

# 6<sup>th</sup>

# International Chestnut Symposium

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## Book of Abstracts





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## ALLOMETRIC EQUATIONS FOR PREDICTING MINERALOMASS IN HIGH-FOREST CHESTNUT STANDS IN PORTUGAL

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### Abstract

The evaluation of nutrients in biomass tree-components is a process time consuming and expensive, often involving tree felling, not always possible or desirable. Thus, mineralomass prediction equations are an important tool for the quantification of the nutrients exported in management and harvesting activities towards to its replacement and sustainable management as well as to evaluate the effect of other disturbances in the balance of ecosystems. Thus, given the importance of the relationship of biomass and nutrients (mineralomass) for dynamic and sustainable management of chestnut woodlands, aboveground mineralomass was studied in sweet chestnut (*Castanea sativa* Mill.) high forest stands located in Northern Portugal. Nutrient specific prediction equations that allow estimating the mineralomass (N, P, K, Ca, Mg, S, B and C) above the ground, total and by components: stem-wood, stem-bark, branches, leaves and flowers, based on tree dendrometric variables, DBH (diameter breast height) and total height, were developed. Linear and non-linear regression estimation methods were used. Data analysis is based on information collected in destructive analysis of thirty-four felled trees, distributed by the existing diameter classes (10-65 cm) in three adult chestnut stands. Several linear and nonlinear equations were fitted by the least squares method to select models. A simultaneous fit by SUR method using iterative seemingly unrelated regression (ITSUR) was used for the final selected models. The best-fitting models are presented.

Keywords: *Castanea sativa* Mill., Allometric models, Above-ground tree mineralomass, Silviculture, Forest management