



Valuate the traditional chestnuts production

Introduction

The innovation presented here was developed in a project aimed at improving the chestnut mechanical harvesting process, improving the preservation of nut quality between harvesting and the consumer, as well as promoting other presentation forms of nuts for consumption in kind.

Objectives

The main objectives are: 1) Improve the chestnut mechanical harvesting process; 2) Enhance nut quality preservation between harvest and consumer by developing a new disinfestation method, creating a protocol for efficient fungal control during storage at room or cold temperature to extend commercialization and minimize water loss; 3) Promote alternative chestnut products like smoked and soft chestnuts, or chestnut flour for use in items such as bread, biscuits, and beer to expand market presence.



Figure 1 – Chestnut production field.



Figure 2 – Chestnut harvest.

Results

The main results are: 1) In very humid groves with thick debris, the elemental inoperative time increased (8.7% to 12.04%), though field efficiency remained at 82%. Equipment capacity for warehouse cleaning ranged from 1000 to 1500 kg/hour, lower in older groves. Aggregates with the nuts required extra cleaning and manual selection before industry delivery. 2) No scientific conclusions for post-harvest vermin control and prototype testing due to technical difficulties. 3) Paraffin and beeswax coatings effectively prevented water loss and maintained sensory quality, with volatile additives suggested to reduce microbial growth (rot). 4) MAP, VAC, and PM bags effectively prevented weight loss and mold, with MAP and VAC better for less than 3 months, and PM bags for 6 months. Non-packaged or macroperforated bags showed over 9% weight loss and mold. 5) Chestnut flour is promising for fresh and dried pasta, imparting softness and lightness, though it darkens the product; the optimal incorporation is 50%. 6) A chestnut sample with Tawny Port Wine and almonds was highly preferred in sensory tests for appreciation, color, aroma, texture, flavor, and purchase intention.

Lessons learned

Mechanized harvesting significantly reduces costs compared to manual methods, addressing labor shortages and improving chestnut health. Efficient harvesting requires good soil management, with vegetation cover and minimal residues, and is incompatible with mobilized groves. Regarding packaging, the high cost of using 0.5 kg plastic bags and manual labor makes it economically unfeasible. Larger plastic bags and automated filling are suggested to cut costs. Chestnut processing showed promising results (e.g., powder, fruit mix, patisserie), but further experimentation and cost evaluation are needed.

The information presented in this factsheet was developed by the FOREST4EU partner, drawing on the innovations and knowledge generated by the indicated operational group with their explicit authorization.

Further information

<https://www.utad.pt/gpfe> (indirect)



 <p>Funded by the European Union</p> <p>Funded by the European Union (Grant n. 101086216). Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or REA. Neither the European Union nor the granting authority can be held responsible for them.</p>	 <p>FCiências</p>	 <p>FOREST4EU</p> <ul style="list-style-type: none">  FOREST4EU Project  FOREST4EU Project  info@forest4eu.eu 	<p>Website</p> 
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