



**#004**

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Protein Innovation Canada



# Canola Protein Innovation in Canada

IRC 2023

September 2023

We co-invest  
in innovation  
to accelerate  
the growth of  
Canada's  
plant-based  
food, feed and  
ingredient  
sector.



WE WILL CONTINUE TO CO-INVEST IN INNOVATION TO ACCELERATE THE GROWTH OF CANADA'S PLANT-BASED FOOD, FEED AND INGREDIENT SECTOR.



**55**

Total number of projects



**437**

Number of reported IP assets as a result of co-investments



**\$15B**

10-year expected GDP



**\$461M**

Total project value



**480**

Number of organizations involved in projects

# PIC Technology Projects by Total Project Value

Crop Legend

- Peas ●
- All ●
- Canola ●
- Other Pulse ●

PIC Pillar



SELL



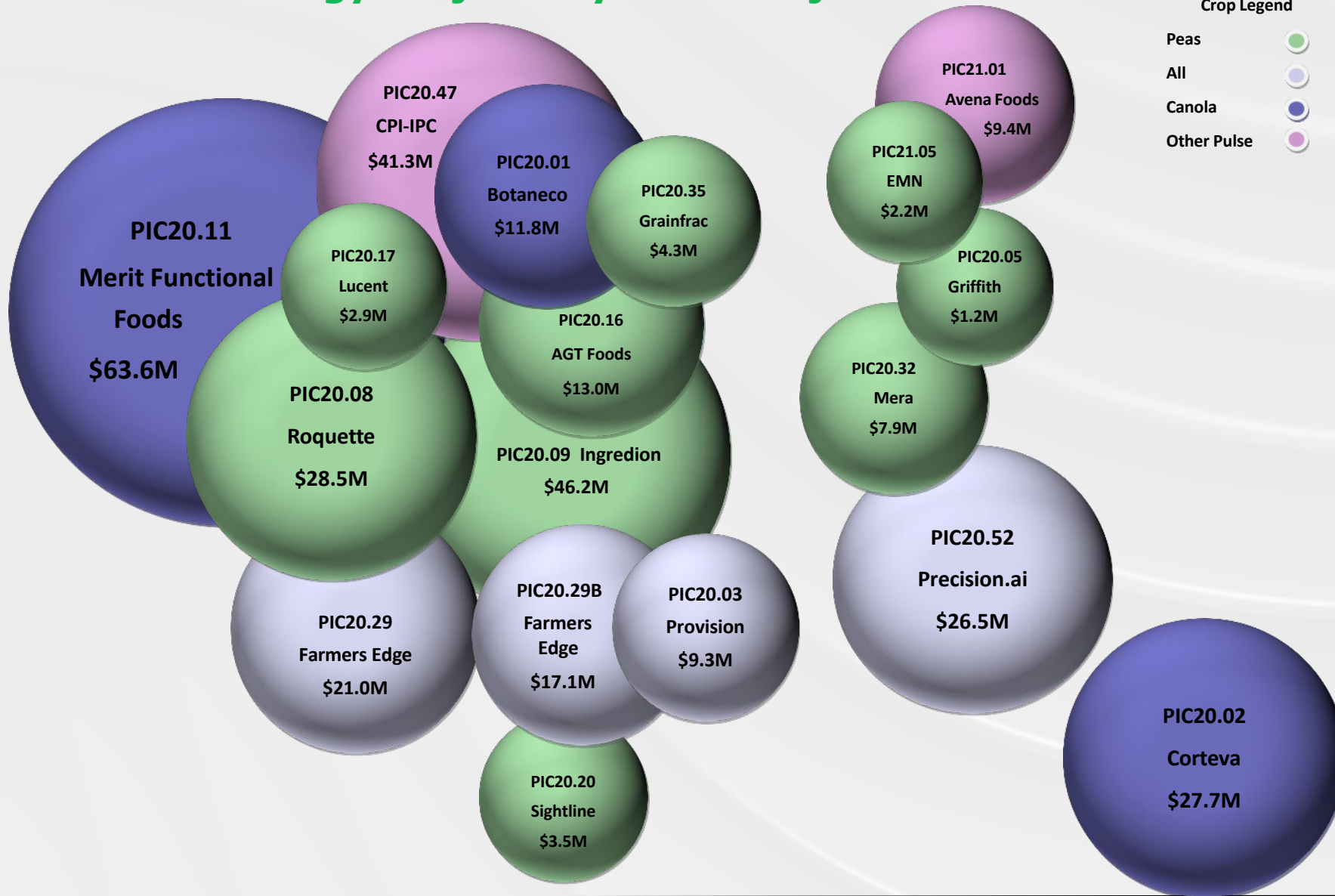
MAKE



GROW



CREATE



2020

2021  
Jan-Jun

2021  
Jul-Dec

2022  
Jan-Jun

2022  
Jul-Dec

2023  
Jan-Jun

2023  
Jul-Dec

2024+

Commercialization Target Date (Expected Product, Process, or Service)

# Technology Pillars



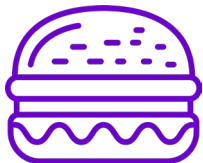
- Genetics (15%): germplasm development with an aim to improve processing efficiency, quality, sensory and the development of novel ingredients



- Crops (10%): technologies to measure and improve on farm sustainability and information flow along the value chain



- Ingredients (50%): the development, scaling and optimization of plant-based ingredients



- Products (25%): the conversion of Canadian made ingredients and co-products into consumption-ready goods

The background features a vibrant green color scheme with a faint, artistic illustration of a plant's internal structure, possibly a seed or a young shoot, showing fibrous and cellular details. Scattered across the page are several solid-colored geometric shapes: a white horizontal bar at the top center, a blue square at the top right, an orange vertical bar on the right side, a blue vertical bar on the right side, a white square at the bottom right, and an orange horizontal bar at the bottom right. A small blue square at the bottom right contains the number 7.

# Why Canada for Plant Protein?

## Agricultural Land and Strength in Crop Production

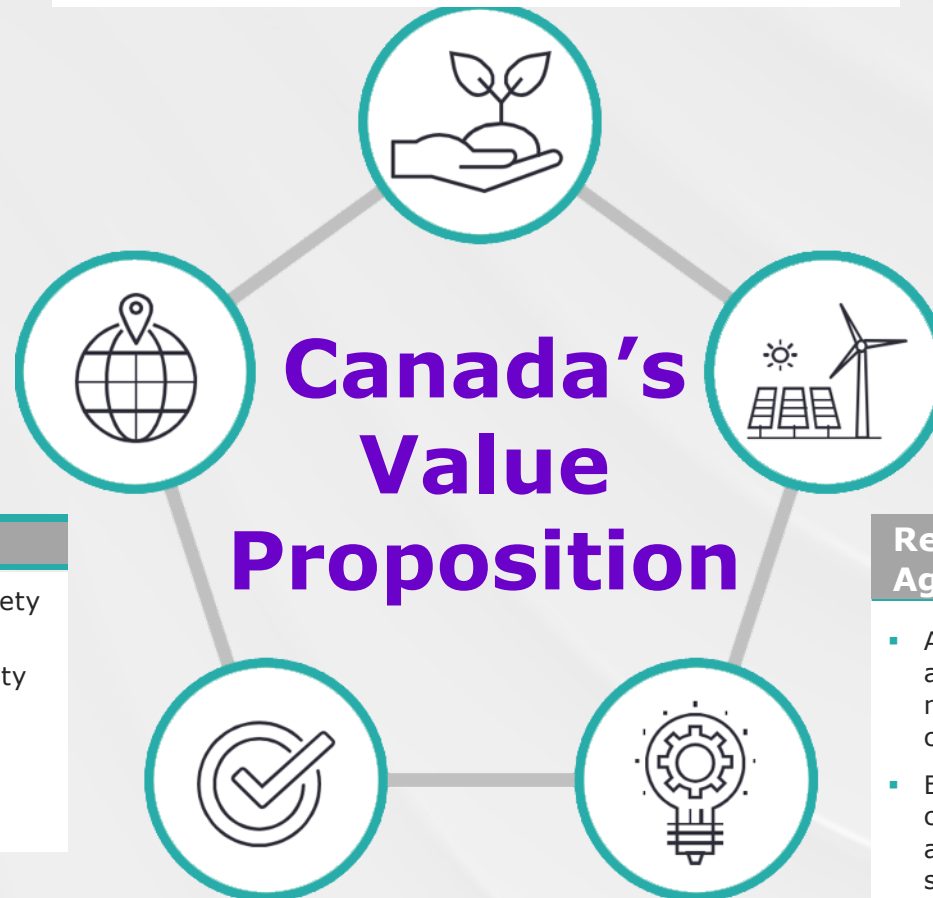
- Endowed with vast amounts of arable land (43.7 million hectares in 2016)
- Leading producer and exporter of protein rich crops including soy, wheat, canola, dry peas, lentils, fava beans, and chickpeas
- In the face of climate change, Canada could gain an additional 4.2 million sq km of agricultural land

## Market Access

- Access to the U.S. and Mexican markets through close geographic proximity and the USCMA trade deal
- Preferential access to EU markets through CETA as well as a post-Brexit trade continuity agreement with Britain

## Sustainable Production

- Canada is an efficient and sustainable producer of crops through practices such as crop rotations, crop engineering, zero-tillage farming, among other practices
- Consumers and food manufacturers are increasingly looking to source sustainable inputs in order to meet their sustainability goals



## Food Safety and Quality

- Canada is a leading jurisdiction in food safety and a supplier of high-quality crops
- Considering the priority given to food safety and regulations in key alternative protein markets in Europe, Canada's reputation provides a distinct advantage to local businesses

## Research Capabilities and Agri-Food Clusters

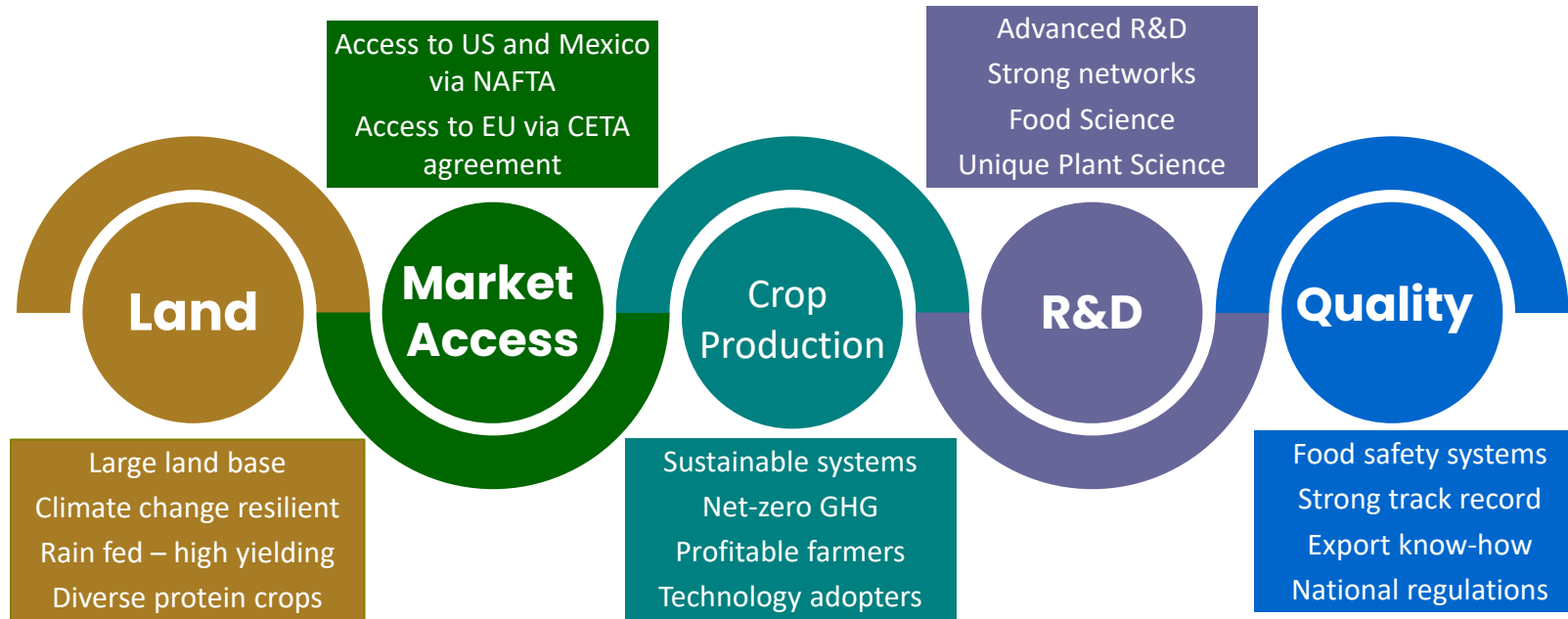
- Advanced research capabilities in agriculture and agri-food across Canada, including a network of research and development centres
- Existing food and beverage processing clusters in the Toronto, Montreal, Vancouver, and Waterloo regions and food science and system expertise at the University of Guelph



# Why Canola?

# Canola Value Proposition

building a new plant protein powerhouse





# Technology Project Portfolio Fund I



BOTANECO™

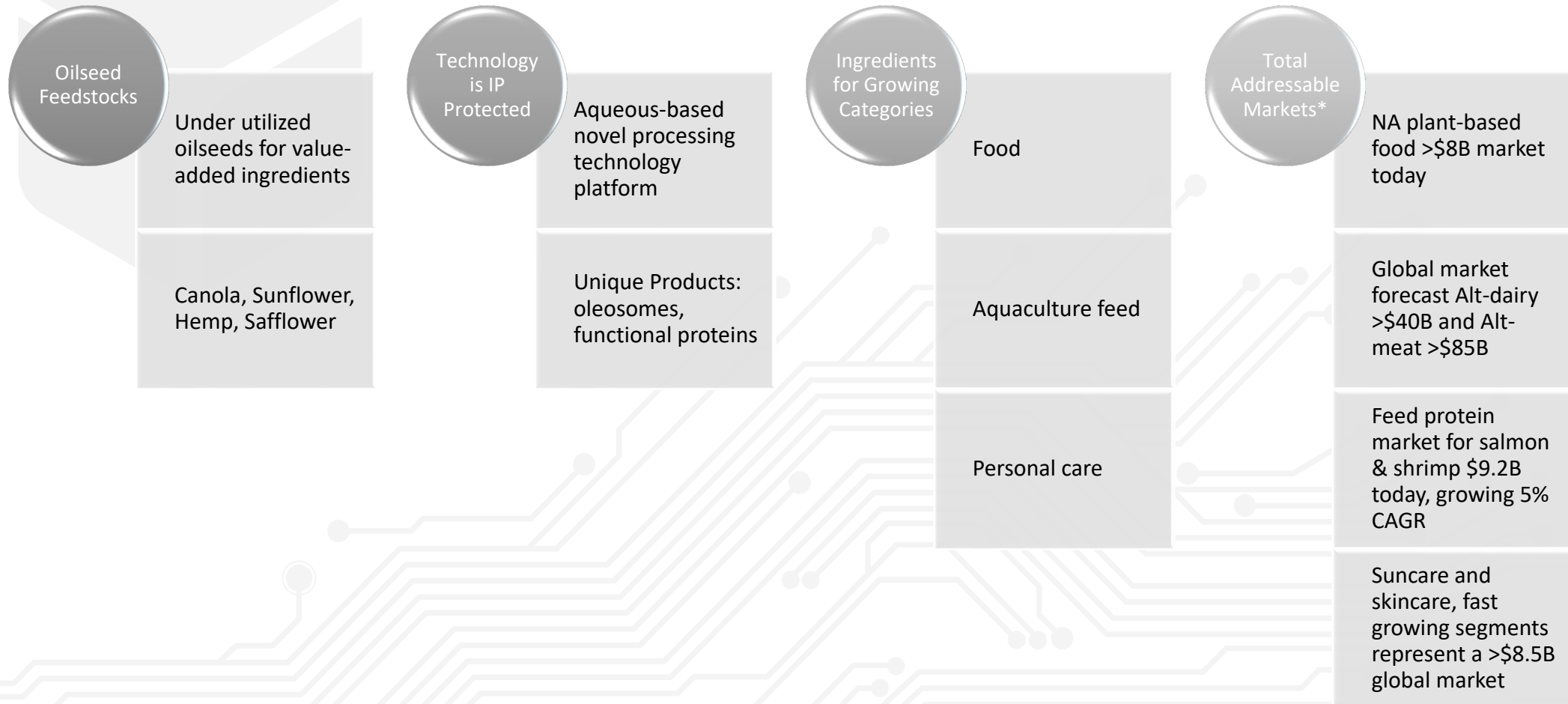


**\$11.8 million**

- Commercialization of novel oilseed-derived ingredients from canola, hemp, sunflower
- Improve separation, purification and commercialization of the novel ingredients

# Botaneco: A Technology Platform Company

- Novel water-based process that creates superior co-products from oilseeds
- Bringing solutions to underserved, fast growing markets



# High-value Aquaculture Feed



# Alofin™

- **A uniquely clean, high-quality and cost-effective protein**

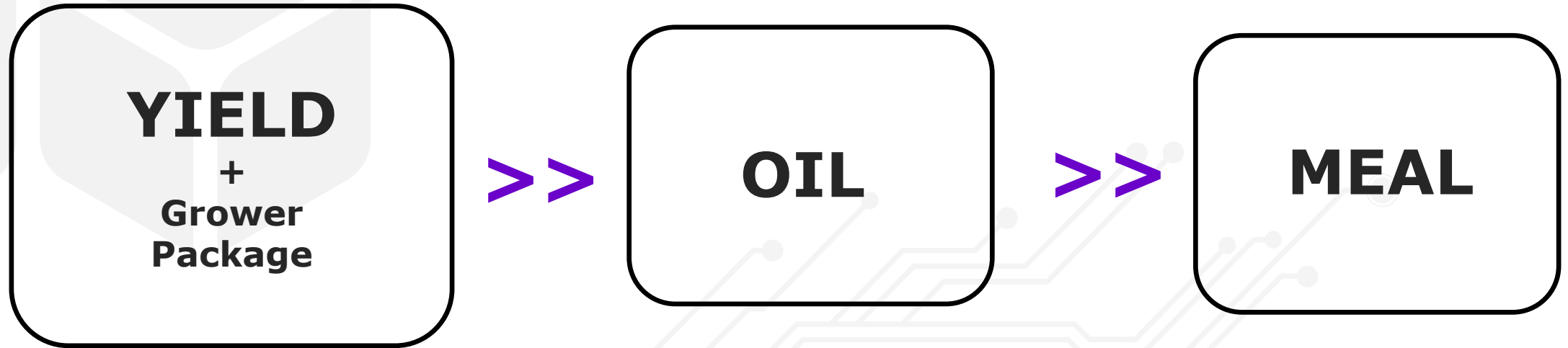
- 1) Alofin is made by a unique process that creates a superior product as compared to previous canola protein concentrates
- 2) Highly concentrated, containing 75% protein
- 3) A balanced amino-acid profile, superior to other plant proteins
- 4) Ultra-low presence of anti-nutritional factors
- 5) Platform provides a strong sustainability and climate change position
- 6) Highly scalable with global supply chain capability
- 7) Takes advantage of canola, 2<sup>nd</sup> largest oilseed crop, a large reservoir of under-developed protein



**\$27.7 million**

- Creation of a hybrid canola seed with increased protein content and less fibre
- Project will develop a higher protein canola meal, superior to soybean

# Canola Value Priorities



- Can't sacrifice YIELD or OIL in making MEAL IMPROVEMENTS
- Meal improvements must be INCREMENTAL in value

# Improving Canola Meal

Metrics (Dry Basis)	Canola Meal:	Soybean Meal:	Difference:
Crude Protein (%DB)	43%	52%	~9% points
ADF (%DB)	20%	8%	~12% points
Digestible Energy (Kcal/kg)	~4,000	~3,300	~700 Kcal (~18%)

- Must close “value gap” with Soybean Meal – improving nutritional value of Canola Meal will increase \$\$ value.
- Total Protein is most important so top priority.
- Increased Protein should be mirrored in Reduced Fiber, especially ADF.
- Above improvements will automatically increase Energy Density.

# Improving Canola Meal – Progress to Date

- In PIC 20.02, Corteva delivered +4% Protein / -3% ADF improvements vs. commodity canola meal.
- 5-year goal of +6% Protein / -5% ADF.
- Goal to close Protein gap with Soybean by 50%+.
- These improvements should drive increased inclusion of Canola Meal in non-ruminant feeds (hogs, poultry, warm-water fish).
- Higher protein canola meal will also be superior feedstock to making Canola Protein Concentrate for salmon & shrimp feeds and Canola Protein Isolate for use as a food and beverage ingredient.



## THE WINNING COMBINATION



**\$63.6 million**

- Construction of state-of-the-art plant protein facility
- One of the world's most functional plant proteins from pea and canola, with high purity and nearly 100% solubility

# Merit Functional Foods 94,000-square-foot production facility in Manitoba, Canada





## **\$2.2 million**

- Developing a novel plant-based protein blend that will be designed to meet the protein needs of clinical patients and athletic consumers
- Targeting consumers where sufficient protein intakes pose a challenge

- Gruppo's DEEPLAF™ plant-based protein



## Nutrition Facts Valeur nutritive

Per 2 scoops (32 g)  
pour 2 cuillères (32 g)

**Calories 130**

% Daily Value\*  
% valeur quotidienne\*

**Fat / Lipides 2 g** **2%**  
Saturated / saturés 0.4 g **2%**  
+ Trans / trans 0 g

**Carbohydrates / Glucides 8 g**  
Fibre / Fibres 2 g **6%**  
Sugars / Sucres 6 g **6%**

**Protein / Protéines 20 g**

**Cholesterol / Cholestérol 0 mg**

**Sodium 320 mg** **14%**

Potassium 125 mg **4%**

Calcium 50 mg **3%**

Iron / Fer 3 mg **16%**

\* 5% or less is **a little**, 15% or more is **a lot**.

\* 5% ou moins c'est **peu**, 15% ou plus c'est **beaucoup**.

Credit: Gruppo North America, Inc.



## **\$1.9 million**

- Developing a whole muscle, plant-based fish filet that emulates the same texture, taste and cooking experience of fish
- New products to target consumers interested in more sustainable diets

**Creating a  
plant-based  
salmon  
alternative  
that looks,  
cooks and  
tastes like the  
real thing**





**\$7.9 million**

- Developing and distributing plant-based, non-soy alternatives to pork and Wagyu beef
- The new products will be sold throughout Europe, Asia and North America

The image features a top-down view of a red bento box and a white plate of gyoza on a wooden surface. The bento box is divided into sections containing: a row of gyoza with green onions, a salad with lettuce and fried items, a bowl of beef stir-fry with rice, a small bowl of dark sauce, fried items, and two egg rolls. The white plate holds a row of gyoza with green onions and radish slices. The brand name 'Waygu' is written in a white, stylized font across the center, with 'PREMIUM PLANT-BASED BEEF' in a smaller, white, sans-serif font below it.

Waygu<sup>®</sup>  
PREMIUM PLANT-BASED BEEF



## **\$15.3 million**

- Developing more than 20 nutritious and appealing clean-label plant-based seafood products that will outperform existing plant-based seafood product options
- A three-part focus on mass retail, direct-to-consumer, and foodservice channels



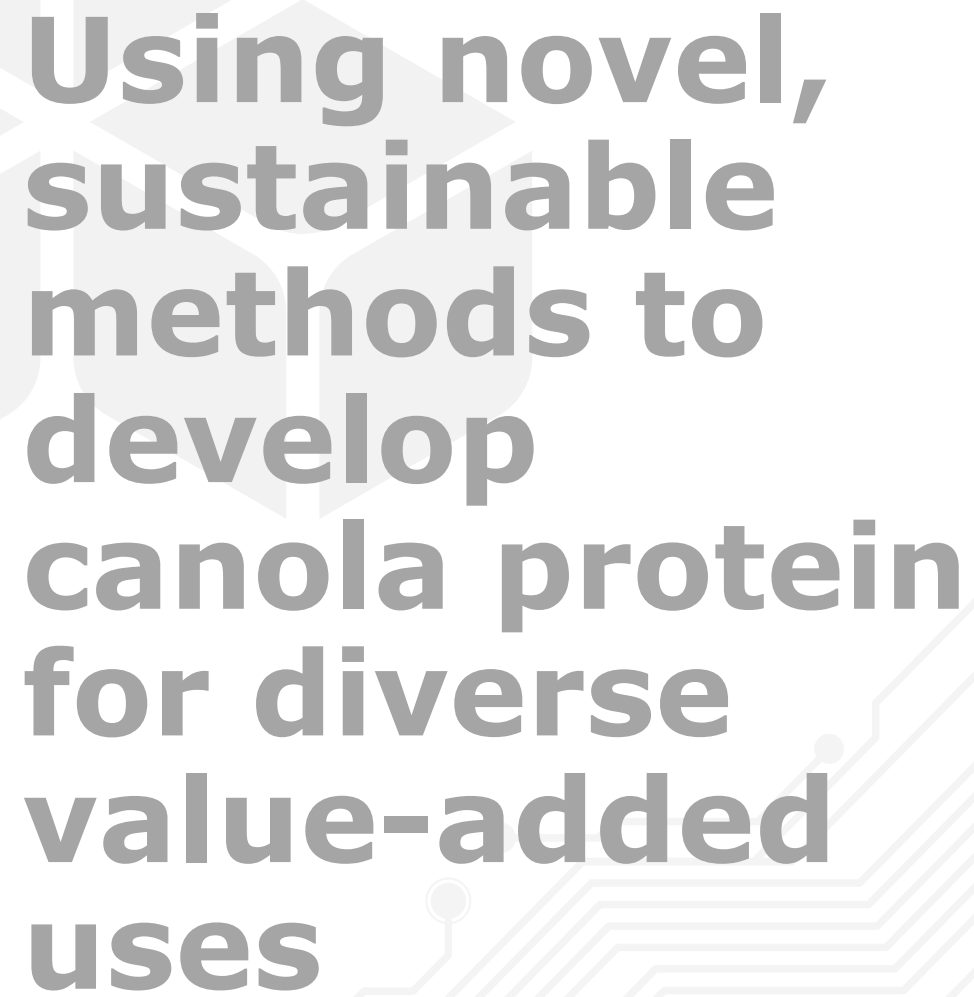
- **Heading**

- Text



## \$2.2 million

- Manufacturing canola protein concentrates economically at large scale while being produced within a much lower carbon footprint than existing protein isolation processes
- Enabling initial evaluation of canola protein concentrate in aquafeed and food formulations



**Using novel,  
sustainable  
methods to  
develop  
canola protein  
for diverse  
value-added  
uses**





Protein  
Industries  
Canada

**Thank you!**

**[www.proteinindustriescanada.ca](http://www.proteinindustriescanada.ca)**

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