

Innovation Place Newsletter
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SRC examines impact of climate change upon province's forests

The biggest threat to Saskatchewan forests is not logging, forest fires or urban development. It's climate change, says Dr. Mark Johnston, a senior scientist with the Environment Branch of the Saskatchewan Research Council.

Johnston heads the SRC's Forest Ecology program. He brings to the position an extensive background in forestry and forest ecology. Johnston has advanced degrees from universities in Canada and the United States, and has worked in Australia, Britain, the United States and three Canadian provinces.

Preparing our forests for climate change

The primary focus of Johnston's research is the impact of climate change upon the boreal forest.

"We've identified three major areas of impact. The most obvious one is that it's likely to get warmer and drier, so the southern boundary of Saskatchewan's forest will probably be subject to increasing moisture stress," says Johnston.

"Moisture stress isn't only an impact by itself, but is also interrelated to other things, such as increased susceptibility to insect epidemics. So the second area of impact will be insect infestation."

Johnston says that the boreal forest is particularly susceptible to two types of insect pests: spruce budworm and forest tent caterpillars. Species most at risk to these pests are spruce and aspen.

"Spruce and aspen are two of the three most commercially important tree species in Saskatchewan's boreal forest. This will have immediate impacts for the forest industry." While these two insect species aren't new to the boreal forest, moisture loss from climate change could intensify their populations and the severity of their infestation.

The third area of impact involves forest fires. "Research conducted by the Canadian Forest Service Research Lab in Edmonton indicates that climate change will result in longer fire seasons. Fires are likely to be more severe, because conditions will be warmer and drier. It's also speculated that there will be more events to cause fires, such as lightning, because the atmosphere will be warmer and more energetic," says Johnston.

"What we're telling forestry companies is, rather than prepare for a specific impact on a particular land base, what they need to do is build systems that are flexible, that can accommodate these changes at a general level. Companies should be preparing to make their operations more flexible, or to change the products they produce, or change the species that they make use of."

One option that forest companies could consider is growing different tree species, he says. "For example, if they're growing white spruce now – a species which likes moderate, fairly moist conditions – then jack pine – a species that tolerates drier conditions – may be more appropriate on some sites. We're just starting those types of conversations."

This type of dialogue will also have to focus on government policy and regulations. "We need forest regulations and policies that are flexible enough to accommodate changes that are required in order to adapt to climate change."

How far ahead into the future is the SRC research team peering? Johnston says that the climate change models produced for the Canadian government at the University of Victoria have a time horizon of 100 years. "For the interior of North America, we're expecting warmer drier conditions during the summer, as well as warmer, wetter winters. Temperatures will definitely increase, especially during the winter. Precipitation may stay roughly the way it is in the summer, but if the temperatures go up, then evaporation will be greater. The end result are declines in soil moisture," says Johnston.

Why is it important for the forestry industry to look so far ahead into the future? "The decisions these companies make today, they have to live with for the next 50 to 75 years, because that's how long it takes to grow a tree," says Johnston. "The decisions they make today are essentially locked in for the life of the tree."

Climate change is inevitable, says Johnston. "Anybody who studies climate change will tell you that agreements like the Kyoto Protocol are just a spit in the ocean. It will only delay the increase in carbon dioxide in the atmosphere by about five years. It's extremely important to keep in mind that climate change is inevitable.

"But if we start taking actions now, it will be less expensive to make smaller changes now than major changes later on.

Is Saskatchewan particularly vulnerable to climate change? "The answer to that isn't yes, it's 'hell, yes!' And that comes from several different sources," says Johnston.

Saskatchewan's location in the continental interior means that we naturally experience climatic extremes, because we lack the moderating influence of the oceans.

"Climate change will be felt to the greatest extent in the northern latitude. We're just on the southern edge of what they mean by the northern latitude – 50 degrees and north from there."

A third multiplying factor is Saskatchewan's location to the east of the Rocky Mountains. "We naturally experience a 'rain shadow' effect. The Rockies intercept rainfall that's coming from the Pacific Ocean," says Johnston. All of these factors combine to make Saskatchewan 'ground zero' for climate change, says Johnston. "We have particular reason to be concerned here."

Saskatchewan's forest fringe area, the boundary between the grassland and the forest, is at greatest threat. "It's already a boundary controlled by moisture availability. There has been

some speculation that the forest boundary in Saskatchewan will move north to around La Ronge. That's just one possibility, but it's one we need to be concerned about."

Diversification through agro-forestry

Another research program being conducted by the SRC's Forest Ecology team focuses on Agro-Forestry.

"What we're interested in are ways to diversify the farm economy through the production of trees as a commodity crop," says Johnston.

The SRC is examining agro-forestry practices in other parts of the world to see if they have relevance for Saskatchewan. "We see options for mixing cattle and trees together in a pasture operation. It may be feasible for a farmer to do plantings of high value trees on pasture land, to be harvested in 25 to 50 years. Hybrid poplar is the big one that everyone's interested in here."

'Alley cropping' is another option being explored by the SRC. "Alley cropping involves planting two or three rows of trees, followed by 15 or 20 meters of a crop like barley. The pattern is then repeated," says Johnston. Leaves fall off the trees in autumn, decompose in the soil, and provide free fertilizer for the crops. Farmers are thus able to reduce the amount of nitrogen they add to the soil and reduce the impact of fertilizer on water quality.

Saskatchewan farmers may also see future opportunities in growing trees to supply Saskatchewan lumber mills with timber. "There's some talk that this will become a mandatory requirement for new mill development; that the proponents will be required to get a certain proportion of their wood supply from private land. They do that in Alberta right now," says Johnston.

Other aspects to consider are the environmental benefits of establishing trees, particularly on marginal soil conditions. "We see a big environmental benefit to establishing trees in areas where the soil has been beat up by intensive cattle grazing. It's unbelievable how planting a few trees can alter the microclimate."

Federal government programs like the National Afforestation Initiative could provide the impetus farmers need to start planting trees across the prairies.

The National Afforestation Initiative is an effort to create a 'carbon sink' in Canada through tree planting. The rapidly-growing young trees will help to absorb harmful carbon dioxide in the atmosphere.

Johnston expects that several pilot scale plantations will be established across the prairies over the next few years.

"The ultimate goal is to plant trees on some 650,000 to 675,000 hectares of land across the country in the next 15 to 20 years," says Johnston.

Innovations in human relations:

In conversation with Kinzel Cadrin & Associates

Kinzel Cadrin & Associates is a professional consulting firm that specializes in assisting organizations, groups and individuals navigate the many challenges of contemporary workplaces.

Ruth Kinzel and Pierre Cadrin bring extensive education and professional experiences to the firm.

Kinzel , who holds an M.A. and Ph.D. in Applied Social Psychology, a Professional Development Certificate from the NTL Institute for Applied Behavioural Science in Maine and is a Certified Human Resource Professional, has built a professional practice in Organization Development since 1986.

Cadrin spent ten years in accounting and administration prior to starting his Organization Development practice in 1986. He holds Bachelor degrees in Commerce and Psychology, and an M.A. in Applied Social Psychology. Cadrin also has a Professional Development Certificate from the NTL Institute of Applied Behavioural Science in Maine and is a Certified Human Resource Professional.

A recent conversation with the Innovation Place Newsletter staff provided insight into the approach Kinzel Cadrin & Associates takes in assisting their clients to implement change, improve effectiveness and build cultures that integrate individual and organizational needs.

Q.: What services does Kinzel Cadrin provide its clientele?

Pierre: We provide a range of consultation, facilitation, training, coaching and applied research services, working with all sizes and types of corporations, including NGOs, private sector, public sector or co-ops.

Ruth: We support the human side, or what's referred to as the organization side, of the business. Typically, when it comes to meeting their business goals, companies tend to be very pro-active. On the organizational side, companies tend to deal with the 'human' issues much more reactively. They tend to ignore inward issues – such as quality of worklife – until they jump up and bite them. What we try to do is help corporations shift to a more pro-active focus on the organization side, but in support of their business.

Q.: What benefits does a corporation realize through this approach?

Ruth: Research indicates that employers realize very clear increases in productivity, market share and profitability. Employees experience greater satisfaction and improved quality of work life. It tends to be the organizational issues that keep leaders awake at night, not so much the business issues. It's typically the organizational issues that they're the least equipped to deal with. Our goal is to help them get better equipped and feel able and motivated to act.

Q.: How would Kinzel Cadrin facilitate organizational improvements?

Ruth: First, we establish some real clarity about what their needs are. This is done in partnership and consultation with the client, through dialogue, through building relationships and working to understand the context of the workplace and what outcomes they're after.

Pierre: Rather than solving our clients' problems, we help them learn how to solve their problems themselves.

Ruth: We think of it as 'capacity building.' They need to be better equipped by the time we leave or we haven't succeeded.

Pierre: Our projects range from four to 12 months on average and some clients use us periodically for many years.

Ruth: One research project we worked on was done through Lucent Technologies for Avaya Communications in the U.S. They contracted with us to lead a coaching research project, to generate employee profiles. We created the survey instrument based on their model of coaching effectiveness, collected self-assessments of these coaches, the coaches' bosses assessments, plus all of their direct reports and customer feedback, and then compiled profiles on each coach. We were able to make concrete recommendations to increase effectiveness and prevent certain sorts of problems.

Pierre: We look at our clients' operations from an organizational perspective, from the macro level to the micro level, assessing what's going on for individuals within particular relationships, among sub-groups, within and between departments. We also pay close attention to their interface with key stakeholders, including clients, suppliers, regulatory regimes – and really bring that forward.

Ruth: We also provide conflict intervention services when differences in the workplace get contentious. Rather than just coming in to deal with the 'mess du jour', we try to get at the root causes of things and orchestrate interventions that integrate multiple needs – the needs of the individual within their work team, the needs of that work team within the organization, the needs of the organization with reference to the business in the larger context.

We have worked very hard to develop our capacity to work with folks on the shop floor right through to the board room, and to be able to connect in authentic ways and meet real needs at each level.

Pierre: We've worked with the senior leadership of multi-million dollar corporations and small NGOs with minimal annual operating budgets.

Ruth: We feel a responsibility to serve that range.

Pierre: We have two other associates who work with KC&A, Sonya Pas and Shelley Adrian-Taylor. Once we identify needs we will refer to other service providers as required – a network of other seasoned professionals with solid reputations.

Ruth: We have a primary alliance here at Innovation Place with Rochon Associated, an HR management specialty firm. Also, while we're dealing with workplace issues, on occasion it

may be that someone is in need of additional personal support, so we would refer them to the appropriate clinicians or mental health professionals.

Q.: How do you help companies accept and embrace change?

Ruth: We are change agents and educators. We identify where our clients are, where they want to be, where they need to be and how to get there.

The work is driven by real business needs. It used to be that all employers were concerned about were attendance, and quality and quantity of work. Now, there's a third element of job performance that employers are being held accountable for, and that's employees' and leaders' capacity to interact effectively with other people. That's usually where the most headaches, difficulties and stress arise. That's the place that we work very hard to effect change, work that is often referred to as organizational culture or climate change.

Q.: Where are your clients located?

Ruth: Our commitment is primarily to Saskatchewan, although the work we did for Avaya took me to Denver. There seems to be no shortage of work here.

Pierre: We've done projects in Regina, with PAMI in Humboldt, North Battleford, Yorkton, Millar Western in northern Saskatchewan. Our client base is definitely centered here; we've reached out to other parts of the province quite effectively.

Q.: What are some of the triggers that may lead a company to approach you?

Ruth: A nose-dive in morale. A waning of commitment. Turnover has gone up. Market share is suffering. People are grumbling and complaining. It may be a particular episode that requires conflict resolution. Any number of things can spark an initial contact. Primarily our work comes to us through personal referral.

Pierre: A certain number of requests come from folks who simply don't know how to move forward. They know that the existing situation is untenable, but they don't know how to get beyond that, to the underlying root of the problem.

Ruth: Other companies retain our services because of their corporate commitment to excellence. Philom Bios is one of those clients who comes to mind. To them, it's about excelling. They are working to achieve their business goals by building a more effective organization.

Pierre: Both Ruth and I are also committed to helping our own profession develop and excel. We quite regularly work to develop and present training sessions and seminars for members of our profession.

Ruth: In keeping with that, both of us do a lot of volunteer work. We sit on the Saskatchewan Council of Human Resource Associations (SCHRA). We've both spent many years as volunteers on the Executive for the Saskatchewan Training and Development Association. We're on the board of our daycare co-operative. From the time I was an undergraduate

student, about a third of my time has been spent on volunteer and pro bono work. It's an important part of our commitment to community and to Saskatchewan.

Golf tourney champs!

The Innovation Place Golf Tournament in support of the 24 Hour Relay took place Thursday, May 31 at the Moonlake Golf & Country Club. A great time was had by the 64 participating golfers, with over \$1,200 raised for the Saskatchewan Abilities Council.

Congratulations to the tourney champions, including men's winner Leonel Philibert; women's winner Barb Gartner; SED Systems, the men's team winner; and SaskTel, the women's team winner.

Who's new to Innovation Place?

Please join in welcoming the following new organizations to the Innovation Place community:

- **Dark Horse Studio**, located at 112 - 112 Research Drive. Contact Sean Martin at 652-4956.
- **Executive Source**, located in the Atrium Business Centre at 105 - 111 Research Drive. Contact Judith Chelsom at 244-1880.
- **Merck Frosst Canada**, located at 236 - 111 Research Drive. Contact Jarrad Friedenberger.
- **Perle Systems Limited**, located at 243 - 111 Research Drive. Contact Barry McKinlay at (906) 475-6070, ext. 2211.
- **Clevor Technologies Inc.**, located at 302 - 111 Research Drive. Contact Ravi Maithel at 955-5772.

Toronto to host BIO 2002

The city of Toronto has been announced as the host of the world's premiere biotechnology event for 2002, BIO 2002 International Meeting and Exhibition, from June 9 to 13, 2002.

The annual event is organized by the international industry organization, BIO. This year's conference took place June 24 to 27 in San Diego.

"BIO 2002 is an important event not just for Toronto, but all of Canada," said Janet Lambert, President of BIOTEC Canada. "It recognizes Canada's leadership role in biotechnology around the world.

"Canada has the second largest biotechnology industry in the world, behind only the U.S.," Lambert said. "Biotechnology in Canada is expected to be a \$5 billion business by next year."

For more information about BIO 2002, call Eileen Inrig at BIOTEC Canada at (613) 230-5585, ext. 622, or check the website at www.biotech.ca.