of starch of the three varieties of plums which have been analyzed during their growth and development registered a variable value, reaching the lowest values in the last phase of harvest. Thus, the amount of starch in the case of Stanley variety ranged from 0.54 g / 100 g and 0.19 g / 100 g, between 0.64 g / 100 g and 0.19 g / 100 g for the Vanat de Italia variety, and between 0.41 g / 100 g and 0.12 g / 100 g in the case of Tuleu Gras variety (Figure 1). This study helps exploiting the starch collected from physiological and prematurely fallen plums.

The main experimental effect is represented by the harvesting phase 48.21%, followed by variety (31.49%), and among interactions the one

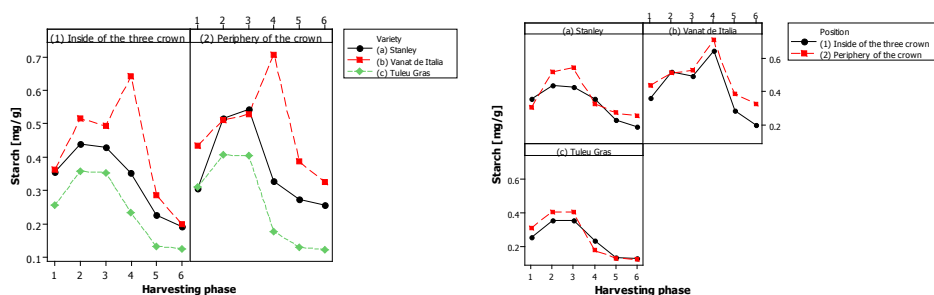


Fig. 1 Changes of starch content during fruit growth for three apple varieties, different representations: (A) – variety grouping; (B) – crown position grouping

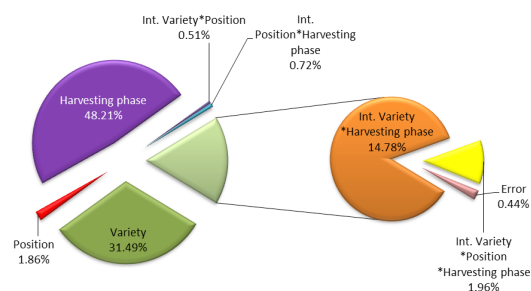


Fig. 2 The relative effect sizes (eta squared) on the starch content of plums for the studied

of the greatest importance is between variety and harvesting phase with 14.78% (Figure 2).

CONCLUSION

Depending on variety, the maximum amount of starch was reached in phases 3 and 4; the values have declined as the fruit was approaching the maturity stage. The amount of starch during plum fruit growth and development is influenced by the harvesting phase, variety and the interaction between variety and harvest stage.

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