

ATLANTIC PLANT PROTEIN INITIATIVE

Figuring out where we fit in the Plant Protein movement

PIC Capacity Building Project 2022/23





Atlantic Plant Protein - PIC

- **1 yr.** Protein Industries Canada
 - Capacity Project
- Atlantic Plant Protein Steering Committee
- **Consortium:**
ECODA – Dalhousie University – UPEI
- **3 components:**
 - a) asset mapping
 - b) value chain study
 - c) ag-literacy & careers



**Protein
Industries
Canada**

PIC Work Plan

Asset Map (ECODA)

- Literature review and data collection
- Interviews and industry meetings
- Provincial Focus Groups
- National map collaboration (EMILI)

Value Chain Study (Dal)

- Consumer survey (national)
- Producer Survey (regional)
- Processor Survey (Eastern Canada)

Ag-literacy & Careers (Dal &UPEI)

- Literature review and data
- Education reach out (school boards & indigenous groups)
- Resource development



What do we mean by a plant-based protein?

- **Wheat: 11 - 13% protein**
- **Oats: 12 - 24% protein**
- **canola: 18 - 22% protein**
- **soybeans: 35 - 40% protein**

***Isolates ~ Concentrates ~ Meals**

Key Considerations in Product Development

Capacity

- Estimate need of 34% increase in pea and 3% soy globally by 2030
- 13MT demand in 2020 , 97MT target for 2035
- +800 processing facilities

Quality

- Consistency is key for supply (volume and quality)
- Taste & texture (vegan vs flexitarian choices)
- Huge whitespace with significant investments (Roquette-Canada)

Price

- Price parity for plant-based expected this year (2023)

Atlantic Agricultural Land Use (acres)

Province	LAND IN CROPS	SUMMERFALLOW LAND	TAME/SEEDED PASTURE	ALL OTHER*
NOVA SCOTIA	247,037	355	27,588	449,093
NEW BRUNSWICK	321,756	140	23,616	340,309
PEI	375,141	68	15,252	114,185
NFLD/LABR	19,298	45	1,825	28,952

** includes available agricultural land not in use*

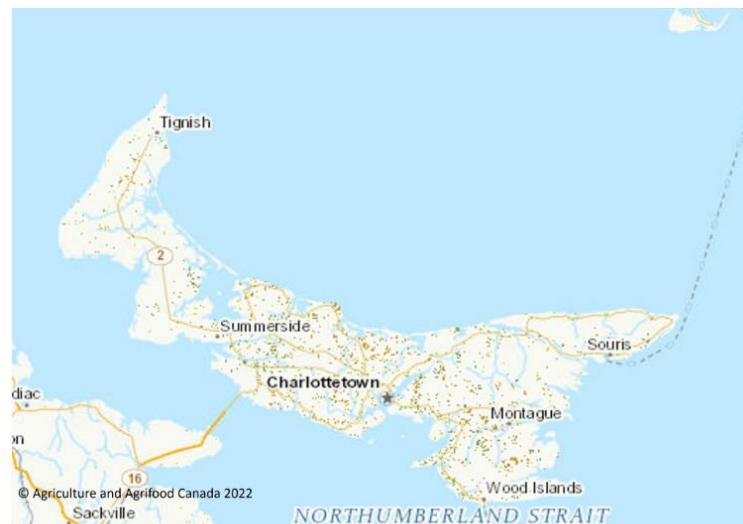
Atlantic Agricultural Production (harvested acres)

Province	Potato	Barley	Oats	Fruit & Veg	Soybeans	Wheat
NOVA SCOTIA	1,200	3,975	3,900	51,279	11,400	4,500
NEW BRUNSWICK	48,539	25,936	27,000	39,312	9,900	7,000
PEI	85,250	61,000	6,200	13,665	36,100	30,200
NFLD/LABR	325	0	0.25	1,286	0	0

Slide adapted from Invest Canada Alternative Proteins in PEI Presentation, 2022; data sources: Statistics Canada, PEI, Potatoes Canada, GNB, Agr-Food Canada, Atlantic Grains Council

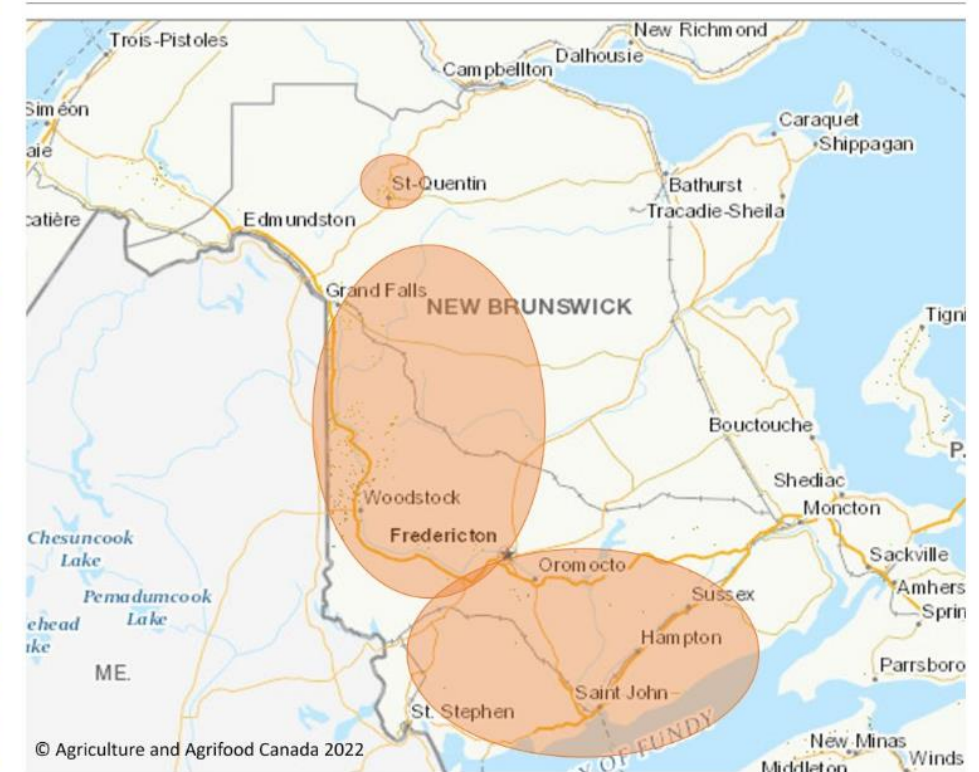


Nova Scotia



Prince Edward Island

Plant protein production in Atlantic Canada



New Brunswick

* EMILI to host national interactive map

Plant-based protein options for Atlantic Canada

Grain Legumes

- **Soybean**
- **Common bean**
- **Pea**
- **Lupine**
- **Faba bean**

Oilseeds

- **Canola/Camelina**



Soybeans

- Adapted to the region and successfully grown in several rotations.
- Current production largely feed types
- Need to diversify markets to reduce risk (feed types into more food types, especially for export (natto+), or expanded buyer markets.....'all eggs in 1-3 baskets')





Field pea

- Well adapted for the region
- Can be challenged by late season heavy rains (intercrop)





Faba Bean

- Cool season crop which allows for early seeding; pods are high; grown in the region successfully for forages
- New cultivars may be more adapted





Lupin & Beans

- Both can be grown in select areas of region, but all depends on market pull.
- Some reticence to lupin due to past experiences and challenges
- Dry bean production in region not at capacity and existing market demands that are not able to be met due to yield limitations.





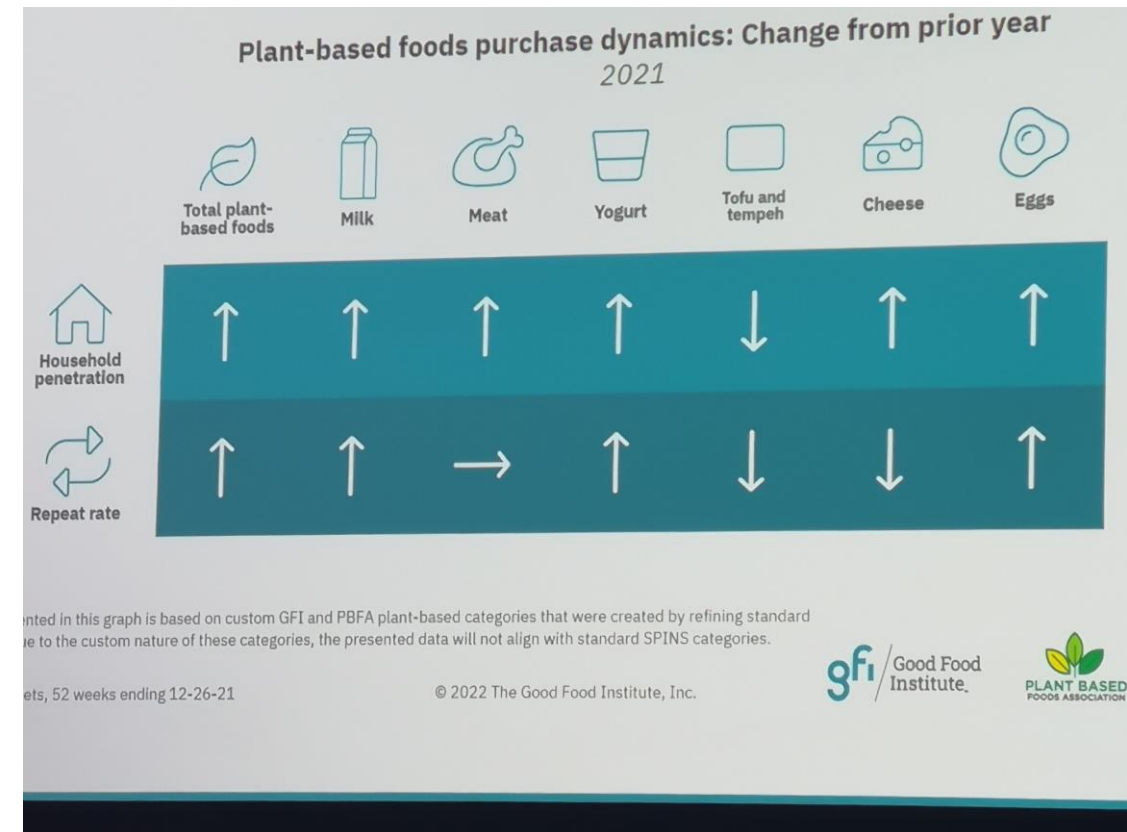
Canola

- Can be grown in the region and historical production.
- Clubroot considerations.
- Protein value of meal?
- Market driven



Consumer purchasing

- In 2021 60% of Canadians declared themselves 'flexitarian', while 6% follow vegan diet (Unilever, 2022)
 - CIFST 2021 study – 18-44 age categories @ 38-40% current purchasers of plant-based meat
- In 2022 Danone Canada reported that plant-based dairy beverage ('milk') at 40% household penetration (10% total consumption) and 10 % of all other dairy categories
- Consumer awareness of products still new (5% of consumers aware since 2019 and release of product type)



What's driving this?

- Health and wellness concerns*
 - COVID impact; dietary restrictions (25%); food guide shift; protein demands (more + diversity, CIFST 2021)
- Animal Welfare*
 - 2022 research showing animal rights now within top 10 (#7) of social causes that GenZ and millennials are passionate about (IFT, 2023)
- Environmental sustainability*
 - Climate change/GHG
 - 74% consider plant-based diet a reduction in carbon footprint
- Food security and sovereignty
 - Supply chain shift to regional supply

THE VALUE- ADDED SECTOR IS KEY

Canada currently processes approximately half of his agricultural output

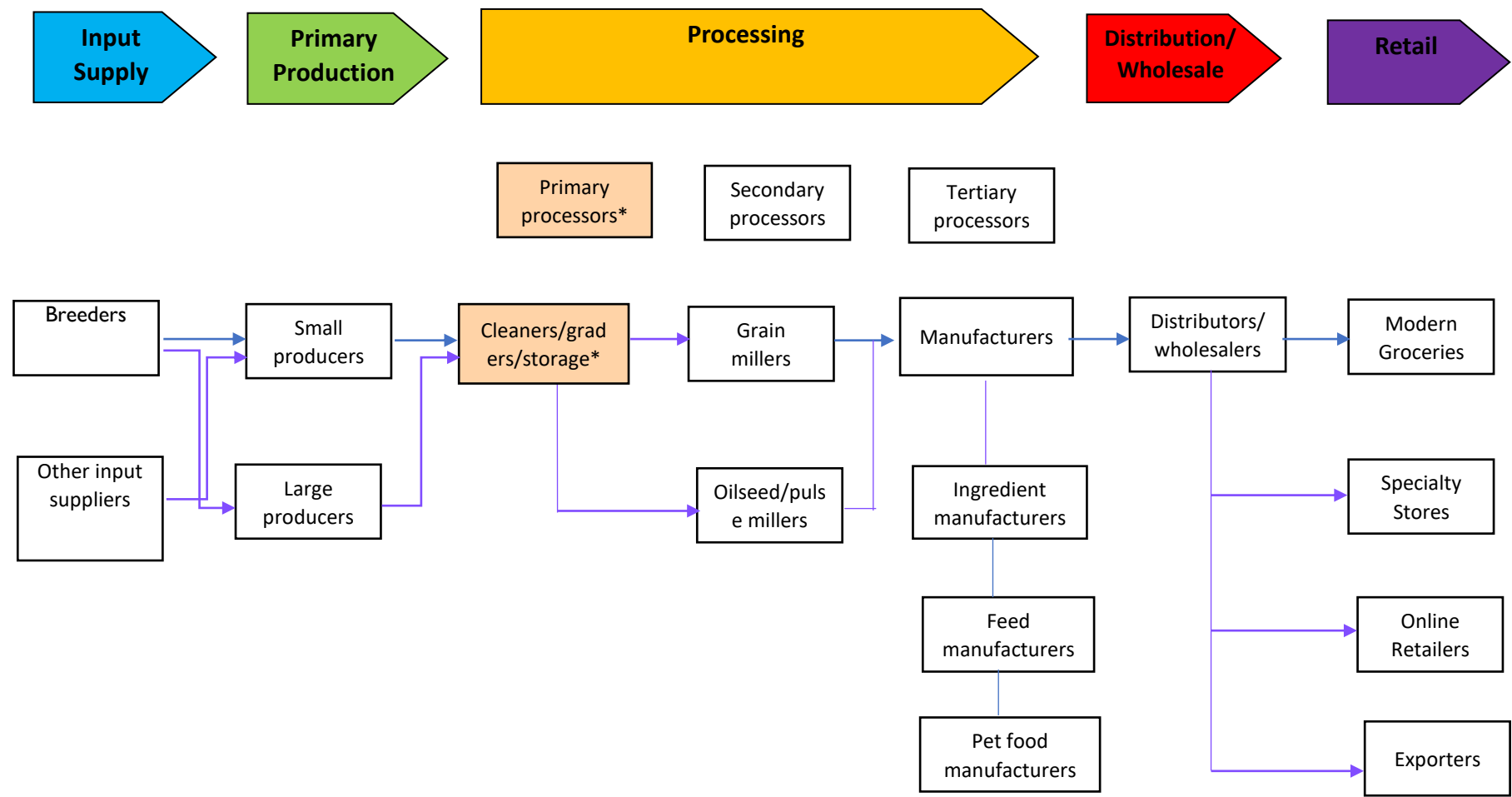
The processing industry cultivates primary products in order to meet emerging consumer trends

Sustainability depends on finish product being processed closer to supply (70%+ reduction in GHG)

Atlantic Food Processing Sector (2021, \$CAD)

Province	GDP	2020-21 % growth in sector
NOVA SCOTIA	\$539M	8.4
NEW BRUNSWICK	\$769M	8.3
PEI	\$257M	11.5
NFLD/LABR	\$404M	24

Plant-based Protein Value Chain



ATLANTIC REGION GAP – at capacity and limiting current production and development

Processing in Atlantic Canada

- Feed versus Food – focus on strengths
- Ingredients versus finished goods

! The 'bottle-neck' in primary processing

- Capacity and Proximity
 - Processors need to have access to volume within proximity (current transport costs = need for closer than ever)

*** REGIONAL CAPACITY SPOKEN FOR –
HIGHLY RISK AVERSE TO CHANGE***

Advantages for Atlantic Region

- Proximity to major markets
 - North America (40%) and EU (35%) comprise largest global markets
- Lower cost of living
- 62 post-secondary institutions & 32,000 graduates per year
- Access to major transport routes:
 - Deep-water ports open all year round (St. John & Halifax)
 - Rail
 - Air

*** Challenges at Halifax port due to port authority policies and procedures limit this transport route capabilities***

Research and Innovation in Atlantic Region

- 62 post secondary institutions
- Innovations Centers and Incubators
- 25+ funding programs (Federal, Provincial, etc. - 2022)
- PIC

*HUGE whitespace in this sector

- breeding for protein content and qualities, as well as fats targeting market needs (feed and food)

*** Industry feels access to programs sometimes more challenging than they are worth***

Collaboration is essential

Collaboration and benefits among the various stakeholders along the value chain is more important than ever. :

- **Food safety**
- **Efficiency**
- **Reduce losses**
- **Waste management**
- **Prices**

***REGIONAL CHALLENGE**

- individually provinces cannot supply capacity
- together we can thrive, separate we cannot contribute

-focus group input deemed multi-level collaboration driven by invested individual(s)/group(s) required



The breakdown

1) Cropping options: Soybeans*, peas, dry beans, faba, lupin, canola, camelina, oats, wheat *Reputable market pull required*

2) Value Adding:

- Primary Processing Gap (cleaning, drying, grading, storage)
- Feed vs Food
- Innovation hub

3) Collaboration: regional collaborations with multi-level stakeholders, driven by individual(s) with invested interests required

