

CENTRE FOR ENHANCED FOREST MANAGEMENT

ADVANCES IN FORESTRY RESEARCH

DEPARTMENT OF RENEWABLE RESOURCES

EFM RESEARCH NOTE 04/2010



Resprouting of aspen after thinning of 10-year old aspen stands

LIEFFERS, V.J., LANDHÄUSSER, S.M., AND J. WOLKEN

In boreal mixedwood forests there is often a desire to grow both spruce and aspen together, but often the aspen regenerates too densely and suppresses the growth of spruce. Thinning of the aspen might be used to develop stands where both species can thrive; however little is known about the response of aspen sucker regeneration to thinning.

Methods: We studied 10-year old aspen stands of harvest origin with an initial sucker density of ~ 20,000 stems/Ha. Large 0.25 ha plots were thinned to 0, 500 or 1500 stems/Ha in both the Lac La Biche and the Peace River regions of Alberta. Thinning was done by brush sawing and each region had 5 replicate blocks. These plots were re-evaluated 5 years after thinning.



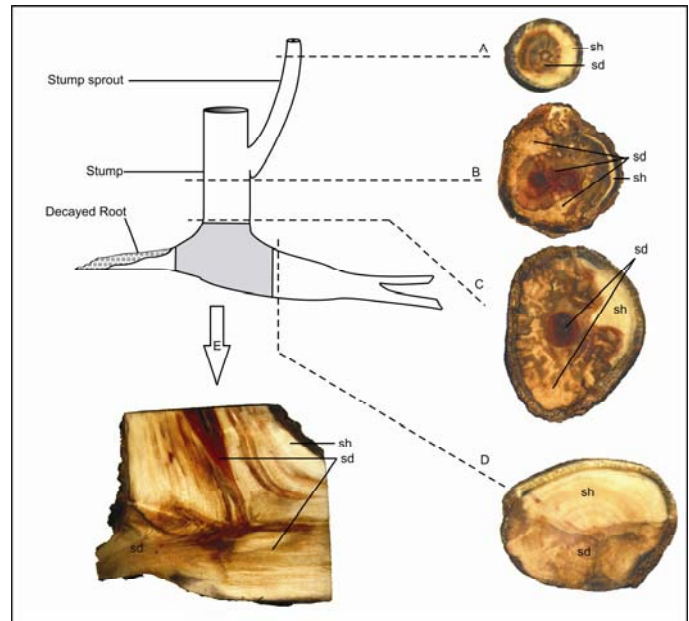
1500 residual stems – 5 years after thinning in the Lac La Biche region showing very little resprouting.

Results: After five years there were large differences in the number and size of remaining aspen sprouts between Peace River and Lac La Biche regions. In Peace River there was dense re-sprouting and these sprouts were very vigorous, while in Lac La Biche sucker density was low and these sprouts were unthrifty. This was in contrast to the finding one growing season after the thinning (Res. Note 05-2007).

There was especially a decline in the vigour of suckers when 1500 residuals/Ha were retained.

A late spring frost in Lac La Biche region 2 years after thinning appears to be one of the main differences between Peace River and Lac La Biche sites.

While aspen suckers did poorly in the Lac La Biche region, balsam poplar suckers continued to grow vigorously.



In Lac La Biche stump sprouts were often diseased – mostly related to infection by Armillaria.

Implications: Thinning tends to reduce and weaken the resprouting of aspen especially at higher residual densities; however, under favourable conditions the sprouts can be vigorous and still remain highly competitive. This experiment also emphasizes the need of long-term monitoring of field studies, as a large stochastic regional event, such as this late spring frost, can significantly influence the outcome of an experiment like this and result in two very different silvicultural interpretations with two very different stand trajectories 5 years post-treatment.

Funding was provided by Mixedwood Management Association and NSERC.

Further Information:

Wolken, J., Lieffers, V.J. Landhäusser S.M. and Mulak, T. 2009. Spring frost and fungal colonization depresses regeneration following partial cleaning of juvenile aspen stands. *Ann. For. Sci.* 66: 805

<http://www.cefm.rr.ualberta.ca/> <http://www.emend.rr.ualberta.ca/>

Centre for Enhanced Forest Management, Dept. of Renewable Resources, U. of A., Edmonton, AB T6G 2H1

Victor.Lieffers@ualberta.ca; Simon.Landhausser@ualberta.ca

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