POPLAR AND WILLOW COUNCIL OF CANADA / CONSEIL CANADIEN DES PEUPLIERS ET DES SAULES





Poplars and willows for ecosystems







POPLAR AND WILLOW COUNCIL OF CANADA / CONSEIL CANADIEN DES PEUPLIERS ET DES SAULES

ANNUAL CONFERENCE / COLLOQUE ANNUEL

Amos, Québler 17-20 OF AUGUST

2025



Poplar and Willow Council of Canada Conseil canadien des peupliers et des saules



PROGRAM / PROGRAMME

17 August/août 2025

Opening and cocktail / Ouverture et cocktail

1:00 pm Registration / Inscriptions

1:30 pm / 3:30 pm Tour of the Amos municipal water well (Departure from Hôtel des Eskers) / Visite du puits municipal d'Amos (Départ Hôtel des Eskers)

6:00 pm Cocktail reception / Cocktail de bienvenue

18 August/août 2025

Conference / Conférence

8:30 am Registration / Inscriptions

9:00 am Openning remarks / Mot d'ouverture

9:20 am Flor Alvarez, Digitalization and AI in the poplar sector in Spain: from field data to innovation

10:10 am Break / Pause

10:40 am Benjamin Marquis, Framework for provenance selection of balsam poplar in Central Canada considering exposure to both late frosts and droughts

11:00 am Kryvda Nataliia, Maintenance of clonal diversity in quaking aspen (Populus tremuloides Michx.) through root grafting

11:20 am Geoffrey Zanin, Converting abandoned agricultural lands to hybrid poplar plantations: effects on soil organic carbon stocks

11:50 am Lunch / diner

1:00 pm Heidi Renninger, PoSIES : Populus in the Southeast for Integrated Ecosystem Services (Populus du Sud-Est pour les services écosystémiques intégrés)

1:50 pm Patrick Faubert, L'écologie industrielle en milieu boréal : synthèse de travaux et applications potentielles pour le peuplier et le saule

2:15 pm Mialintsoa Aroniaina Randriamananjara, How does understory vegetation diversity and composition differ between monocultures and mixed plantations of hybrid poplar and spruce?

2:35pm Olivier Lalonde, Treatment, Valorization and Volume Reduction of Mining Effluents Using Willow Filtering Plantations at the North American Lithium Complex

3:00 pm Networking, drinks and posters / Réseautage, cocktail et affiches

6:00 pm Poplar and Willow Council of Canada AGM meeting / Conseil Canadien des peupliers et des saules réunion de l'AGM

19 August/août 2025

Field trip / Visite terrain

8:00 am Field trip : poplar or willow plantations (Departure from Hôtel des Eskers) / **Visite** de plantations de peuplier ou de saule (Départ Hôtel des Eskers)

1:00 pm Lunch and degustation at 'Boréalait' and 'Ferme Chalpagas' presentation / Diner et dégustation chez "Boréalait" et présentation de la "Ferme Chalpagas"

4:30 pm Banquet and visit at 'Refuge Pageau' | Banquet et visite au "Refuge Pageau"

20 August/août 2025

Conference brunch / Brunch-conférence

8:30 am Inscriptions

9:00 am Eliane Grant, Restoring moose habitat in Waswanipi: Willow planting as a sustainable solution

09:50 am John Kort, Agroforestry projects in Canada's Agricultural Greenhouse Gas Program (AGGP).

10:10 am Break / Pause

10:40 am Mihorean Mckenzie, The emerging threat of Aspen Running Canker: News from the western boreal forest

11:30 am Krygier Richard, Tolerance of Hybrid Willow Clones to Aircraft De-icing Fluid







SUMMARY

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FIRST DAY OF THE CONFER		7-9	02		
	03	Sche Popla Hybri Boréa	D TRIP DAY dule ar plantations d willow plantatio alait and Ferme Ch	12 ns13 nalpagas14	
SECOND DAY OF THE			04		
	05		_ PRESENTATION	NS AND POSTERS 19-37	
FINANCIAL PARTNERS Presentation of the part		39	06		
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OPENING DAY

AUGUST 17, 2025

OPENING AND COCKTAIL

AUGUST 17, 2025

REGISTRATION / INSCRIPTIONS

Hôtel des Eskers, Amos

01:00 PM

TOUR OF THE AMOS MUNICIPAL WATER WELL / VISITE DU PUITS MUNICIPAL D'AMOS (DEPART 1 / DEPARTURE 1)

01:30 PM

TOUR OF THE AMOS MUNICIPAL WATER WELL / VISITE DU PUITS MUNICIPAL D'AMOS (DÉPART 2 / DEPARTURE 2)

03:30 PM

COCKTAIL RECEPTION / COCKTAIL DE BIENVENUE

Hôtel des Eskers, Amos

06:00 PM

La plus grande campagne de l'histoire de l'UQAT

16 projets majeurs sur les différents territoires d'ancrage dont la construction du pavillon de l'Institut de recherche en foresterie et l'Agrandissement des laboratoires de la Forêt d'enseignement et de recherche du lac Duparquet



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UQAT

FIRST DAY OF THE CONFERENCE

AUGUST 18, 2025/ HÔTEL DES ESKERS, AMOS

CONFERENCE DAY / JOURNÉE DE CONFÉRENCES (PART 1/3)

AUGUST 18, 2025/ HÔTEL DES ESKERS, AMOS

REGISTRATION / INSCRIPTIONS	8:30 AM
OPENING WORDS / MOTS D'OUVERTURE Annie DesRochers - Université du Québec en Abitibi-Témiscamingue	09:00 AM
KEYNOTE : DIGITALIZATION AND AI IN THE POPLAR SECTOR IN SPAIN: FROM FIELD DATA TO INNOVATION Flor Álvarez Taboada - Universidad de León	09:20 AM
BREAK / PAUSE	10:10 AM
FRAMEWORK FOR PROVENANCE SELECTION OF BALSAM POPLAR IN CENTRAL CANADA CONSIDERING EXPOSURE TO BOTH LATE FROSTS AND DROUGHTS	10:40 AM
Benjamin Marquis - Université Laval MAINTENANCE OF CLONAL DIVERSITY IN QUAKING ASPEN (POPULUS TREMULOIDES MICHX.) THROUGH ROOT GRAFTING Nataliia Kryvda - Université du Québec en Abitibi-Témiscamingue	11:00 AM
CONVERTING ABANDONED AGRICULTURAL LANDS TO HYBRID POPLAR PLANTATIONS: EFFECTS ON SOIL ORGANIC CARBON STOCKS Geoffrey Zanin - Université du Québec en Abitibi-Témiscamingue	11:20 AM
LUNCH TIME / REPAS	11:50 AM

CONFERENCE DAY / JOURNÉE DE CONFÉRENCES (PART 2/3)

AUGUST 18, 2025/ HÔTEL DES ESKERS, AMOS

<u>KEYNOTE</u>: POSIES: POPULUS IN THE SOUTHEAST FOR INTEGRATED ECOSYSTEM SERVICES (POPULUS DU SUD-EST POUR LES SERVICES ÉCOSYSTÉMIQUES INTÉGRÉS)

01:00 PM

Heidi Renninger - Mississippi State University

L'ÉCOLOGIE INDUSTRIELLE EN MILIEU BORÉAL : SYNTHÈSE DE TRAVAUX ET APPLICATIONS POTENTIELLES POUR LE PEUPLIER ET LE SAULE

01:50 PM

Patrick Faubert - Chaire en éco-conseil et Carbone boréal, Université du Québec à Chicoutimi

HOW DOES UNDERSTORY VEGETATION DIVERSITY AND COMPOSITION DIFFER BETWEEN MONOCULTURES AND MIXED PLANTATIONS OF HYBRID POPLAR AND SPRUCE?

02:15 PM

Randriamananjara Mialintsoa Aroniaina - Université du Québec en Abitibi-Témiscamingue

TREATMENT, VALORIZATION AND VOLUME REDUCTION OF MINING EFFLUENTS USING WILLOW FILTERING PLANTATIONS AT THE NORTH AMERICAN LITHIUM COMPLEX

02:35 PM

Olivier Lalonde - Ramo

CONFERENCE DAY / JOURNÉE DE CONFÉRENCES (PART 3/3)

AUGUST 18, 2025/ HÔTEL DES ESKERS, AMOS

NETWORKING, DRINKS AND POSTERS / RÉSEAUTAGE, COCKTAIL ET AFFICHES

03:00 PM

POPLAR AND WILLOW COUNCIL OF CANADA AGM MEETING / CONSEIL CANADIEN DES PEUPLIERS ET DES SAULES RÉUNION DE L'AGM

06:00 PM



FIELD TRIP DAY

AUGUST 19, 2025

FIELD TRIP-BANQUET

SCHEDULE

08:00 AM	Departure from Amos Hôtel des Eskers
01:00 PM	Lunch Boréalait, Saint-Félix-de-Dalquier Ferme Chalpagas presentation
04:00 PM	Return to Amos
04:30 PM	Banquet and visit Refuge Pageau



FIELD TRIP-POPLAR PLANTATIONS

AUGUST 19, 2025

Join us for a field visit to hybrid poplar plantations established on abandoned agricultural lands in Rivière-Héva, Amos and Saint-Domique-du-Rosaire in the Abitibi-Témiscamingue region of Quebec. These sites include both monoculture plantations of hybrid poplars and mixed plantations combining hybrid poplars with white spruce or Norway spruce.

During the visit, we will explore how these plantations influence understory plant diversity, observe the ecological dynamics of these reforested lands and have a look on the impact of different treatments on productivity of poplar clones. This excursion provides a unique opportunity to observe the state of these plantations 20 years after reforestation efforts began, offering insights into their ecological impact.

Walking shoes or hiking boots, appropriate clothing and mosquito repellent are recommended.



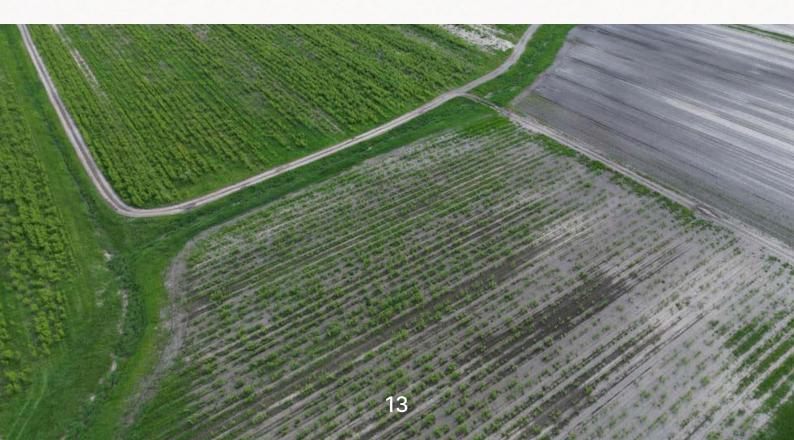
FIELD TRIP-HYBRID WILLOW PLANTATIONS

AUGUST 19, 2025

Join us for a field trip to hybrid willow plantations established on abandoned agricultural land in the Amos and La Corne areas of the Abitibi-Témiscamingue region of Quebec. These sites include both monoculture plantations on various types of soil (mineral or organic), either for biomass production or to accelerate the succession process of establishing a forest.

During the visit, we will explore the influence of soil, planting method, and topography on the growth performance of various willow genotypes. This excursion offers a unique opportunity to observe the condition of these plantations following their recent establishment (0-4 years).

It is recommended that you wear walking or hiking shoes, appropriate clothing, and insect repellent.



BORÉALAIT AND FERME CHALPAGAS

AUGUST 19, 2025 **01:00 PM**

Boréalait: Boréalait is a family-run dairy farm in Saint-Félix-de-Dalquier, Abitibi-Témiscamingue, producing and selling milk and cheese since 2019. More than a business, it is a heartfelt journey built on passion for animals and dairy production. Visitors can tour the farm, buy local products, and enjoy an authentic, homey experience. As a key player in the region's dairy industry, Boréalait stands out for its quality offerings and the warmth of the family behind it.

Ferme Chalpagas : Chalpagas Farm has been breeding alpacas since 2014 and welcomes visitors to discover these gentle animals, their care, and the unique qualities of their fiber. Enjoy a tour and browse handmade felt and knitted creations made from alpaca yarn.



BANQUET AND VISIT AT REFUGE PAGEAU

AUGUST 19, 2025 **04:30 PM**

The story of the Pageau family, a story that has spanned nearly 40 years and reflects their incredible relationship with animals, will be told on a woodland trail. The Refuge takes in orphaned, sick or injured wild animals to care for them and, where possible, release them back into the wild. You can admire moose, bears, wolves, white-tailed deer, raccoons, birds of prey and many other animals staying here on a short or long-term basis. At the end of the tour, in an immersive experience signed Moment Factory, visit the lair of the man who talked to the wolves and discover your role in maintaining the fragile balance between humans and nature.

We will have the chance to dine and dance on the outdoor terrace adjacent to the moose enclosure.





AUGUST 20, 2025/ HÔTEL DES ESKERS, AMOS



PRODUITS FORESTIERS

CONFERENCE BRUNCH PRESENTED BY ARBEC/ BRUNCH-CONFÉRENCE PRÉSENTÉ PAR ARBEC

AUGUST 20, 2025/ HÔTEL DES ESKERS, AMOS

REGISTRATION / INSCRIPTIONS	8:30 AM
KEYNOTE: RESTORING MOOSE HABITAT IN WASWANIPI: WILLOW PLANTING AS A SUSTAINABLE SOLUTION Eliane Grant - School of Indigenous Studies (UQAT)	09:00 AM
AGROFORESTRY PROJECTS IN CANADA'S AGRICULTURAL GREENHOUSE GAS PROGRAM (AGGP) John Kort - Poplar and Willow Council of Canada	09:50 AM
BREAK/ PAUSE	10:10 AM
KEYNOTE: THE EMERGING THREAT OF ASPEN RUNNING CANKER: NEWS FROM THE WESTERN BOREAL FOREST Mackenzie Mihorean - Wilfrid Laurier University	10:40 AM
TOLERANCE OF HYBRID WILLOW CLONES TO AIRCRAFT DE-ICING FLUID Richard Krygier - Natural Resources Canada- Canadian Forest Service	11:30 AM

ORAL PRESENTATIONS

ABSTRACTS

AUGUST 18, 2025 / HÔTEL DES ESKERS, AMOS



Flor Álvarez Taboada

(flor.alvarez@unileon.es)

Universidad de León

AUGUST 18 09:20 AM



KEYNOTE: Digitalization and AI in the poplar sector in Spain: from field data to innovation

This keynote will provide an integrated overview of the current state of poplar cultivation in Spain, highlighting key figures and structural aspects of the sector, while focusing on how digitalization and artificial intelligence are already transforming its practices.

The talk will showcase a range of innovative tools that are advancing digitalization in the poplar sector, including a free online platform for estimating standing timber volume and forecasting growth, laser scanning technologies for efficient poplar inventory and automated volume estimation in timber storage areas, the use of satellite imagery and eco-physiological sensors for early detection and monitoring of biotic damages and water stress, a free mobile app for reporting damage in plantations and accessing likely causes in real time, and the use of radar sensors with non-destructive testing techniques to assess wood quality.

The presentation will also touch on the practical benefits and current limitations of implementing these technologies in the field, and conclude with a forward-looking perspective on how digital tools and Al can support the poplar value chain in Spain.

Benjamin Marquis

(benjamin.marquis.1@ulaval.ca)

AUGUST 18 10:40 AM

Université Laval



Framework for provenance selection of balsam poplar in Central Canada considering exposure to both late frosts and droughts

In collaboration with Raju Soolanayakanahally (Agriculture and Agri-Food Canada)

Assisted gene flow is a promising approach for forest management under climate change, however, for successful provenance selection, we need to to determine their response to various extreme weather and integrate it into a framework that allows measuring overall vulnerability to climate change. We present a framework to assess the vulnerability of balsam poplar to both late frosts and growing-season droughts. Observations of bud break timing from 2008-2012 and 2016-2019 were collected from 40 balsam poplar provenances planted in a common garden established in 2007 in central Canada. We calibrated 18 bud phenology models and selected those with the highest predictive power to simulate future bud break timing under 12 climate models (CMIP6) for socioeconomic pathways (2.45 and 5.85). Late frost exposure was determined when air temperatures dropped below 0°C after bud break, while growing-season drought exposure was calculated by comparing the climate moisture index (CMI) between provenance origins and the common garden. These analyses were conducted for the past period to establish a historical exposure benchmark (low, intermediate, high). Future exposure to both risks were grouped according to these benchmark values, and vulnerability was assessed using a two-dimensional index based on the categorical scores for each environmental risk. We determined when provenances are expected to shift in vulnerability under climate change. Our results show that overall vulnerability increases for most provenances, as the increase in growing-season drought exposure outweighs the reduction in late frost exposure. We also observed significant variation in vulnerability across climate models, making the selection of optimal provenances challenging.

Nataliia Kryvda

(nataliia.kryvda@uqat.ca)

AUGUST 18 11:00 AM

Université du Québec en Abitibi-Témiscamingue (UQAT)



Maintenance of clonal diversity in quaking aspen (*Populus tremuloides* Michx.) through root grafting

In collaboration with Ilga Porth (Université Laval); Mebarek Lamara (UQAT) and Annie DesRochers (UQAT)

Quaking aspen (Populus tremuloides Michx.) is known for its ability to reproduce primarily through vegetative root suckering from parental roots. This mode of reproduction creates a vast and interconnected root network among trees. Since suckers (new shoots) do not become fully independent from parent roots, these roots remains crucial for maintaining connections between individuals, thereby facilitating resource exchange. These connections are further strengthened over time through the formation of natural root grafts (anastomoses) between trees of the same or different genotypes. It has also been observed that the roots of dead aspen stumps can remain alive for extended periods, supported by neighboring living trees. This confirms the functionality of root connections, allowing the transport of water, nutrients, and sugars produced by the leaves of adjacent living trees. This study aims to analyze the role of root grafts in maintaining the genetic diversity of aspen, particularly following disturbances. The central hypothesis is that the quaking aspen root system acts as a "genotype bank," enabling the regeneration of lost genotypes after disturbance through root connections between different genotypes and the long-term survival of roots from dead trees. Tissue samples (young branches and bark) were collected for genetic analysis using high-throughput sequencing. The trees were then felled to stimulate suckering. The following year, the root systems were excavated using high-pressure water jets, and emerging suckers were genotyped to verify the genetic profiles of connected roots and the emergence of new genotypes. This approach provides insight into how root networks support regeneration and maintain genetic diversity in aspen forests following both natural and anthropogenic disturbances.

Geoffrey Zanin

(geoffrey.zanin@uqat.ca)

AUGUST 18 11:20 AM

Université du Québec en Abitibi-Témiscamingue (UQAT)

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Converting abandoned agricultural lands to hybrid poplar plantations: effects on soil organic carbon stocks

In collaboration with Nicole Fenton (UQAT); Vincent Poirier (UQAT) and Annie DesRochers (UQAT)

Intensively managed fast growing plantations can provide a significant portion of the world's wood biomass and preserve natural or lightly managed forest ecosystems by limiting harvesting pressure and associated disturbance. However, the establishment of such plantations should not be at the expense of soil organic carbon stocks, and their potential as a carbon source or sink may depend on the initial stocks present on site prior to planting. The choice of the site is therefore crucial in minimising or even allowing the accumulation of carbon within a hybrid poplar plantation. The aim of our study was to determine the impact on soil carbon stocks of afforestation with hybrid poplars of sites of different origin: abandoned agricultural lands (AAL) with a herbaceous vegetation cover; shrubby AALs and former logged site. Our results show that forest sites afforested with hybrid poplars had lower carbon stocks than their non-afforested equivalents and than other plantations established on AALs, 15 years post-afforestation, while plantations on AALs had similar carbon stocks to their non-afforested counterparts. AALs would therefore appear to be the preferred establishment site for taking advantage of the high yield of hybrid poplars while preserving carbon stocks.

Heidi Renninger

(heidi.renninger@msstate.edu)

AUGUST 18 01:00 PM

Mississippi State University



<u>KEYNOTE</u>: PoSIES: Populus in the Southeast for integrated ecosystem services

The southeastern United States has great production potential and low costs for growing hybrid poplar and eastern cottonwood (*P. deltoides*) for biomass energy and bioproducts. However, production costs of Populus spp. grown on two-to-three-year coppice rotations for biomass feedstock are still prohibitively high for wide-spread adoption, although calculations have often ignored co-produced ecosystem services relative to alternative land uses. Ecosystem services of Populus on short rotations have the potential to diversify income streams for landowners and producers and reduce impacts of market volatility risks while providing additional benefits to society. However, for these markets to be available to landowners, quantification of these ecosystem services is neccessary. Therefore, we have been leveraging existing field trials as well as planting new ones to quantify ecosystem services including nitrogen and phosphorus mitigation in riparian areas, belowground carbon sequestration and storage in sites not directly connected to waterways, wildlife biodiversity, and greenhouse gas emissions particularly of trace gases including methane and nitrous oxide. (PART 1/2)

Heidi Renninger

(heidi.renninger@msstate.edu)

AUGUST 18 01:00 PM

Mississippi State University



<u>KEYNOTE</u>: PoSIES: Populus in the Southeast for integrated ecosystem services

We are also testing if ecosystem services and productivity can be improved by increasing poplar plantation functional diversity and inoculating plantations with symbiotic (endophyte) bacteria. Initial results show significant mitigation of nitrate by Populus plantations from nearby agriculture as well as carbon sequestration particularly in coarse woody roots compared with adjacent agricultural fields. We also found that functional diversity of Populus plots increased aboveground productivity of dry biomass and inoculation with endophytes significantly increased soil carbon compared with non-endophyte inoculated Populus plots. These benefits have the potential to bring additional revenue to landowners to offset the costs of production and achieve more cost-competitive bioenergy and bioproducts for the public. (PART 2/2)

Patrick Faubert

(pfaubert@uqac.ca)

AUGUST 18 01:50 PM

Chaire en éco-conseil et Carbone boréal Université du Québec à Chicoutimi



L'écologie industrielle en milieu boréal : synthèse de travaux et applications potentielles pour le peuplier et le saule

L'écologie industrielle, intégrée à l'économie circulaire, est un ensemble de pratiques et de moyens par lesquels des résidus et sous-produits d'une industrie deviennent des matières premières pour une autre. L'écologie industrielle vise aussi la lutte aux changements climatiques par une réduction des émissions de gaz à effet de serre (GES) dans les pratiques et procédés. Cette présentation montrera une synthèse de travaux réalisés depuis 2012 par la Chaire en éco-conseil et Carbone boréal (Université du Québec à Chicoutimi) sur l'utilisation de sous-produits industriels fertilisants et de matières résiduelles fertilisantes en milieu boréal. Un survol de résultats d'expériences sur des plantations forestières et des cultures agricoles y seront présentés. Ce survol fera finalement le lien avec des pratiques d'écologie industrielle potentiellement applicables pour des plantations et peuplements de peupliers et de saules.

Randriamananjara Mialintsoa Aroniaina

AUGUST 18 02:15 PM

(mialintsoaaroniaina.randriamananjara@uqat.ca)

Université du Québec en Abitibi-Témiscamingue (UQAT)

How does understory vegetation diversity and composition differ between monocultures and mixed plantations of hybrid poplar and spruce?

In collaboration with Nicole Fenton (UQAT) and Annie DesRochers (UQAT)

Although monocultures are important for timber production, they are often associated with lower biological diversity than mixtures. Thus, mixed plantations have been suggested as a way to enhance biodiversity because of their inherent compositional diversity. However, the effects of monocultures versus mixtures on understory diversity and composition can vary in different ecosystems. The objective of this study was to assess how monocultures and mixed plantations influence understory vegetation diversity and composition in the boreal forest region of southern Quebec. We sampled plantations established with deciduous Populus trichocarpa Torrey & A. Gray × balsamifera L. and P. maximowiczii Henry × balsamifera L. and coniferous Picea abies (L.) Karst. and Picea glauca (Moench) species planted in monocultures and in mixed plantations on abandoned farmlands and a forest site. We assessed understory vegetation diversity and composition in each canopy type (coniferous, deciduous, mixed) and in each plantation type. We evaluated bryophyte and lichen diversity and composition specifically in tree microhabitats: soil, tree bases, and tree trunks. We found that vascular plant and lichen species richness was similar in all plantation types, while bryophyte species richness was higher in spruce monocultures and in mixed plantations compared to poplar monocultures. Our results also highlight how land-use history influenced vascular plant composition as abandoned farmland sites were composed of more ruderal vascular plants, while the previously forested site was composed of species found in natural forests. In the context of reforestation and plantations, our study suggests mixing spruce with poplars to maximize understory vegetation diversity as the addition of spruce in mixed plantations promoted the establishment of terrestrial bryophytes, while poplars favored the establishment of epiphytic lichens.

Olivier Lalonde

(olalonde@ramo.eco)

AUGUST 18 02:35 PM

Ramo



Treatment, valorization and volume reduction of mining effluents using willow filtering plantations at the North American lithium complex In collaboration with Louis-Clément Barbeau (Ramo) and Eugénie Lemieux (Ramo)

Mining sites in Quebec face major environmental challenges related to the management of contaminated water, especially effluents rich in nitrates from blasting operations, as well as a scarcity of organic matter needed for ecological restoration of disturbed areas. Vegetated treatment systems based on agroforestry, such as willow filtering plantations, offer an innovative and sustainable solution to these issues. The Evaplant technology is based on the controlled irrigation of fast-growing willows with mining effluents, enabling volume reduction through evapotranspiration, nitrogen recovery, and the production of woody biomass for soil restoration. A demonstration project was implemented at the North American Lithium Complex, located in La Corne, Abitibi-Témiscamingue. The technical objective is to demonstrate the system's ability to treat between 2,100 and 3,100 m³ of effluent annually, to produce 7 to 10 tonnes of dry woody biomass per hectare, and to support the phytoextraction of key contaminants such as lithium and nitrates. The plantation covers 1.2 ha, with 0.73 ha actively irrigated. Three willow cultivars (S. 'Sx61', S. 'Discolor', S. 'Tully Champion') are tested on a total of 19,200 plants. Experimental monitoring includes sampling campaigns of effluents, soil pore water, biomass, and soils, along with continuous tracking of hydrological and system performance parameters. Anticipated results include net evapotranspiration between 2,900 and 4,300 m³/ha/year, annual production of 54 to 76 m³ of ramial chipped wood (RCW), and net carbon sequestration ranging from 11 to 16 t CO₂eq./year. This project aims to validate the potential of filtering plantations as a tool for mine site restoration and integrated water management, within a circular economy framework and a sustainable mining development approach.

ORAL PRESENTATIONS

ABSTRACTS

AUGUST 20, 2025 / HÔTEL DES ESKERS, AMOS

Eliane Grant

(eliane.grant2@uqat.ca)

AUGUST 20 09:00 AM

School of Indigenous Studies - UQAT



KEYNOTE: Restoring moose habitat in Waswanipi: Willow planting as a sustainable solution

Faced with a worrying decline in the moose population in Quebec, exacerbated by the forest fires of 2023 that ravaged essential habitats near the community of Waswanipi, an innovative project is taking shape. This conference explores the willow planting initiative in the affected areas, aimed at providing an essential food source for moose, an emblematic species of Cree culture, while creating natural barriers against future fires. Discover how this approach combines traditional knowledge, wildlife conservation and environmental disaster prevention.

John Kort

(pwccpoplar@gmail.com)

AUGUST 20 09:50 AM

Poplar and Willow Council of Canada



Agroforestry projects in Canada's Agricultural Greenhouse Gas Program (AGGP).

In collaboration with Raju Soolanayakanahally (Agriculture and Agri-Food Canada)

Agroforestry projects in Canada's Agricultural Greenhouse Gas Program (AGGP). John Kort and Raju Y. Soolanayakanahally Abstract Ten agroforestry projects were conducted across Canada from 2011 to 2021, funded by the Government of Canada, as a member of the Global Research Alliance on Agricultural Greenhouse Gases. The projects, conducted by universities or other institutions, were in two cycles (2011-2016; 2016-2021). They occurred in six provinces and dealt with silvopasture, shelterbelts, alley-cropping, riparian buffers and bioenergy plantations. The projects studied aboveground and belowground carbon sequestration and net emissions of other greenhouse gases. Many projects included natural or planted willows (for example, in riparian buffers) or poplars (especially as fast-growing carbon sinks or sources of biomass). The projects made recommendations for the use of trees on agricultural land as Beneficial Management Practices (BMPs) to reduce greenhouse gases.

Mackenzie Mihorean

(miho0900@mylaurier.ca)

AUGUST 20 10:40 AM

Wilfrid Laurier University



<u>KEYNOTE</u>: The emerging threat of Aspen Running Canker: News from the western boreal forest

In collaboration with Greg Thorn (University of Western Ontario), Colin Bonner (Wilfrid Laurier University), Steven G. Cumming (Laval University), Jill Johnstone (Yukon University and University of Alaska Fairbanks and Jennifer Baltzer (Wilfrid Laurier University)

Across the boreal biome, temperatures are increasing 3-4 times faster than the global average leading to an increase in wildfire activity. Frequent and high severity wildfire hinders spruce self-replacement making stand conversions to trembling aspen common, creating the expectation that broadleaf deciduous tree species in the boreal will increase in importance. However, aspen in central Yukon is now facing multiple threats including drought, insect outbreaks, and a novel pathogen, Aspen Running Canker (ARC, Neodothiora populina). ARC was detected in 2015 in Interior Boreal Alaska. It can kill aspen trees in 1-2 years. We have since found instances of ARC infection in Yukon (2023), and in Northwest Territories (2024). ARC could ultimately prove as destructive as historical pathogens like Dutch Elm Disease, Chestnut Blight, and White Pine Blister Rust. A pathogen-induced decline in aspen could shift the boreal forest back towards spruce dominance or could result in forest loss. Despite the widespread occurrence of ARC in western North America, its novelty means that there are many unknowns concerning the factors that facilitate or possibly limit its spread. (PART 1/2)

Mackenzie Mihorean

(miho0900@mylaurier.ca)

AUGUST 20 10:40 AM

Wilfrid Laurier University



<u>KEYNOTE</u>: The emerging threat of Aspen Running Canker: News from the western boreal forest

In collaboration with Greg Thorn (University of Western Ontario), Colin Bonner (Wilfrid Laurier University), Steven G. Cumming (Laval University), Jill Johnstone (Yukon University and University of Alaska Fairbanks and Jennifer Baltzer (Wilfrid Laurier University)

This talk will provide: (1) a background on the initial findings of ARC from Alaska; (2) an overview of where ARC has currently been identified in Northwestern North America; and (3) new insights into ARC epidemiology.

Findings come from extensive sampling conducted across multiple stand ages and forest types in central Yukon. Bark samples have been collected and analyzed to identify ARC infection and soon the presence of potentially related fungi. These data will help us evaluate which forests are most at risk of aspen decline through ARC infection. Uncovering the dynamics of this pathogen is crucial to anticipating future changes in the boreal forest as the disease spreads. (PART 2/2)

Richard Krygier

(richard.krygier@nrcan-rncan.gc.ca)

AUGUST 20 11:30 AM

Natural Resources Canada- Canadian Forest Service

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Water Control of the	

Tolerance of hybrid willow clones to aircraft de-icing fluid
In collaboration with Martin Blank (Natural Resources Canada- Canadian Forest Service)

Around the world, glycol-based aircraft de-icing and anti-icing fluid (ADAF) is applied to remove snow and ice, and prevent ice from reforming. Some of the fluid is collected and recycled but a significant amount is collected in runoff and stored in ponds for treatment. Extensive research has been conducted on the effective degradation of ADAF in water and soil by micro-organisms under both aerobic and anaerobic conditions. Given how willows have been proven to effectively treat nutrients and other contaminants in wastewater, land application of ADAF containing water to willow plantations could be a good low-cost alternative treatment method for many airports, provided the willows are tolerant to ADAF. The tolerance to ADAF of seven hybrid willow clones commonly used for biomass production in Western Canada (India, Tully, Tora, Bjorn, Owasco, Olof and Preble) was tested in a randomized complete block design (n=6) greenhouse trial. One rooted cutting of each clone was transplanted into a 7-litre pot containing orthic black chernozem topsoil. Starting 26 days after transplanting, the pots were irrigated approximately every three days with RO water containing either 0 (control), 200, 400 or 800 ppm of UCAR™ Deicing ADF Concentrate (92% ethylene glycol). Thirty days after irrigation began, the length and diameter of the tallest shoot on each cutting for all blocks was measured from where the shoot emerged from the cutting to the base of the growing tip (n=168). For half the blocks, the total shoot dry weight of each cutting was determined (n=84). Fortytwo days later, for the remaining three blocks, the height, diameter, and total dry weight were measured as above (n=84). (PART 1/2)

Richard Krygier

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AUGUST 20 11:30 AM

Natural Resources Canada- Canadian Forest Service

\$ \$

Tolerance of hybrid willow clones to aircraft de-icing fluid
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Plant Products™ 20-8-20 Starter Fertilizer was applied 25, 35 and 45 days after transplanting. No mortality, little damage (leaf edge necrosis) or signs of plant stress was observed after 75 days of irrigation with ADAF affected water. For all except India, Tora and Tully, there was no significant difference for the response variables between the control and the 200 and 400 ppm ADAF treatments. Except for Prebble and Tully, there was a significant negative effect of the 800-ppm treatment for some of the response variables and clones. The study shows that young willow plants are tolerant to ADAF impacted water in a greenhouse setting, the tolerance is clone dependent, and that irrigation of ADAF impacted water on willows could an alternative treatment method. Longer term and field trials need to be conducted. (PART 2/2)

POSTERS

ABSTRACTS

AUGUST 18, 2025 / HÔTEL DES ESKERS, AMOS

Bilel Bouaziz

(bilel.bouaziz@uqat.ca)

AUGUST 18 03:00 PM

Université du Québec en Abitibi-Témiscamingue (UQAT)

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Utilisation de la spectroscopie PIR et de la régression des moindres carrés partiels pour la prédiction des propriétés chimiques de clones de Saule

In collaboration with Ahmed Koubaa (UQAT), Cyriac Mvolo (Natural Resources Canada) and Sana Koubaa (Ecole Nationale d'ingénieurs de Sfax)

La caractérisation des propriétés chimiques du bois issu de la biomasse est importante, car elle détermine son potentiel pour diverses applications chimiques et énergétiques. Le saule (Salix sp.), une espèce feuillue à courte rotation, constitue une ressource intéressante pour de telles applications. Il peut représenter une alternative aux matières premières non durables, aux arbres à longue rotation et aux matériaux biologiques agricoles. Cette étude avait pour objectif de caractériser les propriétés chimiques de différents tissus du bois de saule et de développer une méthode non destructive permettant de les prédire. Des échantillons de bois, d'écorce et de rameaux ont été prélevés sur six clones de saule (Alberta, Canada). Les teneurs en extraits, cellulose, hémicellulose et lignine ont été mesurées dans les tissus échantillonnés à l'aide de tests d'analyse chimique destructifs, selon les méthodes d'essai normalisées TAPPI. La chimie de surface des échantillons a été analysée par spectroscopie dans le proche infrarouge (NIR). Des modèles de régression par moindres carrés partiels (PLS) ont été développés pour prédire quantitativement les composants chimiques du bois. Les coefficients de détermination (R² en calibration, en validation croisée et en prédiction) variaient de 0,66 à 0,99 pour les extraits, la lignine, la cellulose et les hémicelluloses. Les glucides (glucose, xylose, arabinose et mannose) présentaient des R² entre 0,98 et 0,99, démontrant une excellente capacité de prédiction pour ces composants. Ces résultats confirment l'applicabilité des modèles développés pour prédire les propriétés chimiques de la biomasse de saule. De plus, les modèles de prédiction sont applicables à tous les tissus étudiés, soulignant leur cohérence. Ces résultats offrent la possibilité de caractériser les propriétés chimiques de la biomasse de saule à l'aide d'un équipement NIR simple à mettre en œuvre, peu coûteux, non destructif et rapide.

Randriamananjara Mialintsoa Aroniaina

AUGUST 18 03:00 PM

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Effects of tree spacing and site conditions on growth and biomass of hybrid poplar clones in short-rotation plantations in northwestern

Quebec

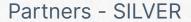
In collaboration with Abhishek Tripathi and Annie DesRochers (UQAT)

Fast-growing trees such as hybrid poplar (Populus spp.) are characterized by rapid growth and high biomass production over short rotations. However, their productivity can vary depending on management practices such as spacing between trees, site conditions and genotype selection. In this study, we evaluated the impact of site x spacing x clone interaction on tree productivity. We selected plantations of four hybrid poplar clones (747215; Populus trichocarpa Torrey & A. Gray x P. balsamifera L., 915004, 915005; P. balsamifera × P. maximowiczii Henry and 915319; P. maximowiczii × P. balsamifera) established at three spacings (1 × 4 m, 2 × 4 m and 3 × 4 m) across three sites of contrasting productivity in northwestern Quebec, Canada. Thirteen years after planting, clone 915319 was the most productive, clones 915004 and 915005 intermediate, and clone 747215 the least productive. Increasing spacing from 1 × 4 m to 3 × 4 m led to larger stem and higher growth rates and above-ground biomass (AGB) on a per tree basis at the most productive site only. In contrast, tree size remained unchanged across spacings and smaller at the least productive site, and especially for the least productive clone. The proportion of biomass allocated to the stem decreased when spacing increased from 1 x 4 m to 3 x 4 m to the benefit of branches. Hybrid poplar plantations performed promisingly, as growth rates per hectare reached 20.10 m³ ha⁻¹ year⁻¹at closer spacing (1 × 4 m) at the most productive site for the most productive clone (915319). These findings highlight that site conditions modulate spacing effects and that high-yielding clones with optimal densities can maximize hybrid poplar productivity.

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