With almost 60% of Albertans claiming that gardening and yard work is one of their favourite physical activities (according to a survey by the Canadian Fitness and Lifestyle Research Institute), it is no surprise that a catalogue detailing trees and shrubs that can grow on the prairies, specifically in Alberta, would be a hot commodity.

In 2002, members of the Landscape Alberta Nursery Trades Association (LANTA) recognized this opportunity and decided to rise to the challenge with a newly revised edition of *Trees & Shrubs for the Prairies*. “This publication actually existed a couple of years ago, under the same title,” explains Nigel Bowles of LANTA. “However, it was a much smaller, lower quality publication with a limited number of photographs. There was a definite need in the industry for a higher quality, larger publication that would not only be a great resource for consumers, but also serve as an effective marketing tool for nurseries.”

Backed with major funding from the Alberta Crop Industry Development Fund (ACIDF), a committee made up of nursery owners and chaired by a fully qualified horticulturalist incorporated data from research programs throughout Alberta and 130 photographs from industry professionals to create a publication second to none. “There are other publications out there but because of our plant testing efforts in different areas of the province, we can make claims in the book that others just can’t match,” explains Bowles.

This 48 page, full colour publication details planting characteristics and new varieties of deciduous and evergreen trees and shrubs, fruit trees, and vines in all Prairie hardiness zones. Gardening centres and nurseries can purchase *Trees & Shrubs for the Prairies* from LANTA for a very economical price which allows LANTA to recover a portion of publication costs. “The majority of these nurseries then supply them to their customers free of charge,” explains Bowles, “and this is when we start seeing our efforts rewarded.”

Bowles indicates that many consumers have difficulty picking out plants when they go to garden centres and nurseries. “At the point of purchase, consumers usually only get to see the plant in a small container, not in its established form,” says Bowles. “So the book has become an effective marketing tool to sell the product, often actually referred to as the ‘silent salesman.’” Many garden centres report that customers can be seen walking around their stores with the publication in their hands while they are picking out plants. Other consumers take the book home and come back to the store with a landscape plan. “And they have the book in their hands, so you know it’s working,” says Bowles.

Although 35,000 copies of the publication were printed, inventory will be gone by the end of 2004. Nurseries from as far away as Washington, Idaho, and Montana have also been requesting copies. “It has become very well-known in the industry, almost a standard, that if you want to know what grows on the prairies, then get this book,” says Bowles.

With this excellent response, garden centres are very excited about another volume of the book and they have recently formed a new committee to produce it. “The 2005 version will be even larger with more new plant material in it. This new version will also allow us to include certain plants, such as some species of Barberry, that were previously restricted by law and have now had the restrictions lifted,” explains Bowles. Based on the success of the latest version, the 2005 issue sounds like it will be a ‘silent salesman’ for years to come.
Beyond the Bench

Once it is completed in June of 2005, close to $22 million dollars will have been invested into the infrastructure of Agri-Food Discovery Place, a new facility that will allow scientists to transform research from their labs into new or improved products with tangible benefits for the marketplace. As a result of Agri-Food Discovery Place, consumers will enjoy a bevy of made-in-Alberta goods with properties beyond the usual. From beta-glucan enriched foods to plastics made from canola, a panacea of good products awaits discovery.

Richard Smith, the University of Alberta, Department of Agricultural, Food, and Nutritional Science’s Co-ordinator of Research Development and Industry Relations, has received funding from ACIDF to coordinate the development of the new facility. Agri-Food Discovery Place is a significant undertaking with enormous potential, and Smith acts as the liaison. “I interface with engineers, the design team, architects, and scientists to make sure things happen smoothly and on time,” he explains.

As a result of Agri-Food Discovery Place, consumers will enjoy a bevy of made-in-Alberta goods with properties beyond the usual.

Agri-Food Discovery Place will be composed of two main wings, says Smith, one of which is the Crop Utilization Research Centre, housing research into specialty products for both health and home. Led by the University’s Dr. Feral Temelli, this Centre will focus on extracting high-value crop components such as beta-glucan in barley and finding new ways to incorporate them into products for the consumer. “We will be taking any of those crop fractions in their original or converted form and looking at how we can develop food and non-food applications,” explains Temelli. Functional foods, nutraceuticals, value-added processing, and bioproducts have all been identified as strategic priority areas for the Centre. Temelli’s work is the first step before any of these products can be developed. “The key thing is that regardless of whatever end product we’re targeting, we need this initial capability of being able to fractionate and convert the different crop components,” she says.

Food safety is a priority in Alberta and has always been. When consumers cut into their steaks in the future, Agri-Food Discovery Place will be just one of the many places contributing to a safe and tasty meal in the province and beyond. As well as undertaking research and development into crop components, the new facility will study how to suppress organisms associated with raw meat and cooked products, capitalizing on the latest technologies and approaches.

University of Alberta researcher Dr. Lynn McMullen is responsible for leading the Meat Safety and Processing Research Centre at Agri-Food Discovery Place, the second wing of the facility. Thanks to state-of-the-art equipment, researchers will be able to ensure the freshness of meat. What makes the Centre unique, says McMullen, is the Level 2 bio-containment facility which will allow pathogens such as E. coli or Salmonella to be brought into the building and put into meat products. McMullen and her team will then assess the ability of novel processes to either kill or stop the growth of these pathogens. “What we do in a test tube does not translate well to what happens to meat in a processing environment,” she explains. “Agri-Food Discovery Place will allow us to fill that gap and ensure the continued safety of our meat supply as a result.”

Agri-Food Discovery Place will be part of the overall R&D system in Alberta and will have close ties to other facilities such as the Leduc Food Processing Centre, the Centre for Agri-Industrial Technology, Agriculture and Agri-Food Canada, Alberta Research Council, and the Olds College Centre for Innovation.

Smith feels the partnership between Agri-Food Discovery Place and these other facilities will, as a result, fill a major gap in Alberta’s research infrastructure and nurture the province’s status as an epicentre of excellence. “What we are lacking is small-scale processing capability where researchers can assess a large number of processing parameters,” he says. “By taking this approach, we are meeting the needs of the growing value-added agri-food and agri-industrial industry and creating opportunity for scientific breakthrough.”

Not only will the facility benefit the province’s R&D community, it is anticipated to have a global impact. “Agri-Food Discovery Place will allow University of Alberta researchers, working in collaboration with researchers around the world, to make a quantum leap forward in meat safety and processing as well as comprehensive crop utilization,” Smith explains. Of course, there is also the expectation that consumers will appreciate new and exciting products for their homes and for their good health.
Nitrogen plays a key role for both the growers and processors of the 30-40,000 acres of sugar beets grown annually in Southern Alberta. While adequate nitrogen is required to produce a desirable yield, excess nitrogen decreases sugar content and increases impurities in the sugar beet itself. Since sugar beet growers are paid based on yield and extractable sugar content, getting the right nutrient balance is a win-win situation.

But what does the canopy colour at harvest have to do with this goal? “It is well known that the colour of the sugar beet canopy at harvest time is an indicator of the nitrogen in the crop and remaining in the soil,” explains Jennifer Nitschelm, research agronomist at Rogers Sugar Ltd. in Taber, Alberta. “While a yellow-green canopy suggests adequate soil nitrogen, a green canopy suggests excess soil nitrogen which will result in a low quality crop.” This green canopy, which is incorporated into the soil after harvest, also returns several hundred pounds per acre of nitrogen to the soil. Started in 1999 and completed via funding from ACIDF, Nitschelm’s team set out to account for this nitrogen quantitatively.

Using two sugar beet fields; one with a green canopy and the other a yellow-green canopy, Nitschelm found that the canopies contained 279 lb N/acre and 124 lb N/acre respectively. “That is in addition to the nitrogen remaining in the soil profile which, for the green site, exceeded 600 lbs/acre for the 0-48” soil depth,” explains Nitschelm. High soil nitrogen levels such as these are typical for the Picture Butte area, where many growers are using manure as fertilizer and in turn, have difficulty growing high quality sugar beets.

After examining the yield and quality response of the rotational crops to 0, 55, or 110 lb N/acre of fertilization in these two sites, Nitschelm’s suspicions were confirmed. “At the green site, cereal crop yields did not respond to nitrogen fertilizer; and the 2003 sugar beet crop continued to exhibit lower quality than the yellow-green site even when no nitrogen was added throughout the rotation.” That was due to the heavy loading and the extra nitrogen from the canopy.

Many growers do not take the nitrogen from the crop canopy into consideration because during fall soil testing, it is still in its organic form and not picked up in the soil tests. “Since about half of this nitrogen is available the following year, a grower can allow roughly 100 lb N/acre for a green canopy and 60 lb N/acre for a yellow-green canopy,” explains Nitschelm.

“What we hope to see come out of this project is that the grower uses the canopy colour as a visual indicator of the soil nitrate levels and adjusts their nitrogen management plans accordingly to get higher quality sugar beets in the future,” says Nitschelm. And who could say no to saving on fertilizer costs and getting better returns per acre?
Fish Food, Snack Food, and Health Food
The Pulse Industry Knows How To Expand Uses

You probably know that pulses are a healthy component of human nutrition and animal feed, but did you know that fish may also be benefitting from pulses in their diets? That’s right, fish food manufacturers are interested in using pulses, specifically lupins or faba beans, as a replacement for fish or animal protein.

And that’s not all that pulses can be used for. In addition to pea soup and baked beans, pulses, such as the white flower faba bean, can be used when making pasta, adding extra fibre and protein, without changing the flavour or texture.

But how do manufacturers know that pulses will work in their recipes? Work being done at the Centre for Agri-Industrial Technology (CAIT) in Edmonton has led to the development of a compositional database of pulses that gives buyers the information they need when considering Canadian pulses for their products.

Connie Phillips, Project Manager and a food scientist at CAIT says the motivation behind this work is providing information to potential buyers of Canadian pulses. “This information will provide answers to composition questions that get asked on overseas marketing missions,” says Phillips. “Buyers have specific needs and want to know ratios of starches and other detailed information, and this database will provide that information in a useful format.”

For instance, food processors might like to use peas instead of corn in a snack food such as cheese puffs. They have specific requirements for starch ratios, which affect the texture and fluffiness of the product, and the information contained in this database will allow processors to determine if they can use pulses. Pulses can also be used instead of soy as a texturized vegetable protein, opening up a local source of vegetable protein in areas that don’t produce soybeans. This information is also useful to local chefs who may want to use pulses in their restaurants.

ACIDE, the Ag & Food Council, Alberta Agriculture, Food and Rural Development, Pulse Canada, and the Alberta Pulse Growers, along with others, have funded this research. Doug Walkey, Executive Director of ACIDE, says there are positive implications for Alberta and Canadian pulse producers. “Increased knowledge of the composition of pulses will increase export demand for pulses and give farmers more choice when it comes to cropping decisions,” says Walkey. “A vibrant pulse industry is good for the farm economy.”

The information contained in the database is also helpful for feed experts, nutritionists, and those concerned with developing diets with specific recommendations, such as the Heart and Stroke Foundation. “With this outline of the contents of pulses, nutritionists can recommend pulses as a component of special diets, particularly for diabetics or those who wish to eat in a heart-healthy manner,” says Janette McDonald, Executive Director of Alberta Pulse Growers.

In fact, pinto or kidney beans are already being processed, rehydrated by adding boiling water, and used in geriatric diets to reap the nutritional benefits. So don’t think of pulses as something you just eat in pea soup or feed to livestock; with this database you may see pulses being used in a lot of new ways, including in your pet fish’s food.
Hive of Activity

What’s all the buzz about bees in Alberta these days? Well for starters, there are 230,000 colonies in Alberta which represent 40% of the bee colonies in Canada and nearly $320 million in value to Alberta’s pollinated crops. Plus, bees provide honey products that have been anecdotally adored by cultures all over the world for thousands of years.

Three bee-focused projects in Alberta continue to place these creatures upon a pedestal. Whether it is developing new integrated pest and disease management techniques or encouraging changes to current federal border regulations on honeybee importation, the projects all have one goal in mind – enhanced production methods, improved bee health, increased honey quality, and more secure marketing for Alberta’s honey products.

Bees Know How to Get Around

The honey industry in Western Canada was built upon a management practice where bees were only used for one season with new ones purchased from California in the spring. In 1987, that practice was eliminated when the federal government closed the border to the importation of bees because of pest issues, such as the varroa mite, in the United States. Varroa mites are devastating insects that prey on adult bees, weakening the bees’ defence against viral diseases. “Bees being a flying insect, the problems that occur in the U.S. now also occur in Canada,” says Grant Hicks, Alberta Beekeepers Association delegate to the Canadian Honey Council.

As a result, a project to address the national ban of honeybee importation has been underway since 2001. A bee-industry team has received funding from ACIDF to encourage the Canadian Food Inspection Agency to open the border. “Having the border open to bulk bees and queens is another tool in the IPM (Integrated Pest Management) toolbox,” emphasizes Hicks. “Any bees purchased from the U.S. will have very few varroa mites on them because infested colonies are not strong enough to produce the extra bulk bees required for the shippers to sell.” Hicks represents one of the member provinces recommending a loosening or total lift of the ban. He says importing packages from the U.S. would be a real economic benefit. Not only would producers see a decrease in their miticide costs, they would see an increase in production associated with healthy bee colonies. This is also good news for consumers – more healthy bees make more healthy honey.

Integrating Options

Dr. Medhat Nasr, the province’s new apiculturist, has begun the work to outline an IPM program that aims to develop alternative controls for parasitic mites in bee populations, namely the trachea and varroa mites which together, if left untreated, can kill up to 80% of a bee colony annually. Some of the mites have developed resistance to the pesticides traditionally used. In order to avoid miticide resistance, reduce miticide residues, lower production costs, and improve bee health and honey quality as a result, Nasr hopes to implement an IPM approach which would include the use of disease and mite resistant bees, organic acids, and essential oils as alternatives. According to Nasr, despite the need for new management techniques to address an increasingly food-safety conscious environment, Alberta’s beekeeping industry is very progressive. Producer education, however, is a fluid and evolving process, especially when it comes to quality. “There is a need for improving the management practices and educating producers on how to keep their bees healthy in order to produce quality products,” says Nasr. “That is first and foremost what I hope to address.”

Did You Know?

- Alberta exports 90% of its honey – 70% to the U.S. and 20% to Japan and Europe.
- The average bee makes only one twelfth of a teaspoon of honey in its lifetime.
- During the winters in Canada, bees thermo-regulate their hives to maintain a temperature of 32°C.
- The term “honeymoon” comes from the Middle Ages, when a newly married couple was provided with enough honey wine to last them for the first month of their new life together.

Combing for Strategies

For the last three years, Steve Pernal, research scientist with Agriculture and Agri-Food Canada’s Beaverlodge research station, has been working to combat American Foulbrood (AFB) disease in bees. AFB is a bacterial disease that affects immature bees and produces spores that are moved throughout the colony, eventually propagating the disease throughout an entire operation. Without intervention the disease will kill the colony. In Alberta, there has been evidence of increased oxytetracycline-resistant strains of the disease. Pernal wants to reverse that trend so that Alberta’s bees can

Continued next page...
thrive. Similar to Nasr, his project aims to develop an integrated solution for better detection and controls for the disease, while lessening the use of antibiotics, in particular oxytetracycline, in the process. “We need to conduct experiments to find out whether other antibiotics are effective, and that the way in which they are applied doesn’t leave residues in the honey,” explains Pernal.

In order to meet his goals, Pernal is developing a trifold strategy that would offer producers a more integrated approach when it comes to disease management in their hives:

• Generate data which will support the registration of alternative antibiotics to which the bees have no known resistance.
• Create more efficient disease detection methods.
• Identify ways in which individual beekeepers can use genetic techniques to select for hygienic behaviour.

Both Nasr and Pernal have high hopes for hygienic bees. Bees with this genetic trait are naturally more resistant to AFB and can detect and destroy the disease in its early stages, before the bacteria has a chance to divide and produce spores. “If more bee breeders are able to select for traits such as hygienic behaviour,” says Pernal, “over time we will have domestic bee stock which is less susceptible to disease which means less costs for producers, greater colony sustainability, and more quality honey.”

Sweet Success
All those involved in the various projects agree that in the end it is the consumer who ultimately benefits. “In the case of the disease and mite control research, we are looking at fewer chemicals used in the system, healthier bees, and a greater supply of higher quality honey,” explains Doug Walkey, Executive Director with ACIDF. “In the case of the regulatory issues, we are looking at lower costs for producers, which mean a stronger industry, a more consistent supply, and again, a safer end product.”

Nasr plans on taking that attention to quality on the producer side through to application on the consumer end. He would like to see more creative marketing for the honeybee industry. Most of Alberta’s honey is exported as a raw product without any processing. Nasr would like to see the introduction of other value-added products such as honey beer and mead (honey wine) that will ensure consumers’ continued interest in and adoration of honey while taking Alberta’s hives to new heights.

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Busy as an Alberta Bee

For over 70 years, the Alberta Beekeepers Association (ABA) has provided Alberta beekeepers with a unified voice capable of communicating their views to government agencies and the industry at large. The Association has been vigilant in its quest to identify key issues for the industry, create proactive solutions for better management, and boost the profile of the province’s quality honey. Since its inception in 1933, the Association has grown such that its members now keep over 90% of the colonies in Alberta.

The ABA is a tireless crusader of the sweet nectar. The strength of the Association is evidenced not only by its strong membership and its relationship with the province’s R&D community, but by polished brochures and displays, participation in the Classroom Agriculture Program, and an active Ladies Auxiliary that organizes fashion shows, raffles, and cookbooks all in the effort to raise funds for honey promotion. With over 230,000 colonies in Alberta, the Association is evidenced not only by its strong membership and its relationship with the province’s R&D community, but by polished brochures and displays, participation in the Classroom Agriculture Program, and an active Ladies Auxiliary that organizes fashion shows, raffles, and cookbooks all in the effort to raise funds for honey promotion. With over 230,000 colonies in Alberta, no wonder there is so much buzz about Alberta’s bees.

The ABA works closely with ACIDF as a signatory to the fund and identifies priorities in honeybee regulations, and pest and disease management. Three projects currently funded by ACIDF are, according to Robert Ballard, President of the ABA, crucial to the development of Alberta’s beekeeping industry. Finding new management techniques that will decrease producers’ reliance on synthetic controls to which some pests and diseases have gained increased resistance, is important not only from a production standpoint, says Ballard, but also to ensure the continued quality and safety of honey for consumers.

Ballard emphasizes reopening the border to honeybee imports from the United States is the Association’s number one priority, a federal regulation he feels has stymied the growth of his province’s industry. “In Canada, we now have all the pests the U.S. has, so the closure is unnecessary,” he explains. “If we had access to American bee stock, we could streamline production, increase colony numbers, and lower production costs.” It’s all about making Alberta the honey capital of Canada!