



HEALTHY FOOD
FROM
HEALTHY FIELDS







Pulse growers across Alberta have indicated that they wish to become more engaged in the shaping and ownership of their future. In 2003, they doubled their levies to their grower organization, **Alberta Pulse Growers**. Growers want to work with partners to meet increasing demand for quality assured grains, as well as new food products and emerging feed opportunities.

2005

750,000 acres of pulse crops
\$90m in Farm Cash Receipts
Limited pulse products on store shelves
450,000 MT of Nitrogen fertilizer on annual crops
Health benefits of pulses not understood
Produce a high quality feed ingredient for 3 million hogs
A truly green industry that feeds the land we till, the animals we raise and our fellow humans.

2015

3 million acres of pulse crops
\$300m in Farm Cash Receipts
25 new pulse products on store shelves
Reduced Nitrogen fertilizer use by 10% due to Nitrogen fixation
Daily consumption of pulses delivers improved health and lifestyle to Canadians
Produce a high quality feed ingredient for fish, poultry, 2 million cattle and 4 million hogs.
Build a sustainable and financially rewarding industry that enriches our land, our livestock feed and healthy diets.

The word pulse crops in this document could refer to any one of beans, peas, lentils, chickpeas, fababeans and lupins.



Driving toward a profitable and environmentally sustainable pulse industry by linking science, technology and innovation for the benefit of stakeholders and the wider community...



FOOD & HEALTH

Our goal is to increase the competitiveness of the Canadian pulse industry by supporting the development of new market opportunities for pulses and pulse constituents in North America.

In collaboration with our partners, we are developing a strategy and action plan to support industry value chains leading to the development of viable commercial products containing pulses, ultimately supporting a broad section of Alberta agriculture and the rural economy.

The strategy will identify opportunities for value-added processing of pulses and fractions, guiding research into the areas of pulse nutrition, functionality and application. In addition, the strategy will focus on creating awareness among consumers and industry alike regarding the use and health benefits of pulses.

To develop this strategy, the Canadian pulse industry received \$3.2 million in funding from Agriculture and Agri-Food Canada. This new endeavour, called the *Pulse Innovation Project*, will be headquartered at *Pulse Canada*.

The objectives of the project are to:

- Create new market outlets for Canadian pulses through the development of novel pulse food and industrial products and applications.
- Move pulses up the value chain to increase returns for Canadian producers.
- Increase the health and wellness of Canadians by increasing the consumption of pulses.



Health and Wellness

Pulses are a natural fit in the consumer movement towards healthy lifestyle and disease prevention. Pulses are high in complex carbohydrates including fibre and resistant starch, as well as protein, minerals, vitamins such as folate, and phytochemicals. As a source of these components, pulses can offer many benefits for nutrition, health and chronic disease prevention including cholesterol and blood lipid lowering, improved blood glucose control, and promotion of satiety.

Although research has shown that pulses have positive effects on health, more concrete evidence demonstrating the health benefits of pulses would provide additional incentives for consumers to purchase pulses, dieticians to recommend consumption and manufacturers to incorporate pulses into product. In 2005, the U.S. Food and Drug Administration issued a new dietary guidance message: "Diets including beans may reduce your risk of heart disease and certain cancers." Moreover, the USDA's 2005 Dietary Guidelines recommends Americans eat three cups of beans per week. (Beans refers to all edible pulses.)

Following the U.S. example, further research and promotion could pave the way for the approval of pulse related nutrition and health claims by Health Canada. To this end, one third of the funds contributed by Agriculture Canada are earmarked for clinical studies.

New Pulse Products on the Store Shelf

Growth in the ready-to-eat food market is forecast at approximately 8% per year while traditional food markets are forecast to grow 1-2%. The ready-to-eat food market is valued at approximately US \$20.6 billion in the United States and CDN \$2.8 billion in Canada. Based on the current value of the market and an average growth rate of 8% a year, the ready-to-eat market will grow to more than \$30 billion in the next 6 years.

The snack food industry in the U.S. is valued at nearly US \$18 billion and CDN \$1.3 billion in Canada. Pulses are already identified as healthy foods. Thus there is strong potential to start using pulses in a wide variety of ready to eat foods as well as snack foods. As part of the *Pulse Innovation Project*, these particular market segments will be targeted and explored for opportunities given their huge growth potential.

Project Organization

In addition to wide participation from the research community, food processing companies that have indicated an interest in participating in the *Pulse Innovation Project* include Heinz Company of Canada, Kraft Canada and Campbell's Soup Company. In addition, given the *Pulse Innovation Project* is North American in scope, several U.S. organization and companies have agreed to participate in the project, including the Beans for Health Alliance, the United States Department of Agriculture, Archer Daniels Midland and National Starch.



Industry Co-ordination

APG and *Pulse Canada* will collaborate with partners in Alberta who wish to invest in research and new product development in Canada. APG and other grower groups in Canada will fund research activities that are identified under this initiative.

Provincial governments have also indicated strong interest in the focus of this project. The Alberta government has indicated that the goals of this project are highly complimentary to their investment strategy. The Manitoba government has already invested \$100,000 into the development of this plan.

Increased research investment in the areas of quality and utilization, coupled with broad industry support, will complement the work carried out by the *Pulse Innovation Project*, helping to ensure that the initiative's objectives are achieved.



FEED QUALITY

Our goal is to improve the feeding value of pulse crops through improved evaluation of quality.

Action will result in increased exports, reduced imports of feedstuffs and improved cost competitiveness of Alberta's crop and livestock industries.



There is a movement in the world to the Net Energy system to describe the energy value of feeds. The pulse industry wants to position Alberta to lead this movement and to use NE to reduce excretions and the resulting impact on the environment. Alberta Pulse Growers recently completed a Feed Quality Strategy that outlines how this will be accomplished.

Feed Pea Network

- Build a collaborative network of feed pea growers, trade, scientists, and feed pea buyers to improve the value of feed peas in livestock diets.
- Identify gaps in nutrient data that are critical to the value of feed peas in livestock diets.
- Enhance quality and consistency of supply.
- Enhance price discovery and marketing channels.
- Develop a communication strategy to ensure that feed pea research results are available to the domestic and global marketplaces.

Feed Evaluation

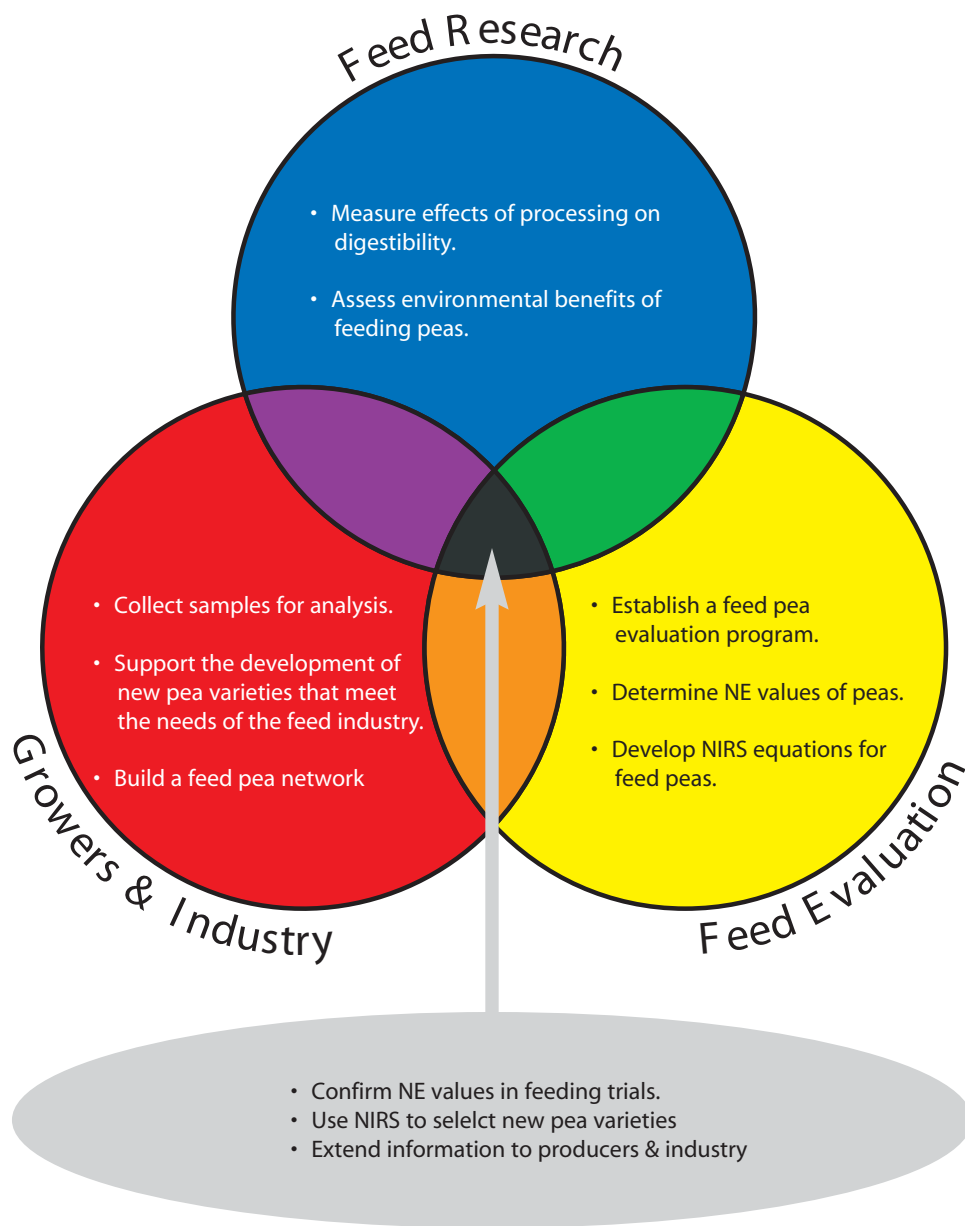
- Establish a plan for collecting and analyzing feed pea samples each year
- Establish a Feed Evaluation program to document the nutritional components of feed peas annually
- Determine the Net Energy value of Western Canadian peas
- Confirm NE values of Canadian peas in large scale feeding trials
- Measure and optimize the effects of processing on the nutrient digestibility of peas.

NIRS

- Develop NIRS as a rapid test for adoption by the commercial feed industry.
- Use NIRS as a tool to select new pea varieties.
- Work with the feed industry to ensure parallel implementation.

Conduct feeding trials with fababeans in swine diets.

Assess environmental benefits of pulses in feed formulations.





Consumer Oriented Genetics

Our Goal is to develop varieties that meet customer and producer needs.

Dry Beans

The dry bean industry in Alberta generates \$24m at the farm gate and another \$45m in value added processing and jobs. The bean industry is expected to grow by 50% by 2015; to 75,000 acres and \$70m in value-added. The Lethbridge bean breeding program is vital to this growth. Over the period 1993-2008, Agricore United and the Alberta Pulse Growers will invest nearly \$0.75 million in the Lethbridge program.



The dry bean breeding program at AAFC Lethbridge spearheads high-quality varieties that are targeted at human-edible niche markets around the world. In 2006, 100% of the red, black and great northern beans grown in Alberta will be AAFC-Lethbridge varieties. Industry partners predict that by 2008, most of the varieties grown in Alberta will be AAFC-Lethbridge varieties.

The bean breeding program at Lethbridge requires private and public investment in order to drive growth. The government of Alberta can partner in this growth by investing along with APG, Agricore United and AAFC to enhance the bean breeding program at Lethbridge. Alberta government investment over the next 10 years will demonstrate to AAFC Alberta's commitment to the bean industry and the Alberta breeding program.

Field Peas

APG is working closely with the feed industry, AAFRD and the University of Alberta to reduce imports of feedstuffs and improve cost competitiveness for Alberta crop and livestock producers. The best way to accomplish this is to evaluate pulse crop quality, using Net Energy and NIRS technology. NIRS will put Alberta in the lead in the identification and selection of new pea varieties that deliver the feed that Alberta's livestock industry needs.



AAFRD, AAFC and Alberta Pulse Growers have partnered for many years on the development and screening of new field pea varieties at CDC Saskatoon and AAFC, Lacombe. Alberta Pulse Growers has recently completed a thorough review of the two programs and has renewed our financial commitment of \$26,000/year to the field pea development program at each station.

A further investment by the Alberta government into the development of NIRS tools to select new pea varieties based on their feeding value will ensure that Alberta can sustain the feeding capacity and technology to be a globally competitive producer of quality pork in 2010.

Lentils and Chickpeas



Canada is a global leader in lentil and chickpea production and exports. These are high value crops that are poised for tremendous growth in the health and functional foods marketplace. Lentils contributed \$189 m to Saskatchewan farm cash receipts in 2004. Chickpeas contributed \$14 m in the same year. In Alberta, in the same year, the contribution of these two crops was less than \$10 m. The potential to increase acreage of these high value crops in Alberta is almost untapped.

Western Canada has one of the leading cultivar development programs in the world at CDC Saskatoon and it's collaborative crop improvement program at CDCS Brooks. Alberta Pulse Growers and the Government of Alberta have invested in these two programs for 5 years. 13 promising lines have been selected under Alberta growing conditions and more testing is needed to put these lines forward.

In order to ensure continued growth, Alberta Pulse Growers increased its investment in the breeding program at Saskatoon to \$24,000/year. The Government of Alberta will guarantee that lentils and chickpeas, targeted at the global market, are developed and adapted for Alberta conditions with investment into crop improvement and selection of varieties at CDC Saskatoon and CDCS Brooks.

Fababeans and Lupins

Pulse growers are interested in the development of these new crop. Zero tannin varieties have opened up new opportunities. Fababeans fix a greater amount of nitrogen per acre than any other pulse crop and are an excellent feedstuff for the Alberta livestock industry.

APG currently invests \$27,000/year into developing the Fababean industry. Government investment further drives growth to a projected 20,000 acres by 2010.



SUSTAINABLE PRODUCTION

Our goal is to enhance farm profitability and agriculture's contributions to the environment through improved nutrition management.

Pulse Growers recognize the importance of pulse crops in sustainable, long term cropping systems. Sustainable production systems integrate today's technology with yesterday's knowledge; and enhance the efficiency and long term profitability of crop and livestock production while **delivering healthy food from healthy fields.**

In 2004, an Integrated Cropping Management (ICM) Strategy was developed by scientists, extension agronomists and producers. It is Phase I of a plan that will help producers, public organizations and the private sector cooperate. Together, economic, environmental and production challenges will be addressed in a comprehensive manner.

Phase I encompassed crops, soils, environment, climate change, production, and environmental economics. It proposes the integration of systems research to:

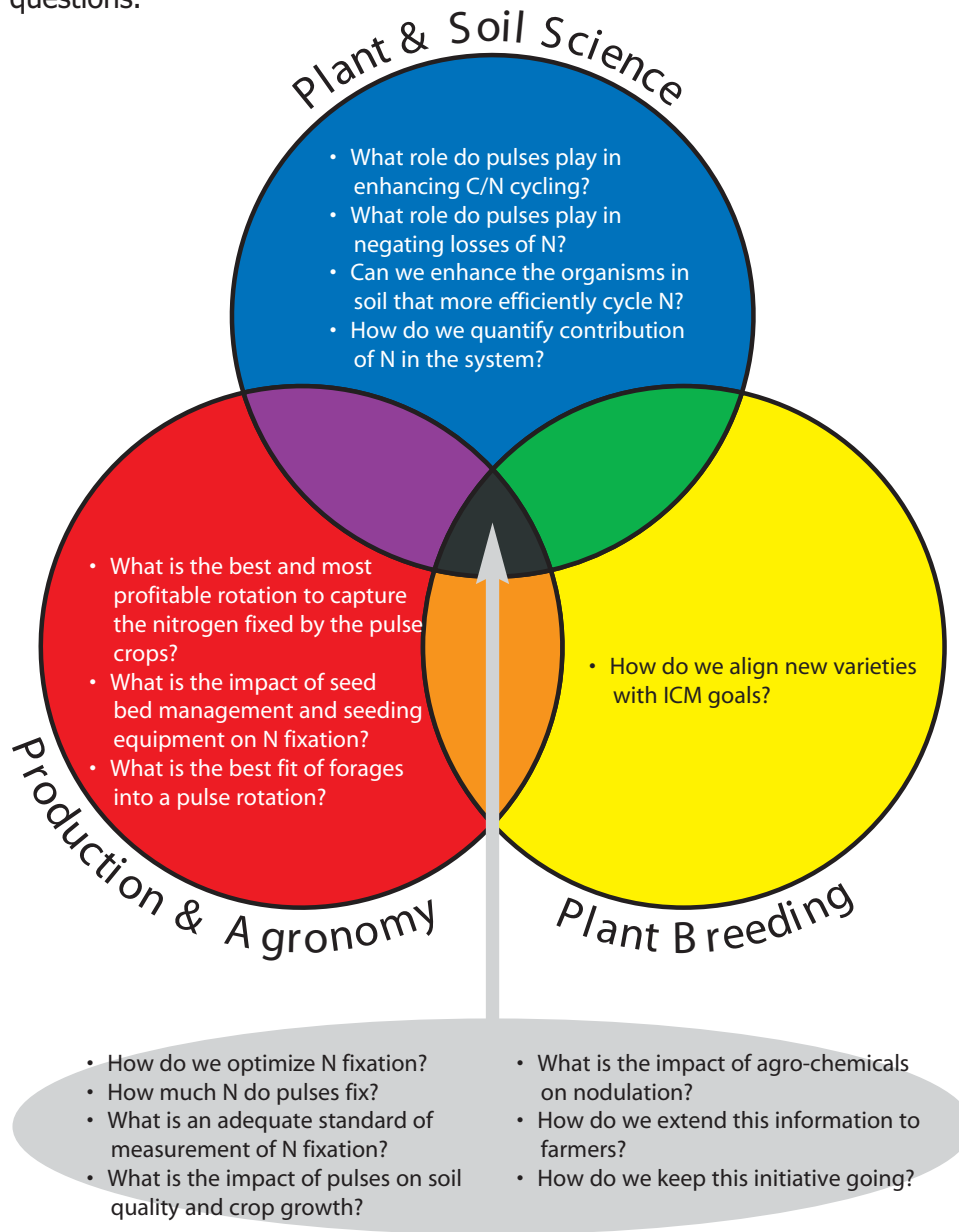
- Enhance sustainability.
- Increase the efficiency of nutrient and water flow between crop and livestock systems.
- Enhance economic return and reduce wastes.
- Implement systematic approaches to deal with disease, weeds, and insects.
- Increase genetic research to reduce threats and enhance value chains.

Phase II of APG's ICM strategy will focus on research and extension into pulse crops. Pulse crops make a significant contribution to sustainable production through:

- Reduced cost of production through reduced use of petroleum-based energy.
- Enhanced agricultural ecosystems.
- Improved contribution to greenhouse gas reduction.
- Expanded market opportunities.
- Improved soil, water and air quality.



Alberta Pulse Growers have consulted industry stakeholders from Alberta and Saskatchewan to develop a pulse chapter of the ICM Strategy. The pulse chapter is targeted at maximizing the contribution of nitrogen fixation to long term cropping systems. Stakeholders agree on sixteen fundamental questions.



Over the next 10 years, integrated research and extension will deliver answers. Governments and industry will have the information and products to deliver on the sustainable production goals of the province and the nation.

Public investment in production and variety research got Alberta to \$8 billion in farm cash receipts. Further public investment in production research and extension will get us to \$10 billion.

Innovation	Current Grower's Investment/year	Required Public Investment/year	Increase in Farm Cash Receipts / year by 2015
Bean Varieties	\$32,000	\$100,000	+\$9m
Lentil and Chickpea Varieties	\$24,000	\$140,000	+\$12m
Field Pea Varieties	\$52,000	\$75,000	} +\$185m reduce soya bean meal imports by \$40 m
Feed Pea Evaluation and Feeding Trials		\$200,000	
Feed Pea Network	\$5,000	\$20,000	
Fababean and Lupin Varieties, Agronomy and Feeding Trials	\$27,000	\$100,000	+\$ 4m
Sustainable Production	\$50,000	\$2,000,000	Reduce N purchases by 10% (\$50 m)
Innovative Products & Clinical trials		\$1,000,000	

Public investment into better varieties, production practices and uses will:

- Increase farm cash receipts from pulse crops to \$300m/ year
- Reduce cost of N fertilizer by \$50 m/ year
- Reduce imported feedstuffs by \$40 m/ year
- Reduce health care costs for Albertans through improved diets.
- Improve soil quality
- Improve air quality
- Improve human nutrition

