

Selection of final crop trees and pruning of valuable broadleaved tree species

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Throughout Europe, valuable broadleaved tree species (VALBRO) are important producers of high-quality logs for veneer and furniture industries. Such logs are branch-free and show large diameters and long but logs. All these characteristics can be manipulated by various silvicultural interventions of which the selection of final crop trees and pruning are among the most important.

As the VALBRO need large crowns to produce high-diameter trees, their silviculture should focus on a reduced number of trees (no more than one hundred) per ha. Under such circumstances, a *single-tree oriented management* in naturally regenerated or planted, pure or mixed stands with VALBRO should be performed. It involves the selection of final crop trees in the young stages of development (end of thicket stage-beginning of pole stage), as soon as the trees have reached a minimum dbh of 10 cm. Such trees, which will be subsequently favoured by heavy thinning from above providing a free-growth state at the crown level, are selected based on three criteria:

1. *Quality*: defect-free trees (without lighting or logging wounds, frost cracks, epicormic branches, forks, accumulations of dormant buds, etc.), regenerated by seed (natural or artificial) or root sprouts (e.g., wild cherry, wild service tree), with cylindrical, vertical and straight boles, thin and as horizontal as possible branches, large and regularly developed crowns, etc.
2. *Vigour*: thickest and tallest (predominant and dominant) trees.
3. *Spacing*: individuals as evenly spaced as possible, with a minimum distance between final crop trees of 50-70 per cent of average spacing at the rotation age.

As branchiness is a major defect of logs that makes them useless for veneer production, artificial pruning of VALBRO is necessary especially in artificially and, to some extent (e.g., wild cherry), naturally regenerated stands. It combines *formative pruning*, performed until the trees reach 3-4 m tall and aiming at retaining the apical dominance, and *high pruning*. The latter focuses only on final crop trees (+ maximum 10-20 per cent) selected earlier and start before stem reaches 10-12 cm dbh. Usually two lifts (I – up to 3 m; II – between 3 and 5-6 m) are performed and crown length after each lift should be at least 50 per cent of total tree height. To promote quick healing (occlusion) of wounds and prevent any major health problems, branches of maximum 3 cm at the insertion point should be removed by clean cuts protecting the branch collar.

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