



What does it all mean?

Turning research results into marketing messages

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A photograph of a person's legs from the knees down, standing on a yellow and white mechanical scale. The person is wearing dark blue leggings. The scale's dial is visible in the center. Overlaid on the image are four semi-transparent white ovals containing text: 'Diabetes' on the left, 'Metabolic Syndrome' on the right, 'Obesity' in the center, and 'Cardiovascular Disease' at the bottom. The background is a light blue gradient.

Diabetes

**Metabolic
Syndrome**

Obesity









**Cardiovascular
Disease**

Pulses & Diabetes

Pulses aid in diabetes management

- ↓ blood glucose
- ↓ HbA1c (marker of LT diabetes mgt)
- ↓ fasting insulin levels
- ↓ insulin resistance (HOMA)
- ↑ insulin sensitivity

GLYCEMIC INDEX (GI) OF SELECTED FOODS

	FOOD ITEM*	GI
	CHICKPEAS	39
	LENTILS	42
	NAVY BEANS	43
	SPLIT PEAS	45
	PINTO BEANS	55
	WHITE RICE	80
	WHITE BREAD**	100
	POTATOES	121

*150 g cooked except for white bread

**White bread was used as the reference food in an amount equal to the carbohydrate available in the test food

Did you know? An estimated 246 million people worldwide are affected by diabetes. That number is expected to hit 380 million by 2025.

Pulses & Cardiovascular Disease

- Cardioprotective effects:
 - ↓ serum cholesterol
 - ↓ triglycerides
 - ↓ blood pressure
 - ↓ blood glucose and insulin
 - ↓ likelihood of obesity

Pulses are a heart healthy food
↑ protein, complex CHO, folate, antioxidants, phytochemicals
↓ fat, sodium
∅ saturated fat, cholesterol

- **Dietary fibre** - slows the absorption of lipids, lowers blood cholesterol, increases fecal bile acid excretion
- **Folate** - reduce elevated blood homocysteine (risk factor for CVD)

Did you know?

CVD costs the Canadian economy more than \$18 billion/year in physician services, hospital costs, lost wages and decreased productivity

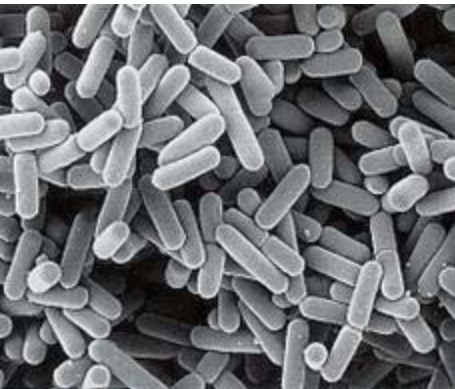
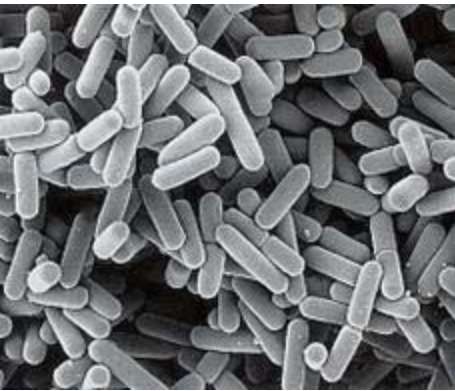
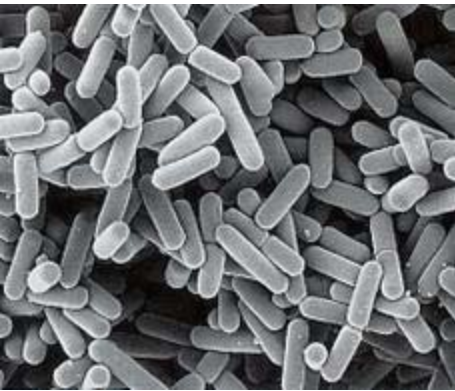
Pulses & Weight Management

- ↓ glycemic response & subsequent hunger
- ↑ satiety
- contribute to weight loss and weight regulation

Pulses as part of a weight loss diet ↑ Complex CHO & protein ↓ Fat & caloric density



- smaller waistlines
- inverse relationship with BMI



Pulses & Gut health

- Regular pulse consumption is well tolerated
- Pulses provide pre-biotic benefit
 - Dietary fibre, slowly digestible and resistant starch content of pulses serve as “prebiotics” that stimulate the growth of healthy gut bacteria
 - *Lactobacillus*
 - *Bifidobacteria*
- Potential to improve overall immune health and reduce the risk of certain cancers

Additional health benefits of pulses

- **Cancer** - Pulses can protect against tumour growth and development
- **Hypertension** - Pulse protein hydrolysates exhibit angiotensin converting enzyme (ACE) inhibitory activity (ACE - enzyme that modulates blood pressure)
- **Immune status** - Pulses may improve the nutritional and immune status in HIV+ children
- **Aging** - Pulses are a good source of antioxidants and other important naturally-occurring agents that can help combat disease and aging
- **Energy** - Pulses provide long lasting energy

Upcoming Clinical Research

Pulse Research Network (PURENet) - 3 clinical studies underway

- Satiety and metabolic control
- Glycemic response and CVD risk factors in type II diabetics
- Hypertension
- Effectiveness of pulse-based foods combined with exercise for improving components of metabolic syndrome



- Consumers are looking for nutritious, safe, cost effective and environmentally friendly foods
- Providing food solutions to chronic diseases is imperative

Imagine a food ingredient that can improve your health and is good for the environment, too...

...think pulses.

Pulse Attributes meet Market Demands

Top Trends 2009

Pulse Attributes

- High Protein
- High Fibre
- Non-digestible (complex) carbohydrates
- Low Glycemic Index
- Low Fat
- High B vitamins and minerals
- Low environmental impact protein source
- Low allergenicity
(alternative to soy, wheat)

Digestive health

Weight management

Energy

Kids health

Healthy snacks

Naturally healthy

Environmentally Friendly



Pulses for special diets

- **Gluten Free** - Pulses are suitable for people who are gluten intolerant or have celiac disease
 - affects nearly 1% of the US population
- **Non-Allergenic** - Pulses appear to have limited associated allergies compared with soy, wheat, nuts etc
- **Vegetarian diet** - Pulses are rich in protein and key vitamins and minerals
 - Rich in amino acid **lysine**
 - When paired: Balanced protein needed for growth

Did you know? U.S. sales of gluten-free foods (~\$700 million in 2006) are rising 15-25%/year (Mintel)

Everyone is talking about pulses...

Canada's Food Guide and the U.S. MyPyramid

Recommend regular consumption of pulses

USDA Dietary Guidelines (2005): Consume 3 cups of dry beans (lentils, chickpeas, peas) per week

FDA Dietary Guidance Message:



Diets including beans may reduce your risk of heart disease and certain cancers.



Eat More Beans!

Health Claim Opportunities in Canada

➤ Nutrient Content Claims

Accepted claims: "Low in fat" "High in fibre"

➤ Structure Function Claims

Potential claim... "Pulses are low in fat. This food may assist in achieving & maintaining a healthy body weight"

➤ Disease risk reduction Health Claims

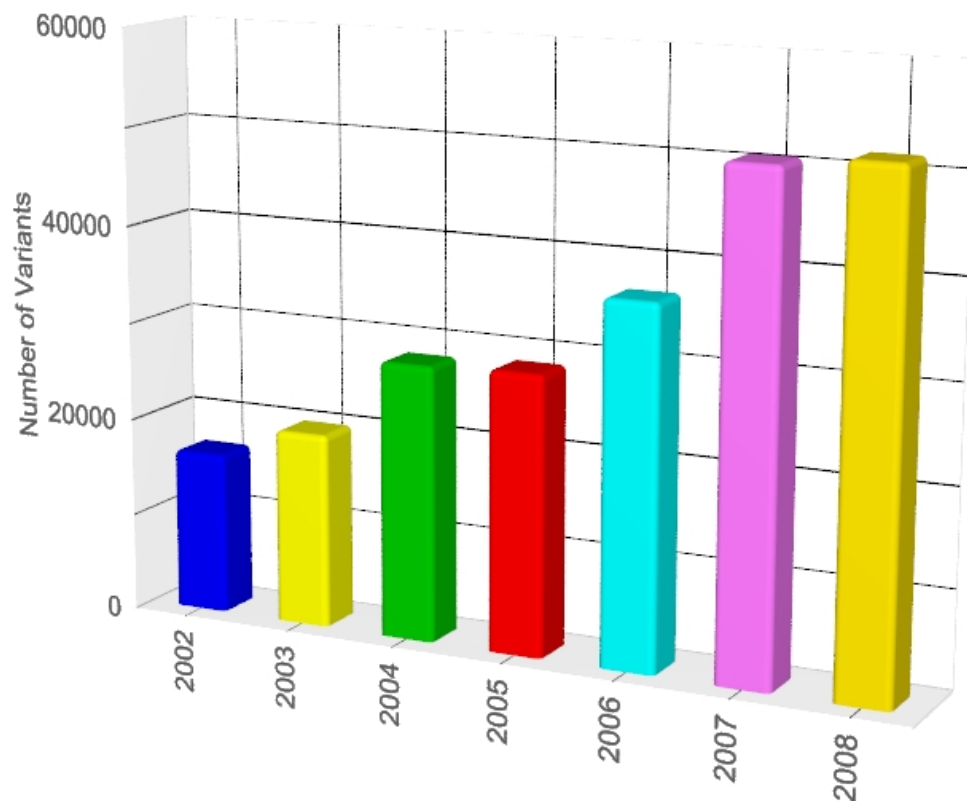
Potential claim... "A diet containing pulses can reduce the risk of obesity, CVD or diabetes"

Health Statements in the US

Claims That Do Not Require Approval:	Claims Requiring FDA Approval:
Helps maintain normal cholesterol levels	Lowers cholesterol
Provides relief of occasional constipation	Provides relief of chronic constipation
Suppresses appetite to aid weight loss	Suppresses appetite to treat obesity
Supports the immune system	
Promotes digestion	

Food Products Launched with Health Messaging Worldwide

Number of Variants by Date Published



45% of processed foods launched in 2008 contained health and nutrition messaging (31% in 2002)

Number of Variants

2002	16,538
2003	19,875
2004	28,153
2005	28,524
2006	36,677
2007	50,501
2008	51,472

Pulse Innovation Station



*Green
Giant™*



Contains black beans



Contains lentil and chickpea flours



Contains pea fibre





UES



CC

that rinsing canned beans reduces the sodium
ately 40%!

Our Next Steps...

- Marketing the research
- Provide research leadership
- Engage the food processing industry's interest in incorporating pulses into food products by:
 - Raising the profile of the pulse industry
 - Providing nutritional and utilization solutions to food manufacturers and ingredient suppliers

pulses are a “superfood”

Efforts



beans, peas, lentils & chickpeas are a healthy food choice

“Pulses” or “legumes”, include crops like dry peas, dry beans, lentils and chickpeas. They are an excellent food choice with health-promoting benefits. Their key nutrients include complex carbohydrates (e.g. fiber, resistant or slowly digested starch), vegetable protein, folate and other vitamins, and minerals like potassium and iron. All support a healthy diet.

- High Fiber ~15 g dietary fiber per cup!
- High Resistant and Slowly Digested Starch
- Vegetable Protein ~23% protein
- Low Fat ~1%
- Low Glycemic Index (GI)
- High Vitamins and Minerals

pulses are recommended by **health professionals!**



Many health organizations recommend eating pulses to maintain good health and prevent chronic diseases like diabetes, heart disease and cancer. The U.S. Dietary Guidelines (2005) recommend eating 3 cups of dry beans (pulses) per week. In 2005, the U.S. Food and Drug Administration issued this statement: “Diets including beans may reduce your risk of heart disease and certain cancers”. Canada’s 2007 Food Guide to Healthy Living states “Have meat alternatives such as beans, lentils and tofu often” and suggests that regularly choosing beans and other meat alternatives such as lentils can help minimize the amount of saturated fat in the diet.

pulses can help protect your good health

Clinical research over 40 years has shown that regular intake of beans or other pulses can contribute to a marked reduction in serum cholesterol and other blood lipids – major risk factors for cardiovascular disease. More recently, research studies have shown that regular pulse consumption may assist with weight management by increasing feelings of fullness and controlling appetite.



Health benefits of

marketing approaches and

health programs,

health professional and



Knowledge & Communication

➤ Publishing scientifically sound original research and literature reviews

→ Literature Reviews

- Pulses & Diabetes, Cardiovascular Disease, Cancer

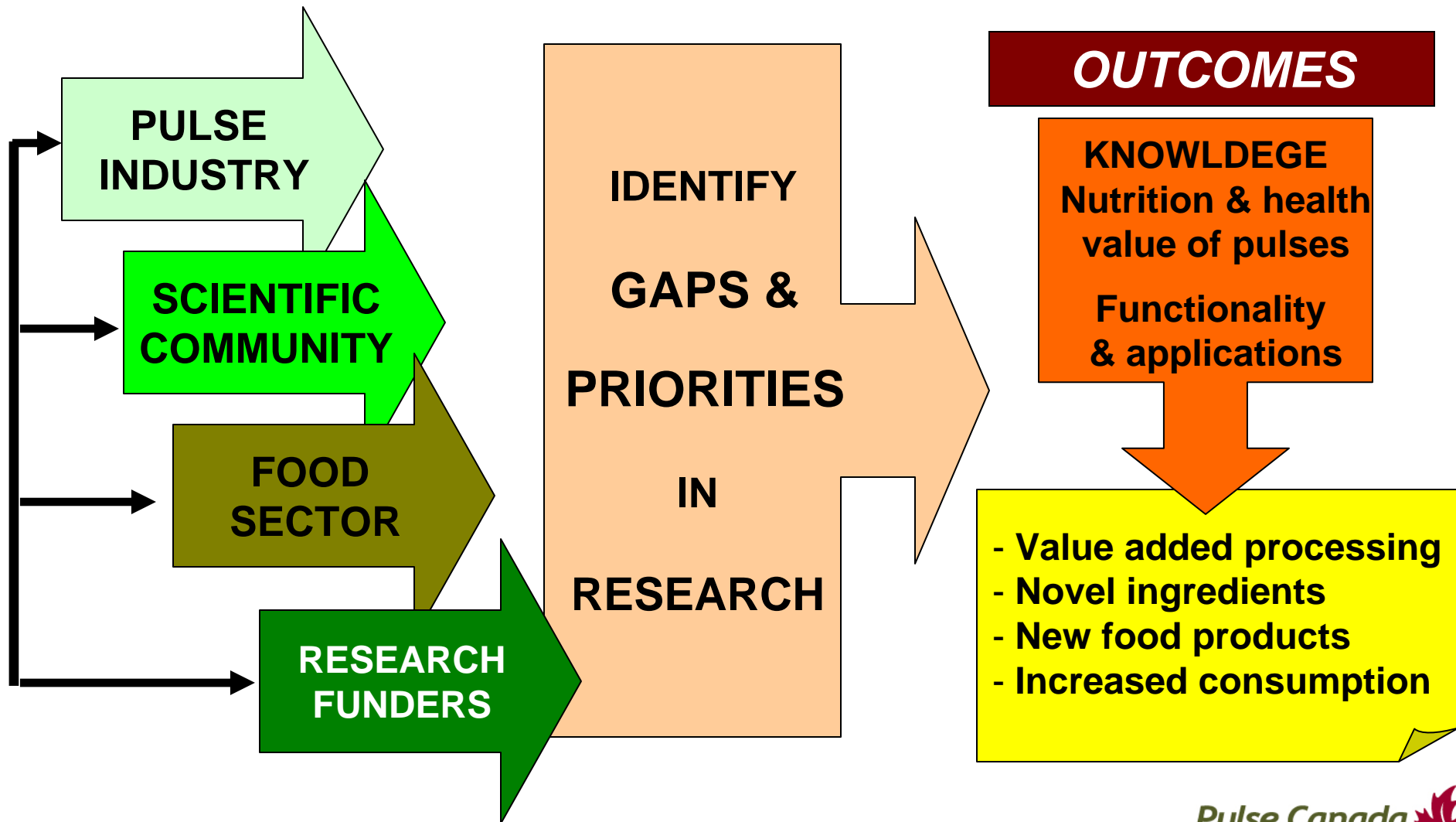
→ Research Publications



- Special issue on the functional and nutritional properties of pulses in **Food Research International** - deadline for paper submission: March 5th, 2009
- Special issue on the health benefits of pulses in the **British Journal of Nutrition** - Call for papers to be announced shortly



Value-Chain Partnerships to drive Innovation



Looking forward

- Research: health & environmental contributions of pulses
- Deliver the value of pulses to people around the world
- We are working to achieve results that make a positive contribution to healthy people and a healthy planet

There is a world of
opportunity and we have
only just begun



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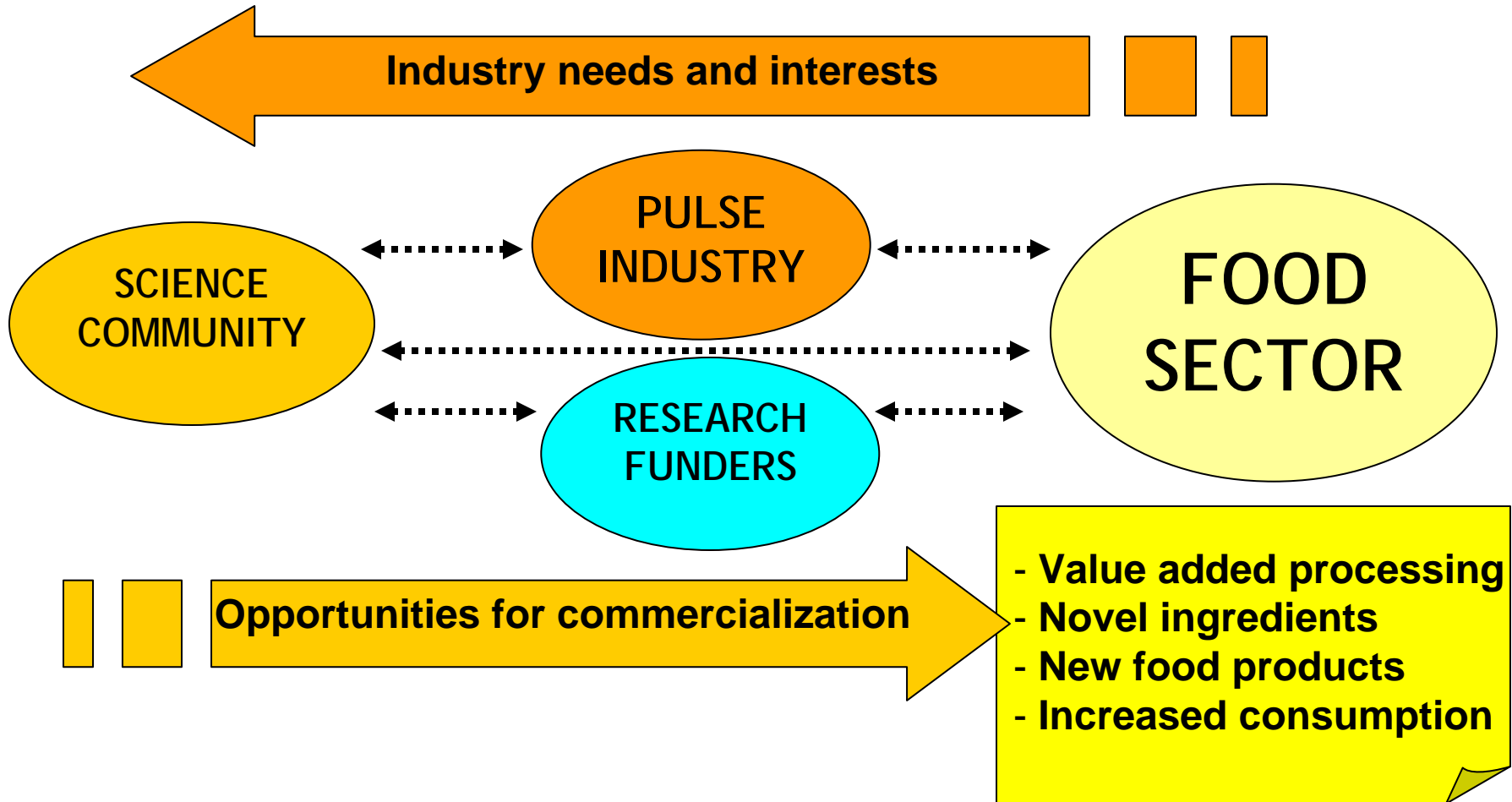
Health and Environment



Consumer Priorities	Pulse Solutions
Weight Control	Increased satiety (feeling full)
Diabetes	Low Glycemic Index
Cardiovascular Disease	Lower Cholesterol
Gut Health	Prebiotics
Greenhouse Gases	Nitrogen Biomanufacturing
Water, Air, Soil Quality	Role in Sustainable Agriculture



Value-Chain Partnerships to drive Innovation



Provide Leadership in Research

To foster pulse-based research linking food industry applications, nutrition and health, pulse processing and breeding, Pulse Canada will:

Establish research priorities for the pulse industry, drive research and provide funding recommendations

- Identify gaps and opportunities in pulse research
- Feed back information from consumer gatekeepers and food industry into research priorities
- Develop networks to disseminate opportunities, priorities and results
- Need for International Research Committee to steer these efforts:
 - Representatives: researchers, health and agricultural organizations and industry associates