Title Influence of selected factors on efficiency and effectiveness of a peeling machine for chestnut

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Citation ISHS Acta Horticulturae 866:595-603. 2010.

Keyword *Castanea*; peeling system; temperature; size; cultivar

Abstract

The process of peeling is a key factor in development of a chestnut industry. A peeled chestnut provides convenience as well as opportunity for value-added products, and thus expanded markets and utilization. It is important to take the peeling effectiveness and peeling yield into account during the varietal selection. Several home remedy techniques as well as some large-scale commercial systems exist to peel chestnuts. In this paper, a commercial peeling system (Boema; Neive, Italy) was tested for its performance with different cultivars and size of chestnuts grown in the USA. In addition, the effects of the preheating temperature of the chestnuts on the efficiency and effectiveness of the peeler was investigated. In total 21 cultivars of chestnuts were tested. The analysis results indicated that most of the cultivars performed similar to each other regarding the efficiency of the peeling machine. With respect to the size effect, it seems that this peeler worked better with Medium and Large sized chestnuts than with Jumbo sized chestnuts. The preheating of the chestnuts prior to entering the peeler was studied at temperatures 15, 38 and 60°C. Generally, increasing preheating temperature from 15 to 38°C or from 38 to 60°C did not affect the peeling efficiency significantly; a significant difference could be observed when increasing temperature from 15 to 60°C. However, a high temperature may cause the problem of overheating or cooking nuts, which may alter the quality of products. The analysis results also showed that high preheating temperature could increase the susceptibility of chestnuts to being broken during process. These results provide useful information for aiding in determining optimal cultivars destined for processing purposes.