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## AgTech Centre poised for new era of agriculture

*A new generation of sustainable agriculture requires a new basis of innovation*

A new technology centre will provide an important base of applied research and education in sustainable agriculture. The AgTech Centre, based in Lethbridge, will work in evolving technologies and practices that will drive agricultural production in the future.

Formerly known as the Alberta Farm Machinery Research Centre, the AgTech Centre has been launched with a new mandate to go with the new name.

"The name change better reflects our function, which is technology development on a broader base, both in crop and livestock production," says Rick Atkins, AgTech Manager and Branch Head of Engineering of Alberta Agriculture, Food and Rural Development. "Sustainable agriculture is no longer simply a production issue. We have to develop a systems approach to farming that considers crop and livestock developments in concert, and meets industry and society's needs in amore holistic way, today and in the future."

With experienced engineers, technologists and support staff, and a network of partners that includes producers, manufacturers, public research facilities and private centres, the AgTech Centre is uniquely qualified to meet the challenges of the new sustainable agriculture.



## A history of innovation

AgTech Centre's roots in agricultural innovation trace to 1958 when Saskatchewan's provincial government founded the Agricultural Machinery Administration. That evolved into the Prairie Agricultural Machinery Institute (PAMI), under which three centres were established each with different responsibilities. The Portage la Prairie, Manitoba station specialized in forage and materials handling equipment while Humboldt, Saskatchewan station's area of expertise was harvesting and grainhandling/ processing equipment. The Lethbridge station, a forerunner of the AgTech Centre, was established in 1975 and took the lead in tillage, seeding and spraying.

### Alberta seeks own path

By the mid-1980s, budget pressures spurred PAMI's partners to re-evaluate its structure and mandate. In 1988, the Alberta provincial government decided it wanted more control over the annual operating grant. On April 1, 1988, the Alberta Farm Machinery Research Centre was established as part of Alberta Agriculture's Engineering Services Branch. The change also expanded the Centre's mandate beyond testing, to research and development.

Today, with a further expanded mandate, the AgTech Centre continues to have a complementary relationship with PAMI.



## Emerging issues in agriculture

These are typical of the emerging issues that fall into the AgTech Centre's mandate.

- Environmental impacts of agriculture operations.
- Greenhouse gases, emissions, particulates and odours.
- Manure management and application technologies.
- Composting and processing manures.
- Livestock development, on-farm processing, intensifying production to meet niche markets.
- Stewardship of resources.
- Special crops and diversification.
- Animal welfare, handling and transportation.
- Indoor air quality for worker and animal health.
- Further production efficiencies.

- New facilities, equipment, technology and their application to production systems.
- Alternative production practices.



## Research, technology and information for 21st Century Agriculture

*AgTech Centre has evolved into a dynamic, multi-purpose facility to advance sustainable agriculture.*

AgTech Centre has evolved from a purely evaluation centre to an applied research and development centre as well. Today at the Centre, engineering research accounts for 60 percent of activities, technology development about 20 percent and information development/transfer the remaining 20 percent.

"This shift has been a natural evolution because industry needs have driven it," says Rick Atkins, "Since the Centre became a department of Alberta Agriculture, Food and Rural Development in 1988, we have performed more research and more development work for manufacturers. What's happened is our base of expertise has gone beyond machinery and crop production issues to include environmental issues, livestock issues, animal welfare issues and a host of others."

### Partners in research

Many of the Centre's engineering research activities are carried out in conjunction with partners. "Partners are usually producer groups, other public research facilities such as Agri-culture and Agri-Food Canada or private companies," says Atkins. "These joint projects seek to answer key questions facing the industry." An example of an AgTech Centre partnership is a recent study on manure application to forages. Support for the research was supplied in part by the Canada Alberta Beef Industry Development Fund, Alberta Cattle Feeders Association, two municipalities and in-kind support in the form of tools from private industry.

"These kinds of partnerships allow us to leverage our resources to produce more useful information than we could on our own. This helps us expand our base of knowledge and more importantly, the body of knowledge available to producers," says Atkins.

### New technology for new agriculture

Technology development is key to sustaining the environment as well as producer profitability. Machinery and technology represent a \$2.5billion industry and employs 10,000 people in Western Canada. In Alberta, for example, it is the number two capital investment after land purchase.

"Technology and machinery are a few of the components producers have control over with regard to

managing a system and making it pay, as far as crop or livestock production goes," says Atkins.

AgTech Centre works directly with machinery and technology manufacturers and sometimes with individual inventors and innovators. "We have the expertise in testing and measurement and that's a crucial component for developing technology. We also have the equipment needed for that evaluation."

That expertise is recognized by some of the largest manufacturers in the industry. The Centre has participated in projects with John Deere, Caterpillar, Ford/New Holland, Case IH, Bourgault, Flexi-Coil, Gen, Morris and a number of others.

"We have no vested interest other than wanting to make whatever equipment we test, better. We're always thinking about the end-user," says Atkins. "If we make a manufacturer more successful or help develop a better machine, it means producers will be more successful."

### Information for the industry

Atkins and the staff at the AgTech Centre have a simple philosophy about the information they produce: "Information is of no use until it's used."

In the past, the Centre has used presentations, reports, newsletters, tradeshow and personal interaction to relay information to producers and the industry. And it has an aggressive communications effort as an integral part of its new mandate.



## AgTech Centre's six core areas of expertise and industry links

**1. Information development and transfer.** Changes to the Centre's newsletter, now called AgTech Innovator, symbolize a new approach to communications that will see other new initiatives deliver high-quality information to producers.

"It really is the information age for the agricultural industry as well. But the problem now is the volume of information and how producers apply that information to their operations. An important part of our role is ensuring that producers have a source from which they receive valid information that has been produced with integrity," says Atkins.

**2. Sprayer technology.** This has been a specialty for the Centre since it was first established in 1975. AgTech Centre is well equipped for testing spraying equipment and tests are ongoing at the Centre. "Spraying has evolved over the last 20 years and we're constantly trying to improve the technology," says Atkins. One of the most critical aspects of environmental impact is drift control. "It's important that chemicals are applied effectively, without losses. This has been a large part of our past work, and with chemical application an important factor in sustainable agriculture, it will continue to be a large part of the Centre's activities," he says.

**3. Sustainable production.** Production efficiency and sustainable agriculture are high on the agenda and adapting technology to meet the needs of new agricultural realities is of paramount importance to the industry. Projects in this area include innovations in direct seeding and development and testing of various openers.

Another current project is row spacing and its impact on production. "This is an important area of research that will contribute to many of tomorrow's production advances," explains Atkins.

**4. Alternative manure handling.** Composting techniques and equipment are currently undergoing

rigorous testing at the Centre. "We're looking at the outcomes of composting and how a composting program can fit into a livestock operation in terms of cost and benefits," he says.

Manure handling is a growing issue and its management is becoming a much larger factor in livestock production. AgTech Centre is prepared to be a leading innovator in the area of manure management.

**5. Testing equipment.** One of the main reasons the industry calls on the AgTech Centre is for its ability to develop new testing equipment. This includes fabricating lab and field equipment and electronic measurement equipment as well. Whether it's torque, load capacity or other technology, the AgTech Centre can measure it or devise a way to measure it. This ability is invaluable in developing new technology. "This is an area that really shows the Centre's capabilities and the type of expertise that makes it so specialized," says Atkins.

A new electronic measurement tool recently developed at the Centre is the soil profile meter. "It actually measures soil disturbance as the result of a cattle feeding operation. Soil disturbance is usually an indication of weed growth." It also has applications to direct seeding. "It's a factor we can measure to assess whether or not you've got a high disturbance or low disturbance type of opener."

Another example of the Centre's expertise is the plot air seeder developed by the Centre. "It was one of the first in North America that could handle any kind of fertilizer - dry, liquid or anhydrous."

**6. Technology development.** Many companies come to AgTech Centre to fill a specific technology development need. Some want an independent assessment of their equipment, either a component of their equipment or a whole machine, says Atkins. They may want their equipment tested to some standard procedure, or they may need help in solving a problem with a prototype. Companies seek help in moving a concept through the idea stage to commercialization.

"People may not realize the impact of this effort on technology development in the Prairies over the last 20 years," says Atkins. "We've helped set the standards for the technology that's used on farms today."

An exciting development is the AgTech Centre's involvement in the tractor testing centre for the Northern Great Plains, says Atkins. "It will be a pooling of resources to develop information on tractors, traction and efficiencies."

### **Direct industry links**

An important benefit of working with everyone from large manufacturers to local inventors is that it keeps AgTech Centre staff connected to the industry, including producers. That connection keeps its research headed in an applicable, useful direction.

"When we do contract testing for large manufacturers, sometimes those projects will spark interest for further research," says Atkins. "We also believe in hiring summer students, so it's a place for engineering students to get their start in agricultural technology development."

"In addition, a number of international visitors tour the Centre each year. It's interesting to see how visitors and students reappear as employees with private firms or with other public sector research facilities and become involved in a project in some way." As well, AgTech engineers travel to other research facilities to learn about new technology and share information. For example, some of the Centre's engineers participate in contract tractor testing in Texas.

### **Producers the first priority**

Throughout the Centre's research, testing and communication, the bottomline remains clear-cut. "We want to get the best technology and practices into farming operations," says Atkins.

Part of that goal is ensuring that untested technology, which could be a high risk to producers, does not reach farmers. "Let's prove the technology first and get all the bugs out, so producers know where it's going to work and where it's not," says Atkins.



## AgTech management and staff

**Manager:** Rick Atkins

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**Technologists:** Ken Janzen, Blaine Metzger, George Ragan, Dave Rea, Brian Storzynsky, Glen Traynor, Giang Truong, Jim Vanee

**Support Staff:** Debbie Campbell, Deanna Maniquet, Vicie Walcott



### AgTech Innovator

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