

B2.5

Seedling and tree growth after chequered-gap-shelterwood-cutting, and in a conventional clearcut system

Charlotta Erefur¹, Petter Axelsson², Annika Nordin⁵, Emma Borgstrand³, Urban Bergsten⁴,
Kristina Ahnlund Ulvcrona⁴

¹Unit for Field-based Forest Research, Vindeln, Sweden

²Department of Forest Ecology and Management, Swedish University of Agricultural Sciences, Umeå, Sweden

³Bergvik Skog AB, Falun, Sweden

⁴Department of Forest Biomaterials and Technology, Swedish University of Agricultural Sciences, Umeå, Sweden

⁵Department of Forest Genetics and Plant Physiology, Swedish University of Agricultural Sciences, Umeå, Sweden

To achieve sustainability both ecological and production aspects need to be considered in forest management. A chequered-gap-shelterwood-system (CGSS) consists of small clearfelled gaps with alternating areas of trees, giving the forest a chessboard appearance which potentially could combine the advantages from both the clearcut system and continuous cover forestry. This approach will introduce more edges which might influence the effect of wind, temperature, and solar radiation on seedlings and trees. In this study, we evaluate the influence of 1) the forest edge and 2) the north- and south-facing parts in the gaps on the growth of seedlings and trees (*Pinus sylvestris* and *Picea abies*) in gaps and shelter forests, respectively, and compare the growth with that in a conventional clearcut system.

Overall, edges affected seedling growth negatively and tree growth positively. Seedlings also grew better at the northern sun exposed parts compared to the southern shaded parts of the gaps. As a consequence of these edge effects, seedlings had lower, and shelter trees higher, growth in the CGS system compared to the reference areas. Seedlings in the central part of the gaps grew better than seedlings in the reference area. Norwegian spruce seems to be the most suited tree species for this silvicultural approach. Given the contrasting effect of edges on seedlings and trees, the production over the whole rotation needs to be evaluated in future studies.