



**STRATEGIC PLANNING MEETING
May 12-13, 2010**

On May 12 & 13th, 2010, the Poplar Council of Canada hosted a Strategic Planning Workshop at the Providence Renewal Centre in Edmonton, Alberta. The focus of the workshop was to develop a new set of strategic targets to help direct the activities of the Poplar Council over the next 3-5 years. In total, there were 25 attendees participating from across Canada and the United States, with Barb Thomas and John Doornbos as co-chairs, and with Alan Fischer facilitating.

In early 2010 the Board of Directors of the Poplar Council identified six key areas of interest to focus the groups' efforts around and included:

1. Bio-energy
2. Carbon credits
3. Genetics and breeding
4. Environmental services
5. Production & stand health risks
6. Communication/Education/
Membership

Six speakers gave brief introductions on each topic to provide attendees with an overview of the current status of the topic, followed by a short Q/A, and a brainstorming session.

Overall, it was an extraordinarily productive two days, and in the end a clear path of action was developed and projects/activities in the six issue areas were identified. Key outcomes from each topic area are as follows:

Bio-energy

- Advance research related to bio-energy
- Encourage policy for poplar/willow use for energy and fibre production

Carbon Credits

- Advocate and influence unified policy
- Improve Poplar Council of Canada member knowledge of carbon credits programs

INSIDE THIS ISSUE...

Strategic Planning Meeting... ..	1
Poplar Development.....	2
Willow Research Trials.....	4
CWFC Poplar & Willow Project.....	5
New 'genetics toolkit'	6
Links to other articles of interest.....	7
Save the Date.....	7

Genetics and Breeding

- Create an action plan for the development of a national genetics and breeding strategy
- Support certification paper position with IUFRO
- Produce letters of support for the stimulation of a Genetic Resource Assembly in Canada
- Bring forward recommendation to IUFRO for the inclusion of 1 or 2 additional species in a world-wide collection of poplars

Environmental Services

- Develop a white paper on environmental services provided by poplar and willow
- Address breeding and certification (eg: FSC) issues

Production and Stand Health Risks

- Encourage the re-initiation of insect/disease and stand health surveys

Communication/Education/ Membership

- Revive website
- Expand membership & enhance process
- Create a synergy with Réseau Ligniculture Quebec

The Poplar Council of Canada would like to thank all of the attendees for their insightful perspectives and participation in the Strategic Planning Workshop.



Poplar Development at AAFC

Bill Schroeder

AAFC-AESB Agroforestry Development
Centre, Indian Head, SK

The 2009 Poplar Council of Canada annual meeting included a field trip to the AAFC Agroforestry Development Centre at Indian Head, Saskatchewan. The tour focused on poplar and willow research at the Centre including breeding and conservation, nursery production, biomass research and a historical overview of poplar development at the Centre. The following summarizes the presentation provided on Centre poplar development.

Forest Nursery Station Established

In the absence of local nurseries, settlers often brought tree and shrub seedlings with them when they homesteaded in the prairies. These trees were important for farm shelter as well as a source of wood and fuel. Unfortunately, the species settlers were accustomed to were often not well adapted to rigorous prairie conditions. In 1901 an on-farm tree planting program headquartered at Indian Head, SK was started by the Forestry Branch of the Department of the Interior. This program was mandated to provide prairie farmers with hardy tree and shrub seedlings.

Poplar was a Preferred Species

Over 38 million poplar have been planted in prairie shelterbelts since 1909 and was one of the main species provided to planters until the 1930s. Poplar was of interest mainly for fast shelter, fuelwood and wood products. Russian poplar, a *P. laurifolia* x *P. nigra* hybrid (*P. x petrowskyana*) originating from eastern Europe, has been the dominant hybrid planted by prairie farmers with over 16 million Russian poplar planted between 1909-1960. The male clone of the Russian poplar widely distributed throughout the prairies has been recently given the name 'Indian Head'. Indian Head Russian poplar proved to be a hardy but disease susceptible species, hence in 1961 nursery production of

Indian Head Russian poplar was discontinued and replaced by clones Northwest, Walker and 38P38. In 1989, 38P38 was dropped and Assiniboine added. More recent AAFC releases include Manitou, Hill, CanAm, Katepwa, Hawktree and Okanese.

The Start of a Shelterbelt Breeding Program

In the 1940's a tree improvement program was initiated by then superintendent, John Walker and tree geneticist Bill Cram with caragana, spruce and poplar identified as a target species. In the early years the main activities of the poplar program were introduction and testing of hybrids and species from eastern Canada and United States and mass selection from open-pollinated seedlings in nursery fields. In 1944, John Walker selected the fast growing clone 44-52 from a 15-year-old open pollinated source population of plains cottonwood. In 1977, this selection was given the name 'Walker' poplar in recognition of its originator.

Breeding and Test Programs

A planned poplar breeding program was initiated in 1979 by long time technician Carl Lindquist. Controlled crosses included the clones Walker, *Serotina de selys, tristis, petrowskyana* and *deltoides*. In addition, mass selection of 150 clones of open-pollinated seedlings of Walker origin was completed in 1971. These populations were the origin of AAFC Shelterbelt Centre released shelterbelt clones including Assiniboine, Manitou, CanAm, Katepwa, Hawktree and Okanese. Over the past 60 years AAFC-AESB has developed and released 13 poplar clones (Table 1).

The AAFC Shelterbelt Centre now known as the Agroforestry Development Centre have established and maintained and collected data from 61 clone trials in the prairies. These trials include evaluation of 355 clones.

Table 1: Named poplar clones developed by AAFC at Indian Head SK.

Clone	Parentage	Originator
'Indian Head' Russian Poplar	<i>laurifolia</i> x <i>nigra</i>	?
Plains Cottonwood	<i>P. deltoides</i>	N. Ross
Saskatchewan	<i>P. deltoides</i> x <i>balsamifera</i>	J. Walker
Dunlop	<i>P. deltoides</i> x <i>petrowskyana</i>	R. Dunlop
Wheeler	<i>P. balsamifera</i> x <i>petrowskyana</i>	S. Wheeler
Walker (44-52)	<i>P. deltoides</i> x <i>petrowskyana</i>	J. Walker
Hill (44-55)	<i>P. deltoides</i> x <i>petrowskyana</i>	J. Walker
Assiniboine	<i>P. xWalker</i> x <i>deltoides</i>	B. Schroeder & C. Lindquist
Hawktree	<i>P. xWalker</i> x <i>deltoides</i>	G. Howe
Manitou	<i>P. xWalker</i> x <i>deltoides</i>	B. Schroeder & C. Lindquist
CanAm	<i>P. xWalker</i> x <i>deltoides</i>	B. Schroeder & D. Walker
Katepwa	<i>P. xWalker</i> x <i>deltoides</i>	B. Schroeder & D. Walker
Okanese	<i>P. xWalker</i> x <i>petrowskyana</i>	B. Schroeder & D. Walker

Current Poplar Breeding Program

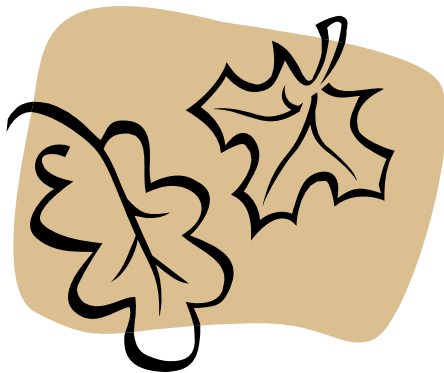
The short term goal of Centre poplar breeding program is development of F1 hybrids in support of ecological services. The long-term goal is to solidify the genetic resources in *P. deltoides* and *P. balsamifera* that would serve a recurrent breeding effort. The secondary long-term effort is to conduct exploratory evaluations of additional non-native species (e.g. *P. laurifolia*, *P. nigra*, *P. maximowiczii*, and *P. simonii*). The two traits of overriding importance are adaptability to cold and drought. Since 2001, 106 families and over 16,000 genotypes have been generated in the current breeding program.

To accomplish our goals we are establishing and maintaining a large genetic base of poplar species and clones. For example the pan Canadian AgCanBaP balsam collection includes 60 populations with over 900 genotypes. These gene banks are meant to store variability and consist of both standing trees and stool beds.

The Centre's mandate is to develop poplar varieties for ecological applications. However, genetic variation encompassed in populations is sufficiently broad that elite varieties are likely to be found in the same population for ecological and poplar farming applications. Close collaboration with industry (eg. ALPAC) is helping to facilitate development of a poplar gene pool of interest to poplar farming initiatives.

Clonal Mixes for Agroforestry Plantings

Beginning in 2008, farmers obtaining poplar trees through the AAFC Prairie Shelterbelt Program received a package of mixed poplar clones for agroforestry planting. The goal is to introduce diversity into poplar agroforestry plantings reducing the impact of many climate (drought and cold), disease and insect problems that would wipe out single clones. Clones used in the mix exhibit pest resistance, above average growth rate, cold hardiness, drought tolerance and compatibility with other clones in the mix. Composition of the clonal mix is dynamic and is adjusted with the development of new clones.



Poplar Council of Canada Field Tour at the University of Saskatchewan Willow Research Trials

Ken Van Rees

AFIF Chair in Agroforestry and Afforestation

As part of the Poplar Council Annual Meeting in Regina, SK a group of attendees travelled to Saskatoon on October 1st to visit the willow research trials of the Centre for Northern Agroforestry and Afforestation at the University of Saskatchewan. The research site consists of several trials the first being planted in 2006 with material obtained from Derek Sidders of the Canadian Wood Fibre Centre. Seven willow clones were planted in a three row arrangement per bed as well as three hybrid poplar clones. The site is a heavy clay (Vertisolic soil – meaning that the soil shrinks and swells depending on the amount of soil moisture) and with the wet day we carried a lot of mud on our boots as we walked around the plantations. Ryan Hangs (Ph.D. student in the Dept. of Soil Science) reported on his work with fertilization and irrigation of two of the willow clones in this trial and the increased growth observed with additions of water and nutrients. Another plantation was planted in 2007 using 30 willow clones obtained from Tim Volk at ESF-SUNY in New York. These clones were planted in two rows per bed and M.Sc. graduate students Christine Stadnyk and Sheala Konecsni talked to the group about their research projects. Christine talked about her work with willow roots using miniature cameras inserted into the ground to investigate willow fine root dynamics as well as excavating willow root systems to measure the amount of carbon belowground. Sheala discussed her project looking at first year fertilization of willow at time of planting as well as her growth chamber experiment using different fertilizers and rates including manure. Alain Ngantcha (an M.Sc. student in Plant Sciences) talked with the group about his project looking at DNA fingerprinting of the various willow clones to create a key to identify the various clones.

Joel Enns (Ph.D. in Soil Science) discussed his project on measuring greenhouse gases in the willow plantations. Despite the wet weather it was a great time of interaction between the students and the attendees from the conference.



Willow Research Trials - Saskatoon

Canadian Wood Fibre Centre Poplar and Willow Project

Richard Krygier

In 2008, Natural Resources Canada, Canadian Wood Fibre Centre (CWFC) began working on a project managed by the Poplar Council of Canada (PCC), funded by Alberta Innovates Bio-solutions, to develop and demonstrate new technologies, work with rural communities, and advance short rotation willow and poplar crop production technologies in Alberta. The CWFC is building on existing research in two distinct areas: 1) the development and demonstration of best practices for crop management, and 2) incorporating waste treatment into the crop production cycle.

The intent of the first component of the project is to develop and establish examples of best practices of plantation design (from site preparation and planting through harvesting), showcase clone and species suitability, evaluate growth and yield

potential, demonstrate the elements in the supply chain, and be a resource for practitioners, users, investors and promoters. Work is being done with afforestation- high-yield tree plantations of hybrid poplar and clonal aspen at densities of approximately 1,600 stems per hectare with 15-20 year rotations, and with concentrated biomass energy plantations- high density (approximately 15,000 stems per hectare) willow and poplar plantations managed for multiple rotations (5-7) with a 3-4 year harvest interval.

As part of this program, over 110 hectares of new plantations have been established. High yield afforestation trials were established at Peace River, with Daishowa-Marubeni International Ltd., at Athabasca with Alberta Pacific Forest Industries Inc. and with several private landowners. The centre piece of the project is the new 20 hectare site located on the University of Alberta (U of A) St. Albert research station. This site compliments an older installation located at the U of A Ellerslie research site- researching and demonstrating both crop management regimes. Additionally, over 70 hectares of older plantations established as far back as 2002 are being maintained and monitored to capitalize on the investment and on the knowledge associated with the time since establishment.

The intent of the second component is to integrate, investigate and demonstrate methods of application of treated municipal wastewater and municipal and industrial (pulpmill) biosolids to concentrated biomass energy plantations, determine the environmental and growth implications, assess the costs and economics of the various methods, and determine their effects on wood fibre attributes. The work is being conducted with industry and municipalities looking for innovative ways to address wastewater and biosolids treatment while minimizing their impacts on the environment, reducing treatment costs, and providing opportunities for economic development (bioenergy, bioproducts).

The project builds on an irrigated plantation established at Whitecourt, Alberta in 2006. This installation proved the pilot for the application of treated municipal wastewater to five willow and two poplar clones using subsurface drip irrigation. In the new project, six municipal governments are collaborating on the installation of four new surface and subsurface irrigation sites and two biosolids sites. Concentrated biomass energy plantations using willow have been established at Beaverlodge and Camrose County Alberta, with an additional site planned in Sturgeon County. A high yield afforestation site using hybrid poplar has been established in Grande Prairie County No. 1, in conjunction with Ainsworth Engineered Canada, Aquatera Utilities Inc. and Grande Prairie Regional College. Biosolids application sites have been established at Whitecourt, in conjunction with the Town and Millar Western Forest Products, and at Edmonton, in conjunction with the City. Numerous other academic, government and industry partners have joined the project, contributing funds and in-kind support. All the partners see an opportunity to integrate waste treatment, woody feedstock production and bioenergy production. Several collaborators are installing or investigating the potential of small scale heat and power systems.

Together, the work in the two components will provide the methodology and the knowledge required to develop and promote short rotation woody crops as a viable biomass feedstock for the new bio-economy in Alberta and Canada.



I like trees because they seem more resigned to the way they have to live than other things do.

- Willa Cather

A New ‘Genetics Toolkit’ Developed by the Alberta Forest Genetics Resources Council

Barb Thomas

The Alberta Forest Genetic Resources Council (AFGRC) applied for funding through the Open Funds Initiative of the Forest Resource Improvement Association of Alberta (FRIAA) to develop a genetics toolkit for forest practitioners. The seed money for the project was provided through a group of Alberta companies and agencies interested in communicating the details and benefits of genetics research and application in forestry.

The new web-based resource provides understandable and practical information to forest practitioners and managers interested in growing trees better able to meet future conditions and needs. The “Toolkit” icon on the home page of the AFGRC (www.abtreogene.com) takes visitors to four key areas: Diversity, Adaptation, Gain and Conservation.

Each of the main articles is accompanied by supporting policy and scientific documentation, as well as related information such as field sites and links of interest. Also included in the site are quick links to field tours, documents, a photo gallery and related organizations around the world.

A “stumped?” button allows visitors to send their tree improvement and forest genetics questions to an expert.

A secondary aim of the project was to provide educational tools for students and teachers of grades 1-12 where the curriculums focus on trees and the environment. The organization Inside Education conducted a survey with science teachers from across Alberta to help AFGRC identify ways to tailor learning resources to these age groups. The Poplar Council of Canada has played a role in managing the funds for the AFGRC communications initiative for the past six years.

**LINKS
To Other Articles of Interest**

Nine Challenges of Alternative Energy

[http://www.postcarbon.org/Reader/PCReader-Fridley-Alternatives.pdf/](http://www.postcarbon.org/Reader/PCReader-Fridley-Alternatives.pdf)

A New Greenhouse Gas Calculator

<https://www.agronomy.org/news-media/releases/2010/0809/395/>

Poplar Growth and Bacteria

<http://www.biofuelsdigest.com/bdigest/2010/05/14/brookhaven-team-identifies-mechanics-of-poplar-bacteria-interactions-that-increase-yields-by-40-percent/>



*Poplar Council Board of Directors
May 2010*

Front Row: Annie DesRochers,
Grant Harrison, Barb Thomas, Jim
Richardson, Jared LeBoldus

Back Row: Bill Schroeder, Pierre
Périnet, Ken Van Rees, John
Doornbos, Dan Carson, Cees van
Oosten

SAVE THE DATE:

**The Poplar Council of Canada,
IPC Environmental
Applications Working Group
and the
Poplar Council of the US**

**Annual General Meeting &
Field Tours**

**Edmonton, Alberta
September 18-24, 2011**