

Doig River First Nation Tests Alley Cropping in the Peace

Alley cropping is being tested in the BC Peace region as a means of meeting projected demand for wood fibre and native plants. Additionally, incorporating trees with traditional management techniques will not only supplement incomes such that individual operations become more stable over time, but will also contribute to community and agricultural sector stability.

The Doig River First Nation (DRFN), with funding assistance from the BC Agroforestry Industry Development Initiative, is heading a partnership to demonstrate the feasibility of alley cropping poplar and aspen (*Populus* spp.) varieties with native grass species. The development of these systems will not only benefit the DRFN, but will also provide a means for alternative crop and economic opportunities for agricultural producers throughout the Peace region. The DRFN is leading implementation of the project and benefits from the talents and support of industry, academic and government organizations in the region. The other partners include the North Pine Farmer's Institute, BC Ministry of Agriculture and Lands, Canadian Forest Products Ltd., McGregor Model Forest Association, Northern Lights Community College, the University of Northern BC, Prairie Farm Rehabilitation Administration, Louisiana Pacific, Daishowa-Marubeni International (DMI), BC Grain Producers Association, the Oil and Gas Commission, and local oil and gas companies.

The DRFN is a member of Treaty 8, which was signed in 1899. Their community of approximately 220 members (half of which are on the reserve) is located 70 km north-east of Fort St. John, and is situated on over 2500 acres, surrounded by an area that is rich in natural resources. The DRFN has a strong vision, which includes preserving culture, traditional knowledge, stories and songs to pass along to future generations, to share with fellow first nations, and to use for educational purposes. This First Nation has had generations of prophets, dream keepers and song keepers; their vision, as shared with the people, has been the main motivation of the Doig River First Nation through out the years. Agroforestry is seen as a vehicle to help achieve their stated mission: *"To enhance the quality of the life of the members of Doig River First Nation, today and in the future through culture, education, social and economic development."*

Similar to other agricultural crops, hybrid poplar and hybrid aspen are typically grown from superior selections to provide better quality and higher yields over much shorter periods of time. Management regimes include site preparation and establishment of regularly spaced stems, weed control, fertilization and in some cases irrigation. It is projected that hybrid trees in the Peace (within an agroforestry setting) could be ready to harvest in 18 to 25 years with wood volumes in the range of 275 - 350 m³/ha. In comparison, 150 - 200 m³/ha is produced in native forests over a 70 to 80 year period. As a result, hybrid poplars and aspens have the potential to be an attractive crop for landowners as local forest industry development has created an increased demand for the wood in the production of oriented strand board (OSB). As well, these trees may have potential for oil and gas site reclamation activities.

The Peace River area is one of the primary regions in Canada for producing exceptional quality grass seeds. The Peace produces approximately 96% of BC's forage seed yield and together, the Alberta and BC Peace Country produces more, higher value grass seeds than all of the rest of Canada. Grasses are typically managed in pure stands using conventional farming practices. The main forage seeds produced are creeping red fescue (*Festuca rubra*), timothy (*Phleum pratense*), and clover (*Trifolium* spp.). However, the production of native plants for the reclamation and

restoration market has shown strong growth in recent years, with demand frequently outstripping supply. Production of native grass seed therefore has the potential to be an important economic diversification option for producers.

With these opportunities in mind, the specific goals of this project are to:

- 1) Create a demonstration site where current and potential practitioners can develop on-the-ground agroforestry information and expertise specific to the Peace Region; and,
- 2) To hold an agroforestry workshop which will bring together First Nations; agricultural producers; agricultural, forestry and oil and gas professionals; and, agencies from the region providing them with up-to-date information on crops, management and potential value-added products.

The demonstration will test the suitability and performance of several tree varieties together with varieties of native and traditional grasses in an alley cropping system as compared with pure stands of both trees and grasses. Eight varieties of hybrid poplar and aspen will be tested in the alley crop system. Possible poplar selections include Walker, WP-69, Northwest, Green Giant, and Hill. Two varieties of native grass seed and possibly shrub selections, including Saskatoon (*Amelanchier alnifolia*) and Dogwood (*Cornus stolonifera*) will be tested as the intercrop. Two alley widths will be tested with each of two varieties of native grass seed: 35 and 55 ft. Each tree belt located between the crop alleys will consist of 5 rows of trees spaced at 15 ft between rows and 10 feet between trees within a row. Each tree belt will incorporate four poplar/aspen selections. Each varietal block will be 5 trees wide x 15 trees long for a total of 75 trees.

Comparisons will be made of the annual yield of native grass varieties in the alley crop versus the conventional field crop system, as well as comparisons of tree growth, damage and survival in the agroforestry setting versus the plantation system. An economic assessment and comparison of the three systems will also be conducted.

A one-day workshop followed by a second day field tour will highlight alley cropping and other agroforestry opportunities for the Peace Region. The field tour will include a visit to a poplar-forage intercropping site near Manning Alberta, and the BC Grain Producer's variety trials near Fort St. John to look at crop options.

It is hoped that this project will demonstrate that Peace Country landowners have an alternative cropping opportunity through agroforestry that provides increased flexibility and improved economics, while benefiting the environment through the effects of the trees on soil, water and air quality and by providing long-term carbon sinks.

For more information on this project, please contact the project coordinator, Todd Bondaroff at Todd.Bondaroff@gov.bc.ca