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## Allometric relationships for surface area and dry mass of young Norway spruce aboveground organs

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Tree-level allometric functions for a precise predicting of stem, branch and leaf mass and surface area of three needle-shoot age classes were estimated from measurements of crown and stem dimensions in 34 harvested Norway spruce (*Picea abies* [L.] Karst.) trees. Trees were grown within a 16-years-old stand in the Beskids Mountains. The results showed stem parameters (stem diameter at breast height – dbh, stem volume – Vs and stem sapwood area – SA) to be highly correlated ( $r > 0.98$ ) with stem mass/area and total aboveground mass of tree. Crown parameters – volume (Cv) and surface area (Ca) were the best predictors for individual branch and needle age-classes mass ( $r > 0.92$ ) or area ( $r > 0.85$ ), specifically for mass and surface areas of young branches and needles. dbh most correctly predicted the branch and leaf mass/surface area of older ( $> 2$  years) shoots. The measured parameters: dbh, SA, tree height, crown length, Ca and Cv showed a high dependence on the tree position within the stand ( $r > -0.81$ ). Thus, these parameters could be modified by silviculture.

**Keywords:**allometry; biomass; *Picea abies*; sapwood; surface area[download PDF](#)

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