Within tree and orchard variability of silver king peach (*Prunus persica* (l.) Batsch) fruit quality

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Abstract

The variability of crop quality accounts for most of seasonal variation of farmers' incomes, since fruit value mostly depends on its size and overall quality. Canopy architecture and orchard lay-out are mainly responsible for within tree environment and allocation, which in turn, account for fruit quality and its variability. Little is known about within tree and between trees variability resulting from different planting and training systems. A positive relationship has been measured in peach between PAR and TEAC. This study was carried out to measure within tree and orchard variability of fruits of the early ripening 'Silver King' peach (*Prunus persica* (L.) Batsch), 8-years-old peach trees trained to a Y-shape and delayed vase. Fruits were picked twice with a 7 day interval and all harvested fruits were analysed in terms of size (weight), soluble solids content, titratable acidity, pH and firmness. Trolox equivalent antioxidant capacity (TEAC) was measured on fruit samples. Fruit weight variability between single trees was larger than within the tree and between training systems. Moreover, Y-shaped trees gave a more uniform crop (with smaller fruits) than the delayed vase. Fruit soluble solids content and firmness had a higher variability than fruit size and within tree variability was higher in delayed vase trees than in Y-shaped ones. Field variability did not change with training system for any of the fruit quality parameters. Between- and within-trees variability of fruit firmness increased with fruit ripening, more than size and TSS, thus making the correct choice of harvest time more difficult. TEAC changed fruit allocation within the canopy.