

FACTORS AFFECTING HEIGHT GROWTH OF HYBRID ASPEN IN LATVIA

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Abstract. Hybrid aspen (*Populus tremula* × *P. tremuloides*) has higher mean annual increment and shorter rotation period than other tree species growing in hemiboreal forests. It can be used for establishment of short rotation plantations to increase the availability of wood resources and increase the rate of carbon sequestration. Climatic changes are predicted to have an increasing effect on growth of trees. Therefore aim of our study was to analyse the intra-annual growth dynamics of hybrid aspen and factors affecting it as well as the effect of predicted climatic changes on growth of this hybrid. Weekly measurements of height increment were carried out through the growing season of trees in two plantations, consisting of 19 clones (10 ramets per clone), grown on abandoned agricultural land. Mean height growth period of hybrid aspen ranged from 119 days for late flushing clones to 137 days for early flushing and was tightly linked to total length of height increment i.e. was significantly higher for clones with early and intermediate leaf flushing than for clones with late leaf flushing. Mean growth intensity (ranging from 7.7 mm day⁻¹ to 11.7 mm day⁻¹) was significantly affected by daily mean temperature, but not with other meteorological parameters. Influence of weather factors on height increment was weakest for early leaf flushing clones with. Both height growth intensity and consequently also annual height increment was significantly affected by clone. Results suggest that predicted rise of temperature might be beneficial for height growth of young hybrid aspen in Latvia, however, increased evapotranspiration in combination with changes in precipitation regime and presumably also groundwater level might limit the positive effect. Clones with early leaf flushing in general had a higher annual increment and lower sensitivity to meteorological parameters and therefore can be recommended for establishment of plantations in future.

Key words: height growth intensity; height increment; tree growth; short rotation plantations.