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Canola AgriScience Cluster

Sustainable, Reliable Supply for a Changing World

Agri-Food Research and Innovation: Looking Ahead to 2025

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Curtis Rempel MBA Ph.D. P.Ag., Nathaniel Ort M.Sc., Ellen McNabb

Who is the Canola Council of Canada?

• Canola AgriScience Cluster

• Sustainable, Reliable Supply for a Changing World

The Canola AgriScience Cluster, under the Canadian Agricultural Partnership, is a partnership between Agriculture and Agri-Food Canada and the canola industry. Announced in 2018, the initiative invested over $20 million in funding into six areas of research. Amended in 2019, another $5 million in joint funding with SaskCanola and Alberta was invested into blackleg and verticillium stripe research activities

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CANADIAN AGRICULTURAL PARTNERSHIP Innovate. Grow. Prosper.
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CCC Primary Members

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Keep it Coming

Our strategic plan guiding the canola value chain to the industry goal of achieving average yields of 52 bu/ac to meet global market demand of 26 million tonnes by 2025.

Increased Yields and Profitability, Reduced Environmental Footprint and Production Risk

Three strategic priorities:

1. **Sustainable, reliable supply**
2. **Differentiated value**
3. **Stable and open trade**

Yield intensification for canola production while improving our environmental footprint is critical to meeting demand for sustainably produced healthy oil and high-quality protein

"52 by 2025"

2025 Environmental sustainability goals

USE LESS ENERGY

18% REDUCTION in fuel use per bushel

INCREASE LAND EFFICIENCY

40% DECREASE in the amount of land required to produce one tonne of canola

SEQUESTER MORE CARBON

sequestering additional **5 MILLION tonnes** of greenhouse gas emissions in Canadian soils, every year

IMPROVE SOIL & WATER HEALTH

Utilize 4R nutrient stewardship practices on **90% OF CANOLA ACRES**

PROTECT BIODIVERSITY

Safeguard over **2,000 BENEFICIAL INSECTS** that call canola fields and surrounding habitat home

CAP Canola AgriScience Cluster

- Sustainable, Reliable Supply for a Changing World

Theme 1 - Differentiated Quality & Enhanced Environmental Performance in Food Processing for Canola Oil & Protein

Theme 2 - Differentiated Quality & Sustainable Livestock Production using Canola Meal

Theme 3 - Yield and Quality Optimization for Sustainable Supply

Theme 4 - Sustainability and Climate Change – Improving Nutrient and Water Use Efficiency

Theme 5 - Sustainability and Climate Change – Integrated Pest Management

Theme 6 - Putting Innovation into Action – Knowledge and Technology Transfer

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Theme 1

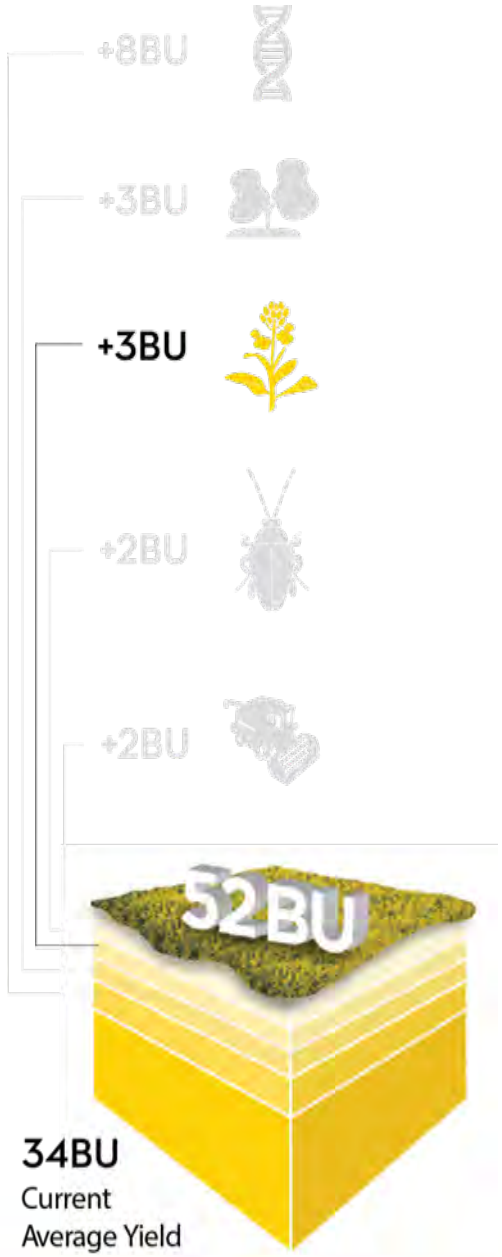
Differentiated Quality & Enhanced Environmental Performance in Food Processing for Canola Oil & Protein

1. Nutrigenetics, canola oil and glucose tolerance: Does SCD1 genotype modulate a person's response to canola oil?
2. Novel extraction of oil & antioxidants from canola seed

Theme 4

Sustainability and Climate Change – Improving Nutrient and Water Use Efficiency

1. Improving nitrogen use efficiency (NUE) and soil sustainability in canola production across Canada
2. Making of a more sustainable canola: Using genetic diversity to improve NUE



Theme 6

Putting Innovation into Action – Knowledge and Technology Transfer

+8BU

+3BU

+3BU

Promoting Best Manag

1. Canola Research Hub
2. Crop Production & Innovation H

Public Private Partnership: Research (Funding) Consortia

- IP / Licensing
- Proof of Concept
- SUCCESS STORY


THANK YOU

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Additional Information

Theme 2

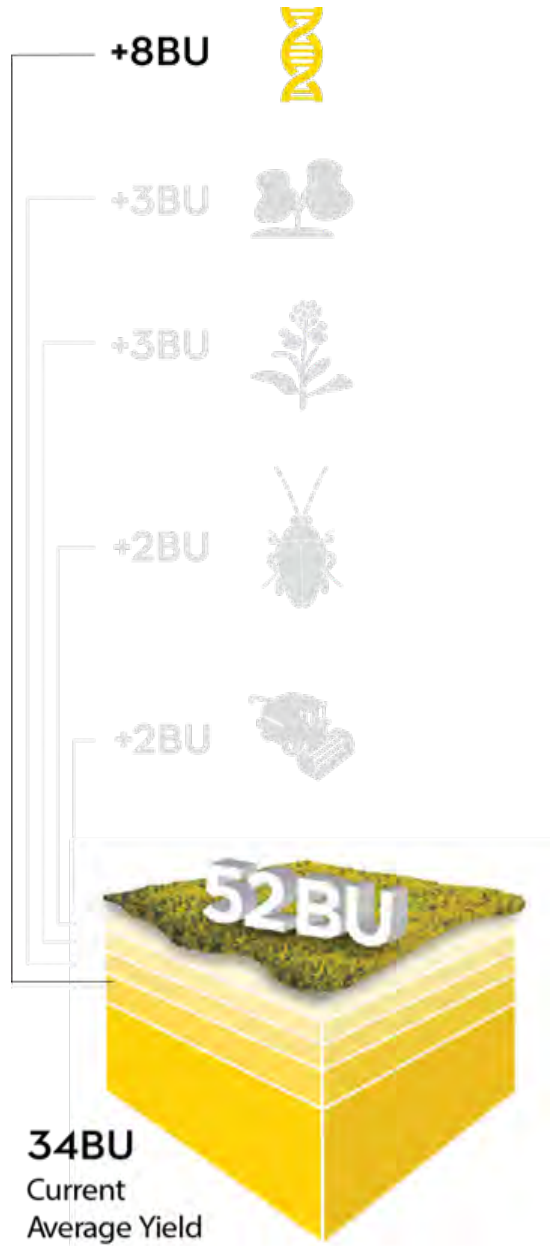
Differentiated Quality & Sustainable Livestock Production using Canola Meal

1. Gut health and digestive physiology of nursery pigs and broiler chicken fed canola coproducts-based diets
2. Canola meal to improve efficiency and sustainability of dairy production: Filling knowledge gaps
3. Understanding the impact of canola meal on gut microbiota and the long-term effects of high level of canola meal inclusion on sow and litter performance
4. Accurate determination of the contribution of canola meal to metabolizable protein supply in dairy cows
5. Evaluation of canola meal as compare to soybean meal in practical California rations

Theme 3

Yield and Quality Optimization for Sustainable Supply

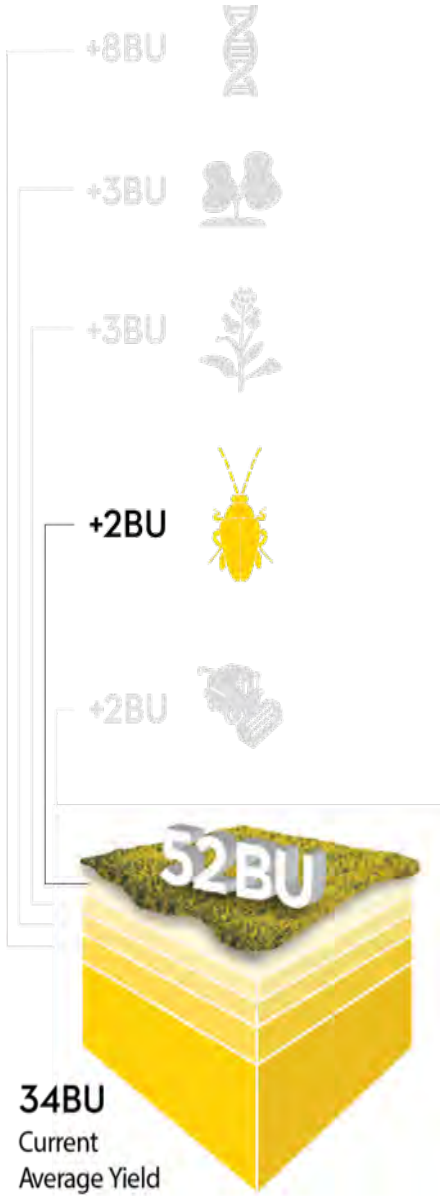
1. Manipulating agronomic factors for optimum canola harvest timing, productivity and crop sequencing
2. Enhancing yield and biomass in canola by modifying carbohydrate metabolism
3. Weeding out secondary dormancy potential from volunteer canola
4. Advancing the functional, nutritional and economic value of canola protein in Canada



Theme 5

Sustainability and Climate Change – Integrated Pest Management

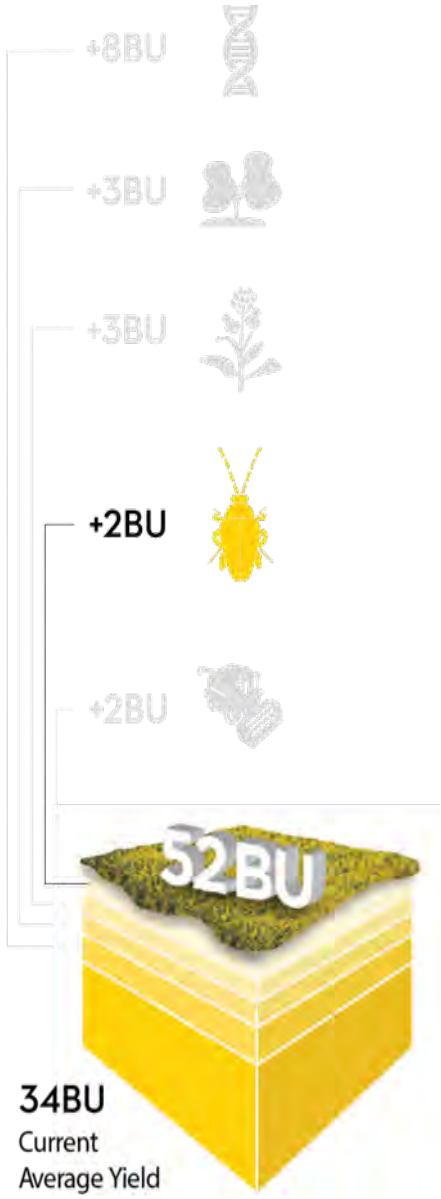
1. Feasibility of using Trichomalus perfectus for biological control of cabbage seedpod weevil in the prairies
2. Integrated approaches for flea beetle control II
3. Genetic resources for flea beetle resistance in canola
4. Improving the management of sclerotinia stem rot of canola using fungicides and better risk assessment tools
5. Development of a biosensor for Sclerotinia stem rot disease forecasting in canola



Theme 5

Sustainability and Climate Change – Integrated Pest Management

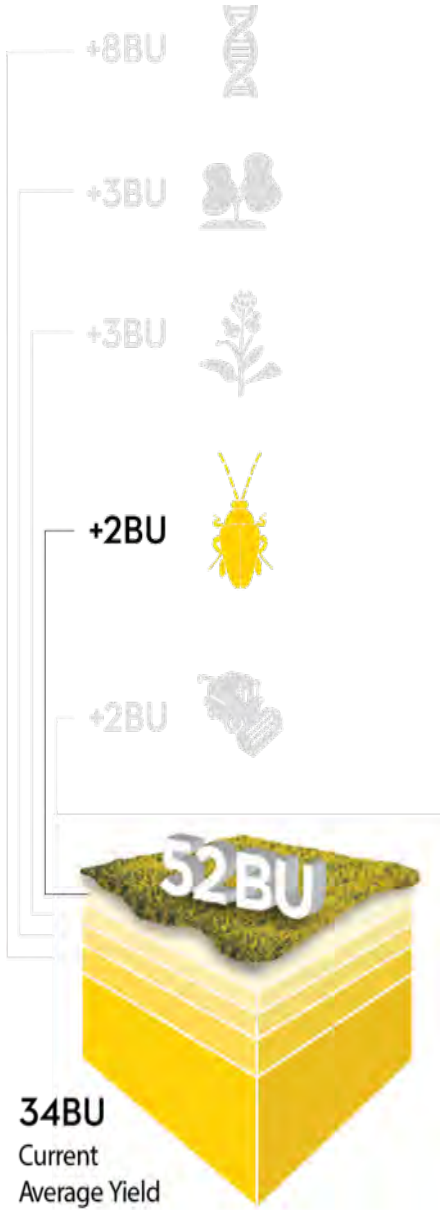
6. Protection of canola from pathogenic fungi using RNAi technologies
7. Resistance to Sclerotinia sclerotiorum effectors in canola
8. Clubroot Pillar 1: Integrated Disease Management
9. Clubroot Pillar 2: Developing novel resistance resources
10. Clubroot Pillar 3: Host-pathogen biology and interaction



Theme 7

Maintaining Canola Supply and Trade: Blackleg and Verticillium – Integrated Pest Management

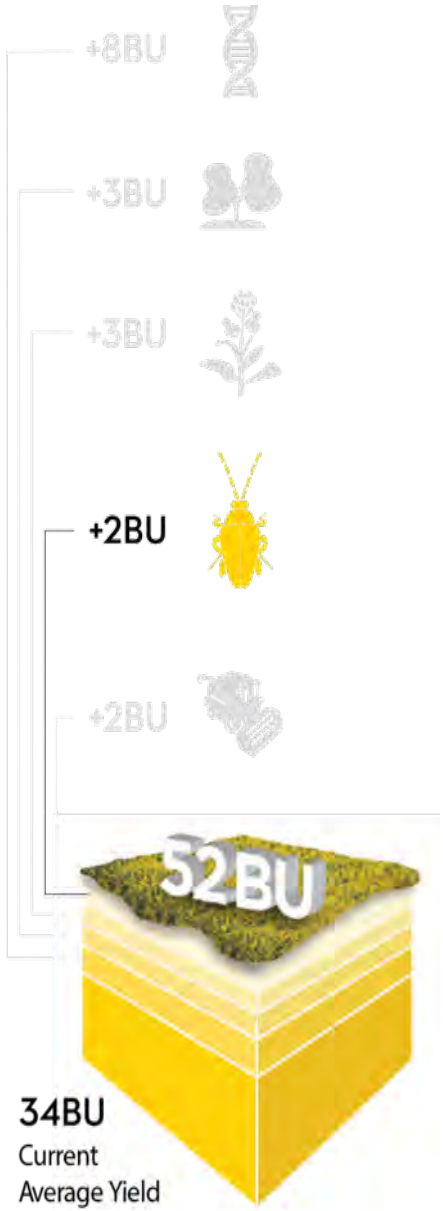
1. Developing a robust system for efficient assessment of quantitative resistance (QR) in commercial canola varieties for blackleg management
2. Developing tools for the rapid screening of canola germplasm for quantitative resistance to blackleg disease
3. Understanding the critical infection window that causes blackleg of canola in western Canada
4. Fine-tuning of the blackleg yield loss model in canola
5. Improving management of blackleg on canola via better flea-beetle control and effective fungicide seed treatment in western Canada



Theme 7

Maintaining Canola Supply and Trade: Blackleg and Verticillium – Integrated Pest Management

6. Improving blackleg resistance durability through R-gene rotation in commercial fields on the Canadian prairies – a science-based stewardship program
7. Genetic dissection of the RlM3-4-7 blackleg R gene cluster and KASP marker improvement
8. Verticillium disease etiology and nursery
9. Genetics and genomics of Brassica-Verticillium interaction

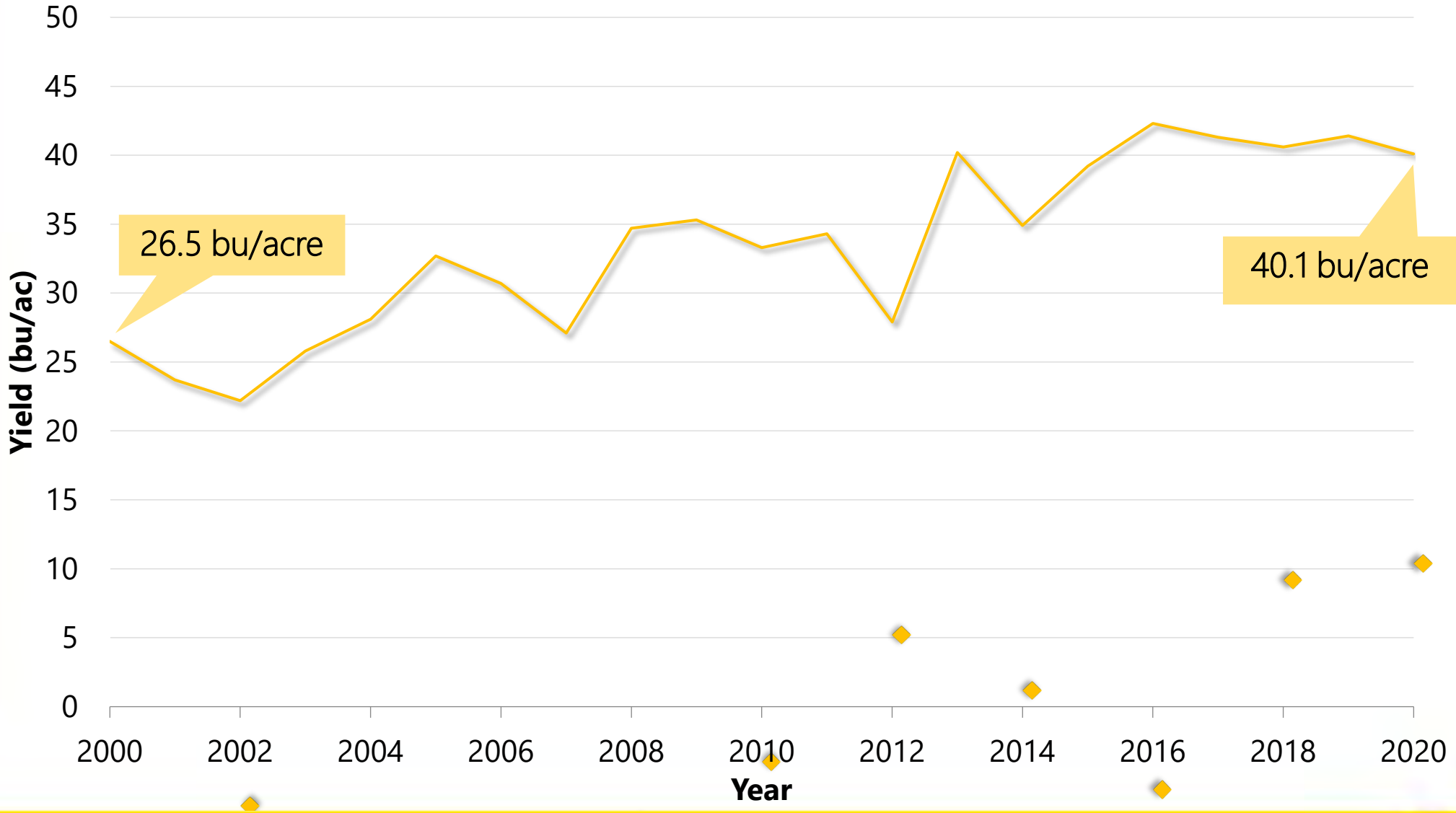


Canola Value Chain

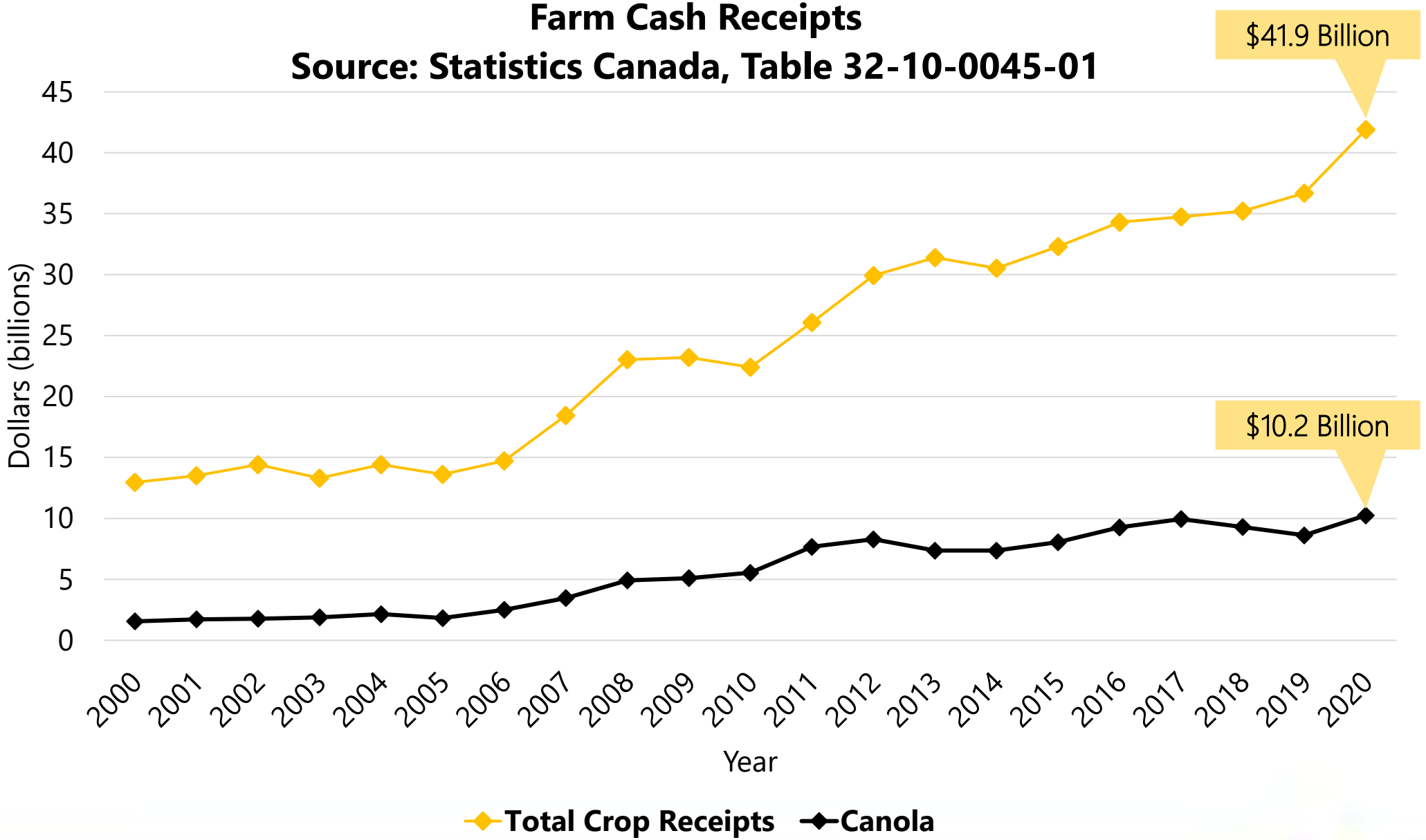
Our December 2020 economic impact study (from 2016/2017 to 2018/2019) for Canada completed by LMC showed:

- The total economic impact on the Canadian economy form the canola sector averaged **$29.9 billion per year**
- **207,000 full time equivalent jobs** are supported by the canola sector
- The total wage impact of the sector average **$12 billion**

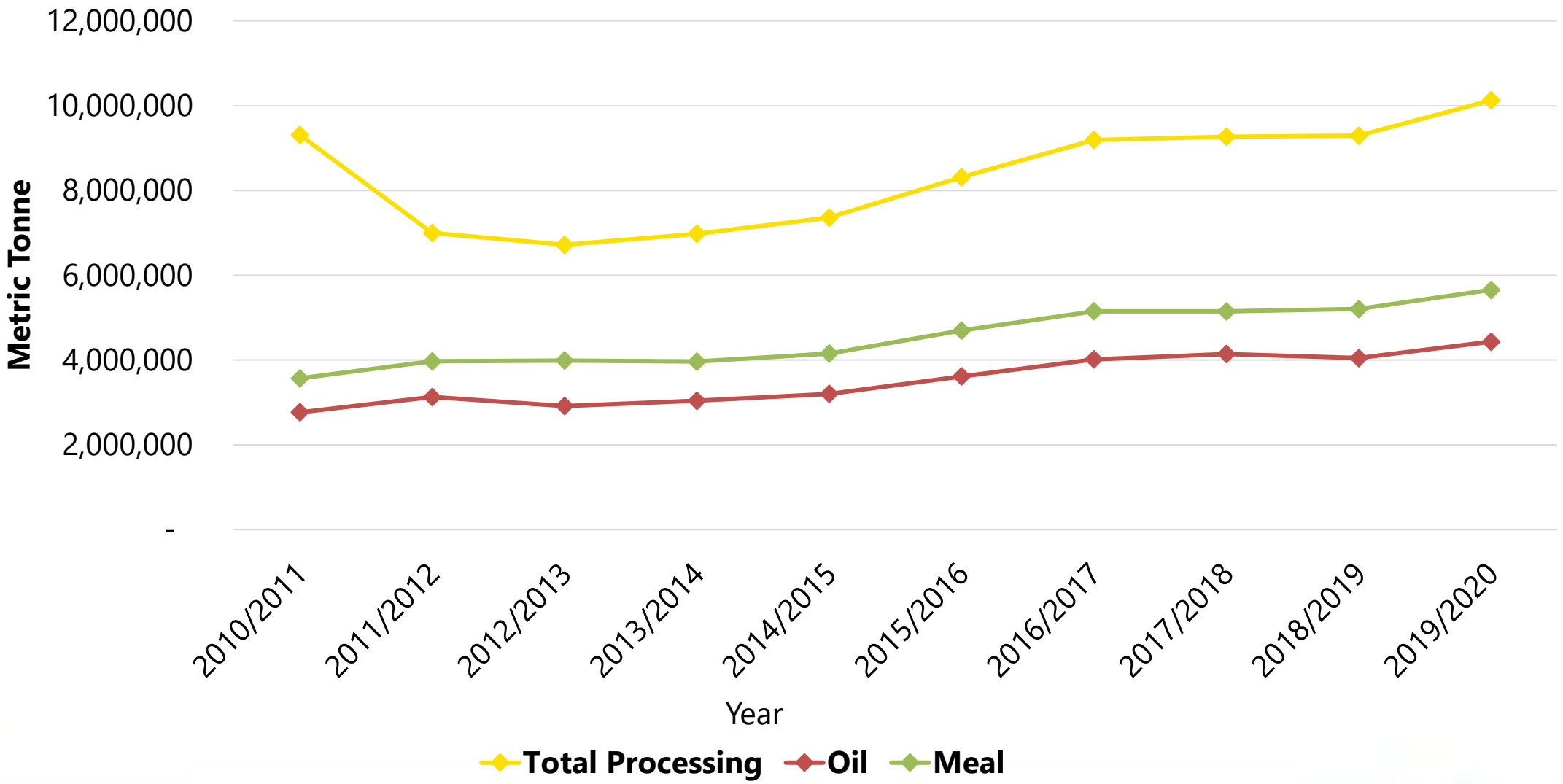
20-Year Canola Yield Trend
Source: Statistics Canada, Table 32-10-0359-01



Farm Cash Receipts
Source: Statistics Canada, Table 32-10-0045-01



Canola Meal Production



Growing Forward and Growing Forward 2

In Growing Forward (2009-2013) and Growing Forward 2 (2013-2018) the canola industry partnered with AAFC on close to $50 million worth of research through the Canadian AgriScience Clusters, developing innovative Agri-Products and AgriScience Programs

Growing Forward and Growing Forward 2 Research Impact

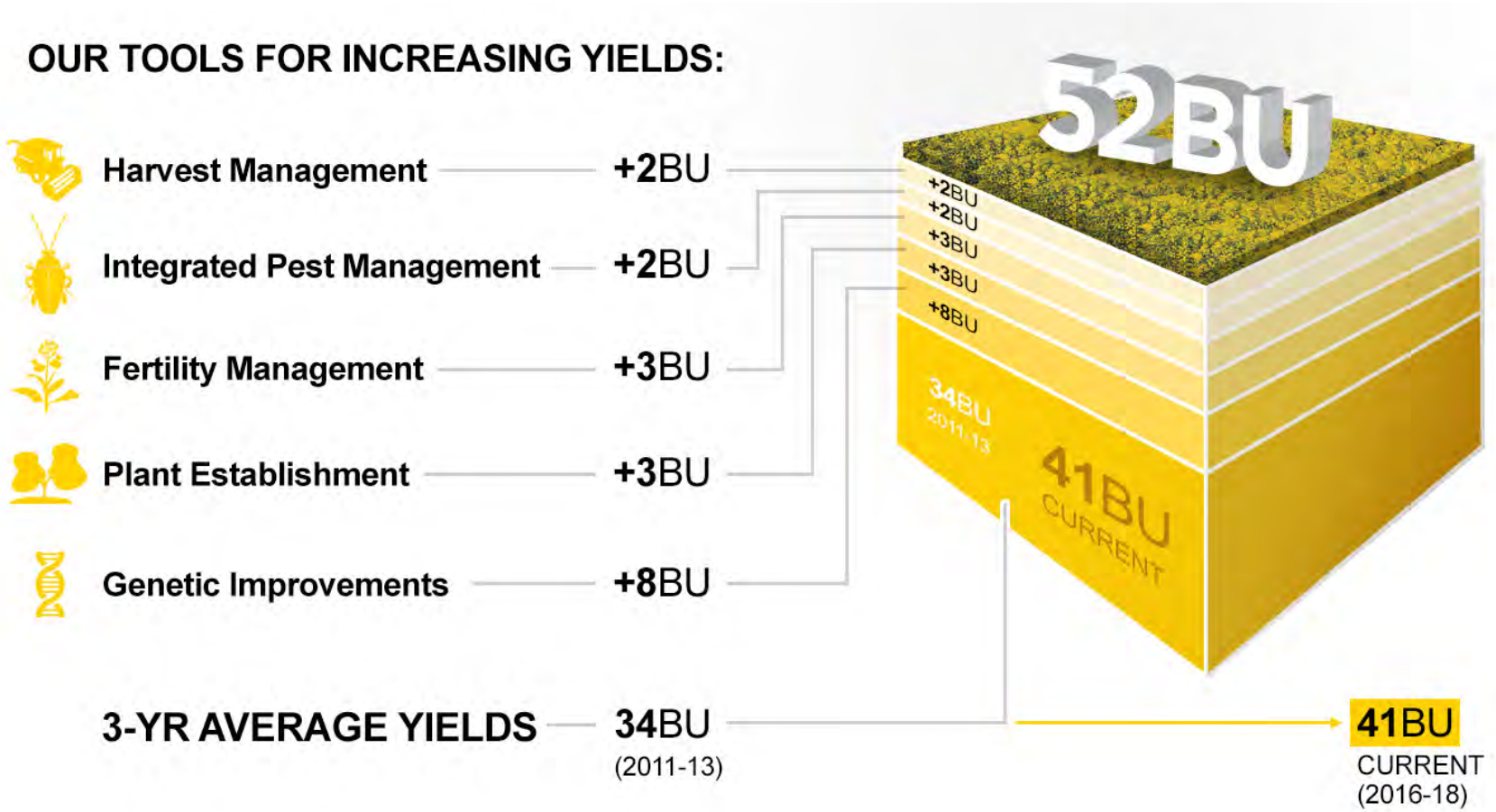
- Canola Oil – Canola Oil Multi-Centre Intervention Trial
- Canola Meal
- Stand Establishment
- Fertility Management
- Integrated Pest Management
  - Disease
  - Insect
- Harvest Management

Progress Towards 2025 Targets

	2019 Results	2011 & 2012 Average (the initial strategic plan benchmarks)	2025 Targets
Exported Seed	8.2 MMT	8.1 MMT	12 MMT
Domestic Processing	9.6 MMT	6.9 MMT	14 MMT
Acres (Seeded Area)	21 million	20.2 million	22 million
Yield	40 bu/acre	31.2 bu/acre	52 bu/acre
Production	18.6 MMT	14.2 MMT	26 MMT
Oil Content (Average of No. 1 Grade)	44.60%	44.40%	Maintain global competitiveness in oil content (10 yr average = 44.4%)
Saturated Fat Content	6.60%	6.70%	Global leadership position in oil saturated fat content
Meal Crude Protein Content (Oil-free, 12% moisture basis)	38.30%	39.7%*	Increase protein availability by target species (10 yr average = 37.9%)

MMT = Million Metric Tonnes

52 by 2025: How we'll get there



Grower Survey
Benchmarking

- Grower Survey conducted in 2011

AAFC / Blacksheep

- 2020

Best Management Practices

Knowledge & Tech Transfer Preferences

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