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Can we establish plantations without herbicides?

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Volunteer Oral Presentation

Since 2001 chemical herbicides are banned in public forests of the province of Quebec and mechanical treatments are now the only authorized means for releasing conifer plantations from competing species. However integrated vegetation management implies minimizing the need for repeated treatments on high-competition sites. We will present the results of research that was carried out during the past 10 years to evaluate the effectiveness of the alternative solutions. Research on seedling stock size showed that large seedlings (35 to 45 cm in height) have a better growth potential a better competitive ability and a better response after release than regular seedlings. Therefore a network of 14 experimental sites covering a range of ecological conditions was established to test the hypothesis that time since planting (number of years) before applying a release treatment is a significant variable to explain conifer large seedling growth. Our results confirm the importance of release treatments over a range of ecological conditions. However a delay of 3 4 or 5 years between planting and releasing large seedlings has not affected seedling size after eight growing seasons ($P > 0.921$) over the range of conditions tested. Two field experiments were also established to test the potential of a biological control method to increase the efficiency of mechanical cutting by reducing stump sprouting. Compared to mechanically released plots the application of the Myco-Tech[®] paste based on indigenous fungus *Chondrostereum purpureum* did not increase light availability ($P > 0.20$) or seedling diameter ($P > 0.58$) two growing seasons after treatment. The use of tall planting stock and intensive mechanical release bring seedlings to the free-to-grow stage without the use of herbicides on most sites. However on high-competition sites biological control methods have not yet been developed to prevent repeated release treatments.