Diameter growth of sessile oak as a basis for defining forest management objectives

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This study evaluates the applicability of the new Forest Management Guidelines of Serbia, specifically management type 2621 (coppice mixed oak forests transitioning to high forests), in sessile oak (*Quercus petraea* (Matt.) Liebl.) stands in Fruška Gora National Park. Three sample plots were established for the purpose of this research, where increment cores were collected from dominant trees. Tree age, diameter at breast height, and height were analyzed to assess stand structure, growth dynamics, and compliance with the prescribed management guidelines.

Detailed dendrochronological analysis and diameter growth modeling were conducted to reconstruct diameter growth patterns and identify trees exhibiting the most intensive diameter growth. Diameter growth trajectories were modeled using the Chapman–Richards function, and current and mean diameter increments were derived from the fitted models. Stand structure analysis confirmed an even-aged character across all sample plots, with relatively narrow age ranges.

The obtained results indicate substantial discrepancies between the observed growth characteristics of dominant sessile oak trees and the assumptions underlying the applied management guidelines. Consequently, the results suggest that the current guidelines for management type 2621 are not fully applicable under the given site and stand conditions and lack sufficient empirical support. These findings highlight the need for revision and site-specific adaptation of forest management guidelines based on empirical growth analyses.