

Brassica carinata – About to ‘take off’



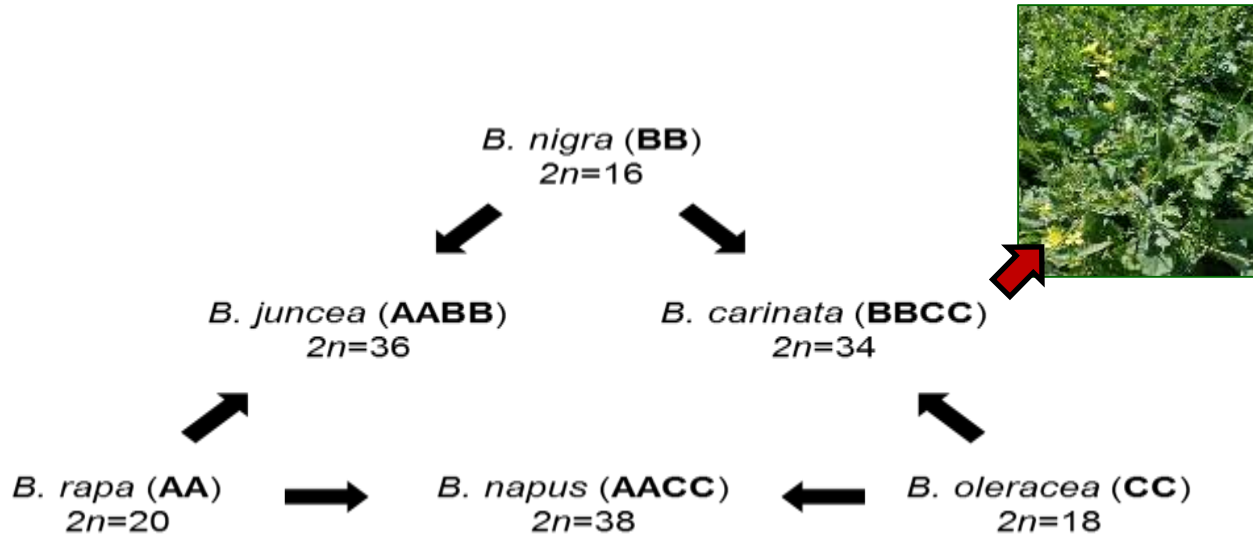
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Global aviation industry continues to grow

- Demand Doubles by 2040
- Meet Demand Sustainably
- Carbon Neutral Growth after 2020
- 50% Reduction in CO2 by 2050
- Already shortfall in biojet supply
- 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



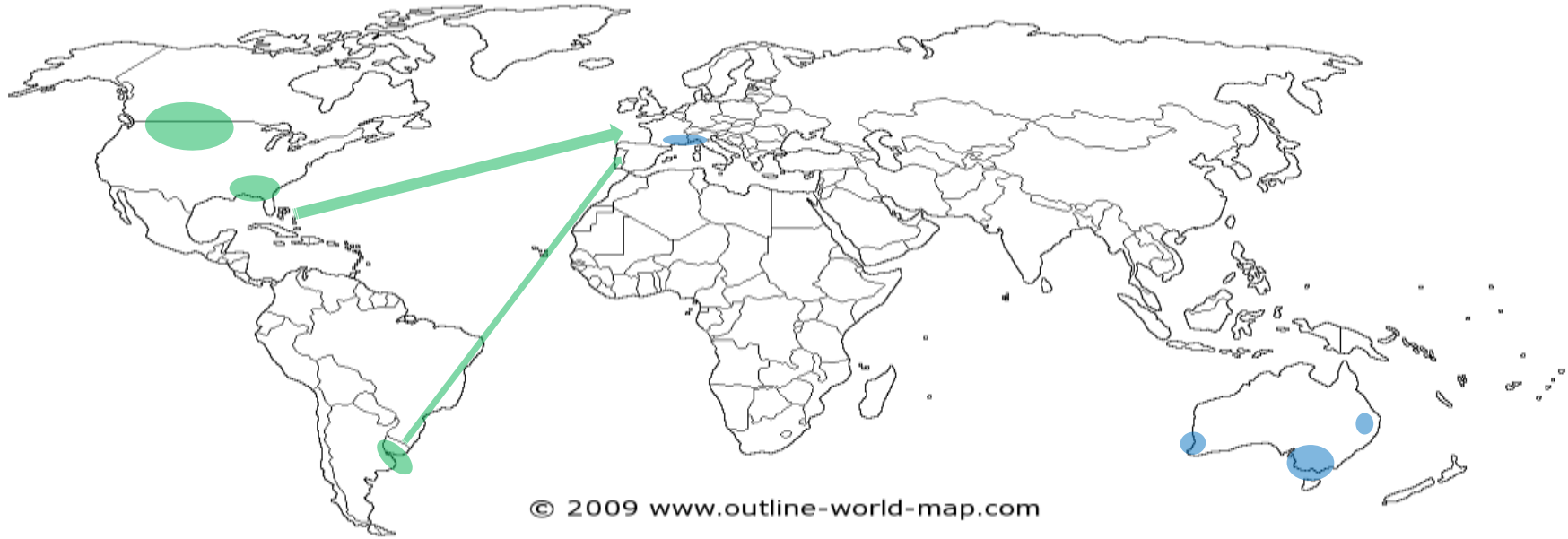
Non-GMO, 45% Protein
Animal Feed

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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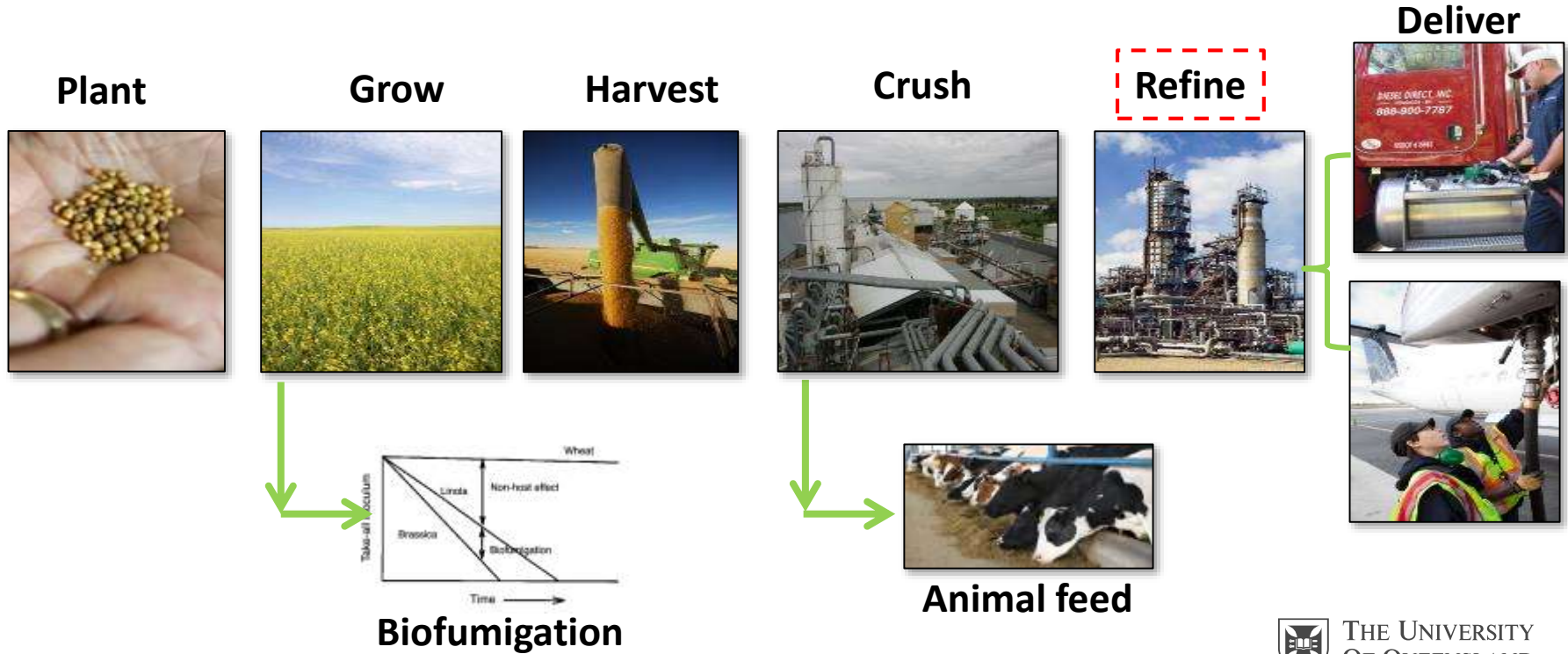


Existing Production



Trials Established

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

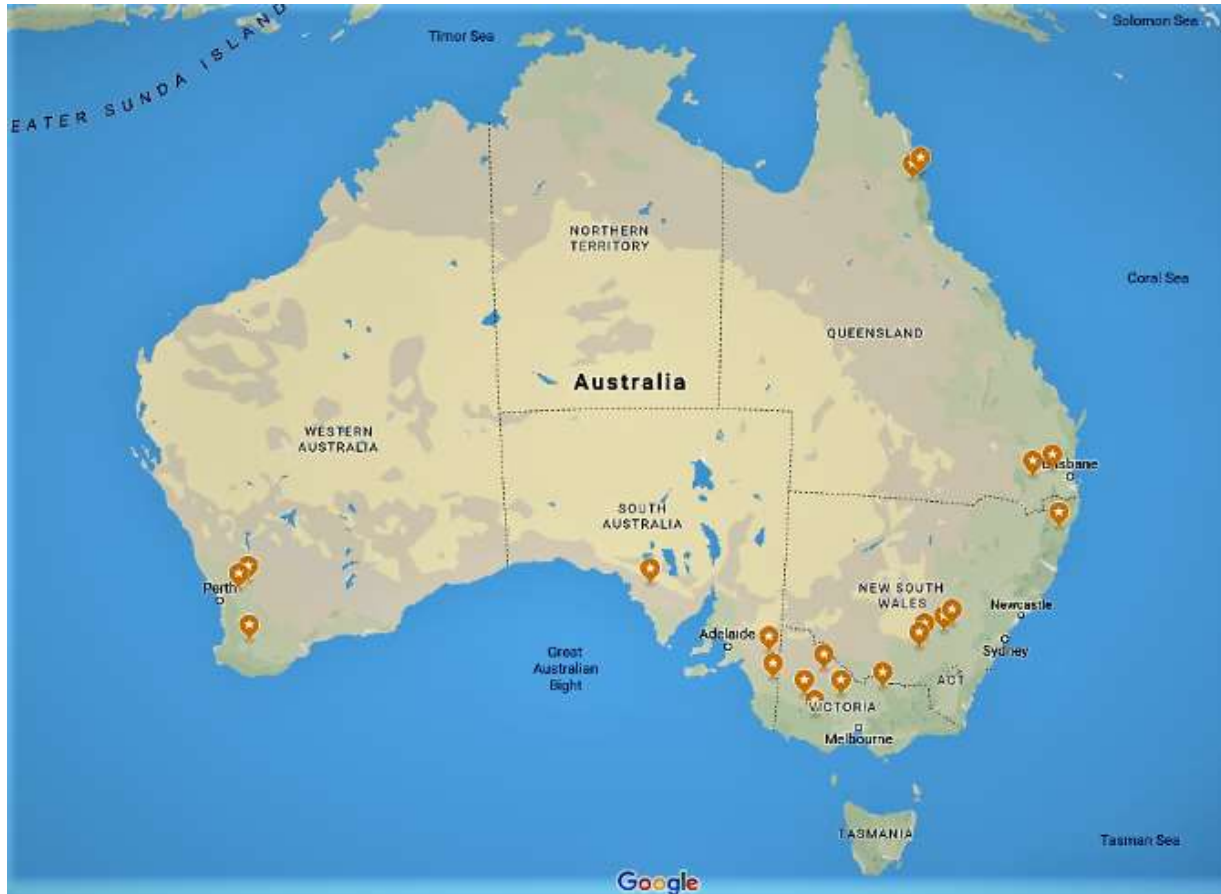
Trait	Canola Gatton QLD	Carinata Gatton QLD	Carinata Bortertown SA
Flowering (date)	27 Jul -15 Aug	12 Aug – 19 Sept	28 Aug – 30 Sept
Degree days	880-1150	1050 earliest	1100 earliest
Height (m)	1.2 - 1.5	1.2 - 2.4	1.2 - 2.4
Oil (%)	37.5 – 44.2	28.8 – 45.9	31.7 – 48.0

- 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



2018 Marrar, NSW



2018 Birchip, Victoria



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