Title Random sample estimates of tree mean for fruit size and colour in apple

Author C. Miranda, T. Girard and P.E. Lauri

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Abstract

Data obtained in 2005 from thinning experiments with 'Ariane' and 'Pitchounette' apples (*Malus* × *domestica* L. Borkh.) were used to estimate tree mean fruit diameter (MD), weight (MW) and proportion of red overcolour (MC) using random samples. Twenty fruit per tree were taken from the boxes containing the fruit harvested at each picking. To avoid taking only fruit in the upper layers of the boxes, fruit from each tree were spread out on a table beforehand. The estimated values were compared with the true MD, MW or MC calculated from each picking and from the entire crop. Statistical techniques were used to assess agreement between the values obtained with estimation methods and the true values. Estimates obtained from a sample averaging ~15–20% of total crop may range from 2 to 3% of the true mean diameter, and from 6.0 to 8.5% of the true mean weight. Estimates for MC obtained from the same samples may range from 10 to 25% of the true mean overcolour. The error margin associated with estimating fruit diameter and weight from the sampling method employed in this study seems to be small enough to consider it reasonably adequate to detect treatment differences that would be considered biologically or economically significant. Blind sampling and colour determination through image analysis are suggested as a means to obtain unbiased and objective data for fruit colour determinations.