

Brassica carinata: Coming to a farm near you



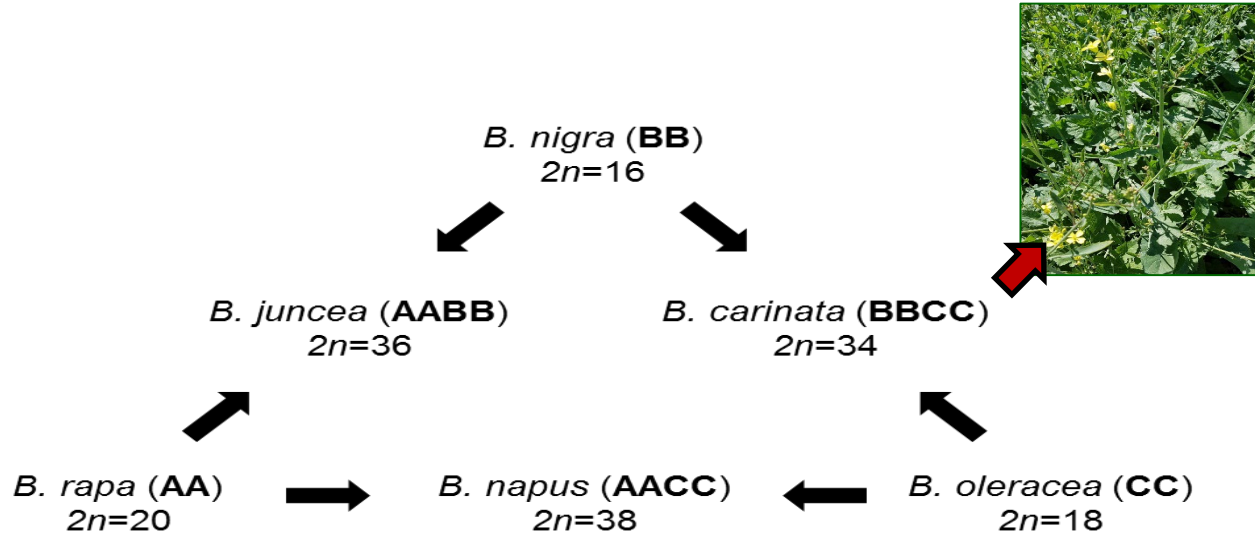
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Global aviation industry continues to grow

- Demand Doubles by 2040
- Meet Demand Sustainably
- Carbon Neutral Growth after 2020
- 50% Reduction in CO2 by 2050
- Current 100m litre annual shortfall in biojet
- All Solutions Needed



Brassica Triangle Woo Jang-choon (1935)



B genome carries interesting properties:

Blackleg resistance, shatter tolerance and reputed stress tolerance traits

“Ethiopian mustard”



- **Cultivated and used in this region for many centuries**



Leafy vegetable, oil, condiment uses

New Product Lines – New Revenue



1000 Liters Oil
High Erucic acid

Bio-Jet: 250 Litres
Bio-Diesel: 700 Litres



Renewable Jet



Renewable Diesel



Non-GMO, 45% Protein
Animal Feed



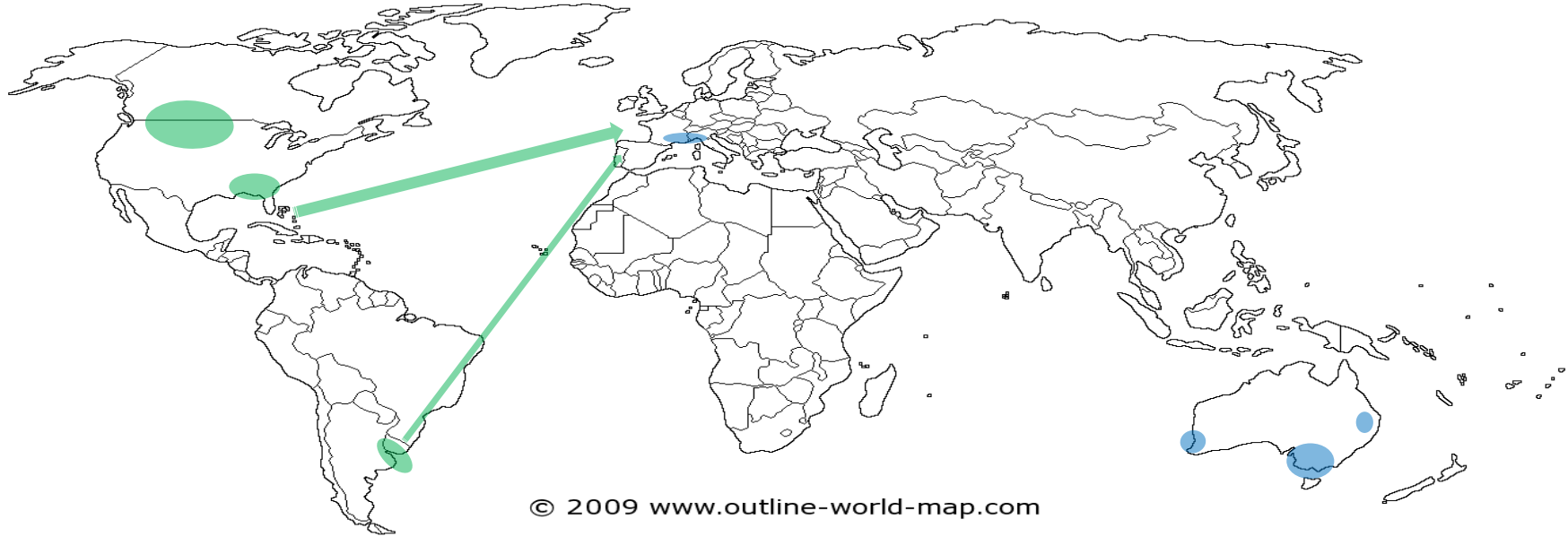
Create change

Agrisoma breeding efforts

- Germplasm screening in Canada, Northern plains of USA, SE of USA, South America and Australia focused on early maturity
- NAM marker discovery project – including early vigour, maturity, branching, TSW, Seed quality, yield
- US, Canada, Uruguay, France and first year 2018 Australia with multi-site replicated trials with entries selected in these geographies.
- Promising hybrids in the early stage of development
- Incorporation of key traits into elite backgrounds: sclerotinia resistance, herbicide tolerance, frost tolerance



Existing Production & Commercial Supply



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Existing Production

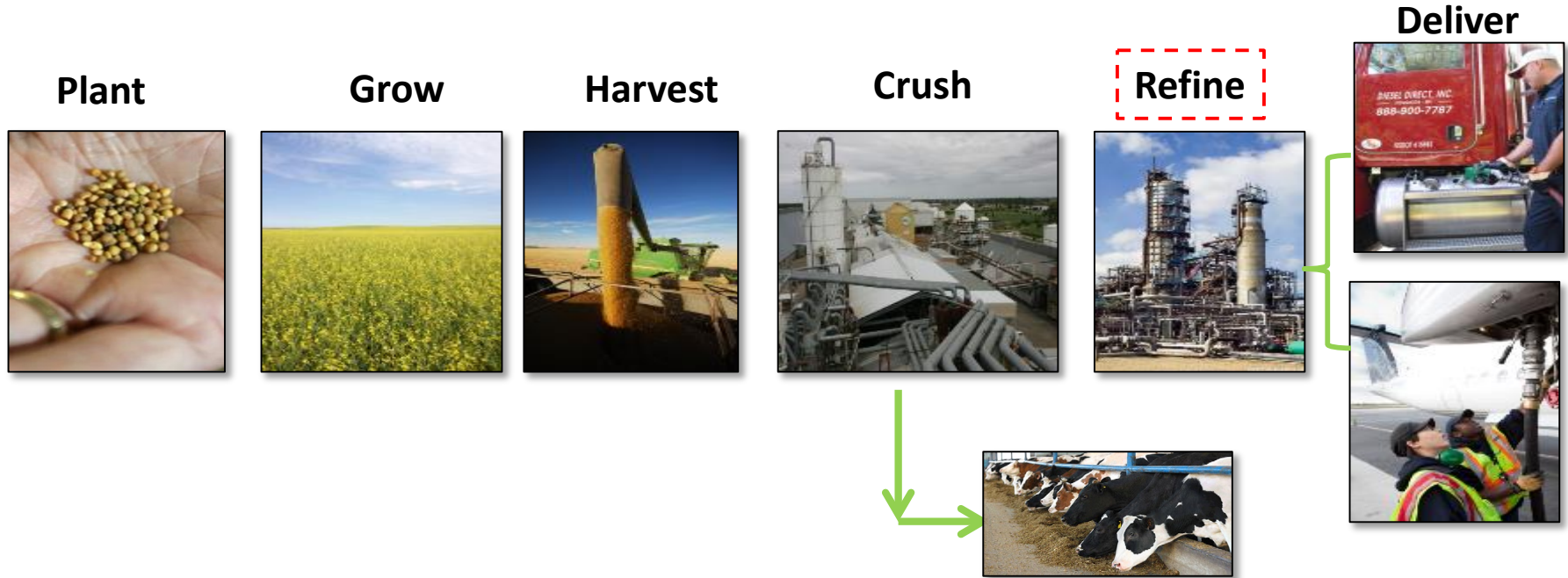


Trials Established



Create change

Good fit into existing Supply Chains



Brassica carinata nurseries 2017

- 1900 carinata lines with repeated carinata and canola checks
- Sown on May 18th Bordertown, 29th May Gatton
- July-September scored flowering dates
- October - November measured height
- 100 lines selected on height and maturity
- Seed quality testing on selections







Nursery observations

Trait	Canola Gatton QLD	Carinata Gatton QLD	Carinata Bortertown SA
Flowering (date)	27 Jul -15 Aug	12 Aug – 19 Sept	28 Aug – 30 Sept
Degree days	880-1150	1050 earliest	1100 earliest
Height (m)	1.2 - 1.5	1.2 - 2.4	1.2 - 2.4
Oil (%)	37.5 – 44.2	28.8 – 45.9	31.7 – 48.0

- Some photoperiod and vernalisation?
- Carinata lines as early as early-mid season canola
- 80 lines identified with suitable maturity, height & absence of photoperiod
- Cut down further based on seed characteristics
- 40-50 lines for preliminary yield testing in a range of environments

Brassica carinata yield trials in 2018

- 48 carinata lines, 26 Aust. Selections, 22 advanced breeding lines
- 5-8 Aust. commercial canola varieties as the benchmark
- Identify high yielding carinata and comparative physiology
- Diverse locations, sown by collaborators and contractors
- Managed to control insects and weeds
- Score establishment, vigour, flowering dates, height, lodging, shattering
- Harvest yield and seed quality all sites
- Harvest Index, N-uptake on selected sites

2018 trial locations



2018 Cunderdin yield trial



2018 Wonwondah yield trial



2018 York yield trial



2018 Pampas yield trial



2018 Cunderdin yield trial



Carinata – a sustainable feedstock crop

- It is a “drop in” crop to existing farm operations capable of growing small seeded crops, no new equipment or special requirements needed
- It offers an opportunity for growers to diversify their cropping operations and spread risk
- Brassica break-crop with shatter tolerance and expected biofumigation effect
- Carinata is reputed to perform well compared to related Brassica species in environments with stress factors such as drought, hot temperatures, and hard frost events.
- High protein seed meal has been tested and approved for inclusion in ruminant, pig and poultry rations



Thank you

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Early Yield trials in South Australia

	2014 Grain yield (kg/ha)		
Entry	Lameroo	B' town	B. lagoon
Carinata	28	217	487
	17-Oct	2-Oct	
Canola	46	733	580
	26-Sep	15-Sep	

	2016 Grain yield (kg/ha)	
Entry	Lameroo	B' town
Carinata	1020	2430
	14 Sep	21-Sep
Canola	1130	2130
	29 Aug	31-Aug