



Direct seeding: An option for British Columbia's north

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Until now, planting seeds directly into the ground, either by air, man, or machine, has primarily been practised in agricultural settings. Why not in forestry?



Albie Thomson photo

Retired West Fraser employee Brian Walker talks about a trial that he initiated in the early 1990s comparing manually planted and direct seeded lodgepole pine south of Fraser Lake.

Studies in the Northern Interior of British Columbia have shown that direct seeding can increase the number of healthy seedlings on sites that have been difficult to regenerate. Specifically, trials under **Brian Walker**, formerly of West Fraser's Fraser Lake Sawmills, and **Mike Jull** of UNBC's Aleza Lake Research Forest have had success with direct seeding.

Walker's trials in the Fraser Lake area have already produced promising results using lodgepole pine. In the process of trying to rebuild soil with legumes, he added pine seeds

and spread the mix with a modified agricultural seeder attached behind a disk trencher.

Walker determined that the hinge of the trench was the best spot to deposit seeds as the top is too dry and the bottom exposes seeds to frost and flood. He also said that substantial research was needed to identify seed requirements relative to soil types and seed bed quality. The Fraser Lake site is now thriving on the combination of two rows of planted seedlings alternated with two rows of seeded.

Reduced costs at Walker's site are another benefit. Directly seeded trees cost a total of approximately 18 cents each. At 13 cents per seedling, plus another 23 to 25 cents once planted, seedlings were by far the more expensive option.

West Fraser has continued with direct seeding trials, using different tools for seed distribution and plastic cones that act as small greenhouses for the

seed. The common understanding from these trials is to use "oodles" of seed and have patience. The urge to fill-plant before giving the seeds a chance to germinate adds cost and may result in an over-stocked site.

They also considered potential sufficient survival for areas infected with pine rusts. With some areas suffering up to 40% mortality, the cost of heavy seeding would be more reasonable than replanting. Heavy seeding may result in enough healthy stems surviving to stock the site. In the future, West Fraser plans to examine which method or combination of methods will produce cost effective results.

On Lucille Mountain outside McBride, Jull's trials involving Englemann spruce and subalpine fir also showed promise. In the summer and fall of 1993, he created four 1 m by 1 m seedbeds: disturbed with seed, disturbed without seed, undisturbed with seed, and undisturbed without seed. While studying the effects of climate and ecology on natural regeneration, Jull found that direct seeding, not site disturbance, effected an increase in survival.

Jull said that germination responses were different for spruce compared to fir in the Lucille study. Smaller spruce seeds needed appropriate seedbed microsites, while bigger, less mobile balsam depended on seed supply. Jull would like to see natural regeneration encouraged through strategic orientation and layout of cutblocks to allow good dispersal of seed as well as plenty of mineral soil exposure.

Across British Columbia, environmental limitations including prolonged cold weather, steep terrain, and insect infestation create regeneration problems on many sites. Yet sites that have produced poorly in the past can offer a greater return on investment with direct seeding as compared to planting.

Nurseries may not produce enough seedlings to meet the province's upcoming needs in stands ravaged by the mountain pine beetle. Planters are limited as to how fast they can cover ground, and in remote or challenging areas, it can be expensive to transport the equipment, labour, and supplies needed for planting.

Direct seeding can provide a solution to these

continued on page 28...



Direct seeding can be cheaper

...continued from page 27

problems. The ability to plant seed quickly, blanketing an area when conditions are right, is a major advantage. Once a site has been properly prepared, seeding can take place immediately. Direct seeding also helps reduce the risk of trees falling on forestry workers in beetle-infested stands and removes the need to test for safe entry into infested areas.

In the future, it will definitely be necessary to include machines, aerial seeding, hand broadcast seeding, and more to help keep up with British Columbia's huge reforestation needs. One of the most innovative machines (used in conjunction with a disc trencher) is the TTS Sigma seeder. Developed in Finland, the Sigma is now available in Canada through KBM Forestry Consultants Inc. The Sigma machine can seed a hectare of land for about \$350, about half the cost of planting seedlings.

Of course, direct seeding does have its shortcomings. There is a longer rotation for trees grown directly from seeds; it may even take a few years for any results to appear. At first, there will be competition from existing grasses for moisture and nutrients. Additionally, there is reduced control of spacing and stocking.

In spite of the drawbacks, the benefits are real and practical for many areas in British Columbia. Direct seeding can be an effective, inexpensive approach

useable in conjunction with other planting methods. The initial costs are one-third to one-half the cost of using seedlings. The wide variety of seeding methods available also makes direct seeding a smart option for restocking problem areas and meeting free-to-grow standards. Based on optimistic results from practical trials, direct seeding has the potential to be a valuable tool for reforestation strategies.

More Information

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