

NEW OPPORTUNITIES IN NEW & EMERGING AGRICULTURAL INDUSTRIES IN AUSTRALIA

December 2017



NEW OPPORTUNITIES

In New & Emerging Agricultural Industries in Australia

FINAL REPORT

DECEMBER 2017

V1.2

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Background & Scope

BACKGROUND

AgriFutures Australia is a statutory corporation set up by the Australian Government to grow the long term prosperity of rural industries.

Emerging Industries is one of four areas defined by the AgriFutures Strategic R&D Plan to deliver on Australian Government priorities.

The **Emerging Industries** arena is dedicated to identifying and supporting the development of new rural industries that can meet changing demand and make an economic contribution to Australia.

Over the next five years, AgriFutures Australia will focus on identifying new industries with high potential. This will result in a strong alignment of research activities that address AgriFutures Australia's legislative requirements and the government's research priorities.

The priority of **Emerging Industries** is supporting the early stage establishment of high potential rural industries.

The Key Performance Indicator (KPI) for **Emerging Industries** success is the number of new rural industries reaching or exceeding \$10m per annum threshold, measured on an annual basis.

The performance target for **Emerging Industries** is one new rural industry reaching \$10m/year with AgriFutures Australia support.

More broadly new industries will contribute to a \$100billion goal for agricultural turnover and make a material contribution to the Australian economy.

DEFINED SCOPE: REQUIREMENTS

The project will conduct a comprehensive scan of opportunities for Australian new and emerging agricultural industries.

Considering the AgriFutures Australia feasibility framework, the project will also detail key personnel/industry champions for progressing the opportunity.

The project will consider global trends and a list of current opportunities that AgriFutures Australia is aware of.

The project may consider international research centres that align with the RIRDC purposes in new and emerging industries considering the potential for this alignment and determining a key contact.

DEFINED SCOPE: KEY DELIVERABLE

A report detailing 20-30 priority opportunities for new rural industry development.

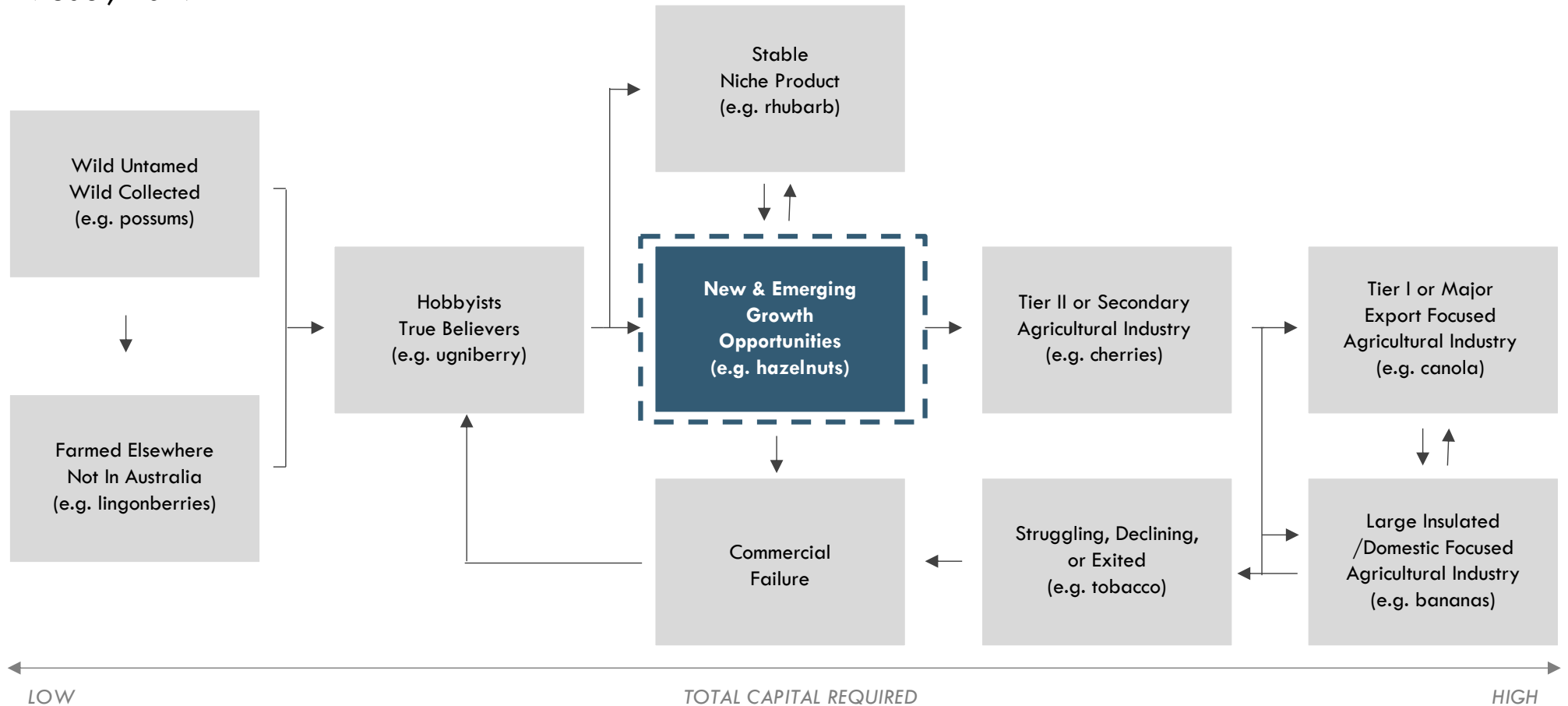
These priority opportunities must have the potential to grow new industries with potential turnover of \$10m or more through commercial stakeholder partnerships. Ideally, given the **Emerging Industries** KPI, these priority opportunities should be realisable in a five year timeframe.

Past Coriolis work indicates that agricultural industries require roughly \$2 in capital (across the supply chain) for every \$1 in turnover. Therefore five industries achieving \$10m/year in turnover will require \$100m in capital invested. Therefore the opportunities must be "capital ready."

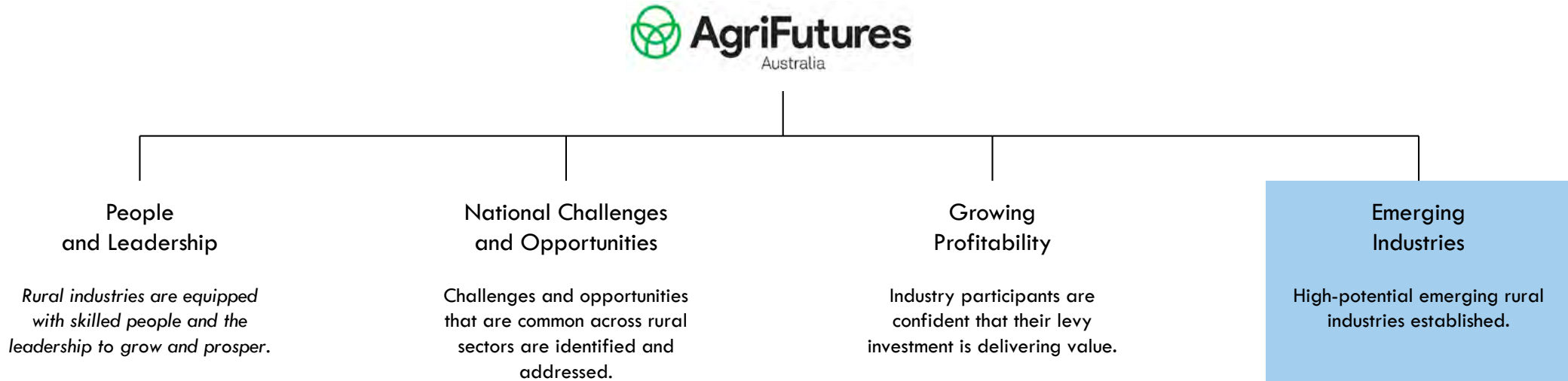
Emerging agricultural industries with high potential for growth exist at the intersection of hobbyists and industries at scale

POTENTIAL DEVELOPMENT PATHWAYS FOR NEW AGRICULTURAL INDUSTRIES

Model; 2017



Supporting Emerging Industries is one of four “strategic arenas” for AgriFutures

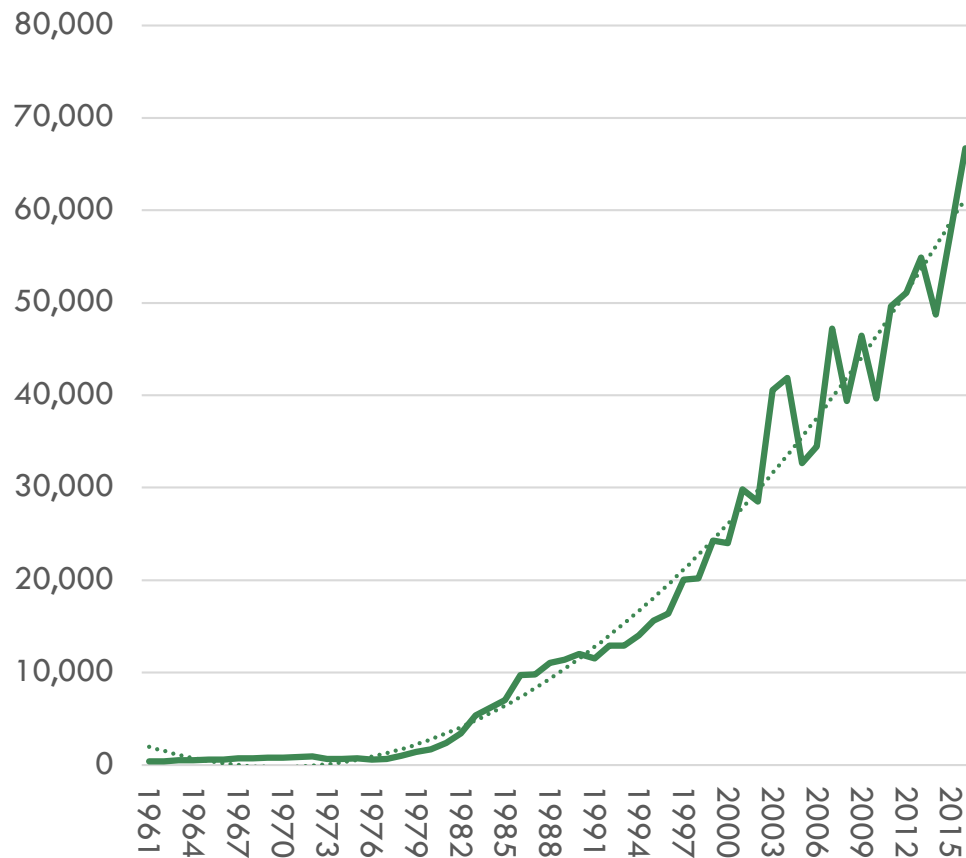


AgriFutures has clear goals for its support of Emerging Industries; it seeks to create five \$10m+ industries in five years

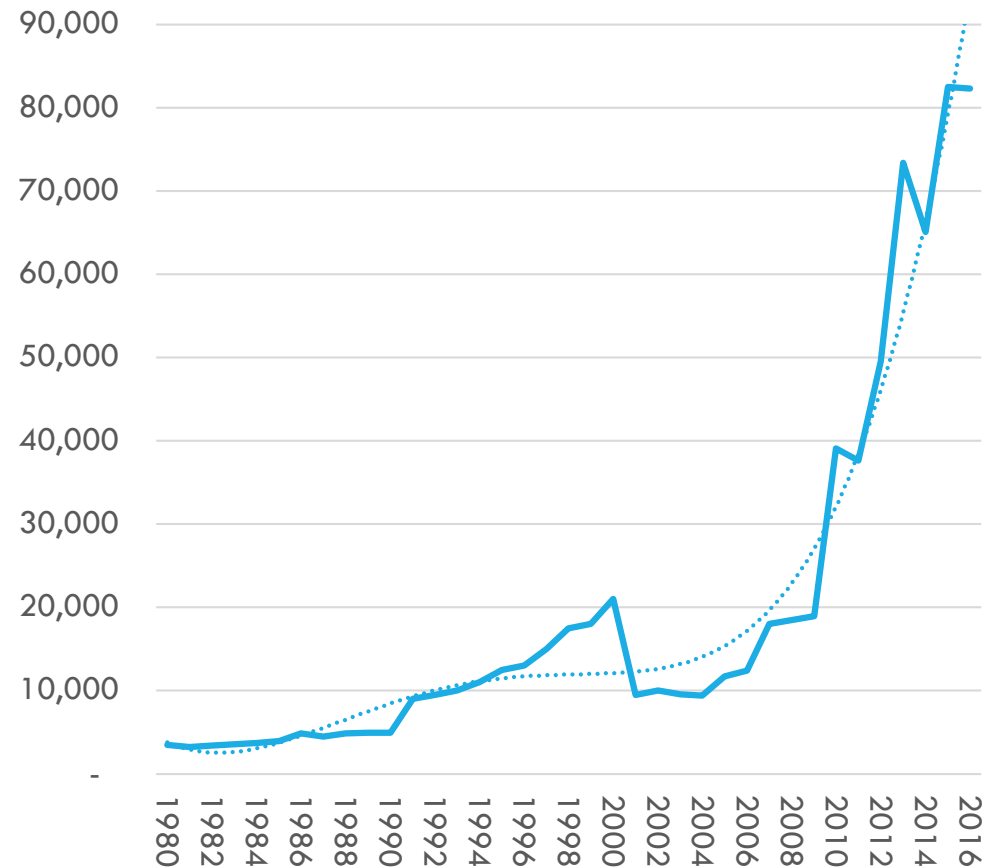
GOAL	OUTCOME	MEASURING SUCCESS/KPI
<p>To support new and emerging rural industries.</p> <p>With global environmental and market trends impacting food consumption, Australian rural industries have an opportunity to identify new food types and to connect with and drive new and expanding markets.</p> <p>As such, AgriFutures Australia is dedicated to identifying and supporting the development of new rural industries that can meet changing demand and make an economic contribution to Australia.</p> <p>Over the next five years, AgriFutures Australia will focus on identifying new industries with high potential. This will result in a strong alignment of research activities that address AgriFutures Australia's legislative requirements and the government's research priorities.</p> <p>AgriFutures Australia will build partnerships with key stakeholders, including partners in the private sector, to support the development of these high-potential emerging rural industries.</p>	<p>Commercially viable and sustainable emerging rural industries established.</p>	<p>Number of new and emerging rural industries reaching or exceeding \$10m per annum threshold.</p>
	PRIORITIES	TARGET
	<p>Supporting the early stage establishment of high potential rural industries.</p> <p>Over the next five years, AgriFutures Australia will focus on identifying new and emerging industries with high potential.</p> <p>AgriFutures Australia will target high potential emerging rural industries by supporting rigorous feasibility assessments and identifying critical impediments that can be addressed through R&D.</p>	<p>1 new or emerging rural industry exceeding \$10m per annum per year for the next five years</p> <p>Leading to 5 new or emerging exceeding \$10m+ by 2022</p>

Conceptually it is seeking the next avocado or almond industry

Australian avocado production Tonnes; 1961-2016



Australian almond production Tonnes; 1961-2016



Towards this goal AgriFutures is funding 32 “Emerging Industries” projects

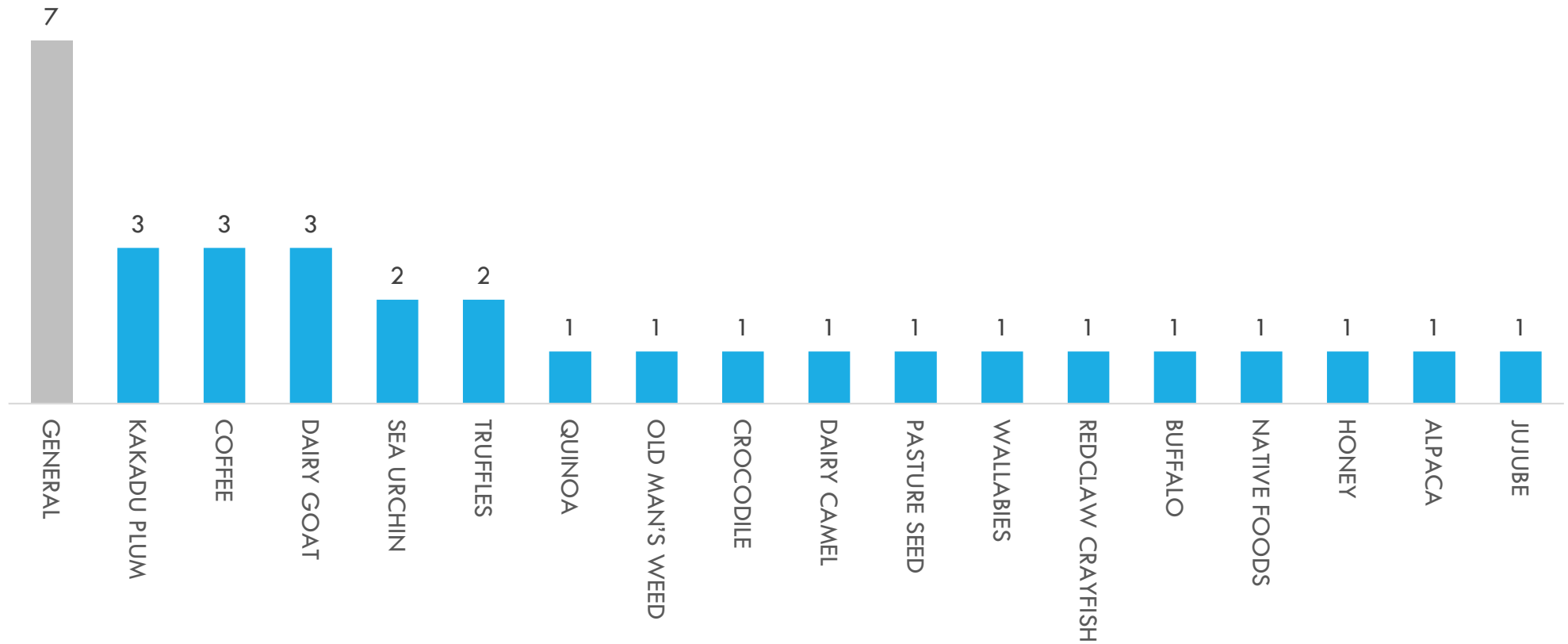
Emerging Industries Project Investments for 2017-18

INDUSTRY	Invested Project	INDUSTRY	Invested Project
GENERAL	Cross Industry Biosecurity and Emergency Animal Disease Awareness	KAKADU PLUM	Monitoring quality and bioactivity of kakadu plum in the Northern Territory
GENERAL	Backoff! Invisible fences to protect working dogs at risk from poison baiting	KAKADU PLUM	Australian Native Foods Kakadu Plum Project
GENERAL	Commencing implementation of a genetic eval. system for livestock working dogs	KAKADU PLUM	Emerging Business Models for the Kakadu Plum Industry
GENERAL	Improving the capacity of Primary Industries to withstand cyclonic winds	COFFEE	Research and Development Extension for the Coffee Industry
GENERAL	A method to screen new crop prospects*	COFFEE	New Coffee Varieties for the Australian Subtropics
GENERAL	Minor Chemical Consultant for small and non-levied industries	COFFEE	Development of a Biosecurity Plan for the Australian Coffee Industry
GENERAL	Continuation of new industry minor use permits transition to industry ownership	TRUFFLES	Pests and diseases of truffles and their tree hosts in Australia
DAIRY GOAT	Development of innovative tools for the detection and control of CAE virus	TRUFFLES	Research and Development Extension for the Truffle Industry
DAIRY GOAT	A national approach to improving the capacity of the goat milk industry	HONEY	Leptospermum Plant Breeding Program for Development of High Grade Manuka Honey
DAIRY GOAT	An assessment of the population and farm gate value of Australian dairy goats	OLD MAN'S WEED	Agronomic and extraction parameters for Centipeda (“Old Man’s Weed”)
DAIRY CAMEL	Australian Camel Milk Industry Forum	JUJUBE	Overcoming barriers to development of the Australian jujube industry
SEA URCHIN	Boosting the productivity of sea urchin aquaculture using a dietary intervention	PASTURE SEED	Australian Pastures Genebank (14/15 - 18/19)
SEA URCHIN	Solving key industry bottlenecks for sea urchin roe enhancement	QUINOA	Quinoa as a new crop in Australia - stage 2
ALPACA	Studies on gastrointestinal nematodes of alpacas	NATIVE FOODS	Australian Native Foods Information and Extension Project
BUFFALO	Parasitism and control strategies in domesticated buffalo populations		
REDCLAW CRAYFISH	Eliminate factors inhibiting redclaw farming from reaching its full potential		
CROCODILE	Possible chinks in the crocodile armour: defining skin microbiota		
WALLABIES	Feasibility of a sustainable harvest of Agile wallabies in NT		

* Not this project; Source: AgriFutures Annual Operational Plan 2017-18 p29-31

AgriFutures is currently investing across a range of industries

Number of AgriFutures “Emerging Industries” projects funded by industry



However, the current project investments appear partially misaligned with the stated KPI and targets

Micro/Hobby Scale Industries with little chance of achieving \$10m in next 5 years	Industries being funded with potential to achieve \$10m in next 5 years	Industries being funded but which are already over \$10m goal
<ul style="list-style-type: none"> Jujube Kakadu plum Old man's weed Sea urchin Wallabies 	<ul style="list-style-type: none"> Dairy camel Dairy buffalo Redclaw crayfish Quinoa Alpaca 	<ul style="list-style-type: none"> Dairy goat Crocodile Honey Coffee Truffles Pasture seed

In addition, a wide range of emerging industries with real potential to reach \$10m per annum are not currently being funded by AgriFutures in 2017

MEAT

Wild pigs (\$8.7m) Rabbit meat (\$3.2m) Guinea fowl (\$1.4m) Camel meat (\$1.3m) Deer meat (\$1.7m) Emu meat(\$0.6m) Ostrich meat (\$0.3m)

AQUACULTURE

Silver perch (\$4.5m) Seaweed (\$2.5m) Marron crayfish (\$2.0m) Yabby crayfish (\$0.8m) Mulloway (\$0.5m)

DAIRY

Sheep milk (\$5.5m)

VEGETABLES

Parsnip (\$9.1m) Chillies (\$8.5m) Garlic (\$7.7m) Turnip (\$7m) Taro (\$5m) Fennel (\$2m) Okra (\$1.3m) Bitter melon (\$1.1m) Snake bean (\$1m) Globe artichoke (\$1m) Cassava (\$1-5m) Wasabi (\$0.2m)

NUTS

Chestnuts (\$8.8m) Hazelnuts (\$2.0m)

FRUIT

Prunes (\$7.9m) Custard apple (\$6.8m) Rambutan (\$3.8m) Jackfruit (\$2.6m) Pitaya (dragon fruit) (\$2.3m) Mangosteen (\$1.9m) Pomegranate (\$1-5m) Guava (\$1-5m)

COFFEE, TEA, SPICES, SWEETENERS & COCOA

Black tea (\$2.0m) Coriander seed (\$1.4m) Cocoa beans (\$1.3m)

ARABLE CROPS

Chia (\$5-10m) Amaranth (\$1-2m) Buckwheat (\$1-2m)

OILSEEDS & VEGETABLE OILS

Flax seed/linseed (\$7-9m) Mustard seed (\$3-5m) Hemp seed (\$1m) Poppy seed (\$1m)

FIBRE/HIDES

Goat fibre (cashmere & mohair) (\$1.5m)

ESSENTIAL OILS

Eucalyptus oil (\$1.3m) Lavender oil (\$1.3m)

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Overview: A two stage screening process was used to identify the high potential emerging industries

STAGE I
(Appendix II)

STAGE II
(Appendix I)

IDENTIFY, MEASURE AND SCREEN

STAGE I.I

- Identification of all existing agriculture & aquaculture industries
- Divide into categories by size of industry in Australia

- No Farming Activity Identified
- Hobby (\$10k-\$1m)
- Emerging (\$1m-\$10m)**
- Secondary (\$10-\$100m)
- Major (\$100m+)

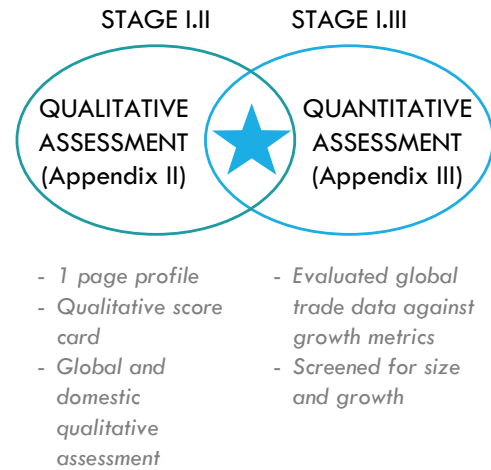
TOTAL 53

Meat (8 emerging)
Aquaculture (6 emerging)
Dairy (3 emerging)
Vegetables (12 emerging)
Nuts (2 emerging)
Fruit (8 emerging)
Coffee, Tea, Spices etc. (3 emerging)
Arable Crops (3 emerging)
Oilseeds & Vegetable Oils (4 emerging)
Fibre (2 emerging)
Essential Oils & Pharma. (2 emerging)

ASSESS AND RANK

TOTAL 26

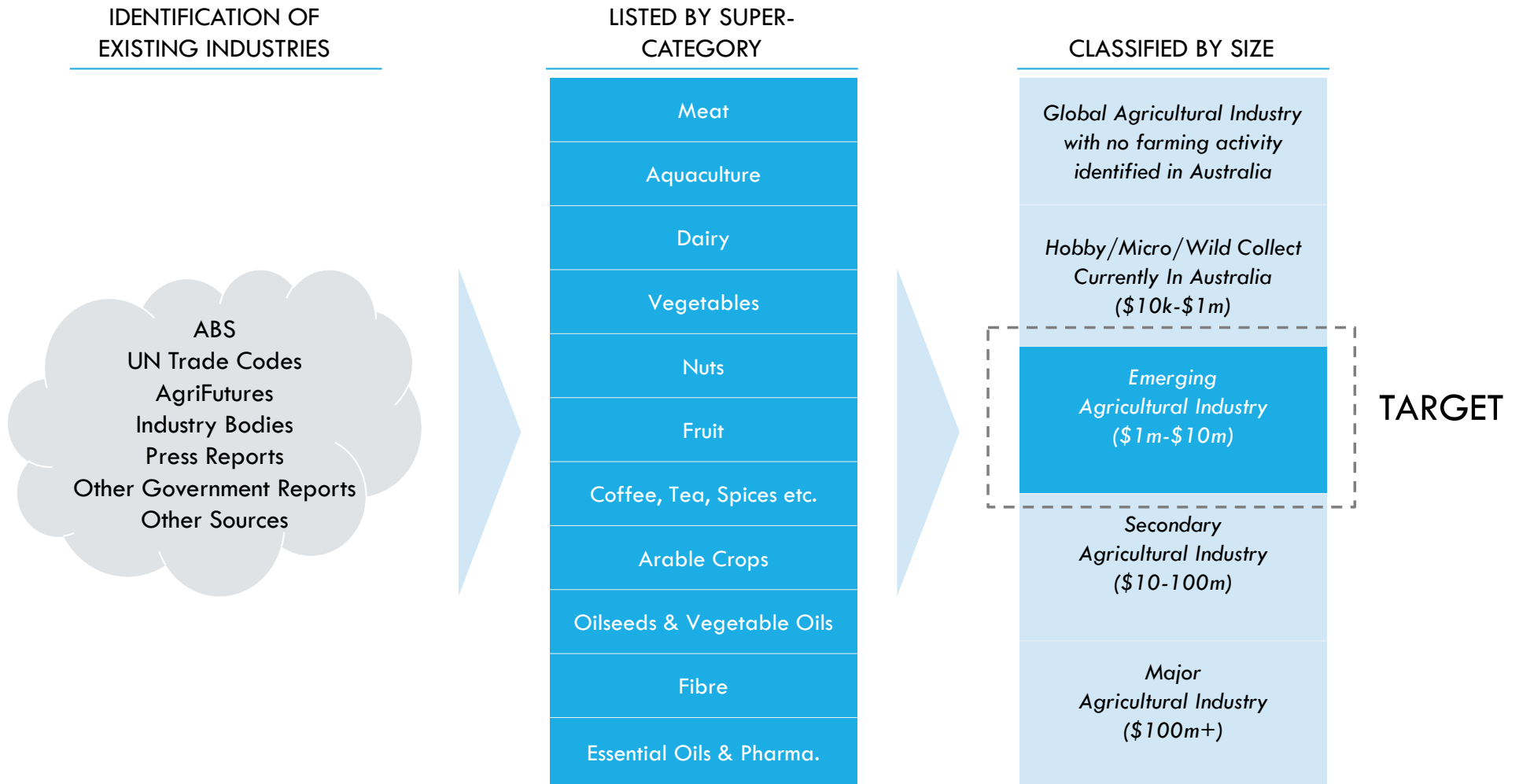
PROFILE INDUSTRY



- STAGE I.IV**
- Good
 - Better**
 - Best**

- Better and Best Industries Profiled*
- Answers 10 key questions for each industry
 - What is it?
 - What is driving success?
 - Where is it produced in Australia?
 - What are the industry metrics?
 - Who are the pioneering Australian firms?
 - Who are the key stakeholders?
 - Who are the competition for export markets?
 - How can you add value?
 - Who are the potential commercial partners?
 - What does Dr Food think?

Stage 1.1 First, all existing agriculture and aquaculture industries were identified and categorised by size of industry in Australia



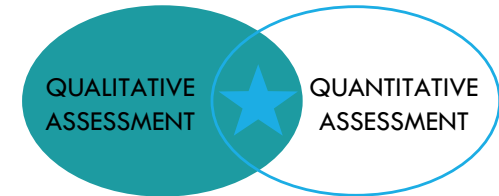
Stage I.II All industries between \$1-10m were then evaluated across common criteria

EXAMPLE

MUSTARD SEED		1	INDICATED MARKET DEMAND	PASS INTO STAGE II	2			
QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"			
PRODUCT		Mustard seed has the potential to be the next canola, successful rotation and companion crop, producing a high value... 4		\$3-5m (2016)	\$20-50m by 2025			
Capital intensive to produce	<input type="radio"/>			3				
Mechanically harvested	<input checked="" type="radio"/>							
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES					
Wide spread of markets/buyers	<input type="radio"/>	<ul style="list-style-type: none"> - Popular seed used for mustard sauce, preserving, oil - High source of oil and protein (e.g. meal = 44% protein) - Used as ingredient for wasabi - Demand for natural solutions to farming (e.g. biofumigant properties on weeds and fungal pathogens) 	<ul style="list-style-type: none"> - Climate change (performs best with moist soil and cool temperatures) - Farmers won't risk breaking from wheat, canola rotation - No reliable market for mustard - Not triazine tolerant (herbicide tolerance) 					
Wide spread prices	<input type="radio"/>					9		
Origin important or called out at POS	<input checked="" type="radio"/>							
COMPETITORS		VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE					
Biosecurity or other domestic barriers	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Essence (volatile oil - glucosinolate) - Condiment ingredient for wasabi - Oil - Pastes (develop a unique AU paste) - Powders - Seeds whole 	<ul style="list-style-type: none"> - AU strength in growing canola transferable to mustard seed - Able to grow the higher yielding brown and black seed mustards - Increase production in SA and VIC to increase volumes at AMO (processing) facility - Research health benefits to identify unique AU characteristics of crop - Crop will maintain its premium over canola to incentivise farmers - New breeds will continue to outperform canola in dry years - Mustard will offer higher yields to wheat as a rotational crop 					
Can we get to the world price?	<input type="radio"/>					10		
Attractive competitive set	<input checked="" type="radio"/>							
AUSTRALIA		KEY COMPETITORS						
High performance genetics available	<input type="radio"/>	DOMESTIC	EXPORT MARKETS					
Required skills for success	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Imported mustard seeds - Imported mustard products 	<ul style="list-style-type: none"> - Canada - Ukraine - Russia - India - Pakistan 					
Leverage country reputation	<input checked="" type="radio"/>							
OVERALL	<input checked="" type="radio"/>							

OVERALL QUALITATIVE ATTRACTIVENESS SCORE

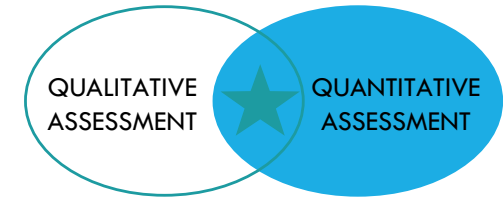
DETAILED ANALYSIS IN APPENDIX II



- 1 Quantitative scoring from trade data
- 2 Does it Pass into Stage II? Y/N
- 3 Turnover Estimates & Size of the Prize by 2025
- 4 Elevator Pitch
- 5 Qualitative Scorecard
- 6 Drivers of Growth
- 7 Value-added Opportunities
- 8 Key Competitors (Domestic & Export markets)
- 9 Key Risks and Sensitivities
- 10 What You Would Need to Believe

STAGE I.III In parallel, global demand for all agriculture & aquaculture products were evaluated across quantitative criteria using trade data

EXAMPLE MEAT



OVERALL QUANTITATIVE ATTRACTIVENESS SCORE

DETAILED ANALYSIS IN APPENDIX III

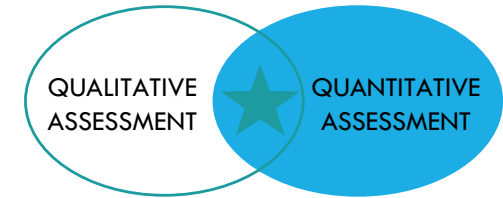
MEAT 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
020110	Beef, chilled carcass	\$1,733	0%	-6%	-\$1	-\$640	\$3.78	-1%	-4%	○
020120	Beef, chilled bone-in	\$3,935	1%	-6%	\$485	-\$1,491	\$4.04	0%	-5%	○
020130	Beef, chilled boneless	\$14,767	5%	1%	\$5,282	\$1,010	\$6.68	3%	-1%	●
020210	Beef, frozen carcass	\$108	-6%	-10%	-\$97	-\$80	\$2.97	1%	-5%	○
020220	Beef, frozen bone-in	\$1,373	14%	10%	\$1,000	\$526	\$3.77	4%	1%	●
020230	Beef, frozen boneless	\$18,135	-7%	2%	\$9,285	\$1,661	\$3.89	3%	-1%	●
020311	Pork, chilled carcass	\$2,048	0%	-5%	\$60	-\$666	\$1.81	-1%	-5%	○
020312	Pork, chilled cuts	\$3,582	0%	-4%	\$142	-\$768	\$1.93	-2%	-5%	○
020319	Pork, chilled nes	\$8,686	4%	-2%	\$2,702	-\$731	\$2.79	-1%	-4%	○
020321	Pork, frozen carcass	\$120	-12%	-24%	-\$318	-\$348	\$1.93	0%	-5%	○
020322	Pork, frozen cuts	\$1,100	7%	3%	\$520	\$156	\$1.88	0%	-4%	●
020329	Pork, frozen nes	\$11,487	5%	-1%	\$4,508	-\$677	\$2.42	0%	-4%	○
020410	Sheep, chilled carcass	\$781	1%	-2%	\$79	-\$103	\$5.41	1%	-2%	○
020421	Sheep, chilled carcass	\$274	11%	1%	\$177	-\$12	\$5.03	5%	-1%	●
020422	Sheep, chilled bone-in	\$1,024	3%	-1%	\$248	-\$43	\$6.88	2%	-6%	○
020423	Sheep, chilled boneless	\$493	6%	-1%	\$225	-\$14	\$9.15	3%	-5%	●
020430	Lamb, frozen carcass	\$72	-4%	-10%	-\$37	-\$51	\$4.49	4%	-2%	○
020441	Sheep, frozen carcass	\$85	0%	-5%	-\$4	-\$24	\$2.94	4%	-6%	○
020442	Sheep, frozen bone-in	\$1,874	3%	-2%	\$524	-\$227	\$3.75	3%	-7%	○
020443	Sheep, frozen boneless	\$799	3%	-4%	\$177	-\$190	\$5.37	3%	-5%	●
020450	Goat, chilled or frozen	\$335	9%	2%	\$189	-\$38	\$5.76	5%	3%	●
020500	Horse	\$368	-3%	-8%	-\$113	-\$188	\$3.64	2%	-3%	○
020610	Beef, chilled offal	\$856	-7%	1%	\$421	-\$23	\$3.84	0%	-1%	●
020621	Beef, frozen tongues	\$323	6%	2%	\$143	-\$35	\$4.82	2%	-3%	●
020622	Beef, frozen livers	\$214	0%	-8%	\$7	-\$106	\$1.01	0%	-6%	○
020629	Beef, frozen offal	\$1,918	11%	5%	\$1,245	\$446	\$2.07	-4%	0%	●
020630	Pork, offal chilled	\$315	5%	-5%	\$121	-\$93	\$0.61	0%	-7%	○
020641	Pork, frozen livers	\$56	-1%	-8%	-\$3	-\$29	\$0.57	-2%	-4%	○
020649	Pork, offal frozen	\$4,222	15%	6%	\$3,220	\$1,110	\$1.54	6%	2%	●
020680	Sheep, chilled offal	\$25	3%	-6%	\$6	-\$8	\$1.60	0%	-5%	○

Source: UN Comtrade database; Coriolis definitions, classifications and analysis

STAGE I.III Global demand was analysed using the following quantitative criteria

EXPLANATION OF QUANTITATIVE SCREENING CRITERIA

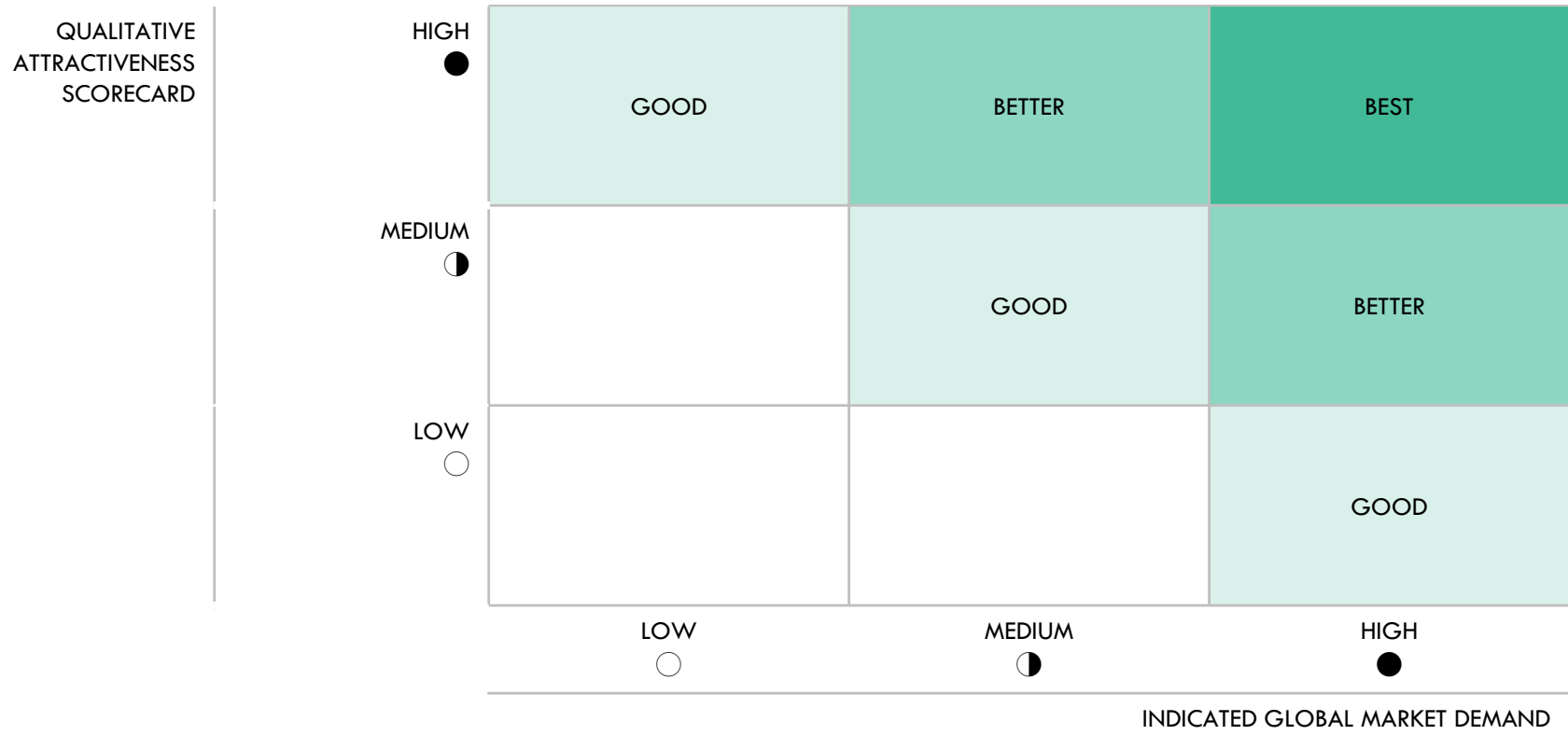
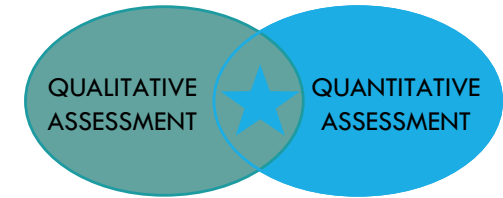


Variable	Time periods	Criteria	Details/discussion
Absolute value growth	10 year 5 year	US\$100m or more	<ul style="list-style-type: none"> - Is the category growing its absolute export value over the medium /long term? - Categories growing their export dollars over a long period are creating wealth and employment - Need to be cautious with absolute growth as inflation can carry a large category along in absolute dollars
		Not negative	
Compound Annual Growth Rate (CAGR) export value	10 year 5 year	More than 10%	<ul style="list-style-type: none"> - Is the category growing its absolute export value over the medium /long term? - Categories growing their export dollars over a long period are creating wealth and employment - However we need to approach high CAGRs on small starting values with some caution
		5 to 10%	
\$/unit (kg or l)	2010	More than US\$5	<ul style="list-style-type: none"> - Does the product possess a high value or high value added per unit of absolute weight (or volume) relative to all other Agri categories? - All other things being equal, Agri categories with higher value per unit weight are more value added (e.g. infant formula vs. milk powder)
		More than US\$2	
CAGR \$/unit	10 year 5 year	3% or more Not negative	<ul style="list-style-type: none"> - Is the category achieving positive price gains? - Categories growing their price per unit weight are an indication of consumers being prepared to pay more for the product over time - Much better to be in a category with increasing prices than falling ones
Overall attractiveness		● High	<ul style="list-style-type: none"> - A forced ranking of all categories relative to each other - Uses combination of above factors
		◐ Medium	
		○ Low	

Stage I.IV The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING OPPORTUNITIES EVALUATION MATRIX

Model; 2017



This evaluation of quantitative and qualitative criteria delivered 26 industries to Stage II, which developed them in more detail



MARRON



SHEEP MILK



CHESTNUTS



HAZELNUTS



JACKFRUIT



MUSTARD SEED



FLAX SEED



HEMP SEED



EUCAL. OIL



DEER



SILVER PERCH



POMEGRANATE



REDCLAW



BUFFALO MILK



CAMEL MILK



CHILLIES



TARO



SEAWEED



PRUNES



RAMBUTAN



PITAYA



BLACK TEA



CHIA



AMARANTH



LAVENDER OIL



CASSAVA

Each Stage II industry profile answers the following ten key questions

HEMP SEED

STAGE I.II Qual

HEMP SEED

What is it?

PRODUCT PROFILE	
Classification	Other seed oil crops
Scientific name	Cannabis sativa
Form factor	Seed, low oil seed (green for fibre feed) and seed (seed feed)
Origin	Asia
Established in AU	First grown under pilot conditions in Victoria in 1998. Able to be used for human consumption from 2017.

HEMP SEED

What is driving its success?

High oil content (2.8-3.7% protein) and low oil content.

Used extensively in animal feed, particularly for fish.

HEMP SEED

Where is it produced in Australia?

South west WA, Central East Coast, Victoria and Tasmania.

HEMP SEED

What are the metrics?

Created 450kg (2016)

100-185 (2016)

Seed cost to 20-75g/ha (2016) or 5-20kg/ha

\$1m (2016)

HEMP SEED

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS

- Founded by Neil Bennett in 1998
- Manufactures hemp seed, hemp oil and hemp protein
- Operates processing plant in the East Coast (1,000kg/d)

THE HEMP CORPORATION

- Hemp fibres, building materials, fibre
- Supporting the development across all aspects of the industry (bank, marketing, equipment)

HEMP SEED

Who are the other key stakeholders?

Government, Industry, Academia, Research, Exporters, Importers, Processors, Distributors, Retailers, Consumers.

HEMP SEED

Who are the competition for export markets?

USA, Canada, EU, Japan, South America, Africa, Asia.

HEMP SEED

How can you add value?

Processed products: Hemp oil, Hemp protein, Hemp seed, Hemp flour.

Further value added processing: Hemp oil, Hemp protein, Hemp seed, Hemp flour.

HEMP SEED

Who are the potential (commercial) partners?

Government, Industry, Academia, Research, Exporters, Importers, Processors, Distributors, Retailers, Consumers.

HEMP SEED

What does Dr. Food think?

"Long associated with its mind-bending seeds, hemp seed is attracting considerable attention in countries globally. In future, hemp competes with Australia in cereals and oilseeds."

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Executive Summary

With global market trends impacting food consumption, Australian rural industries have an opportunity to identify new food types and to connect with, and drive, new and expanding markets. Australia has a long history in agriculture and many new niche industries have emerged into multimillion dollar industries over the last 10 years (e.g. avocados, almonds, chia).

This report “New Opportunities in New & Emerging Agricultural Industries in Australia” identifies twenty six high potential emerging industries with the potential to grow to \$10m or more in the next 5 years.

The research specifically targeted Australian industries currently between \$1-\$10m GVP.

A multi-stage screening process was used to identify, analyse and rank the attractiveness of agricultural industries. The research combined trade data and a range of qualitative and quantitative criteria.

Fifty three industries emerged at the intersection of “having global demand” and “having commercial presence in Australia.” Further analysis and rankings delivered 26 industries to Stage II, which then develops each profile in more detail.

The opportunities delivered are from across the agricultural sector.

Marron crayfish, Sheep milk, Chestnuts, Hazelnuts, Jackfruit, Pomegranate, Flaxseed/linseed, Hemp seed, Eucalyptus oil, Deer, Silver perch, Seaweed, Redclaw crayfish, Buffalo milk, Camel milk, Chillies, Taro, Cassava, Prunes, Rambutan, Pitaya (dragon fruit), Black tea, Chia, Amaranth, Mustard seed, & Lavender oil.

The products have a combination of success factors that drive the industry. Such success factors include:

- premium products (e.g. marron, camel milk),
- on-trend (e.g. hemp seed, seaweed),
- new or emerging cuisine (e.g. jackfruit, sheep milk), and
- health benefits and attributes (e.g. chia, flaxseed).

This research not only identifies and analyses the opportunities with the highest potential for success but provides a vast resource and analysis of existing agricultural products and industries.

53 potential emerging industries were identified and ranked as “Good, Better and Best”

RESULTS OF STAGE I SCREENING

GOOD

Wild pigs	Okra
Camel meat	Bitter melon
Buffalo meat	Globe artichoke
Guinea fowl	Wasabi
Emu	Custard apple
Ostrich	Mangosteen
Yabby crayfish	Guava
Mulloy	Coriander seed
Garlic	Buckwheat
Parsnip	Poppy seed
Turnip	Alpaca fibre
Fennel	Goat fibre

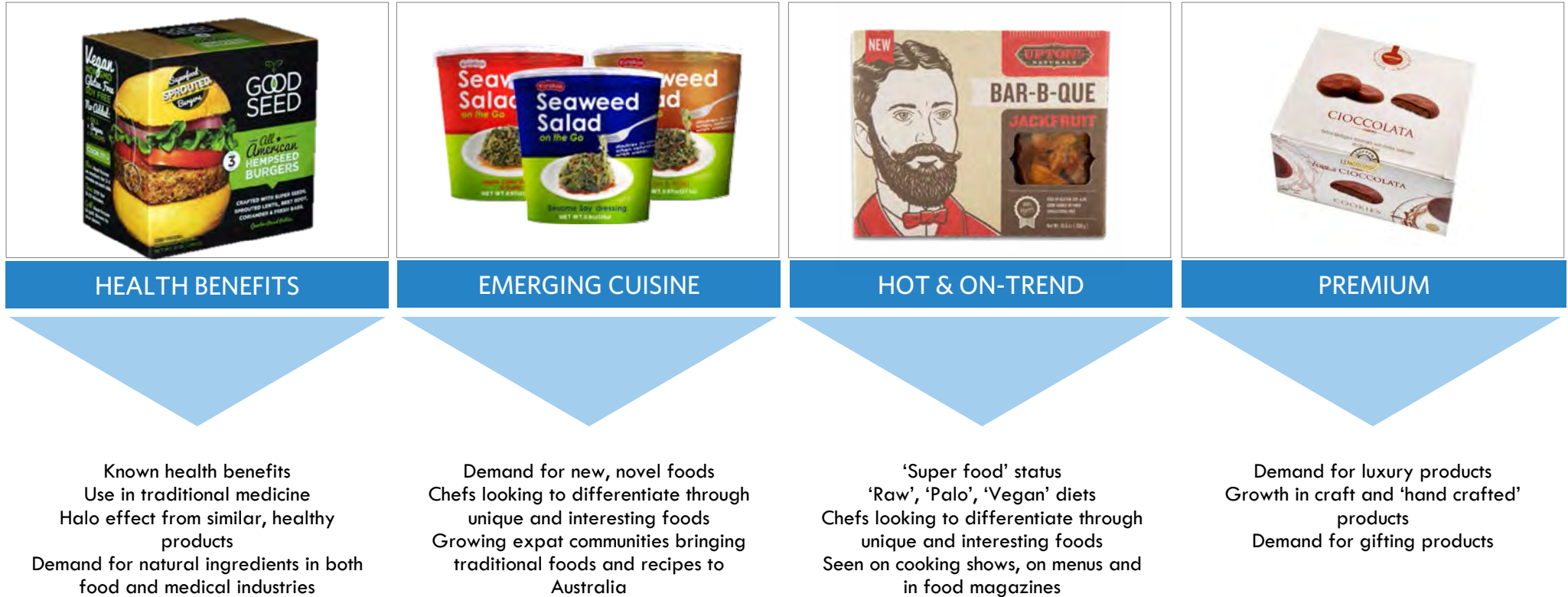
BETTER

Deer	Prunes
Silver perch	Rambutan
Seaweed	Pitaya (dragon fruit)
Redclaw crayfish	Black tea
Buffalo milk	Chia
Camel milk	Amaranth
Chillies	Mustard seed
Taro	Lavender oil
Cassava	

BEST

Marron crayfish
Sheep milk
Chestnuts
Hazelnuts
Jackfruit
Pomegranate
Flax seed/linseed
Hemp seed
Eucalyptus oil

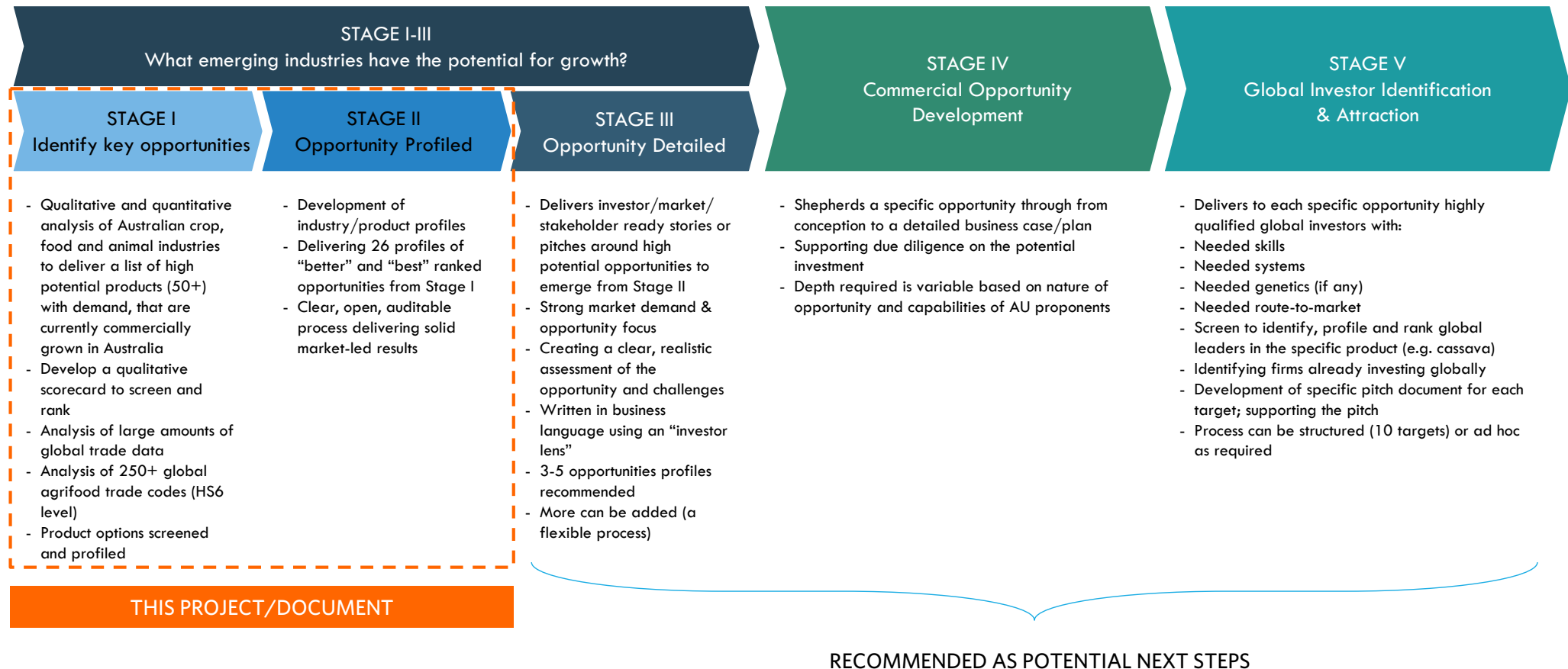
High potential emerging industries shared one-or-more of the following characteristics



Opportunities exist for the emerging industries to value add and expand into multiple categories, as this hemp seed example shows



We recommend the following next steps for the project

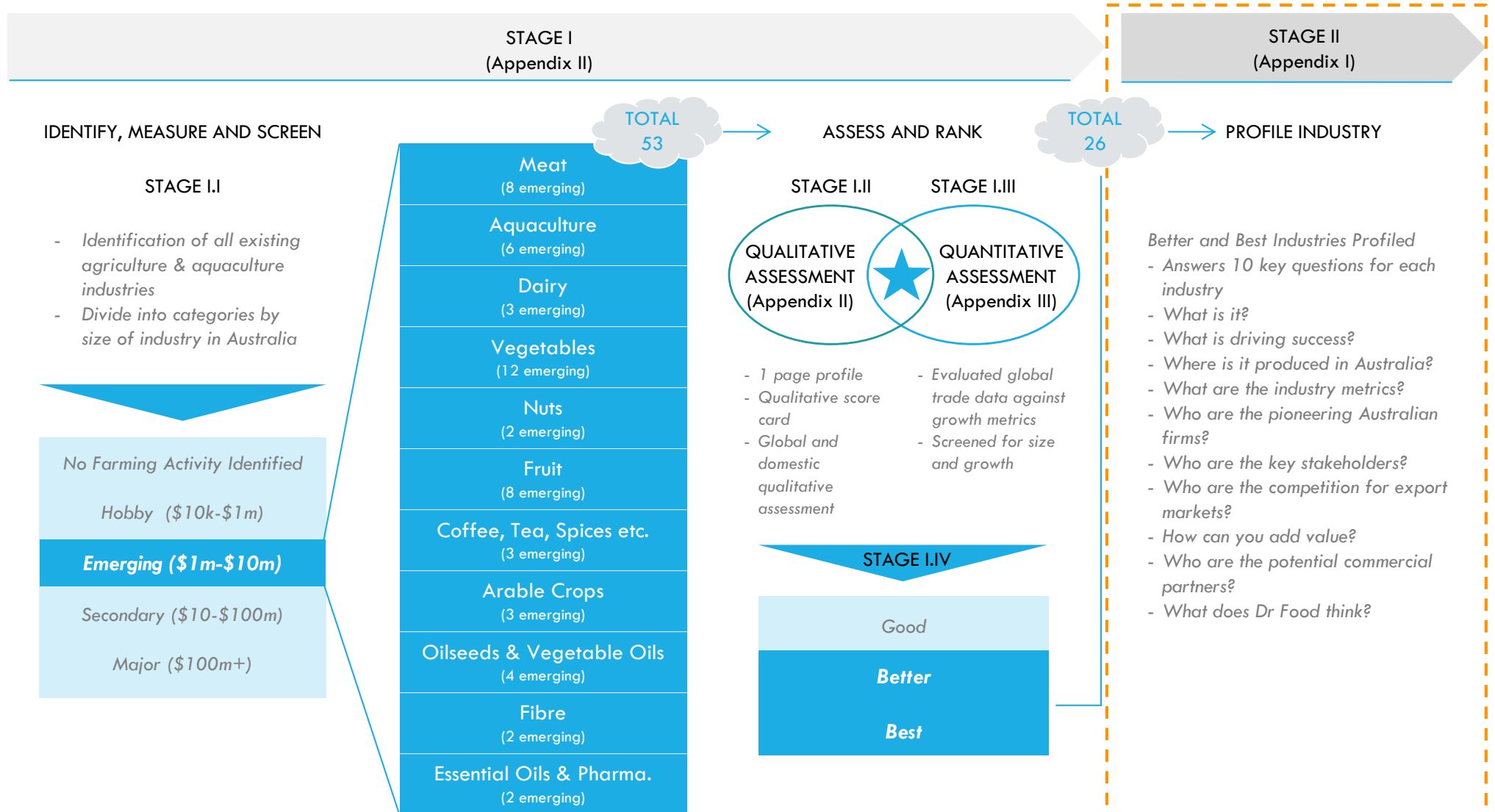


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Appendix I: Results of Stage II

Stage II of the process profiled the “Best” and “Better” high potential emerging industries



Stage II profiles the 26 'Best' and 'Better' products that emerged from Stage I of the process

RESULTS OF STAGE I SCREENING RANKING "BEST" & "BETTER"

BEST

Marron crayfish
Sheep milk
Chestnuts
Hazelnuts
Jackfruit
Pomegranate
Flax seed/linseed
Hemp seed
Eucalyptus oil

BETTER

Deer	Prunes
Silver perch	Rambutan
Seaweed	Pitaya (dragon fruit)
Redclaw crayfish	Black tea
Buffalo milk	Chia
Camel milk	Amaranth
Chillies	Mustard seed
Taro	Lavender oil
Cassava	



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		<p>Marron crayfish are unique to Western Australia. It is possible to breed a striking blue coloured variety. Marron are a high value product (27% of freshwater crayfish production but 40% of value).</p>		\$2.0m (2015)	\$5-10m by 2025
Capital intensive to produce	●				
Mechanically harvested	◐				
Value-added opportunities	◐				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	◐	<ul style="list-style-type: none"> - Premium seafood product - High value placed on premium shellfish in China (e.g. as banquet centre pieces) - Move towards sustainably sourced seafood 	<ul style="list-style-type: none"> - Have been introduced to South Africa (only 2 tonnes of production in 2013) - Slow growing species; low yields compared to capital cost - Lack of production information for some species and few stand alone models to follow - Limited improved genetic stock available 		
Wide spread of prices	●				
Origin important or called out at POS	●				
COMPETITORS		VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Biosecurity or other domestic barriers	●	<ul style="list-style-type: none"> - Live exports - Live aquarium trade (especially blue marron) - Prepared products - Sustainable seafood marketing - Tourism opportunities 	<ul style="list-style-type: none"> - Australia can maintain its relatively disease free status - Consistent supply can be achieved in order to capture high value export markets - Improved breeding and production systems can achieve higher yields (faster growing) - Australia will continue to ban live crayfish imports 		
Can we get to the world price?	●				
Attractive competitive set	○				
AUSTRALIA		KEY COMPETITORS			
High performance genetics available	◐	DOMESTIC	EXPORTERS		
Required skills for success	●	<ul style="list-style-type: none"> - Other Australian freshwater crayfish species (redclaw, yabbies) - Australian saltwater lobsters (rock, tropical, scampi) - Other shellfish - Imported cooked, frozen and prepared crayfish/lobster products 	<ul style="list-style-type: none"> - China (91% of world production of freshwater crayfish) - United States - Bangladesh - Thailand 		
Leverage country reputation	●				
OVERALL	●				

What is Marron crayfish?

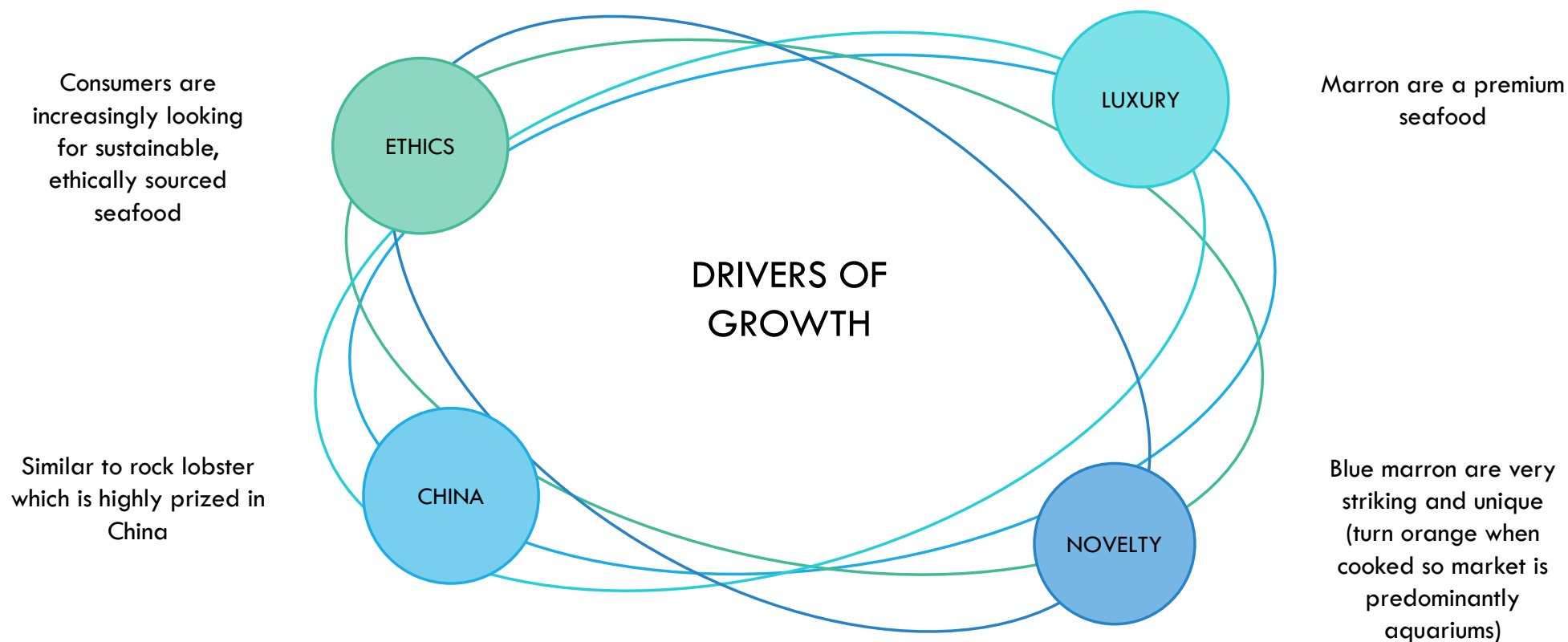


PRODUCT PROFILE

Common names	Smooth marron
Scientific name	<i>Cherax cainii</i>
Type of animal	Freshwater decapod crustacean
Cultivation cycle	Sexual maturity at 2-3 years; 20 years to full sized in wild (800g – 1.5kg); 2-3 years to 150-250g in intensive systems
Suited climate	Adverse to high salinity, low oxygen, high temperatures; prefer permanent water with suitable habitat and food
Part eaten	White flesh in tail and claws
Origin	Native to south west Western Australia
Established in AU	Native; commercial wild harvest banned in 1950s



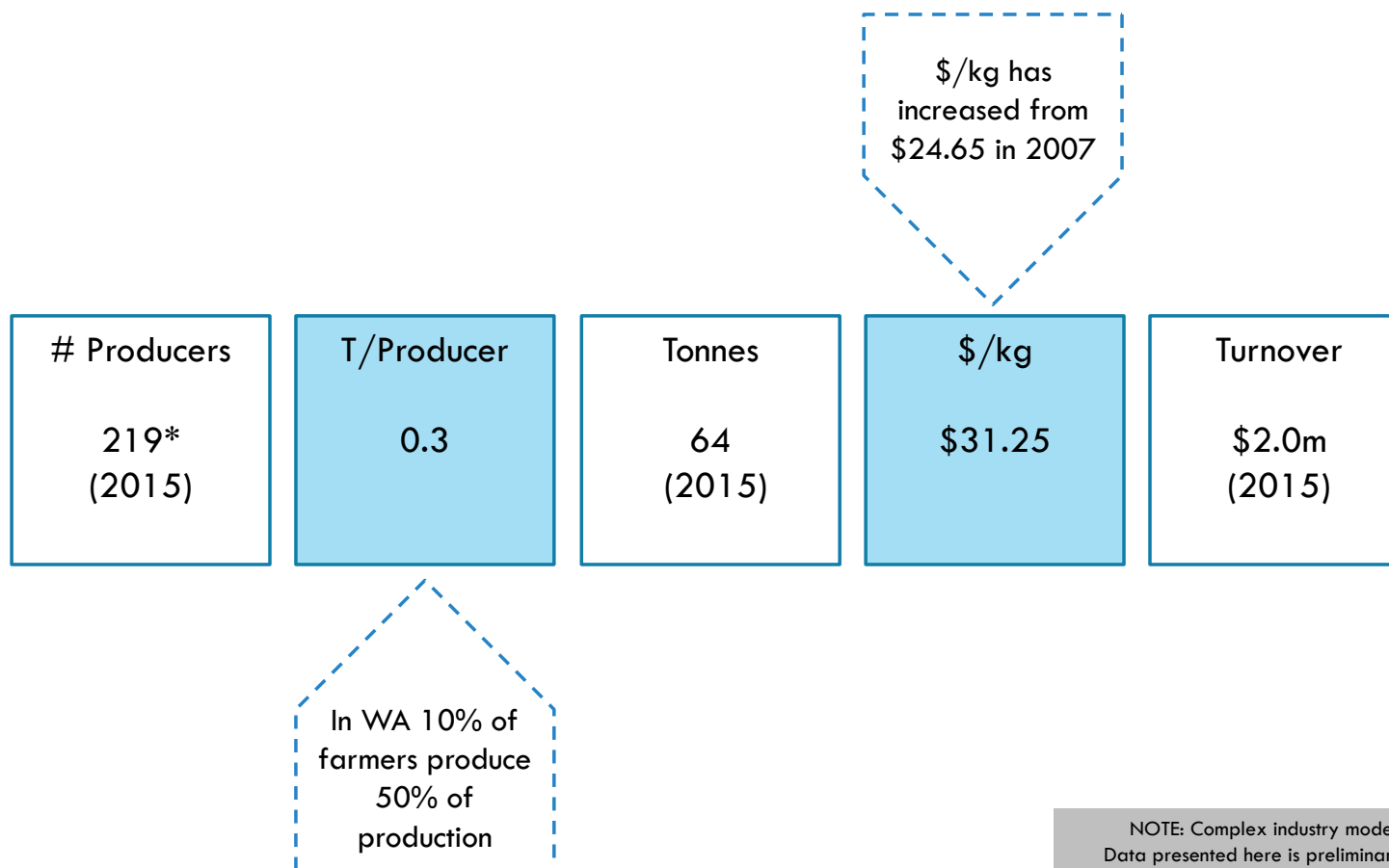
What is driving its success?



Where is it produced in Australia?



What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years. Data is "patchy" in places and should be treated as directional. Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - One of largest wholesalers of live marron in Australia - Based in Manjimup, Western Australia - Supplies to hospitality industry locally and internationally - Sources from own ponds and growers throughout Western Australia - New state of the art facility constructed in 2006 - 15 semi intensive ponds and 3 extensive dams
	<ul style="list-style-type: none"> - Family owned and run marron farm and wholesaler based in Donnybrook, Western Australia - Australia's largest marron wholesaler - Sources from own ponds and local growers - 15 years of commercial growing experience
	<ul style="list-style-type: none"> - One of the largest best practic marron farms in Australia - Based on Kangaroo Island, South Australia - 52 grow out ponds - Tours, café, winery, farmgate sales, online store - Storm destroyed bird protection netting leading to loss of stock; expecting to be recovered in 2017 - Sold to Chinese government backed company in 2017

Who are the other key stakeholders?



- Aquaculture Council of Western Australia
- State's peak aquaculture industry body

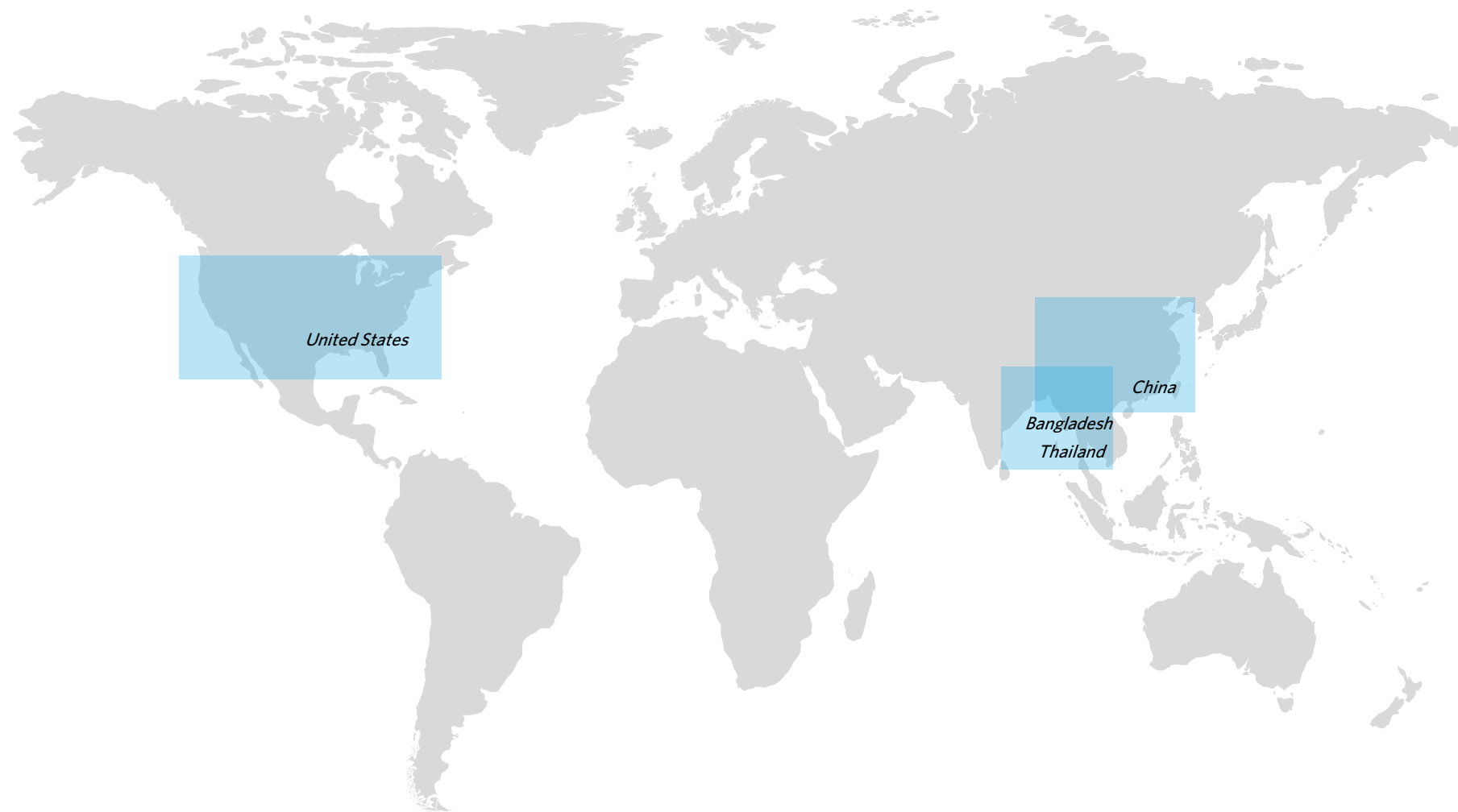


- Marron Growers Association of Western Australia
- Works to assist marron growers and those looking to set up commercial marron growing on whatever scale



- WA Department of Primary Industries and Regional Development
- Pemberton Freshwater Research Centre, freshwater hatchery and research centre
- Aquaculture and Native Fish Breeding Laboratory at UWA

Who are the competition for export markets?

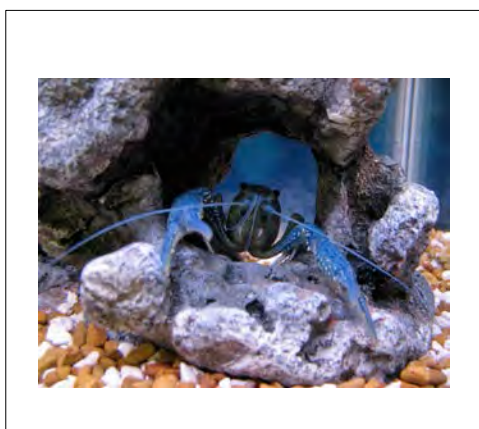


How can you add value to it?

Live products



Further value added processing*



*Lobster/crayfish is used as product suggestion. Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes; blue crayfish photo by Nathan Daly, Creative Commons

What does Dr. Food think?



“Live seafood turns the “touchstone” of marketing, viz. adding value to raw materials, on its head – the less alive it is, the less value it is!






Particularly focus on the fact that Marron crayfish are native to and have exceptional terroir.

In Asian export markets, the product label “Marron crayfish” may need work and positioning as the superior sustainable lobster.

In some Western markets, live shipments will start to receive pushback from seafood welfare activists.

Keep your eyes on prospective plant-based seafood lookalikes (e.g. see products from Sophie’s Kitchen “Gourmet plant-based seafood”, New Wave Foods, and Good Catch – all US-based).”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 MARUHA NICHIRO	1943	Tokyo, Japan Public TYO: 1333	¥863.8b (15) US\$7.6b 12,335	Wild catch, aquaculture, processed fish, processed foods, frozen foods, meat (beef, pork, chicken), fishmeal, fine chemicals, storage & logistics	Japan Asia Nth America Europe Australia NZ	www.maruha-nichiro.co.jp www.westwardseafoods.com www.australfisheries.com.au World's largest seafood company by turnover; over 200 companies in group in 26 countries
 Mazzetta Company, LLC*	1987	Illinois, US Private Mazzetta family	US\$425m TBD	Lobster, finfish, mussels, prawns, crab	US Canada New Zealand Norway	www.mazzetta.com www.hofseth-as.no Sources 306 items from 33 countries; one of top seafood suppliers in North America; shareholder in Hofseth International (NO), Sanford (NZ)
 NISSUI	1911/ 1943	Tokyo, Japan Public TYO: 1332	¥638.4b (14) US\$5.6b 8,240	Wild catch, processed fish, processed foods, fine chemicals	Japan Asia Americas Europe NZ Australia	www.nissui.co.jp www.australianlongline.com.au www.anzco.co.jp www.sealord.com 75 subsidiaries & 33 associated companies
 湖北莱克集团 HUBEI LAKER GROUP	2002	Hubei, China	N/A 5,000	Farmed crayfish, freshwater fish, aquatic vegetables, other products	China Europe USA Japan Korea	www.hblaker.com Leading crayfish producer in Chinese industry; 200,000t annually
 HUASHAN	2005	Dalian, China Best Foodstuff (Dalian) Co.	US\$12.6m N/A	Crayfish, cod, haddock, salmon, pollack, ocean perch, scallops	China Europe Americas	www.huashanfoods.com 10,000t production



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Australia is good at dairy and good at sheep; it should be the world leaders in dairy sheep. China has a large and growing demand for non-bovine infant formula, especially in Asian markets. Europe and New Zealand has already demonstrated strong growth is possible.</p>		\$5.5m (2012)	\$10-15m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Move away from bovine dairy - Health benefits of sheep milk - Increased demand for traditional European style cheeses 		<ul style="list-style-type: none"> - Only ~8% of world sheep cheese production is traded globally - Majority of milk is processed on farm, into cheese and yoghurt for the domestic market - Operations are small scale - Biosecurity barrier to importing best global genetics to build milking flock - Australia's dairy herd is predominantly crossbred; not purebred, high productive breeds like East Friesian, Awassi, Lacaune, etc. 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Cheese (e.g. Roquefort style, feta, romano pecorino) - Yoghurt - Milk based beverages - Specialised powders - Cosmetics (e.g. soaps, body lotion) - Sale of lambs for meat - Wool - Lanolin 		<ul style="list-style-type: none"> - Australian produced sheep milk cheeses can command same price as traditional European products - Australian dairy sheep flock numbers can be increased - Investment into high value infant formula production will occur 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	●				
Can we get to the world price?	◐				
Attractive competitive set	◐				
AUSTRALIA					
High performance genetics available	◐				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	●				
		DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Other milks (cow, goat, camel) - Plant based milks - Imported sheep milk powder - Imported sheep milk cheeses - Imported sheep milk baby formula 	<ul style="list-style-type: none"> - Europe - China - Middle East 		

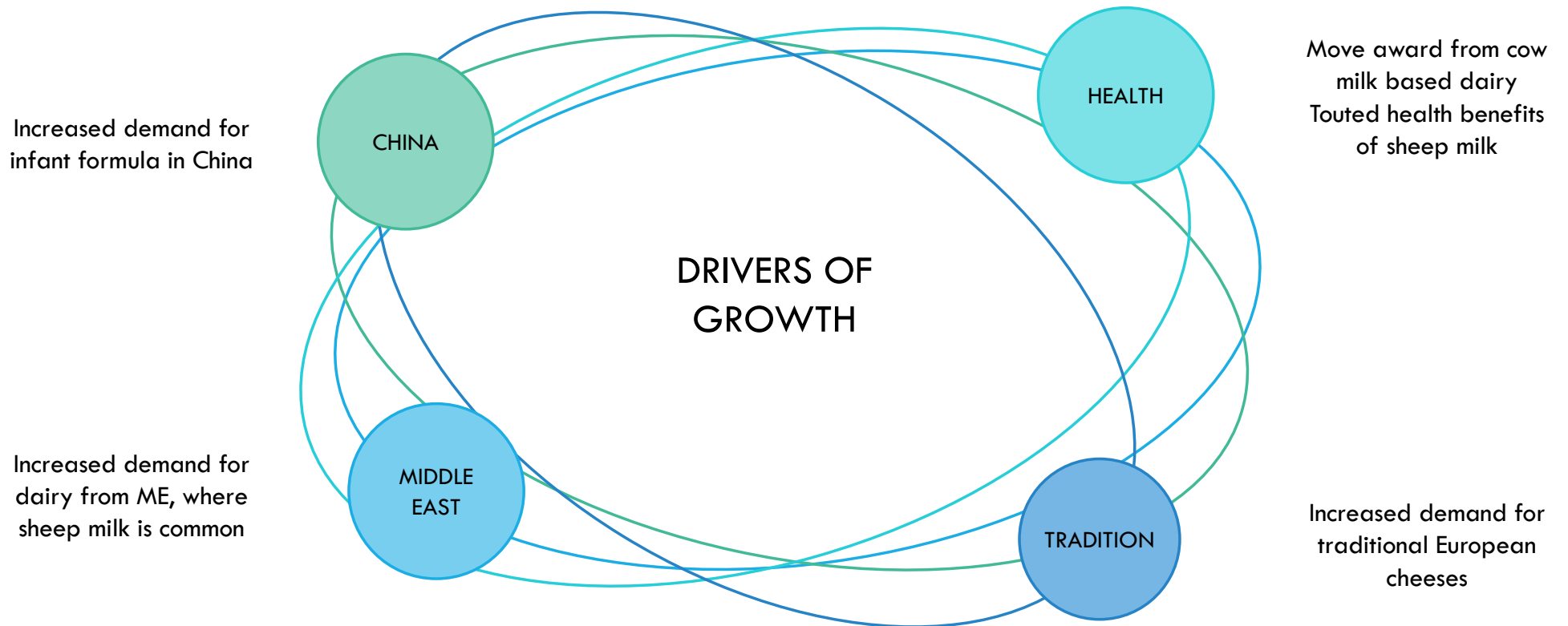
What is sheep milk?



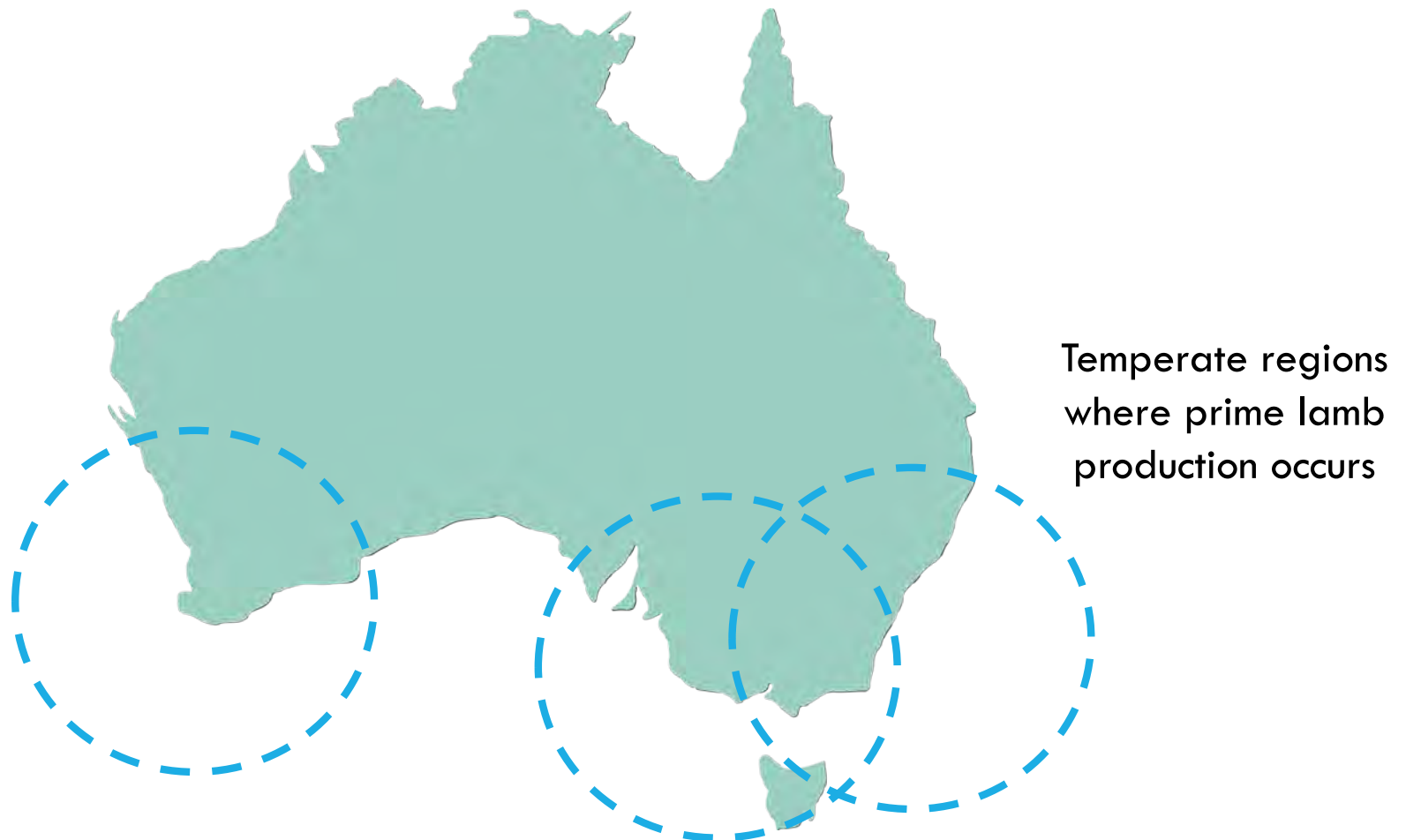
PRODUCT PROFILE

Common names	Sheep milk, sheep dairy, ewe's milk
Scientific name	<i>Ovis aries</i>
Type of animal	East Friesian, Lacaune, Awassi, Assaf are most common and productive dairy breeds
Cultivation cycle	Dairy sheep can lactate for 120-240 days; naturally breed in autumn
Suited climate	Temperate and cool climates with dry summers
Uses	Fluid milk, fresh dairy products, powders and infant formula
Origin	Mesopotamia
Established in AU	1788 (East Friesian in 1990s)

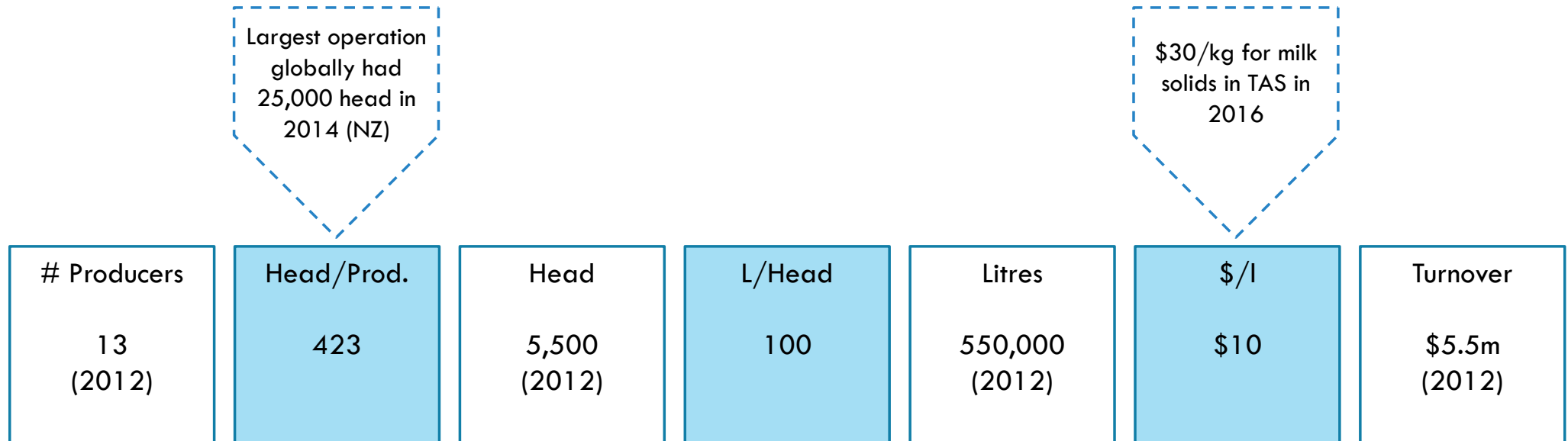
What is driving its success?



Where is it produced in Australia?






What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
 Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years.
 Data is "patchy" in places and should be treated as directional.
 Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
 <p>Island Pure Kangaroo Island <small>Natural · Handmade · Pure · Simple · Natural</small></p>	<ul style="list-style-type: none"> - South Australia's first sheep dairy and cheese factory - Opened in 1992 - 260 ha grazing property on Kangaroo Island, South Australia - Sheep cheese and yoghurt
	<ul style="list-style-type: none"> - Goat and sheep milk dairy company - Based in Meredith, Victoria - Specialty cheeses and yoghurt - Domestic and export - Factory on site
	<ul style="list-style-type: none"> - Based in Birchs Bay, Tasmania - Sheep milk cheese and livestock/genetics sales - Developed crossbreed of East Friesland and Awassi with others to suit Australian climate 'Grandvewe Dairysheep'

Who are the other key stakeholders?



- National services body for Australian dairy industry
- Industry owned, funded by farmer levies matched with R&D funds from government

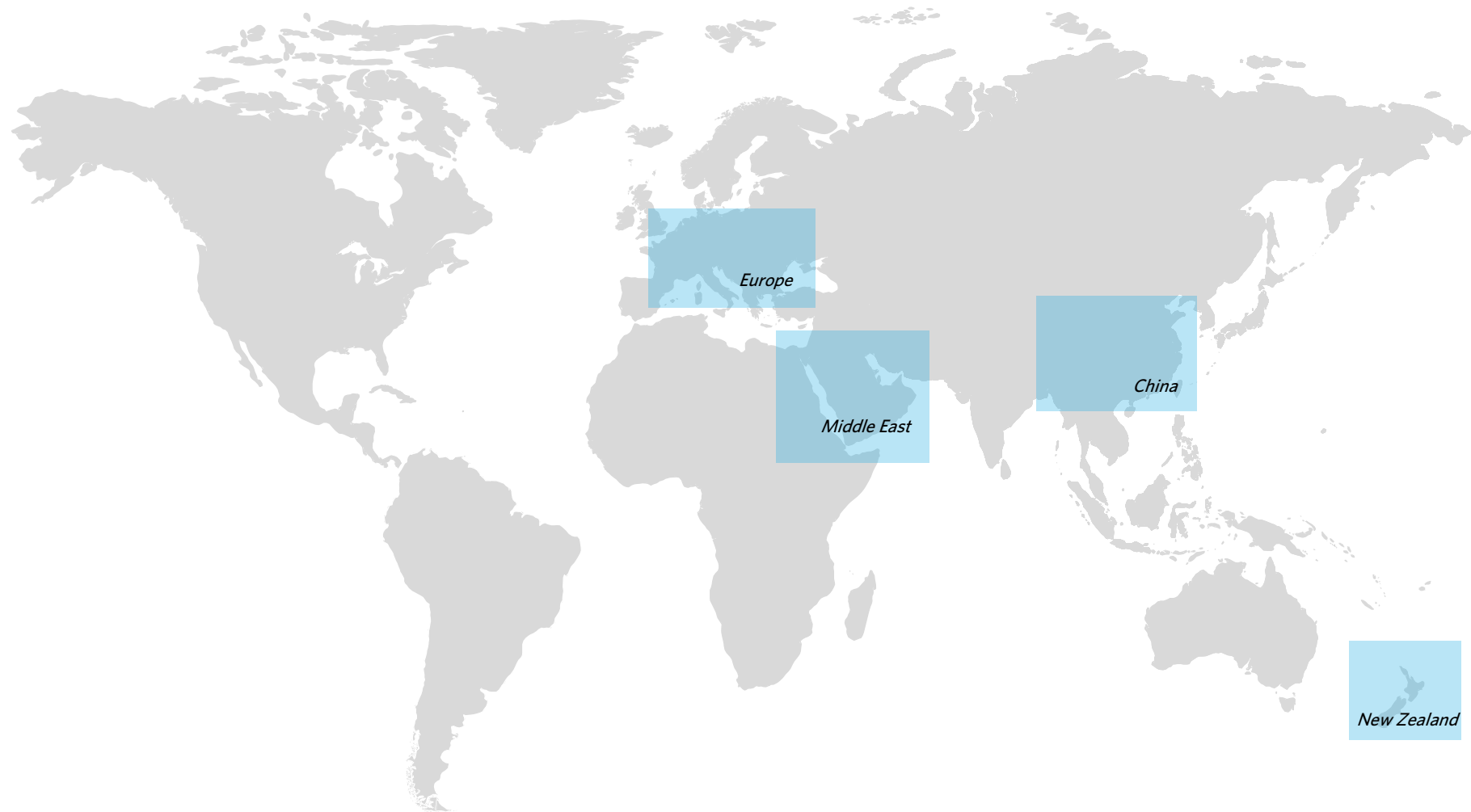


- Not-for-profit industry association for dairy product manufacturers and allied trades
- Branches in every state



- Represents specialist and artisan cheese industry
- Education, awareness, extension role
- Not-for-profit member-based industry association

Who are the competition for export markets?



How can you add value to it?

Processed products



What does Dr. Food think?








“Sheep milk products exploded from being beloved by quirky, alternative consumers to premium mainstream niche at the beginning of the noughties reflecting, the huge growth in the market for “Free From” food products (e.g. lactose-free).

More recently, demand for “alternative” dairy products such as sheep/goat milk have suffered because of burgeoning growth in plant-based milk products from soy, almond, oat, hemp etc..

Greece is building a case in Europe for PDO (you know, like champagne) status for Greek yoghurt whereby it must have Greek provenance and come from the milk of sheep and goats. Feta cheese already has such PDO status.

Thus, the opportunity for WA sheep milk products to claim authenticity in raw materials if not in provenance – like mozzarella made from buffalo milk, premiums are there for the taking when linked to dairy products that have a sheep’s milk heritage.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	2013	Hunan, China Private	NZ\$10-15m 50 (NZ operations)	Cheese, milk powder, sheep and goat infant formula, whey powders	NZ Italy China	www.blueriverdairy.com infantformula.nzsheepmilk.co.nz Operations in NZ (Blue River) and Italy (Alimenta srl); IPO planned in 2019-2021
	1890	Roquefort, France Private Ricard family	N/A	Raw sheep milk cheese (Roquefort)	France Global	www.roquefort-vernieres.fr One of 7 producers allowed to bear name Roquefort
	1985	Shanxi, China Bai Yue Dairy Group	>US\$100m >1,000	Sheep milk infant formula, milk powder	China	www.cnsheepdairy.com 100% imported sheep milk powder used; largest goat and sheep milk products manufacturer in Asia
	2015	Auckland, New Zealand Private Landcorp; SLC Ventures LP	NZ\$2-5m 30	Sheep milk powder, chewable tablets, gelato	NZ China Asia	www.springsheepnz.com Sheep milk producer and marketer; 4,000 milking ewes; initial focus on Taiwan and Korea
	2016	Gwangyang, South Korea	N/A	Sheep and cow infant formula, milk powders, specialised formulas	South Korea China Asia	www.hamglobal.co.kr Dairy farm and powders plant



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		Chestnuts are well positioned to take advantage of demand for gluten-free baking ingredients. Growing interest in chestnuts for the alternative milk market. Real opportunities to reinvent/reposition chestnuts away from Christmas and to modern uses		\$8.8m (2016)	\$9.8m* by 2020 \$10-15m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Consumer perceptions of the benefits of nuts as part of a healthy diet - Gluten-free alternative - Pest-free status therefore no insecticides (opportunity for organic) - Offseason, counter-seasonal to Northern Hemisphere - Versatile sweet or savoury ingredient (candied, stuffing, roasted, flours) 		<ul style="list-style-type: none"> - Blight and disease impacts crop and productivity (5,300 trees removed during 2010-13) - Drought conditions - Currently small family businesses - Imports become open to other countries (beyond NZ) 	
Wide spread of markets/buyers	●				
Wide spread of prices	◐				
Origin important or called out at POS	◐				
COMPETITORS					
Biosecurity or other domestic barriers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Can we get to the world price?	◐	<ul style="list-style-type: none"> - Processed chestnuts (frozen-peeled, purees, canned, dried) - Gluten free flour, meal, cake mixes - Asian baked goods (moon cakes, mochi) - Chestnut beer - Confectionery - Soups - Chestnut 'milk' - Chestnut beverages - Animal feed - Timber 		<ul style="list-style-type: none"> - Extend the scale of existing operations (75% AU production in NE Victoria, 300 growers) - Ongoing research into Chestnut Blight and other diseases to improve productivity and yields - Consumer friendly varieties will be developed - Increase exports beyond 1% production (currently to Asia) - Increase the \$/kilo value of the crop (lowest of the tree nuts) - Australia will continue to prohibit imports other than from New Zealand 	
Attractive competitive set	●				
AUSTRALIA					
High performance genetics available	○				
Required skills for success	●				
Leverage country reputation	●	KEY COMPETITORS			
		DOMESTIC	EXPORTERS		
OVERALL		●			
		<ul style="list-style-type: none"> - Imported NZ chestnuts - Imported processed chestnut products - Walnut - Almond - Hazelnuts 	<ul style="list-style-type: none"> - China - Turkey - Italy - South Korea - Bolivia - Greece - Japan - USA 		

*Australian Nut Industry Council. Source: RIRDC Publication No 14/069; Coriolis analysis and estimates

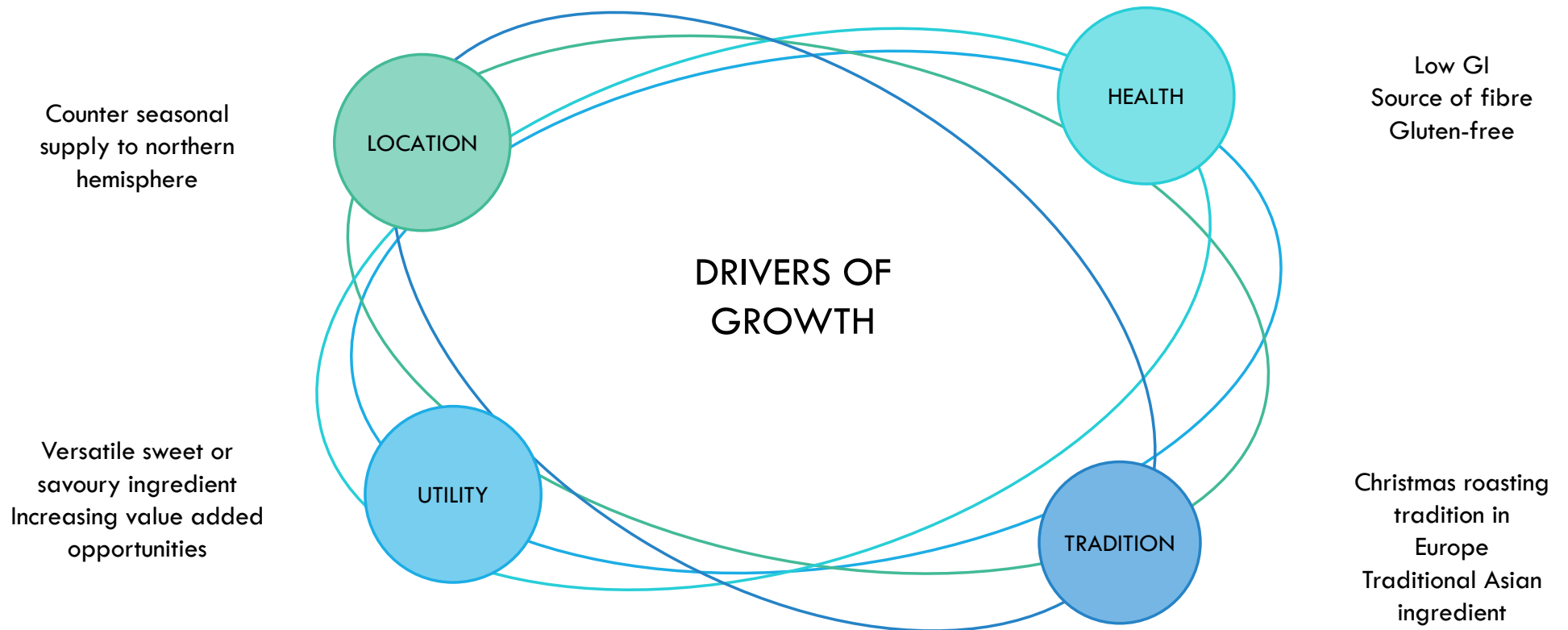
What are Chestnuts?



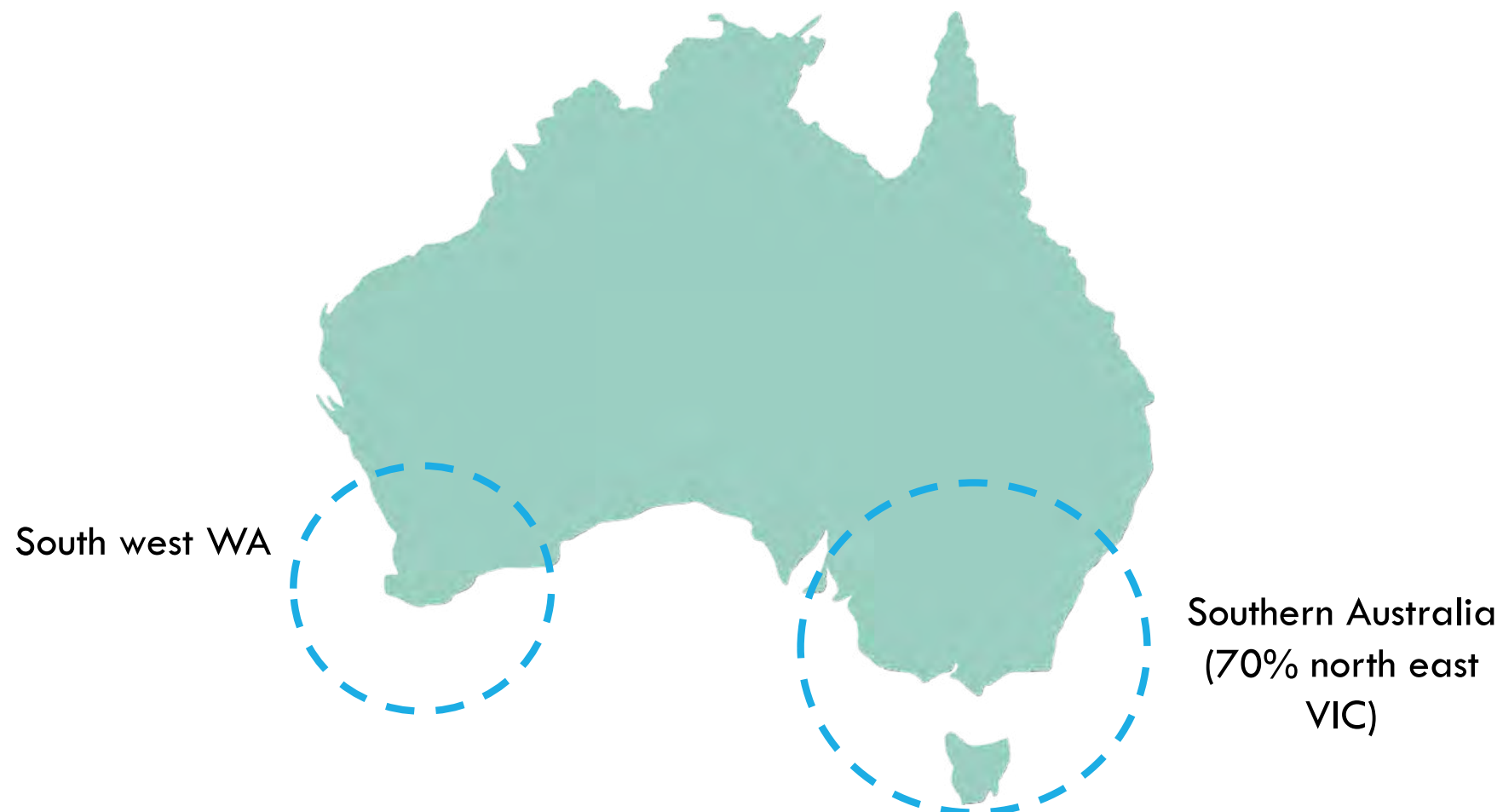
PRODUCT PROFILE

Common names	Chestnut
Scientific name	<i>Castanea</i>
Type of plant	Tree (deciduous, 25-30m high)
Cultivation cycle	Annual (harvest March to May when drop from the ground)
Suited climate	Hot summer, cold winter ~800m above sea level
Part eaten	Nut
Origin	Asia Minor
Established in AU	1850's C. Sativa

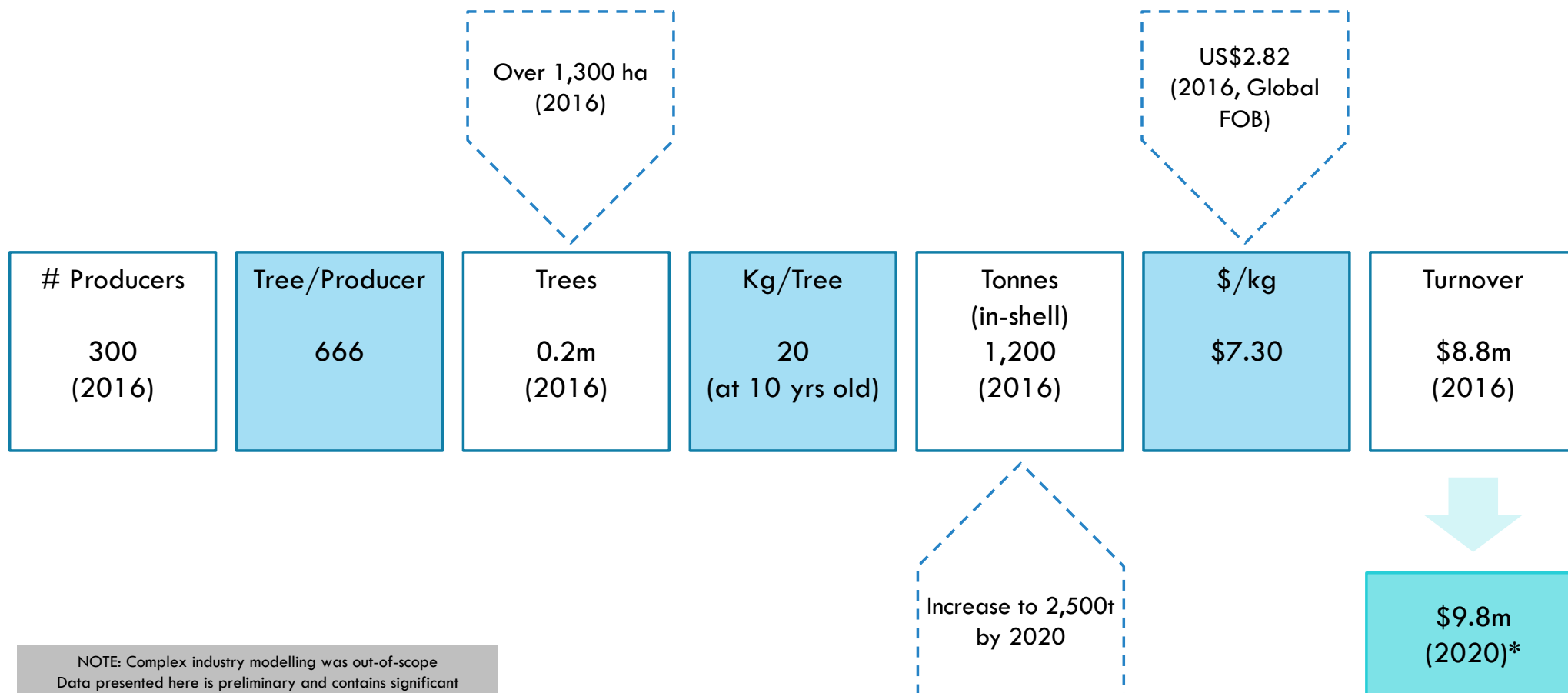
What is driving its success?



Where is it produced in Australia?






What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
 Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years. Data is "patchy" in places and should be treated as directional. Use with caution.

*Australian Nut Industry Council; Source: Chestnuts Australia; various published articles; Coriolis analysis and estimates

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Based in Beechworth, VIC - Group of 20 growers in north east VIC and southern NSW - Produce over 25% Australia harvest - Specialise in easy to peel varieties
	<ul style="list-style-type: none"> - Bought by Laria family in 2007 - Berries, chestnuts, preserves and jams; pick your own and cafe - 9,000 chestnut trees, #2 producer in Stanley, VIC - Eezi-peel brand
	<ul style="list-style-type: none"> - Based in Eurobin, VIC - Casey's are committed industry advocates - Exports to Japan, China - Cooked and peeled chestnuts, chestnut flour, marrons glace, puree, dried

Who are the other key stakeholders?



- Chestnuts Australia
- Dedicated to the growth of the chestnut industry through education, promotion, research and extension

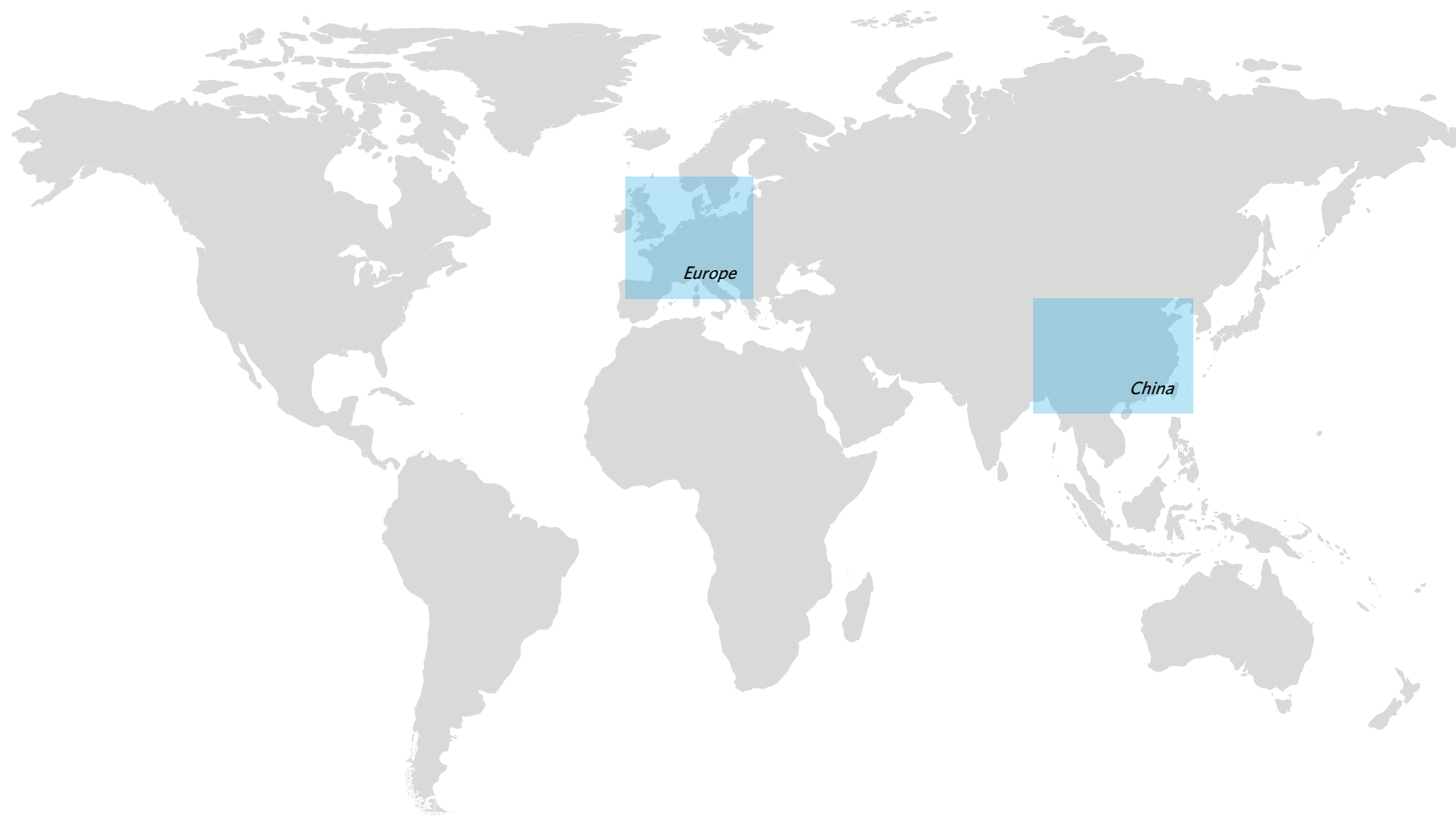


- Australian Nut Industry Council
- Represents the 7 commercial tree nut industries at national level



- Horticulture Innovation Australia
- Not-for-profit, grower – owned R&D and marketing company
- Invests over \$100m annually

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing








What does Dr. Food think?



“Nuts are having “a moment” around the world driven by their very positive nutritional profiles and the mega-trend in many countries towards healthy snacking and “non-dairy dairy” (e.g. nut butters/milks). Traditional and still popular in much of Europe, Brits are only tiny consumers of chestnuts and see them as a romantic but inconvenient seasonal item for “roasting on an open fire”.

The nutritional profile of chestnuts with claims for improving digestive health, strengthen bones and manage diabetes attract a global audience but have particular resonance in Asia. The “clean & green” credentials of AU and the perception that processing integrity is much higher than in China suggests that market potential for the raw and processed chestnut will be strong in SE Asia. The challenge will be to communicate the health messages effectively.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	2002	Saint Médard de Mussidan, France	N/A	Chestnuts, fresh, packaged, sweet	Europe	www.inovfruit.com Chestnut wholesaler; 300t of product, 8 producers
	2009	Shangdong, China Public NYSE: ALN	Market cap US\$10.3m	Chestnuts, canned chestnuts, processed chestnuts, convenience, chilled and frozen ready to eat products	China Europe	Acquired Athena Group in France to achieve distribution into EU in 2014; both suppliers of Chestnut products
		Gelsenkirchen, Germany	N/A	Honey, candied chestnut, dairy products	Europe	www.enkafood.eu "Maroni Candied Chestnut" brand; wholesaler to retail, food service, industry
	1968	Lugo, Galicia, Spain	N/A	Chestnuts; peeled and frozen, canned, flour, puree, marron glace	Europe	www.alibos.eu/en/index.html One of the largest suppliers and manufacturers in the region Counter-seasonal fresh
	1992	Taipei, Taiwan Public Sun Guohua, Laxton, Cathay United World Bank	N/A	Pastry, bakery, confectionery, popcorn, meat snacks, dried fruit	Taiwan China	www.vigorkobo.com Leading bakery in Taiwan



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Almonds and Macadamia have demonstrated Australia can succeed in nuts. Import substitution a clear "low hanging fruit"; Australia imports almost 3,000 tonnes. A\$70m investment by Ferrero Group announced in 2013 given real confidence in the sector.</p>		\$2.0m (2016)	\$22.5m by 2021* \$400m by 2020
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	●	<ul style="list-style-type: none"> - Growing demand for premium chocolate products - Growing demand for premium nuts - Perceived health benefits of hazelnuts (and nuts in general) - Concern over consistency of supply from unstable countries 	<ul style="list-style-type: none"> - Long time from development to harvest - Biennial bearing patterns - Risk of disease (e.g. spread of hazelnut mite) 		
Wide spread of prices	◐	VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Origin important or called out at POS	●	<ul style="list-style-type: none"> - Roasted - Crushed and ground for use as ingredient in baked goods, confectionery, desserts - Processed into oil and butters - Gluten free flour and meal - Hazelnut liqueur 	<ul style="list-style-type: none"> - Announced developments all come to fruition - Large scale development in warmer regions have same quality and yields - Value added processing in Australia can be competitive at world prices 		
COMPETITORS		KEY COMPETITORS			
Biosecurity or other domestic barriers	●	DOMESTIC	EXPORTERS		
Can we get to the world price?	◐	<ul style="list-style-type: none"> - Other locally produced nuts (almond, macadamia) - Imported hazelnuts - Imported other nuts - Other gluten free meals and flours 	<ul style="list-style-type: none"> - Turkey - Italy - Azerbaijan - United States - Chile - Brazil - France 		
Attractive competitive set	●				
AUSTRALIA					
High performance genetics available	●				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	●				

*Australian Nut Industry Council; RIRDC. Source: RIRDC Publication No 14/069; Coriolis analysis and estimates

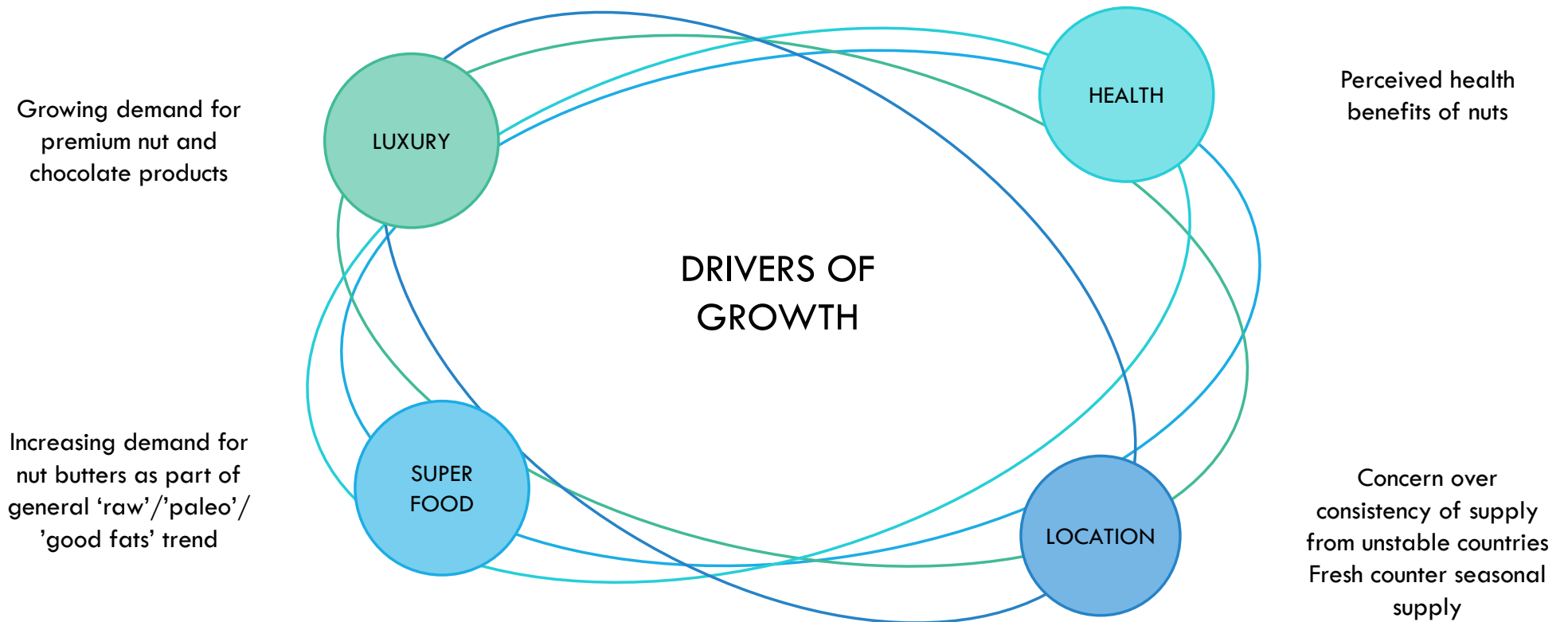
What are hazelnuts?



PRODUCT PROFILE

Common names	Hazelnut, (cobnut, fibert nut are closely related species)
Scientific name	<i>Corylus avellana</i> (most common)
Type of plant	Deciduous, fruiting tree
Cultivation cycle	Blooms and pollinates in winter; nuts drop 3 times a year; begin to bear at 3 years
Suited climate	Mild summer and cool winter; chill requirements
Part eaten	Kernel of the seed
Origin	Southern Europe and Turkey
Established in AU	By early settlers and returning soldiers

What is driving its success?



Where is it produced in Australia?



What are the industry metrics?

1,400 ha under production with new planting not yet bearing

# Producers	Ha/Producer	Hectares	Kg/Ha	Tonnes	\$/kg	Turnover
80 (2014)	2.5	200 (2016)	850	170* (2016)	\$10	\$1.7m (2016)

2.5-3.5t/ha sustained annually is considered acceptable level





\$2.0m#
(2016)

NOTE: Complex industry modelling was out-of-scope
 Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years.
 Data is "patchy" in places and should be treated as directional.
 Use with caution.

*In shell; # Australian Horticulture Statistics Handbook 2015/16. Source: Australian Nut Industry Council; various published articles; Coriolis analysis and estimates

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
 <p>ROYAL NUT COMPANY EST. 1987</p>	<ul style="list-style-type: none"> - Family owned business based in Rowville, VIC - Source and manufacture nuts, nut butters, dried fruit, legumes and grains, health & snack foods, confectionery, spices - Hazelnuts sourced from Australia and Turkey
<p>Tamar Valley Hazelnuts</p>	<ul style="list-style-type: none"> - Family run business in Glengarry, Tasmania - First planted in 2010; now 5,000 trees - Plans to expand to 14,000 trees on 160ha farm over next 5 years - Pesticide free - Nursery sales, processing facility and commercial kitchen
 <p>AGRI AUSTRALIS <i>Australian Hazelnut</i></p>	<ul style="list-style-type: none"> - Ferrero subsidiary (also has Ferrero Australia; manufacturing Nutella and Tic Tac in Lithgow, NSW; Australian and NZ sales) - Planted 900,000 trees in the Riverina, NSW since 2014 - First commercial harvest to begin after 2018; full production by 2022 - A\$70m investment

Who are the other key stakeholders?



- Hazelnut Growers of Australia
- Peak industry body
- Produces Hazelnut Growers Handbook resource

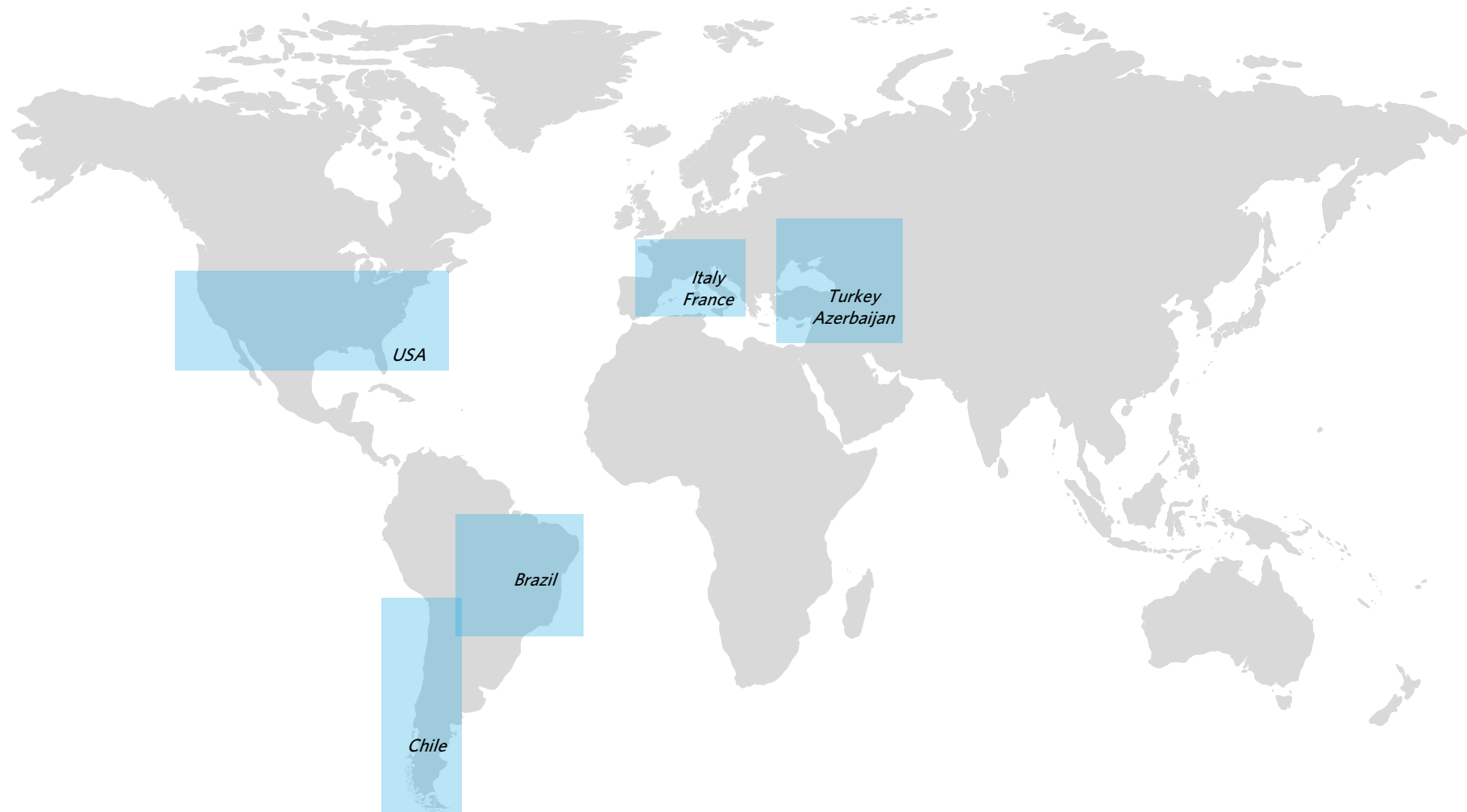


- Australian Nut Industry Council
- Represents the 7 commercial tree nut industries at national level



- Horticulture Innovation Australia
- Not-for-profit, grower – owned R&D and marketing company
- Invests over \$100m annually

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing








What does Dr. Food think?



“Like Chestnuts, hazelnuts are benefitting from the current global “nut moment” and has high global consumer awareness. In fact, if the global spread Nutella had been more accurately named Hazelnutella, then, generations of hazelnut-friendly consumers would exist!

Note how effectively the California Almond Board advertise their nut as being the quintessential snack (not least for women) with principal nutritional benefits being its high protein and calcium content. Hazelnuts in their raw and processed form have strong claims relating to skin condition and suggest Japan and South Korea as key markets (both global leaders in food & drink products with beauty enhancing attributes).”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1946	Piedmont, Italy Private Ferrero family	US\$10.3b 32,990	Chocolate (Ferrero Rocher), confectionery, spreads (Nutella), baked snacks, beverages	Europe Global	www.ferrero.com www.ferrero.com.au Third largest chocolate producer and confectionery company; 22 plants across 5 continents
	1866	Vevrey, Switzerland Public SIX:NESN; EuroNext:NESTS; OTC Pink:NSRGY; BSE:500790; NSE:NESTLEIND	US\$90.8b 328,000	Dairy products, pet care, beverages (water, coffee, juice), food (prepared, frozen, aids, cereal), nutrition (infant, adult), confectionery	Global	www.nestle.com www.orioncokolada.cz www.cailler.ch/en 418 factories; factories in 36 countries
	1896	Chicago, USA Public NASDAQ:KHC (Berkshire Hathaway 27%, 3G Capital 24%)	US\$26.5b 41,000	Dairy products, infant nutrition, condiments, sauces, meals, meal bases, canned food, frozen food, beverages, coffee, meats, snacks, pet food	North America Global	www.kraftheinzcompany.com #5 food and beverage company in world; operations in over 45 countries; sells in 190 countries
	1824	USA Public NASDAQ:MDLZ	US\$25.9b 100,000	Biscuits (cookies, crackers and salted snacks), chocolate, gum and confectionery, beverages (coffee and powdered beverages), cheese, grocery	North America Global	www.mondelezinternational.com # 2 confectionery company globally; operating in 165 countries; recently exited chocolate manufacturing in NZ
	1986	Newark, USA Private	US\$10-50m 10-100	Natural and synthetic flavours and fragrances; vanilla	USA Global	www.elan-chemical.com Leading worldwide producer of vanilla products for ice cream and bakeries



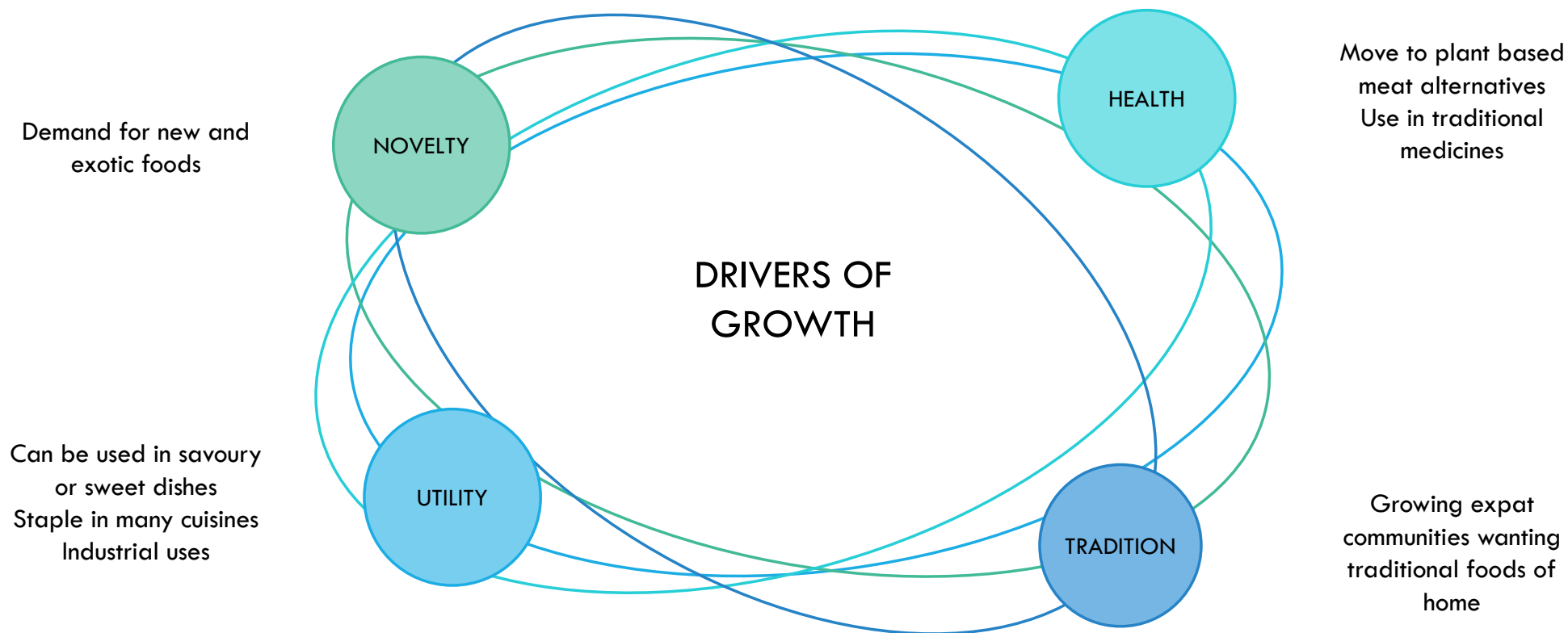
QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"				
PRODUCT		<p>Extremely versatile sweet or savoury food used in many cuisines worldwide. Rapidly emerging as a key "meat substitute"; has the benefit of not being made in a lab/factory. Wide range of uses: ripe or unripe, fresh, dried or canned, in processed foods.</p>		\$2.6m (2012)	\$5-10m by 2025				
Capital intensive to produce									
Mechanically harvested									
Value-added opportunities									
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES						
Wide spread of markets/buyers		<ul style="list-style-type: none"> - Staple in many cuisines globally - Demand for new and exotic foods - Increasing demand for Asian cuisines - Move to plant based meat alternatives 	<ul style="list-style-type: none"> - Three years until trees bear first fruit - Size and weight of the fruit can make transport expensive - Limited range of cultivars, majority from 1960s and 1970s importations - Labour intensive hand picking - Cutting the fruit releases latex that does not wash off in water - Fully ripe unopened fruit emit an unpleasant aroma 						
Wide spread of prices		VALUE-ADDED OPPORTUNITIES							
Origin important or called out at POS		<ul style="list-style-type: none"> - Canned, dried, processed products from the fruit and the seed - Juice - Desserts - Roasted seeds - Dip from the seeds - Meat substitute (unprocessed as pulled pork replacement) - Alcoholic beverage - Ice cream - Processed into flour, noodles - Nutraceutical extracts (traditional use in Chinese and Indian medicine) - Latex, Morin (yellow food dye), timber from the trees 							
COMPETITORS		KEY COMPETITORS							
Biosecurity or other domestic barriers		<table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Imported processed Jackfruit - Other tropical fruit - Other meat substitutes </td> <td> <ul style="list-style-type: none"> - Bangladesh - India - Thailand - Vietnam - Brazil - Indonesia </td> </tr> </tbody> </table>	DOMESTIC	EXPORTERS	<ul style="list-style-type: none"> - Imported processed Jackfruit - Other tropical fruit - Other meat substitutes 	<ul style="list-style-type: none"> - Bangladesh - India - Thailand - Vietnam - Brazil - Indonesia 	WHAT YOU WOULD NEED TO BELIEVE		
DOMESTIC	EXPORTERS								
<ul style="list-style-type: none"> - Imported processed Jackfruit - Other tropical fruit - Other meat substitutes 	<ul style="list-style-type: none"> - Bangladesh - India - Thailand - Vietnam - Brazil - Indonesia 								
Can we get to the world price?			<ul style="list-style-type: none"> - Imports of fresh Jackfruit into Australia will continue to be barred - Knowledge about Jackfruit at consumer, food processing and food service levels can be increased - Consumers would not be put off by odour and amount of preparation required for ripe, fresh fruit - Off season supply could provide an export advantage 						
Attractive competitive set									
AUSTRALIA									
High performance genetics available									
Required skills for success									
Leverage country reputation									
OVERALL									

What is Jackfruit?

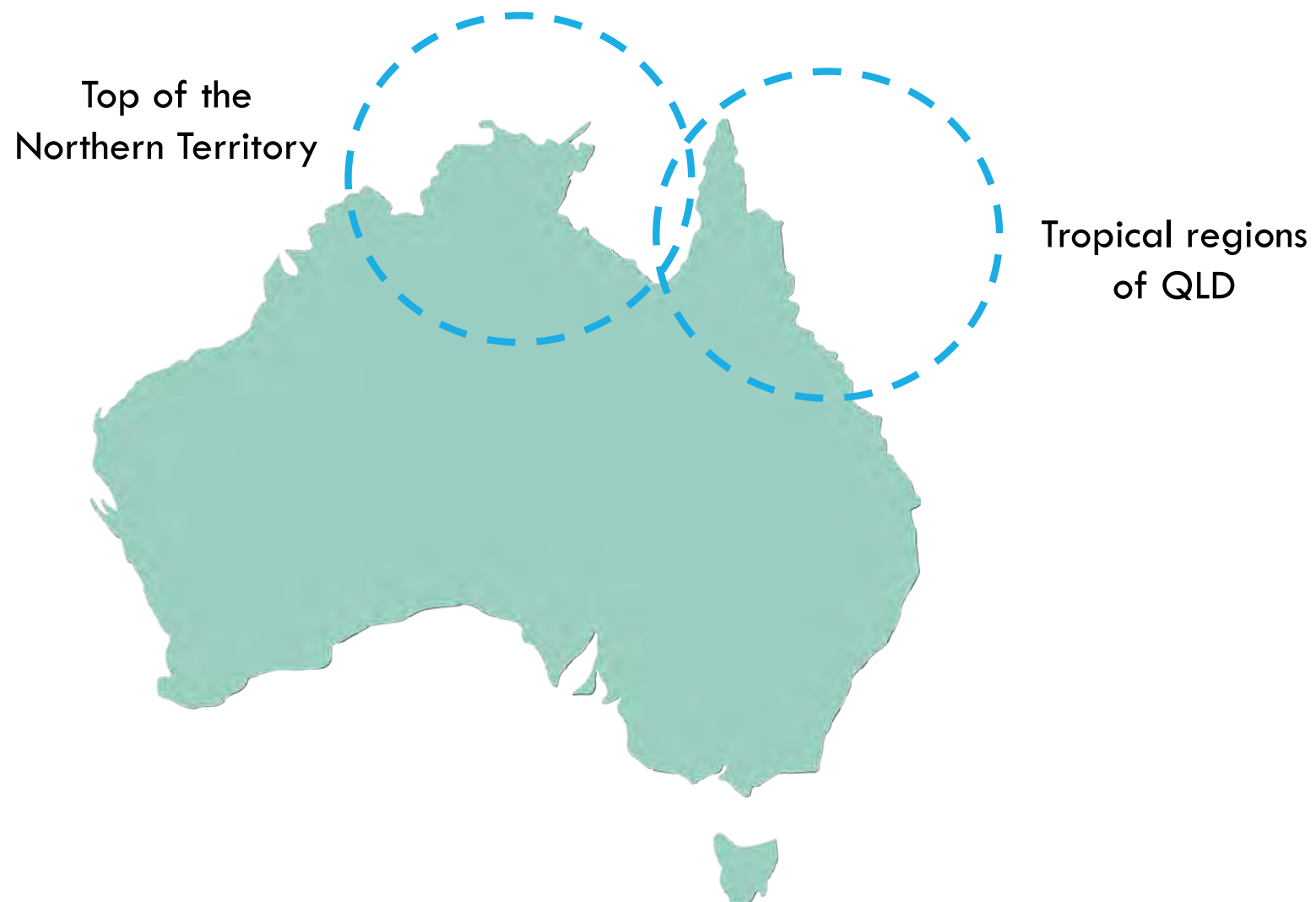


PRODUCT PROFILE	
Common names	Jack tree, fenne, jakfruit, jak
Scientific name	<i>Artocarpus heterophyllus</i>
Type of plant	Tree in fig, mulberry and breadfruit family (moraceae)
Cultivation cycle	A mature tree can produce 100-200 fruits a year
Suited climate	Tropical lowlands
Part eaten	Fleshy petals of fruit, fresh or dried, ripe and unripe; seeds
Origin	South India
Established in AU	Introduced in 1800s; commercial varieties in 1960s & 70s

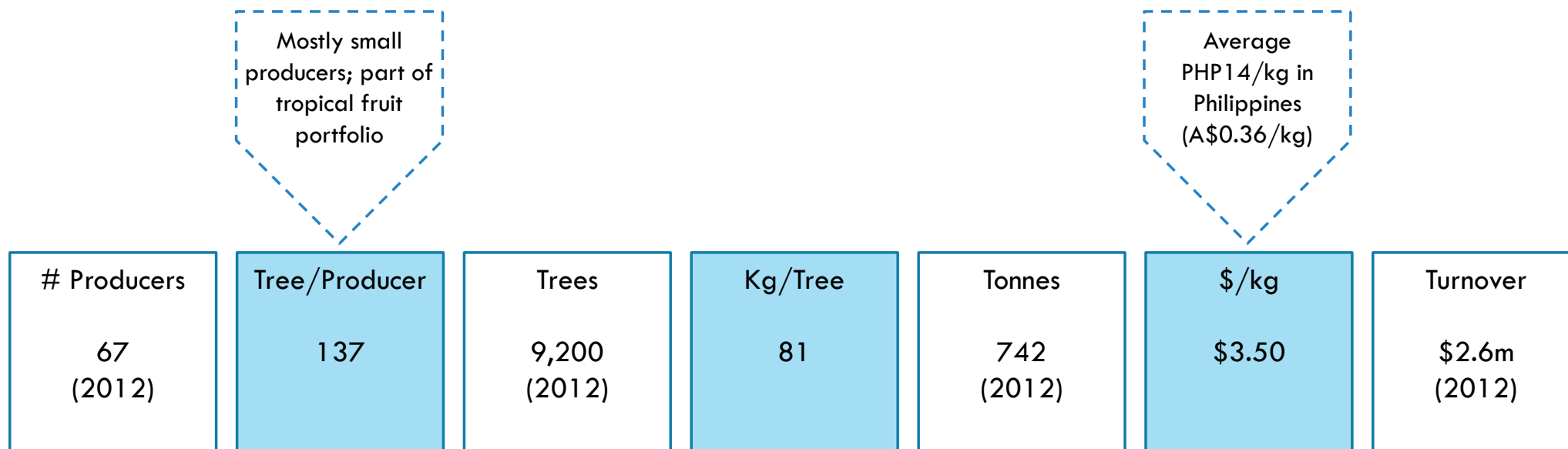
What is driving its success?



Where is it produced in Australia?



What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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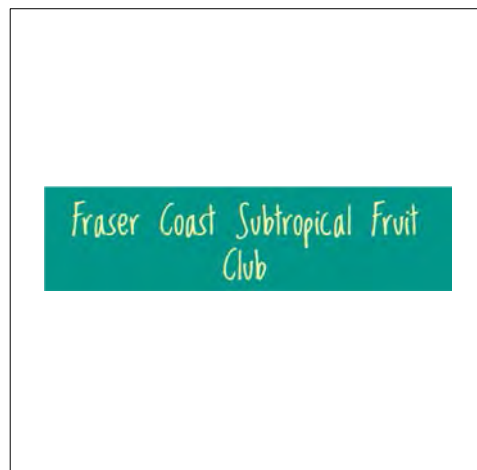
Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Peter & Alison Salleras, third generation farmers - 260 acres of tropical fruit orchards at East Feluga, north of Cairns, QLD - Grows range of different crops to test market and runs tours of farm - Picked a 25kg jackfruit in 2017 worth about \$150 at market in Sydney or Melbourne - Developed 'Tatura' trellising method to mitigate cyclone damage
	<ul style="list-style-type: none"> - Company established by Indian expats missing a traditional food of their childhood - Wholesaler/importer based in NSW - Dried unripe and ripe jackfruit and seeds - Imported jackfruit products
	<ul style="list-style-type: none"> - Tourist attraction and commercial growing operation based in Tweed, NSW - Tropical fruits (avocados, sapotes, annonas, bananas carambola, pitaya, jackfruit) - Three generations of Brinsmead family - Collection of over 500 exotic fruits; ongoing breeding programs including developing smaller ripening 'crunchy' jackfruit species

Who are the other key stakeholders?



- Tropical and Exotic Fruits Association
- Established in 2007
- Represents members across all of Northern Australia
- Run by NT Farmers

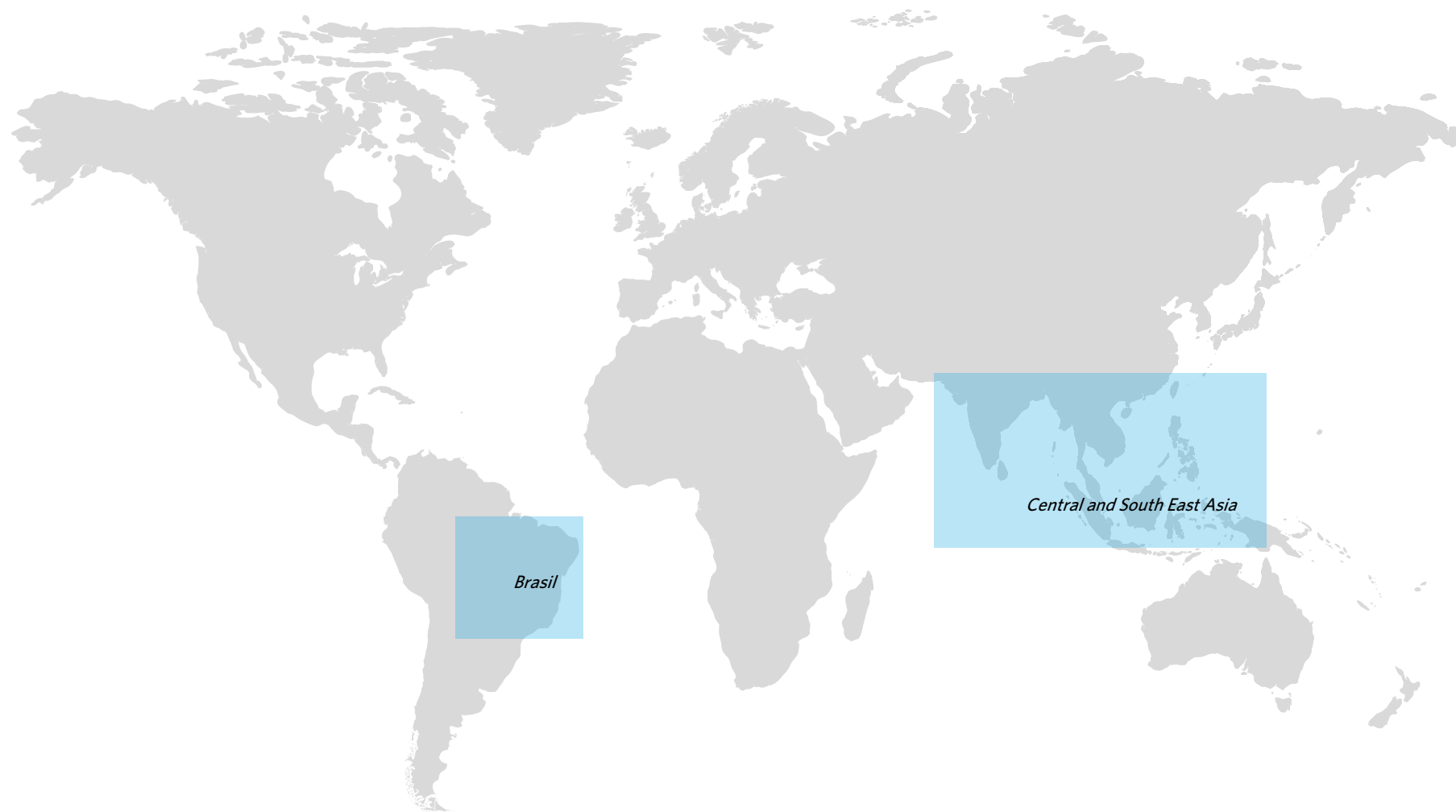


- Fraser Coast Subtropical Fruit Club (one of several across Australia)
- 100 growers Australia wide
- Hobby growers exchange fruit and tips on how to best grow exotic fruit



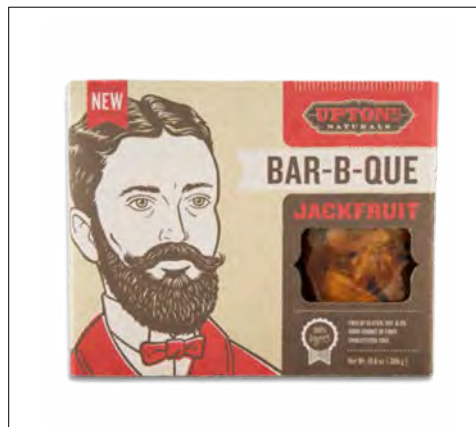
- NT Department of Primary Industries and Resources
- Coastal Plains Horticulture Research Centre
- Research into commercial varieties of jackfruit

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing



What does Dr. Food think?








“Unknown outside tropical Asia and parts of Latin America, Jackfruit might well be the biggest fruit in the world.

With flexitarian diets becoming fashionable, the most innovative use of the fruit Dr. Food has seen and tasted is as a brilliant meat-free spicy pulled pork dish.

Jackfruit has the fibrous mouth feel of shredded pork, is high in protein for a fruit and, when mixed/marinated with a delicious Asian sauce, is a dead ringer for the porky real thing!

This presents a great opportunity within the Australian market directed at meat-reducers.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	2011	Boulder, USA Private	N/A	Ready to eat jackfruit meals, ripe jackfruit in pouches	USA Global	www.thejackfruitcompany.com Largest supplier of jackfruit products in the world; 350+ farms in India supply
	2006	Chicago, USA Private Staackman	N/A	Ready to eat jackfruit meals, seitan meals, vegan ready to eat meals	USA Global	www.uptonsnaturals.com Natural foods company with focus on meat alternatives
	1851	California, USA Private Murdock	US\$4.8b 25,000	Bananas, fresh fruit (70%), fresh vegetables, bagged salads, prepared fruit and vegetables	Global	www.dole.com #1 Producer, marketer and distributor; 300 products to 90 countries; privatised again in '13 when acquired by Murdock
	2012	Sam Prakan, Thailand Private	US\$15.3m	Dried fruit and vegetable snacks	Thailand Global	www.greenday.co.th Exports to over 20 countries; partnership with EAF Intertrade in Australia to distribute chips; building second plant in Thailand in 2017; 70% exports
	1989	Maasdijk, Netherlands	N/A	Exotic fruit and vegetables	Netherlands Global	www.tfc-holland.nl Owned by BayWa; specialist in sourcing and importing exotic fruit and vegetables



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Pomegranate juice market exploded in USA in early 2000s. Very limited southern hemisphere production. Currently under 500 ha in Australia, not yet at full potential, producing 3,000 to 4,000 tonnes.		\$6-8m (est)	\$10-15m by 2025
Capital intensive to produce	●				
Mechanically harvested	◐				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - "Super food" status - Health benefits (antioxidants, dietary fibre, antibacterial properties) - Increasing demand from food service industry - Traditional medicinal uses - Counter seasonal supply 		<ul style="list-style-type: none"> - Low understanding of tree health (mystery dieback condition) - 3 years to fruit, peak production at 5-6 years - Whole fresh fruit are fussy/messy to deal with for consumers 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Frozen arils - Juice - Flavouring, powders - Syrups - Jams - Ice cream and confectionery - Tea - Wine, grenadine - Nutraceutical products - Cosmetic products - Dyes 		<ul style="list-style-type: none"> - Group Kinetica/PomPersia can achieve real growth in size of industry with conglomerate of growers model - Australia can compete with cheap South American exports in the Asian markets - Australian growers can access better varieties suited to climate - Health benefits will be confirmed by research 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS		DOMESTIC		EXPORTERS	
Biosecurity or other domestic barriers	◐	<ul style="list-style-type: none"> - Imported juice and frozen arils - Other juices - Other high antioxidant foods 		<ul style="list-style-type: none"> - India - Iran - USA - Turkey - Spain - Israel - South America 	
Can we get to the world price?	○				
Attractive competitive set	◐				
AUSTRALIA					
High performance genetics available	●				
Required skills for success	◐				
Leverage country reputation	●				
OVERALL	●				

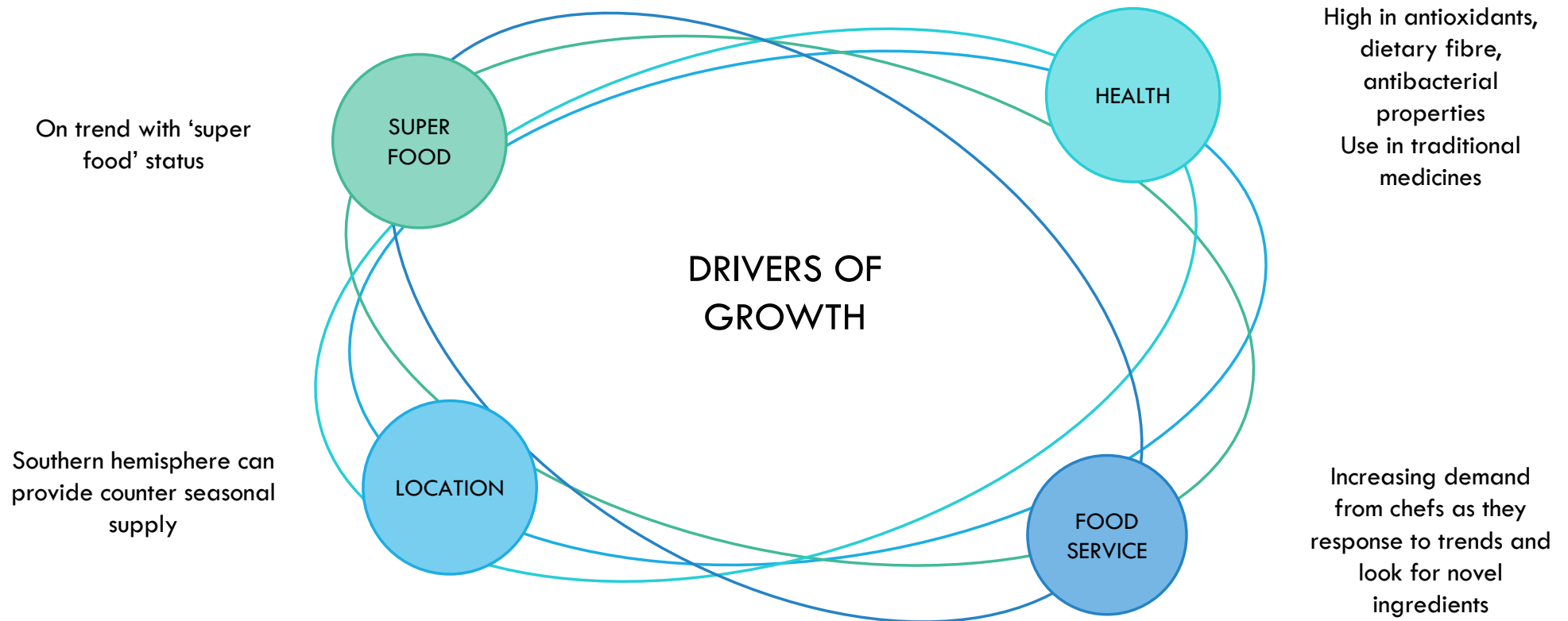
What is pomegranate?



PRODUCT PROFILE

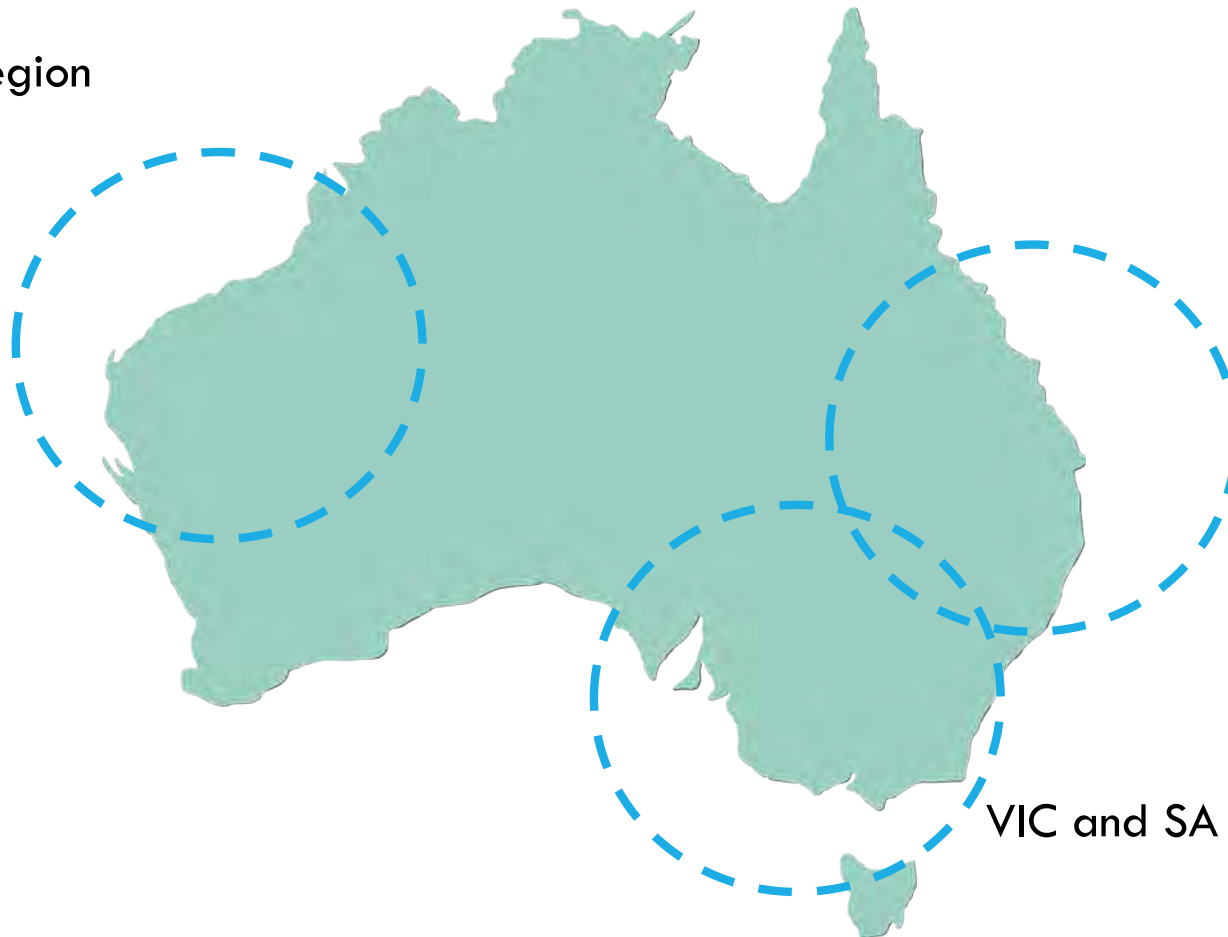
Common names	Pomegranate
Scientific name	<i>Punica granatum</i>
Type of plant	Fruit bearing deciduous shrub
Cultivation cycle	Three years to fruit; peak production at 5-6 years
Suited climate	Dry regions with either Mediterranean winter rainfall or summer rainfall climates
Part eaten	Arils
Origin	Iran-India region
Established in AU	Commercial plantings commenced in 2000s

What is driving its success?



Where is it produced in Australia?

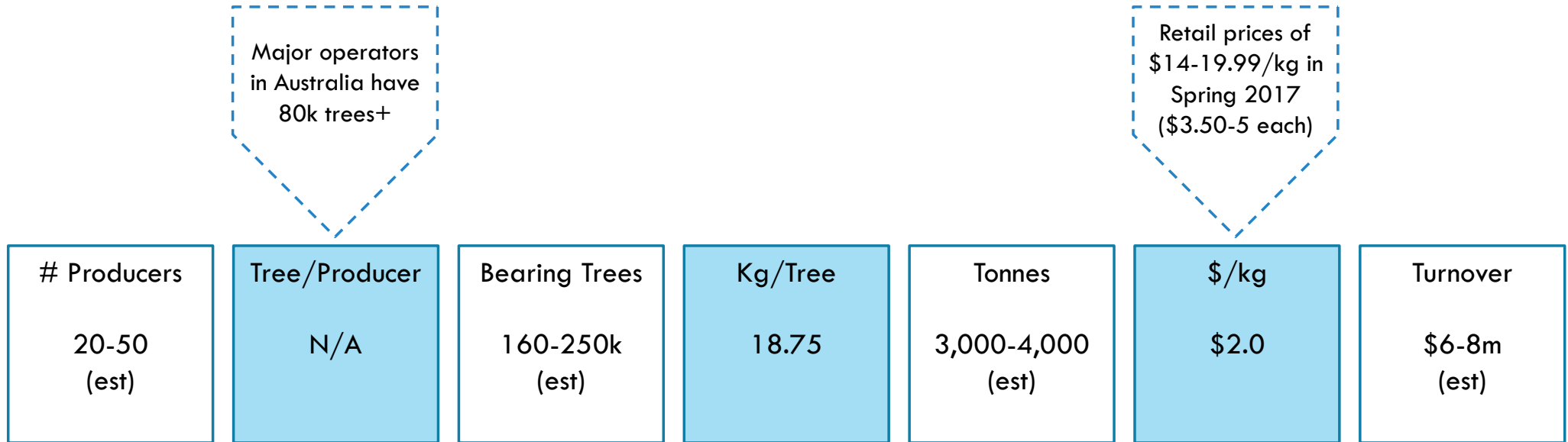
Sub-tropical region
of WA



Sub-tropical
regions of QLD
& NSW




VIC and SA

What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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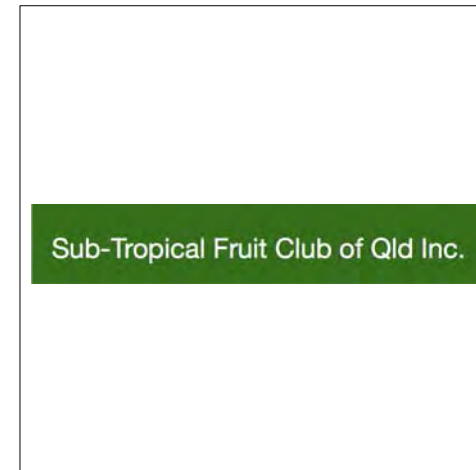
Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Established in 2008 in Goulburn Valley, Victoria - 110ha; 1,500t in 2016; planned production of 3,500t by 2021 - 80,000 trees - Fresh whole pomegranates and arils, freeze dried and frozen arils, freeze dried powder, fresh and bulk frozen juice, wine
	<ul style="list-style-type: none"> - Based in Wanbi Downs, South Australia - Orchards planted in 2009 - 90,000 fruiting trees; one of largest in Australia - Owned by Bickford's since 2014; bought out of administration - 75% used in Bickford's juice, 25% sold fresh; 750t in 2017, growing to 5,000t in future when trees mature - Bickford's is Australia's largest buyer of pomegranate concentrate
	<ul style="list-style-type: none"> - Aims to be a conglomerate of 200 growers by 2025 - 7 test farms around Australia, including gene bank in South Australia with 307 varieties - Model of small, 5-15ha farms clustered in 12 regions, without need for transient labour - Owned by Group Kinetica

Who are the other key stakeholders?

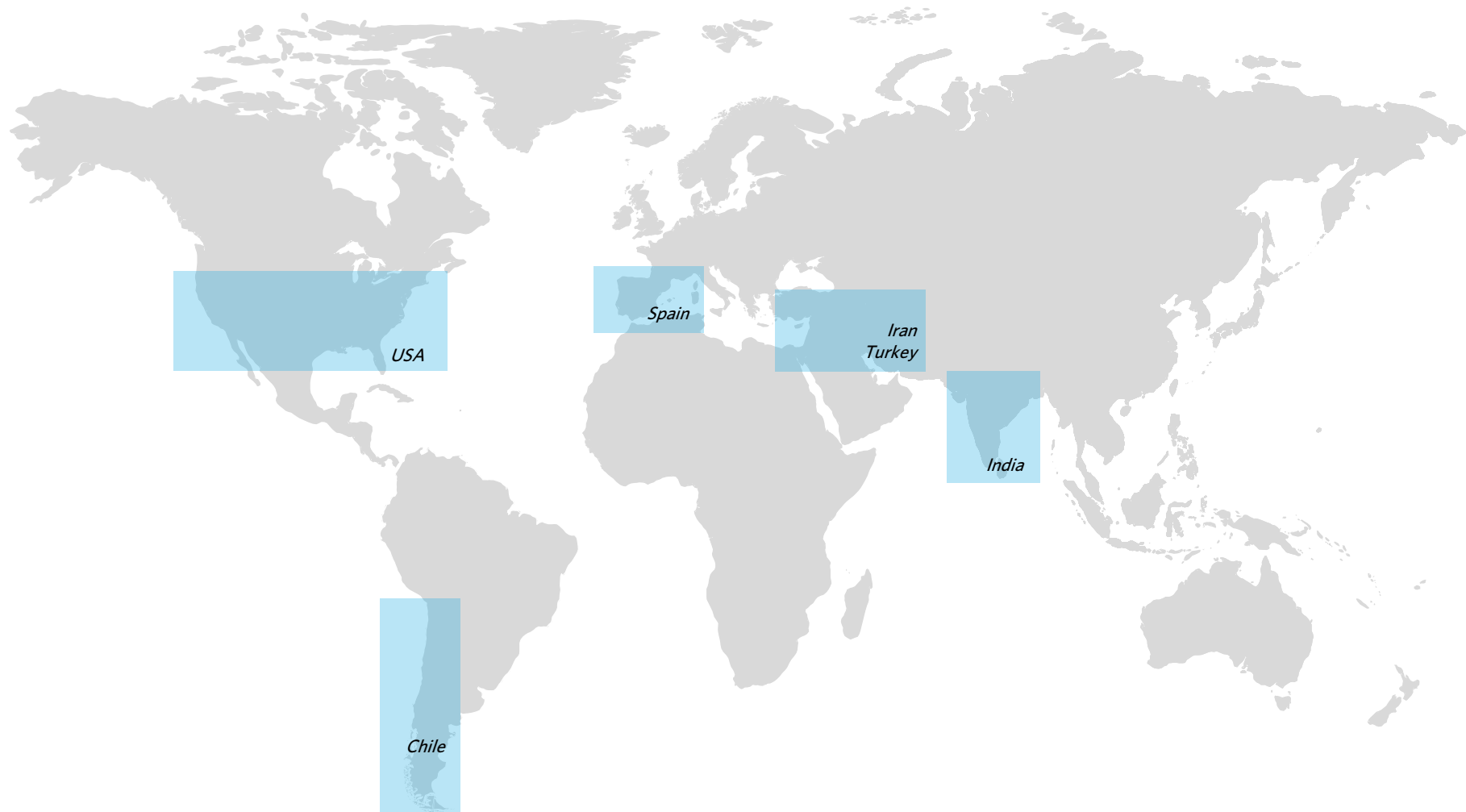


- Tropical and Exotic Fruits Association
- Established in 2007
- Represents members across all of Northern Australia
- Run by NT Farmers



- Sub-Tropical Fruit Club of QLD Inc
- Promotes the growing and use of rare, unusual and common fruit, bush foo and vegetables

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing



What does Dr. Food think?



“Dr. Food is a lover of pomegranates and is 1 of only 125 consumers in the Western world who has the patience to remove the arils from the fruit! Don’t believe the YouTube videos that suggest it’s simply a matter of halving the pomegranate and, then, beat the upturned half sharply with a wooden spoon over a bowl and all the pips (arils) fallout.

Delicious although the fruit is, pomegranates will only be eaten by consumers in a ready-to-go form whether that be in juice, sprinkled on a salad, or as an exotic addition to an upmarket cosmetic product.

Success in pomegranates in Australia will be contingent on world class processing being put in place. Buying a fresh pomegranate for consumers in many countries is, currently, a lottery: there is little or no correlation between skin colour of the fruit and taste/colour of the arils –sometimes a yellowed skin fruit yields a tart ruby red aril and sometimes not! Sustained growth in the fresh market for whole fruit will be contingent on sorting this problem out.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 the Wonderful company™	1979	Los Angeles, USA Private (Stewart & Lynda Resnick)	US\$4b 7,300	Citrus, pomegranates (fresh, arils, juice, iced teas), almonds, pistachio, bottled water, wine, flower delivery	USA Mexico Fiji	www.wonderful.com www.pomwonderful.com #1 citrus grower in US, #1 tree nut grower in world; largest integrated producer of wonderful pomegranate variety; exports globally; 9,000 acres of pomegranates in California, USA
 ARIO	1985	Tehran, Iran	N/A	Pomegranates (fresh, arils, juice, paste, powder, dried seeds, seed oil, dried flowers), dates, kiwifruit, saffron, grapes, apples, citrus	Iran Middle East Europe India	www.iranpomegranate.com One of the largest growers and suppliers of fresh fruit in Iran
 UPRO NATURE Iran Italian Joint Venture	2016	Tehran, Iran Private	N/A	Pomegranates (fresh, arils, juice, concentrate, vinegar, sauce), pistachios, limes, grapefruit, saffron, dried fruit, herbs, spices	Iran Italy Europe	www.upronature.com Meyro brand; JV between Upro Tarh Pouya Kish (Iran) and Nature SRL (Italy)
 stiebs Nature Elevated	1963	Madera, USA Private	N/A	Pomegranate (fresh juice and juice concentrate, arils, extracts, powders, seed oils, nutraceuticals), acai, mongosteen, goji, kiwifruit, berries, acerola, prickly pear, etc. juice, purees and concentrates	USA Global	www.stiebs.com 2 processing plants in Madera; juices through to nutraceutical powders
 subsole	1990	Santiago, Chile Private	N/A	Grapes, kiwifruit, pomegranates, walnuts, avocados, citrus, cherries	USA Global	www.subsole.com 150 farmers; over 3,000 hectares of farmland; growers, processors, shipping, marketing, investment fund

FLAX SEED/LINSEED

INDICATED
MARKET
DEMAND



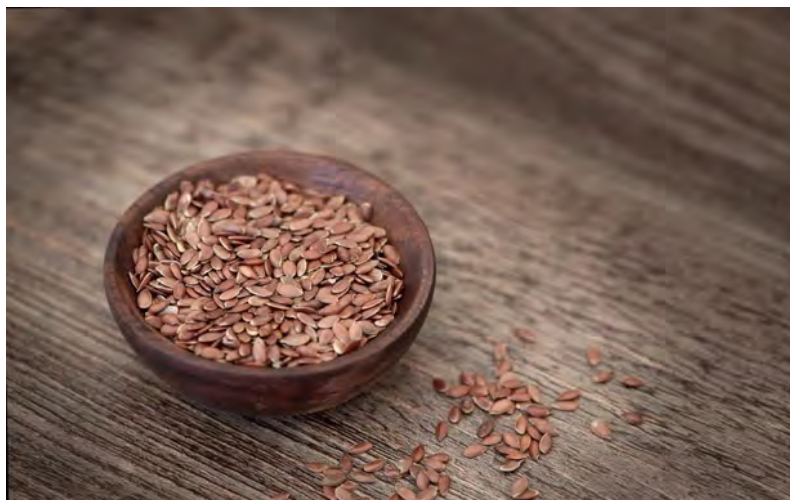
PASS INTO
STAGE II

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QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Flax seed oil is on trend as a healthy oil and nutritional supplement that can extend into wider food applications		\$7-9m* (2013)	\$10-15m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Growth in processing facilities to process oil - Functional food health benefits from high in omega 3 & 6 oils, rich in alpha linolenic acid - Demand for organic oil - achieves a premium 		<ul style="list-style-type: none"> - Requires rainfall or irrigation for successful yields - Soil borne fungal diseases affect some species - Linseed oil for industrial use on the decline (replaced by synthetic oils) 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Salad dressing - Ingredient in baking - Spread - Nutritional supplement - Cosmetics (linoleic acid), featuring anti-inflammatory properties, acne reduction, moisture retention - Drizzle over cereal, yoghurt etc.. - Seed used in baking, muesli bars, confectionery - Specialist niche feed ingredient 		<ul style="list-style-type: none"> - New investments in oil refineries can extend product lines to include smaller products (flax seed, linseed, hemp etc..) – e.g. new Proteco oil refinery expansion in QLD - Able to differentiate Australian flax seed oil - Linseed oil (petroleum solvents used for extraction to increase yield) would require significant scale for success used in paint thinners, wood protectant - Market will extend beyond niche ingredient into everyday product - Ongoing development of new varieties to maximise health benefits or yield improvements - Able to develop linseed as a aquaculture feed substitute (high protein) 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers	◐	<ul style="list-style-type: none"> - Imported oil and linseed - Other niche seed oils (e.g. hemp plus nut oils) 	<ul style="list-style-type: none"> - Europe - Belgium - Canada 		
Can we get to the world price?	○				
Attractive competitive set	●				
AUSTRALIA					
High performance genetics available	○				
Required skills for success	◐				
Leverage country reputation	●				
OVERALL	●				

* Linseed value, not oil exclusively. Source: RIRDC Publication No 14/069; Coriolis analysis and estimates

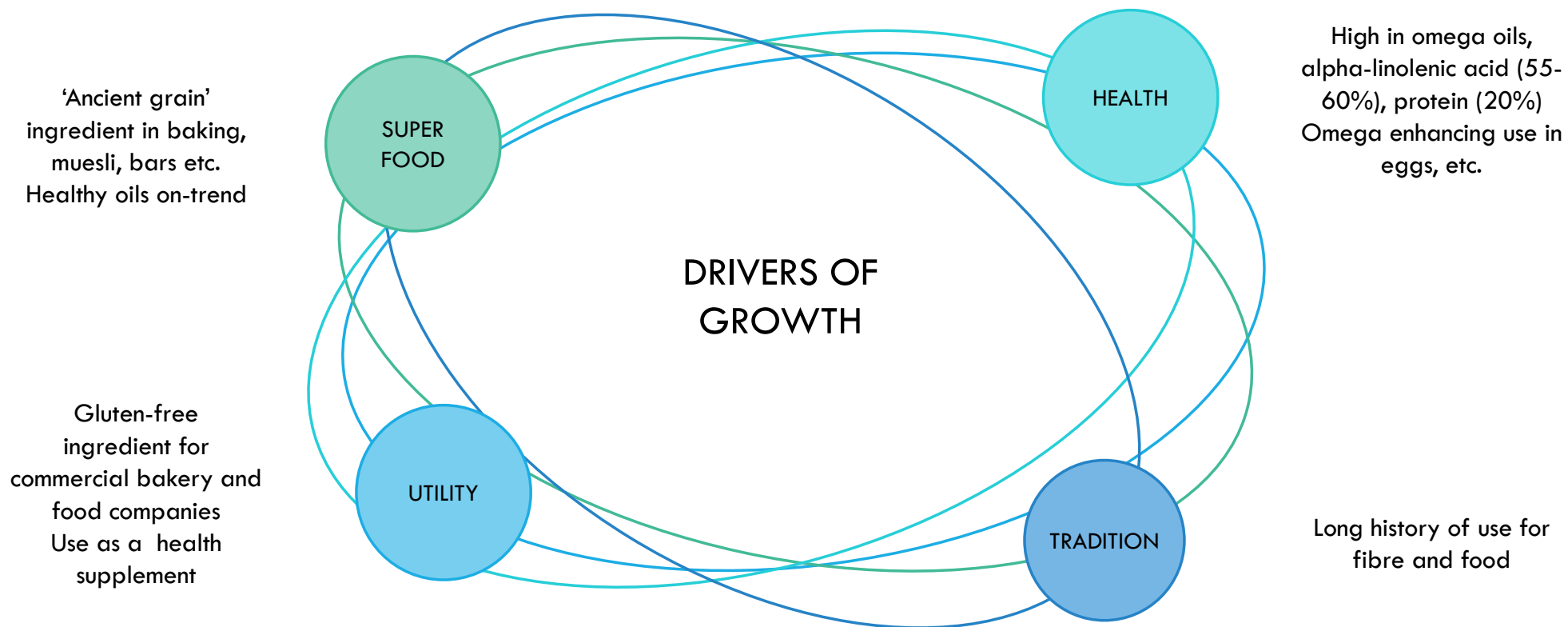
What is flax seed/linseed?



PRODUCT PROFILE

Common names	Common fax, fax seed, linseed
Scientific name	<i>Linum usitatissimum</i>
Type of plant	Herbaceous plant
Cultivation cycle	Annual, sown early spring, flowers 6-8 wks, harvest mid-late summer
Suited climate	Temperate, drylands, medium rainfall (best)
Part eaten	Seed, crushed into oil (fibre also used, linen)
Origin	Syria
Established in AU	1940s

What is driving its success?

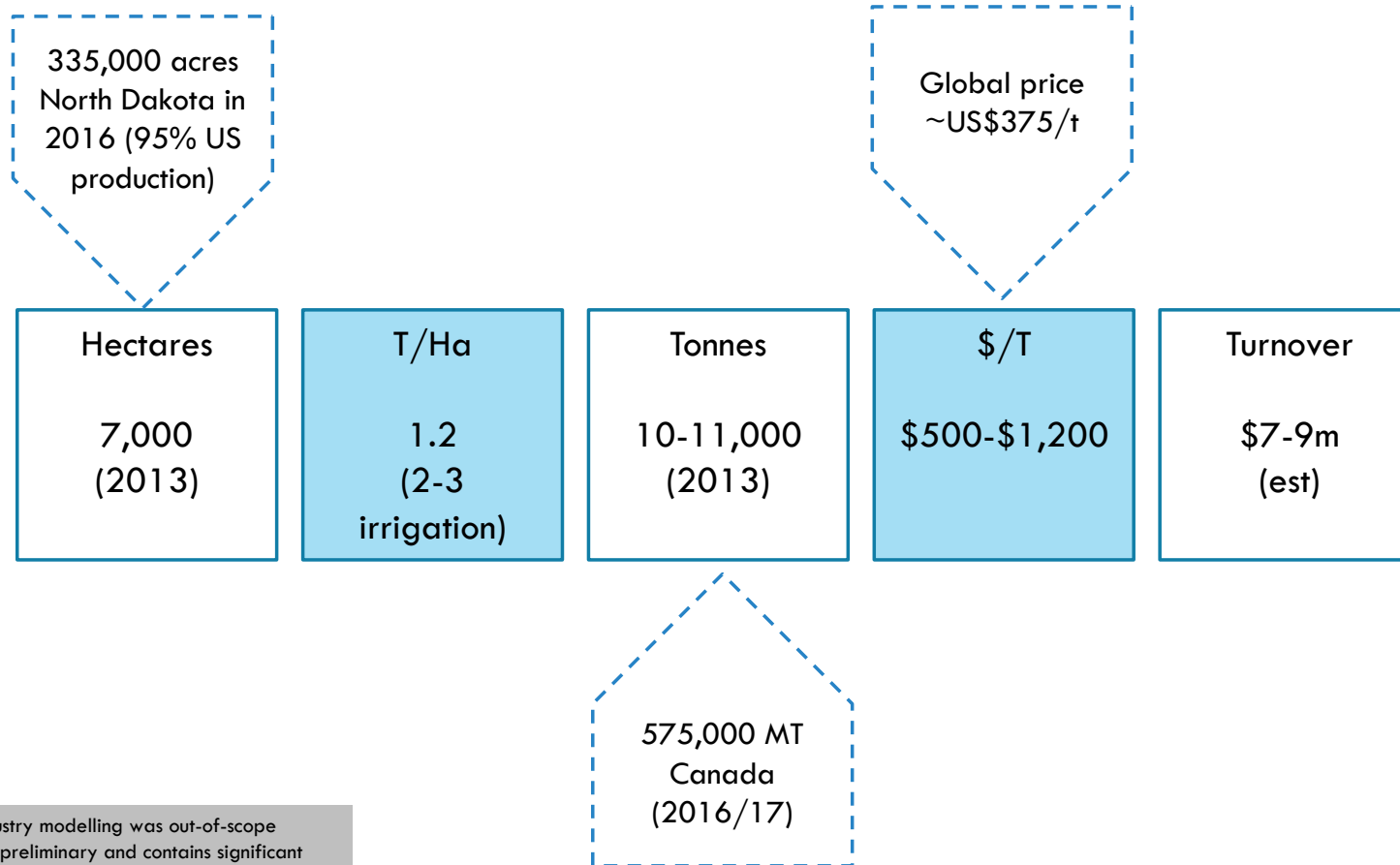


Where is it produced in Australia?






Victoria

What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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 Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Developed world's first antimicrobial topical products made from organic flax seed oil - In collaboration with CSIRO - Bio3 Guardian brand - Boron Molecular (CSIRO) in Melbourne, VIC to do extracts
	<ul style="list-style-type: none"> - Based in Grampians, VIC - Organic certification - Australia's leading flax seed producer - Grow and manufacture oil, flour, seed, rolled seed, pet grade oil - Partnered with Annex Foods and launched Flax Farms Australia Co in 2014 - Custom built harvesting machines
	<ul style="list-style-type: none"> - Based in Kingaroy, QLD - Leading specialist in cold pressed oils using Australian grown produce - Bulk, wholesale, industrial and retail - Pressed Purity retail brand - New processing plant - Macadamia, almond, flax seed, olive, peanut, avocado, sesame, apricot kernel, safflower, sunflower, walnut, pumpkin seed, fish, cod liver oils, massage oil, LSA, peanut butter

Who are the other key stakeholders?



- Australian Oilseeds Federation
- Represents common interest of all Australian oilseed industry participants
- Promote the development, expansion and improvement of oilseed production

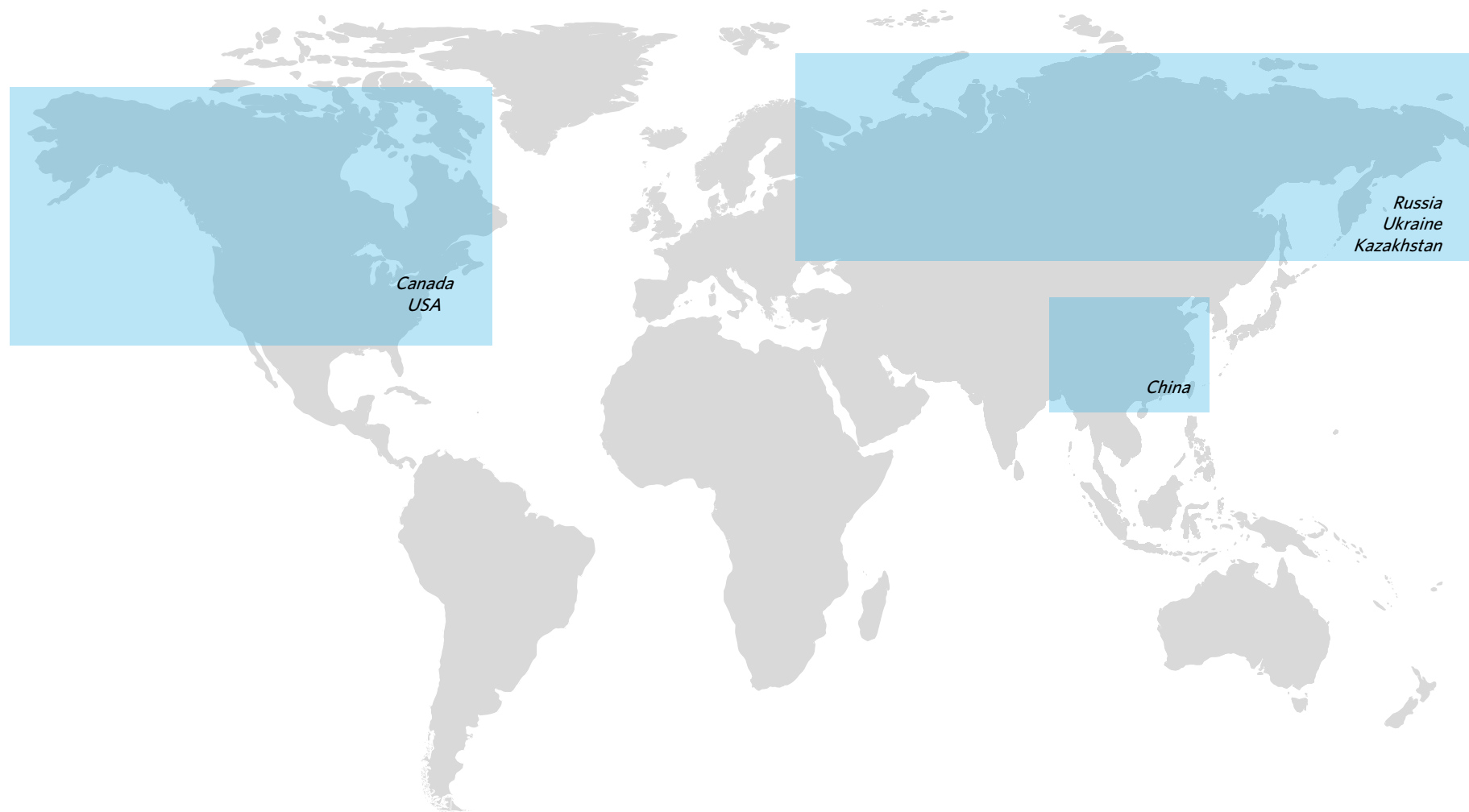


- Agriculture Victoria
- Created to give greater visibility to the agriculture activities of the Department of Economic Development, Jobs, Transport and Resources, VIC



- Commonwealth Scientific and Industrial Research Organisation
- Australia's largest patent holder
- Research partnership with flax seed company

Who are the competition for export markets?



How can you add value to it?

Processed products



Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes

What does Dr. Food think?








“Like nuts, seeds are in vogue as they are firmly in concert with the megatrend of health and well-being and, now, only baby boomers in cricket-loving countries associate linseed with oiling cricket bats!

The healthy food/ingredient aura of these seeds will be long-lasting and plenty of opportunities arise for the seed in its entirety and for fractionated parts whether they be conventionally grown or organically so – the latter has particular attraction to the USA market.

Their “healthy oil” status makes them value-adding ingredients to a host of premium food and drink products.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1865	Minneapolis, USA Private Cargill family	US\$120b 153,000	Bulk handling & trading of agricultural commodities; meat processing; feedlots; food ingredient production; energy trading; other	North America Australia Global	www.cargill.com Operations in 67 countries; 50% JV Teys Australia, grain handling, oil seed processing
	2007	Waukesha, USA Private Peterson	N/A	Stabilized bulk oils, oil powders, soft gels, specialty ingredients	USA	www.connoils.com Established when Cargill, Degussa and Traco exited nutritional supplement industry; global leader; new facility
	1987	Vancouver, Canada	N/A	Flax oil, fatty acid blends, nutraceutical products, skin care, pet nutrition	North America	www.omeganutrition.com Premium manufacturer of flax oil
	1922	Hamburg, Germany	N/A	Fats, oils, fat acids, glycerine, vegetable oils, animal fats, soap noodles	Germany Europe	www.mohrmann-trading.com Wholesale trader in oils, fats and their products
	1900	Denhoff, USA Private	N/A	Whole flax seeds, ground, flour, baking mixes, lignans	USA	www.premiumgoldflax.com Miller Family Farm and Premium Gold Flax brands



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Now hemp seed oil is able to be consumed by humans due to the recent regulatory change, opportunities exist for new product development and marketing of the health benefits of hemp</p>		\$1.0m (2016)	\$15-20m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - "Superfood" qualities, high in Omega 3 and 6, high amino acids - High in protein (33%), high in polyunsaturated fats (47g PUFA's) - Change in Federal regulation allowing human consumption (seed, protein, soil, ingredient) - High demand in Asia for hemp products 		<ul style="list-style-type: none"> - Bedding in process as moves to being legal for use as food product (Regulation enacted 12 Nov 2017) - Finding new markets for products as new to Australian industry - Requirements for specialist machinery and processing - Scale required at farm and processing facility level - Needs further research around oil instability (oxidises quickly) - Australia late to the market compared with competition 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Oil (salad dressing and ingredient) - Oil ingredient for smoothie, snack bars & baking etc.. - Cosmetics industry (skin conditions, shampoo, soap, detergent) - Hemp protein - Hemp flour - Hemp seeds - Hemp beer - Hemp chocolate - Industrial oil for lubricant, inks, fuel, plastics - Byproducts of straw (bast and hurd); absorbent material used for paper, insulation, bio composite building material 		<ul style="list-style-type: none"> - Crop farmers can easily transition to growing hemp - Continue to work on achieving high omega varieties - Able to produce high quality oils at competitive prices - Able to develop a USP for AU hempseed oil (research around health benefits) - Northern Rivers Hemp Association president believes the "hemp seed production could be \$1b inside a decade" - Able to replicate Canadian growth rates 2002 ~\$0 to 2014 \$500m 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS		DOMESTIC		EXPORTERS	
Biosecurity or other domestic barriers	◐	<ul style="list-style-type: none"> - Imported seeds and oil - Other oils (flax seed, linseed) 	<ul style="list-style-type: none"> - France - Netherlands - Spain - Belgium - Germany - Canada - Chile 		
Can we get to the world price?	○	AUSTRALIA			
Attractive competitive set	●	High performance genetics available		Leverage country reputation	
AUSTRALIA		<ul style="list-style-type: none"> - High performance genetics available 		<ul style="list-style-type: none"> - Required skills for success 	
High performance genetics available	◐	Required skills for success		Overall	
Required skills for success	◐	Leverage country reputation		●	
Leverage country reputation	●	OVERALL		●	

What is hemp seed?

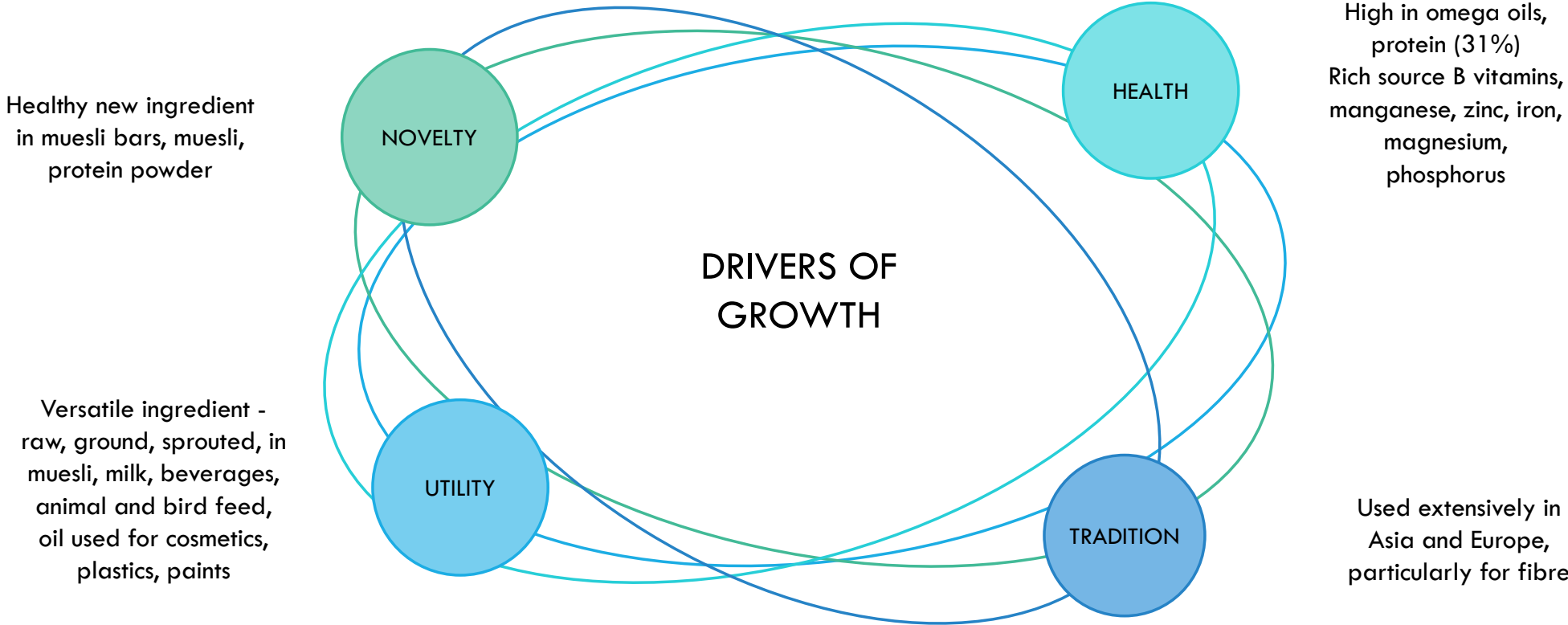


PRODUCT PROFILE

Common names	Hemp, industrial hemp
Scientific name	<i>Cannabis sativa</i>
Type of plant	Herbaceous plant
Cultivation cycle	Annual, matures in 3-4 months
Suited climate	Temperate (often under irrigation), subtropics and tropics, prefers mild climate
Part eaten	Seed, but plant also grown for fibre (hurd and bast) and animal feed
Origin	Asia
Established in AU	First license under strict conditions in Victoria in 1998 Able to be used for human consumption Nov 2017



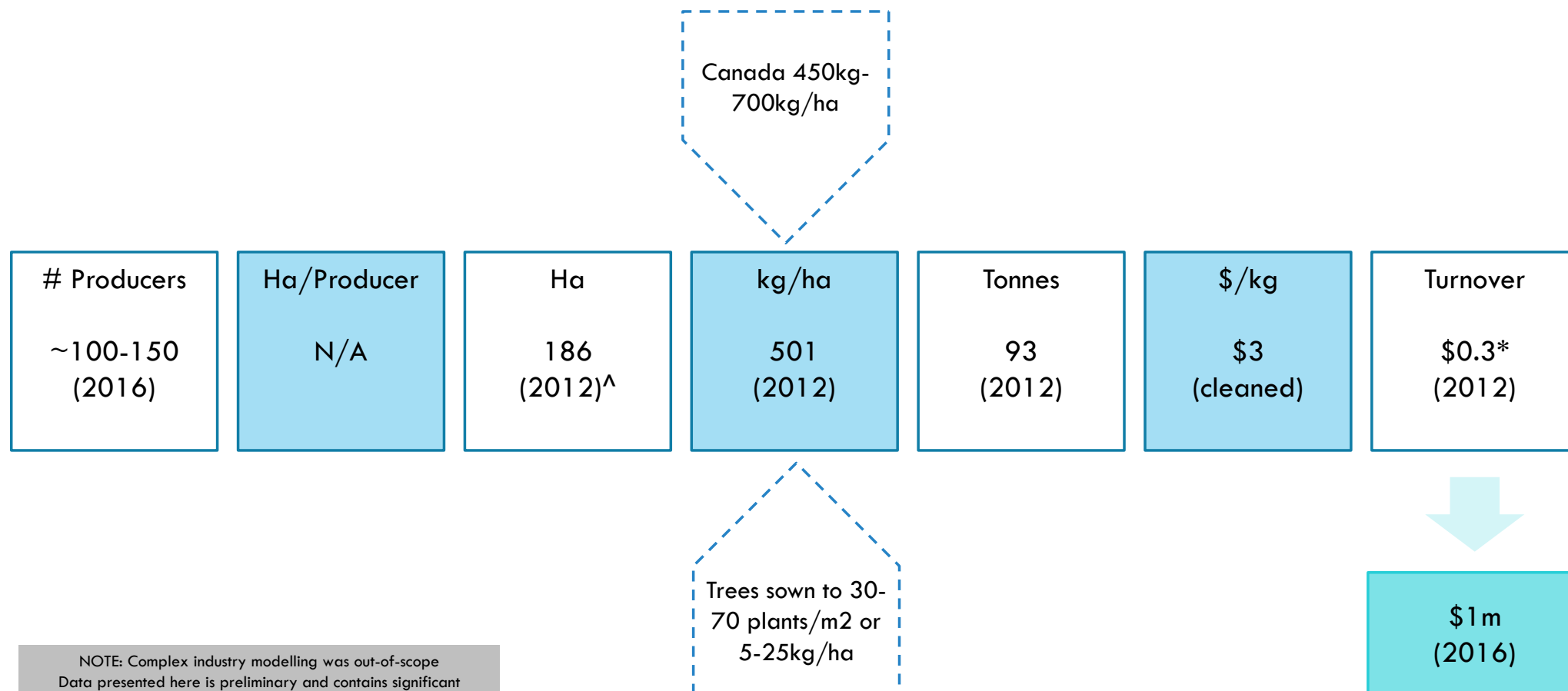
What is driving its success?



Where is it produced in Australia?






What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Founded by Paul Benhaim in 1999 - Wholesaler, Retailer, Manufacturer and Exporter of hemp products - Organic processing plant on the East Coast (11,000sq ft) - Contracts with organic farmers throughout Australia for hemp seed (50-100+ ha each)
	<ul style="list-style-type: none"> - Hemp across a range of products, textiles, clothes, materials, cosmetics - Oils and Food products (chocolate) - Two stores in WA and wholesaling
	<ul style="list-style-type: none"> - Hemp fibres, building materials, rope - Supporting the development across all aspects of the industry (seed, breeding, equipment)

Who are the other key stakeholders?



- CSIRO Agriculture and Food Division
- Multiple research projects on hemp

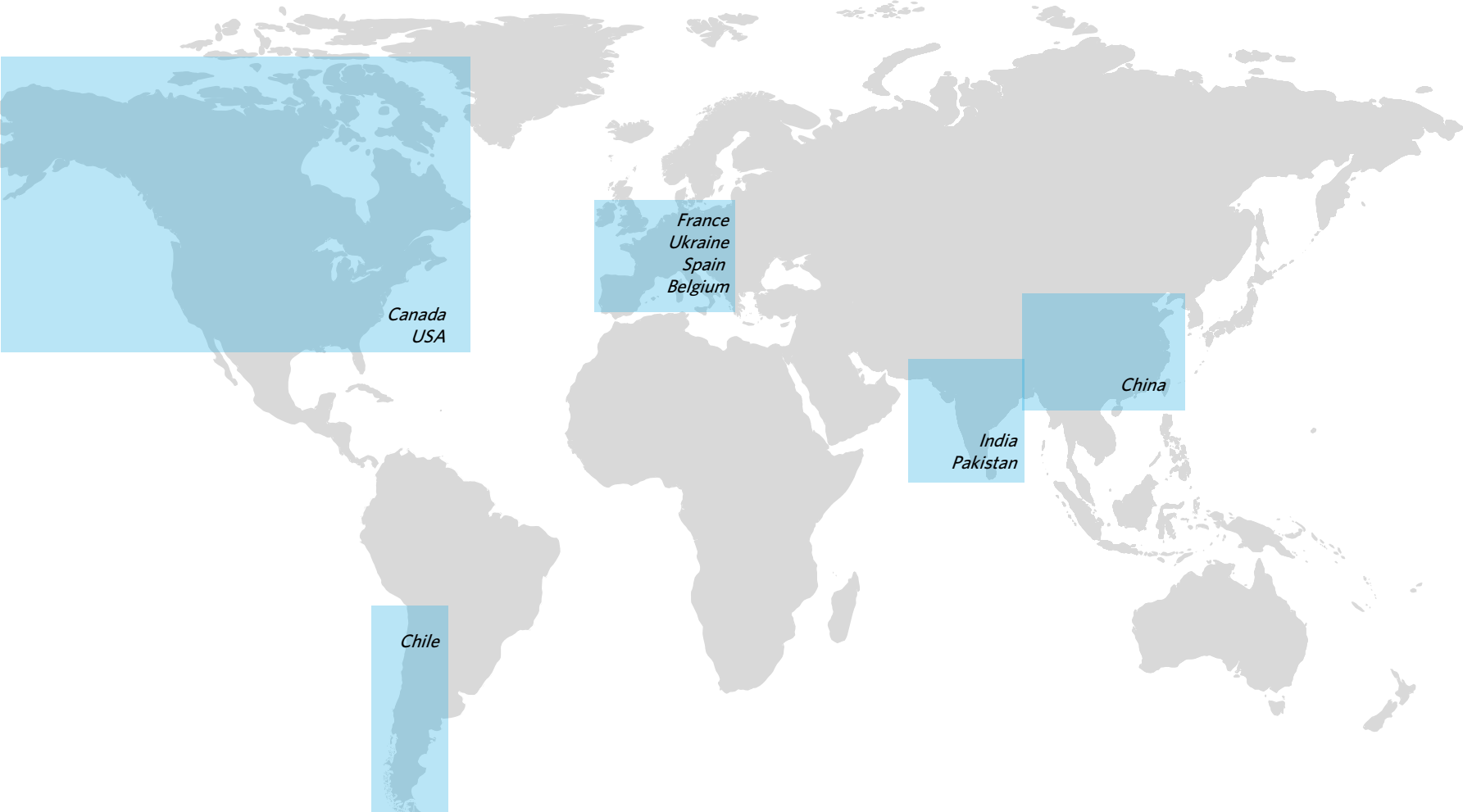


- Australian Industrial Hemp Alliance
- Not-for-profit incorporated in 2015
- Represents interest of all people and organisations



- State and regional not-for-profit associations
- Advocacy for and promotion of the hemp industry

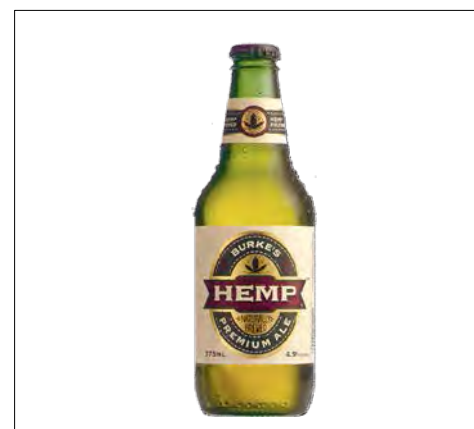
Who are the competition for export markets?



Source: Coriolis analysis

How can you add value to it?

Processed products



What does Dr. Food think?




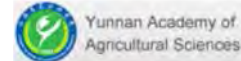



“Long associated with its mind-bending cousin, hemp seed is attracting considerable attention in countries which, in history, have competed with Australia in cereals and oilseeds.

In Western Canada, hemp production is on the charge and for good reason. European supermarket “non-dairy dairy” shelves increasingly carry hemp milk (even flavoured hemp milk which is a sure sign of market traction).

As “active” hemp (cannabis) is legalised (albeit regulated) around higher income countries of the globe, hemp will become an important crop not an “alternative” crop for large area arable farmers.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	N/A	Beijing, China Hemp Industrial Group (HMI Group)	N/A	Genetics, patents, seed development Textiles, seed, meal, protein powder, food, beverages, medical, cosmetic	China	www.hempclan.com Subsidiaries - Hanyi Bio-technology Co. Yunnan Hansu Bio-technology Co; 16,500 acres planted; international offices (USA, CAN, ISR, NL, SL)
	2001	Kunming, China Yunnan Hanpu Health Products Co	N/A	Seed, unshelled hemp, oil, protein powder, Medicinal, stalk bark fibre	China	www.cnhemp.com Specialise in the development, research, breeding, planting, industrialised production and marketing of industrial hemp
	N/A	Heilongjiang Academy of Sciences	N/A	Research agency	China	www.has.ac.cn Heilongjiang province has 130,000 acres of hemp in 2016 (for fibre and seed)
	1976	Yunnan Academy of Agricultural Sciences	N/A	Research hemp genetics, industrial and medical uses	China	www.yaas.org.cn Yunnan province has 120,000 acres of hemp
	1998	Barnstaple, UK Private Braham, Murray	N/A	Hemp oil, milk, seeds, protein flour, protein supplements	UK USA Europe	www.goodhempfood.com Initially grew hemp for fibre; built own cold press mill; endorsed by celebrity chefs in UK

EUCALYPTUS OIL

INDICATED
MARKET
DEMAND

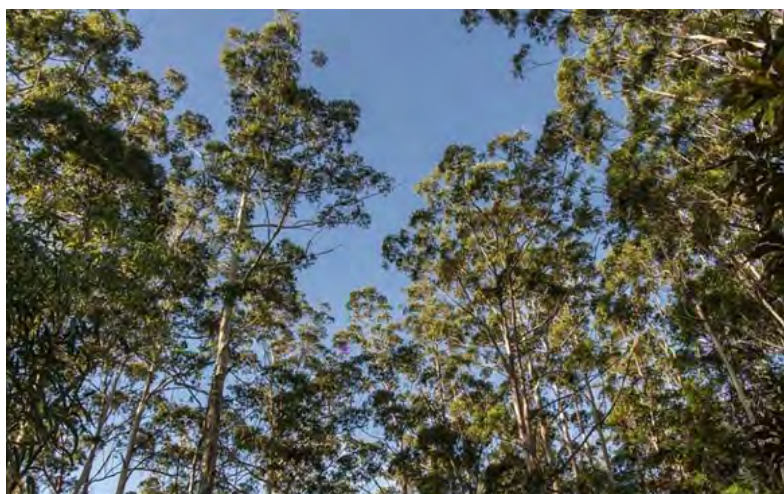


PASS INTO
STAGE II

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QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		<p>Eucalyptus gums thrive in their native country. Medical grade Australian eucalyptus oils are increasingly in demand. Australia should own this product globally.</p>		\$1.3m (2012)	\$5-10m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	●	<ul style="list-style-type: none"> - Demand for natural medical ingredients - Demand for natural household products 	<ul style="list-style-type: none"> - Once single world supplier, now China world's largest producer of eucalyptus oil using Tasmanian blue gum, though not all produced is true eucalyptus oil - Large amount of re-exporting products made with imported oil 		
Wide spread of prices	●	VALUE-ADDED OPPORTUNITIES			
Origin important or called out at POS	◐	<ul style="list-style-type: none"> - Pharmaceutical products (external application/inhalation/lozenges) - Massage oil - Dental care - Cosmetics (soaps, lotions) - Confectionery flavouring - Fragrance (especially for household cleaning products) - Aromatherapy - Disinfectant - Insect repellent and bio pesticide - Industrial solvent - Biofuel (not economically viable) - Tourism activities 	WHAT YOU WOULD NEED TO BELIEVE		
COMPETITORS		KEY COMPETITORS		<ul style="list-style-type: none"> - Australia can regain market share that it lost to low cost producers - Australian produced eucalyptus oil can command a premium in export markets over low cost competitors - Research targeted at increasing oil yields will lower costs of production 	
Biosecurity or other domestic barriers	○	DOMESTIC			
Can we get to the world price?	◐	EXPORTERS			
Attractive competitive set	◐	<ul style="list-style-type: none"> - Imported eucalyptus oil - Other essential oils - Other naturally scented household and personal products 	<ul style="list-style-type: none"> - China (75% of world trade) - Spain - Portugal - India - South Africa - Brazil - Chile - Swaziland 		
AUSTRALIA					
High performance genetics available	●				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	●				

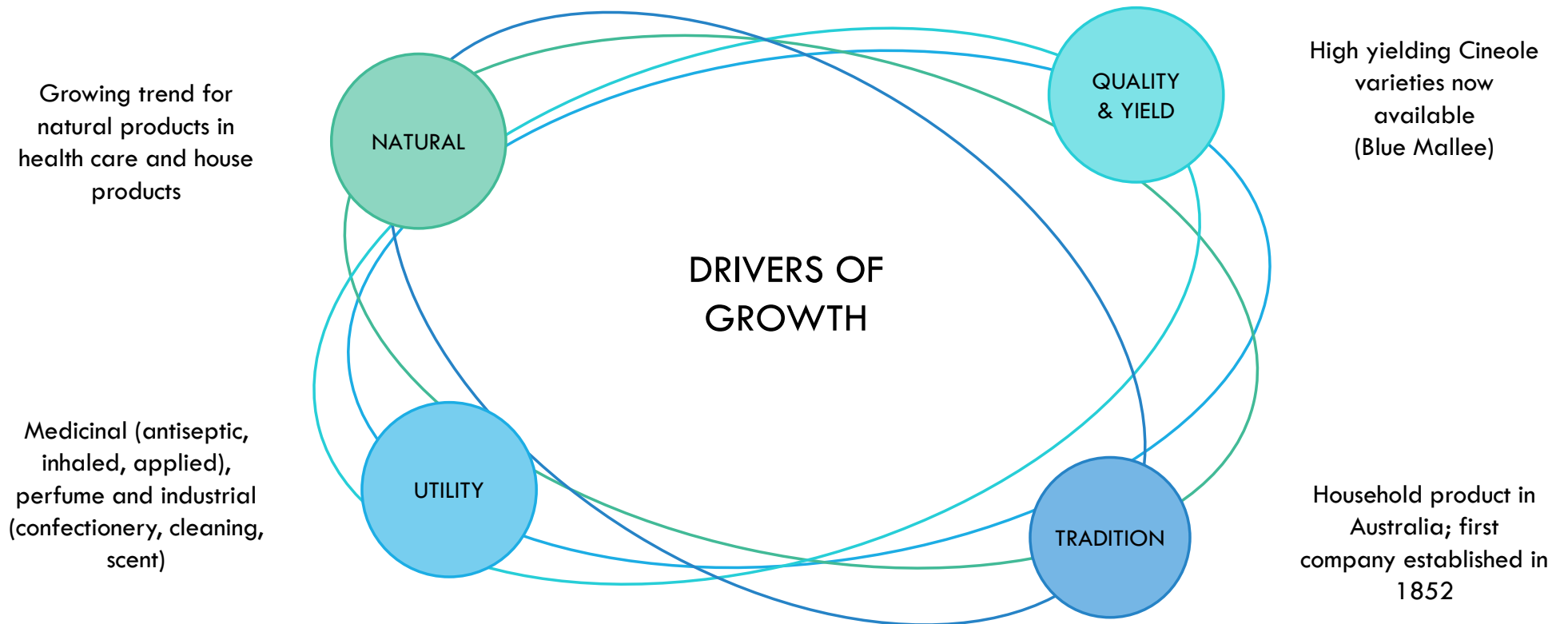
What is eucalyptus oil?



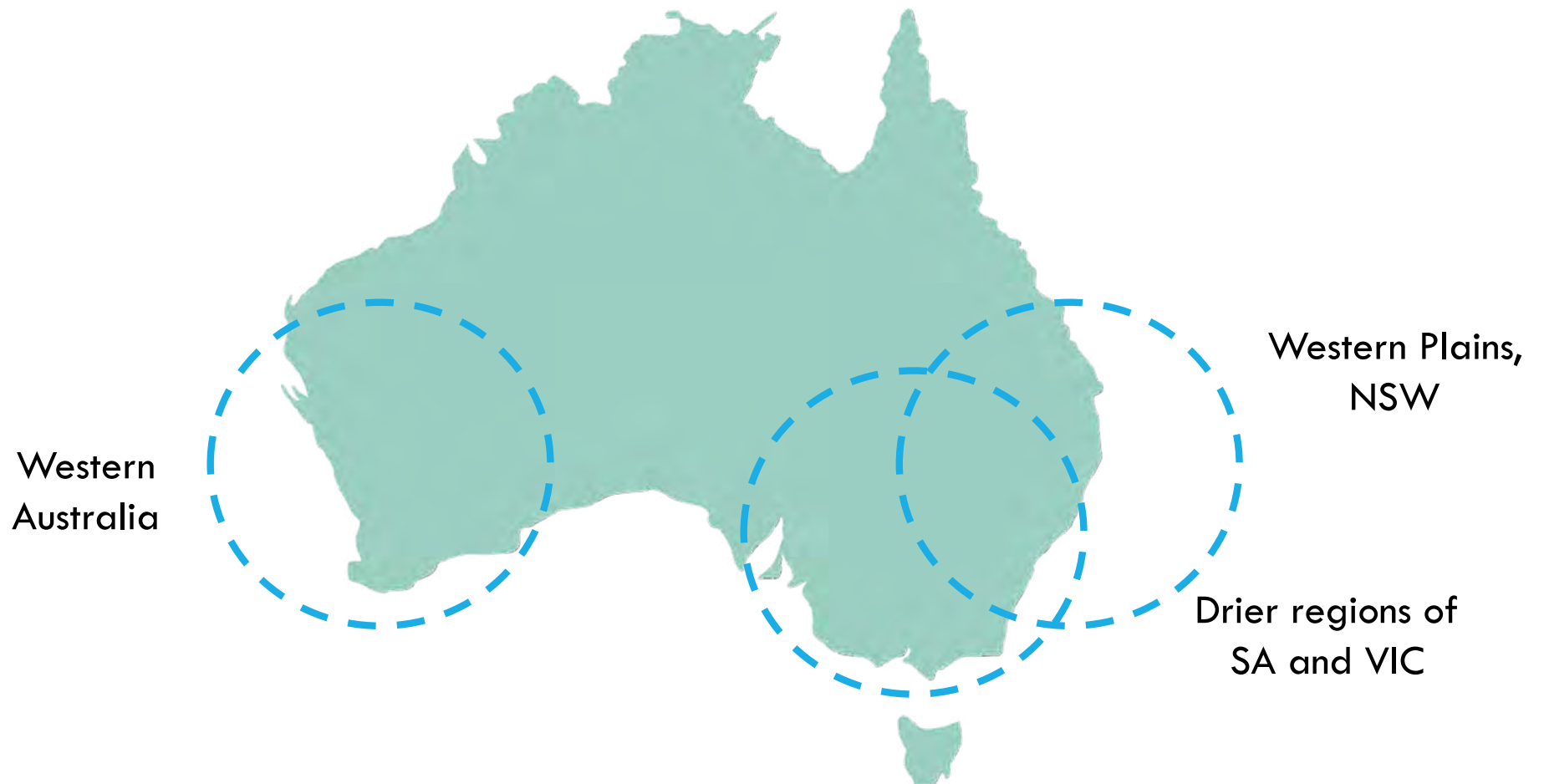
PRODUCT PROFILE

Common names	Eucalyptus oil (from Eucalyptus/Gum/Blue Gums)
Scientific name	<i>Eucalyptus</i>
Type of plant	Flowering tree
Cultivation cycle	Harvested every two years
Suited climate	Dry temperate
Part used	Leaf (steam distilled)
Origin	Australia
Established in AU	Native

What is driving its success?

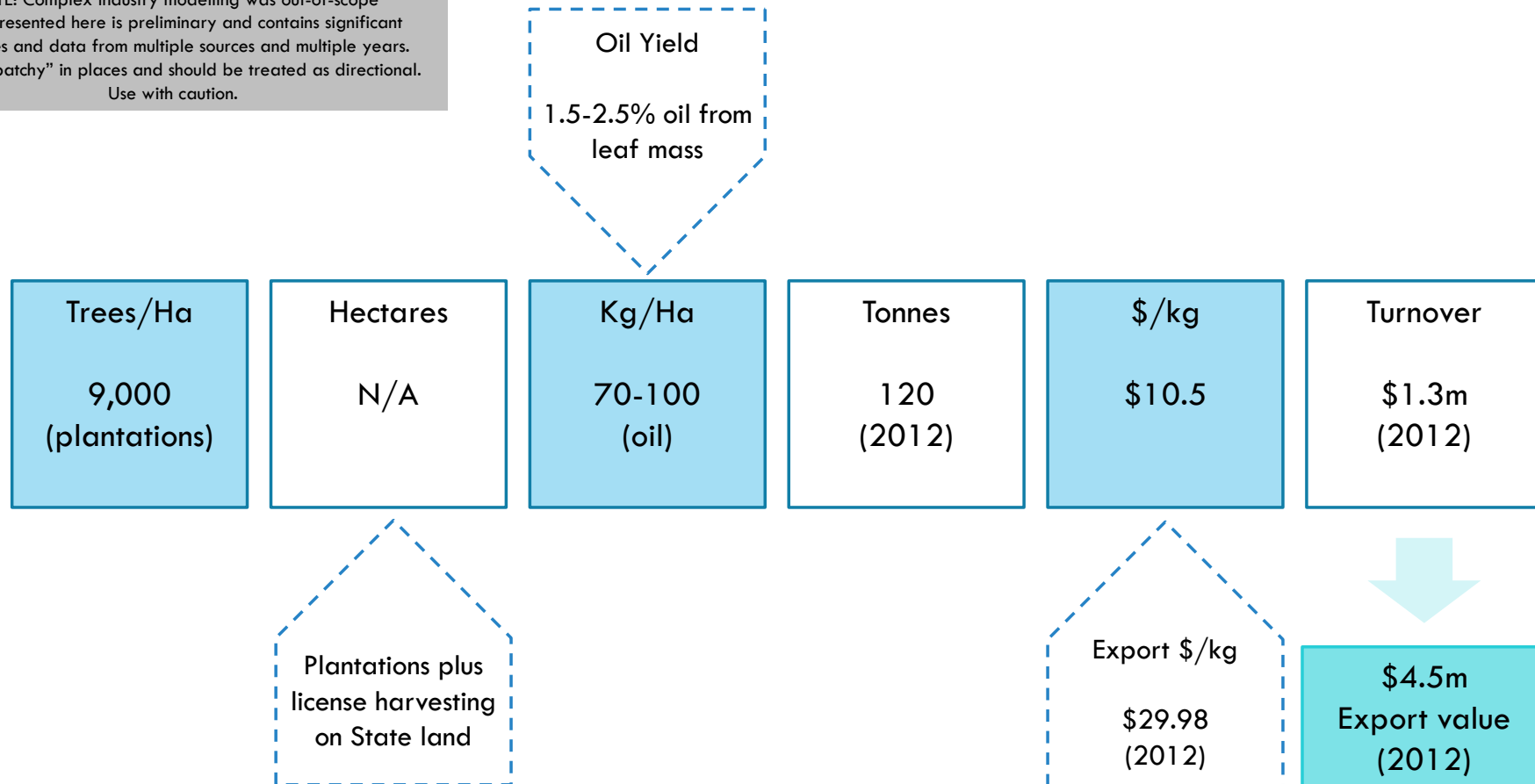


Where is it produced in Australia?






What are the industry metrics?

NOTE: Complex industry modelling was out-of-scope
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 Use with caution.



Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - G.R Davis Pty Ltd - Established in 1964 as a essential oil company - Based in Queanbeyan, NSW - Grow, refine and export eucalyptus and tea tree oil, including organic
	<ul style="list-style-type: none"> - Felton Grimwade & Bosisto's - 70 FTE's across two sites - Since 2000 researching super strains of Blue Mallee at School of Botany at University of Melbourne - Planted 4m trees
	<ul style="list-style-type: none"> - Native Oils Australia - Full traceability - Full range of essential oil products - Advisory service (research, development, management etc.)

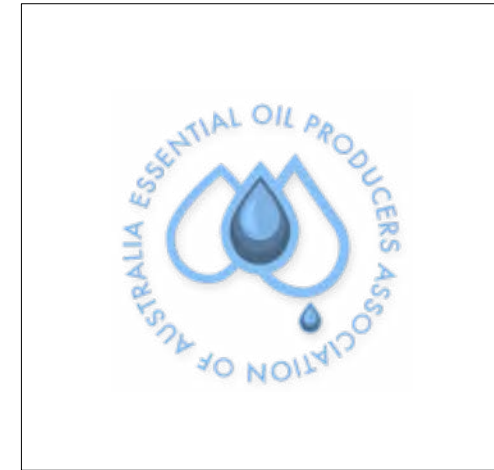
Who are the other key stakeholders?



- Victoria State Government
- Administer harvesting of eucalyptus that are on government land

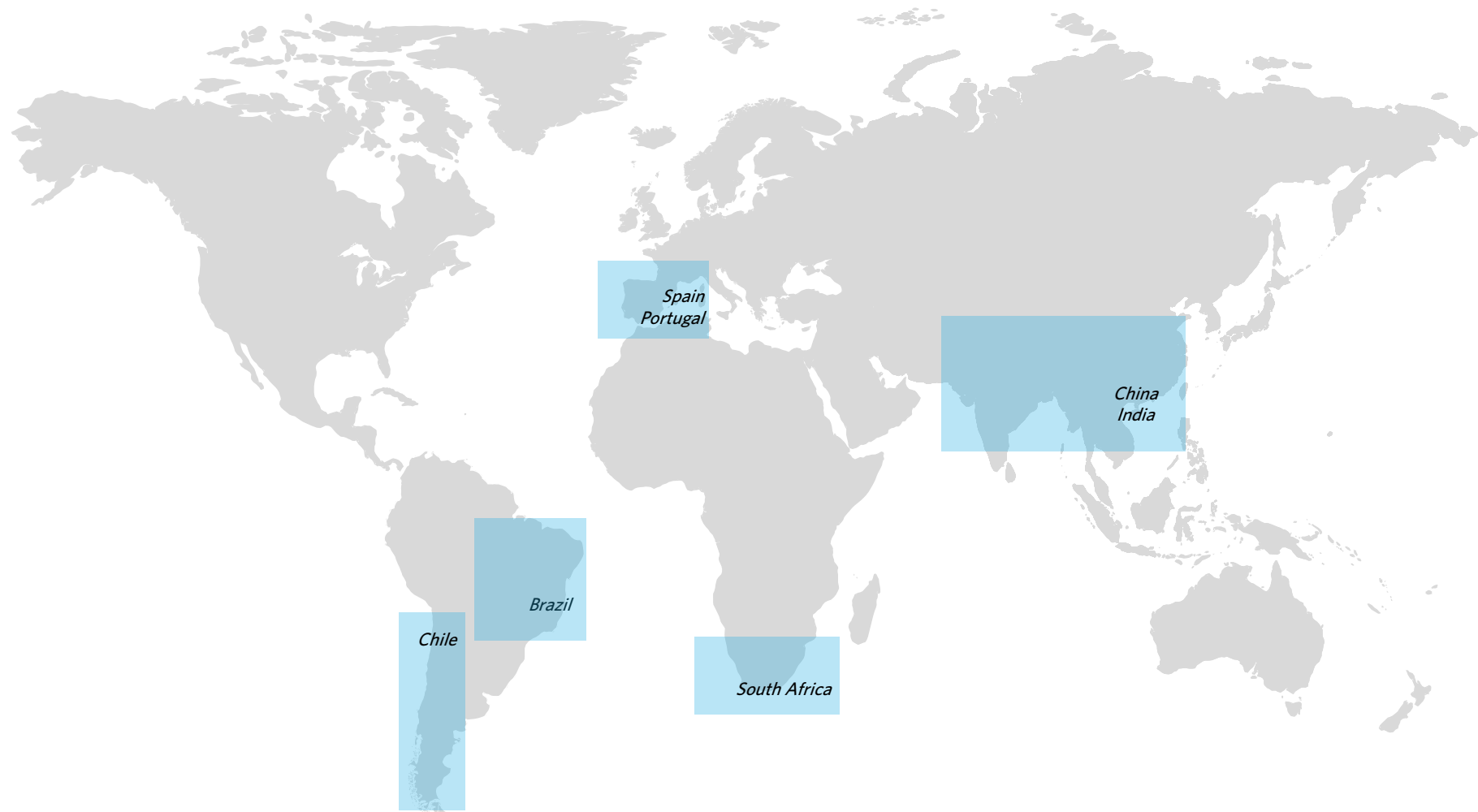


- The University of Melbourne, School of Botany
- Eucalyptus research in conjunction with FGB



- Essential Oils Producers Association of Australia
- Promoting and facilitating the production of essential oils and allied products in Australia

Who are the competition for export markets?



How can you add value to it?

Processed products



What does Dr. Food think?



“Australia is to Gum Trees as England is to fish and chips! Particularly for tree products, consumers are increasingly asking where are the trees grown and did their growing damage the environment and, indeed, the workers that tended and felled them. If there is a natural home for the Eucalyptus tree it’s Australia.

As a powerful and important ingredient in food and home care products, consumers will be comforted by the knowledge that Australian eucalyptus oil is farmed sustainably – or, at least they should be! This underlines the need for an industry-wide programme on “Green Eucalyptus oil from Australia”.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1837	Ohio, USA Public NYSE:PG	US\$65b 95,000	Cleaning agents, personal care, hygienics products (Vicks Vapour rub, Oral-B, Tide, AmbiPur, etc. brands)	Global	www.us.pg.com One of the largest personal care and cleaning companies
	1894	DK Rotterdam, Netherlands Public AMS:UNA; LSE:ULVR; NYSE:UN&UL	€52.7b 169,000	Personal care, home care, food, dairy products, refreshment (tea and tea based beverages)	Global	www.unilever.com Operates in over 100 countries; 306 factories in 69 countries (all products); sells in 190 countries
	1909	Clichy, France Public Euronext:OR	€25.8b 89,300	Cosmetics, skincare, fragrances, haircare	Global	www.loreal.com World's leading cosmetics company; present in 140 countries; 42 factories worldwide
	2004	Xianyang, China	N/A	Plant powders, oils, extracts, pesticides, monomers	China Global	www.fzbiotech.com Specialise in manufacturing plant powder, plant extract, plant oil and biological pesticide products
	2009	Sao Paulo, Brazil Public NYSE:FBR	US\$3b 15,000	Eucalyptus pulp	Brazil, Global	www.fibria.com.br Global leader in pulp; production capacity of over 6m tonnes of pulp and paper



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		<p>Paleo diets and a growing interest in new and natural foods puts the spotlight on deer. Deer is a healthy alternative red meat that can be successfully sold into foodservice, retail and exported. It has good potential for farmers looking to diversify investment portfolio.</p>		\$1.7m (2012)	\$5-10m by 2025
Capital intensive to produce	●				
Mechanically Processed	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Healthy meat alternative to traditional beef and lamb (25% less fat, high protein, high iron) - Consumers looking to diversify their meat options - Growth in demand from Asian markets 		<ul style="list-style-type: none"> - Trade access to key markets - Social license surrounding velvet - NZ lower cost producer of venison with higher marketing spend in export markets - Lower cost competition in EU from wild supply Polish and Spanish meat 	
Wide spread of markets/buyers	○				
Wide spread of prices	◐				
Origin important or called out at POS	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
COMPETITORS		<ul style="list-style-type: none"> - Pre-prepared steaks, ready-meal ingredients - Velvet Antler (\$112/kg frozen weight; 2016) - Nutraceutical industry/medicine (in particular in Asia) use of velvet, pizzle, tail, tendons, heart, blood) - Petfood ingredient - Jerky - Hides and skin for high end retailing - Knife handles - Hunting (lodges and resorts) 			
Biosecurity or other domestic barriers	●				
Can we get to the world price?	●				
Attractive competitive set	●	KEY COMPETITORS		<ul style="list-style-type: none"> - Able to compete with importing countries - Able to compete with NZ (#1 producer) - Imported species able to be breed to suit AU conditions (imported 1803) - Ongoing breeding opportunities with fallow and red deer - Lifestyle farming will change to commercial farming operations (approx. 100 farmers) - Australia will maintain its relatively disease-free status 	
AUSTRALIA		DOMESTIC	EXPORTERS		
High performance genetics available	◐	<ul style="list-style-type: none"> - Beef - Lamb - Goat - Other meats/proteins - Imported deer products 	<ul style="list-style-type: none"> - New Zealand - Germany - USA - Europe 		
Required skills for success	○				
Leverage country reputation	●				
OVERALL	●				

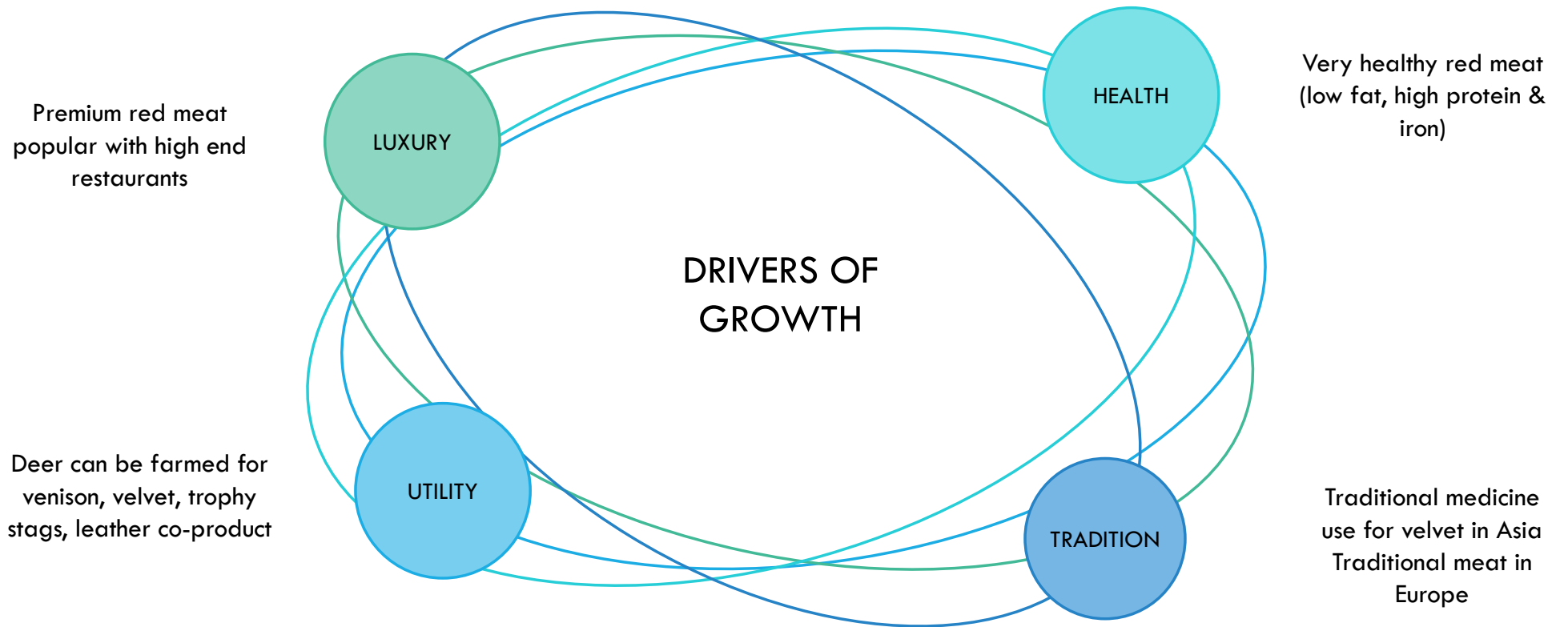
What is deer meat?



PRODUCT PROFILE

Common names	Deer
Scientific name	<i>Cervus elaphus</i> (Red deer); <i>Dama dama</i> (fallow deer)
Type of animal	Ruminants
Cultivation cycle	Red deer have 230 days gestation; defined mating season (stags cycle with decreasing daylight hours); females reach sexual maturity at 2 years
Suited climate	Temperate
Part eaten	Flesh, velvet
Origin	Asia
Established in AU	1803; commercial farming in 1971

What is driving its success?

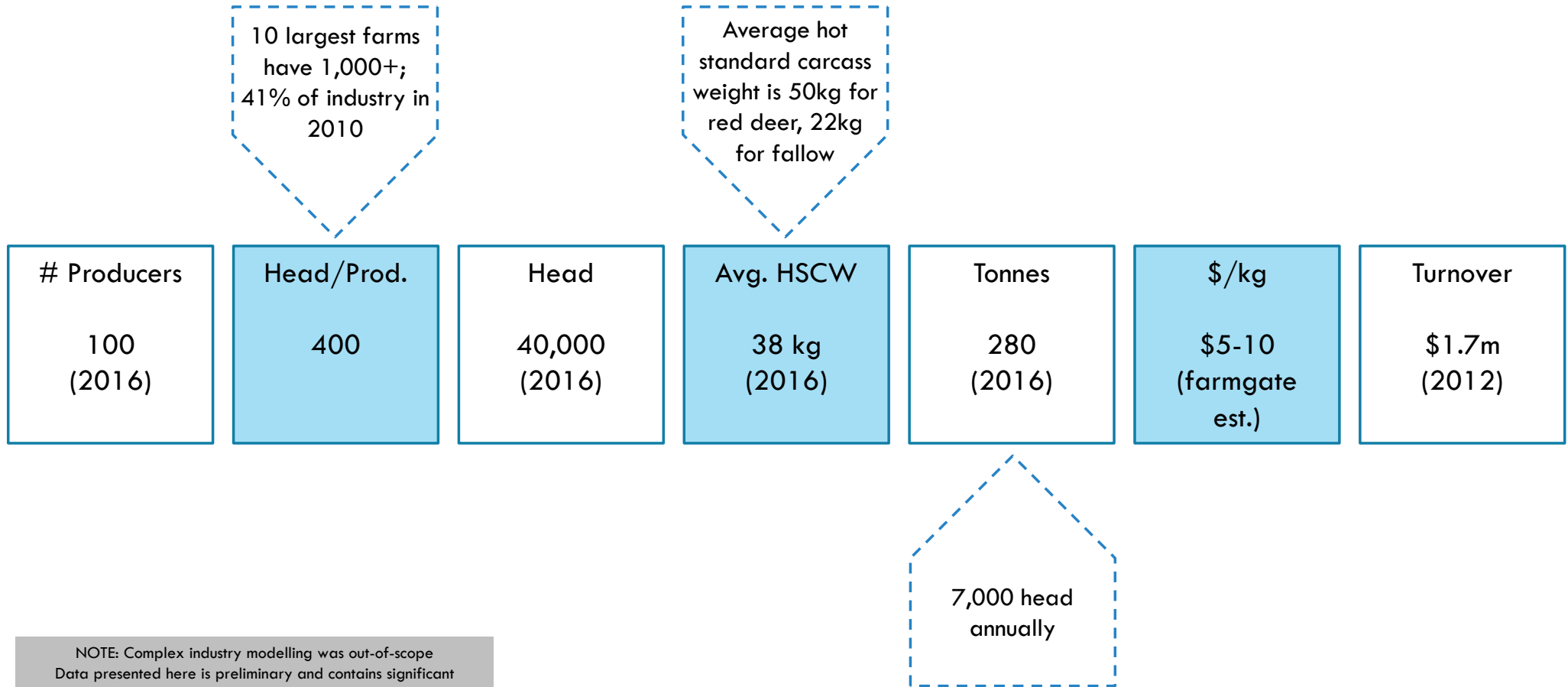


Where is it produced in Australia?



NSW, VIC & SA;
small operations
elsewhere

What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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 Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Family owned and operated deer farming and venison specialist producer and processor - Established in 1978 - Based in Hahndorf, SA - 140 acres run with deer - Venison, velvet liquor; high end restaurant target market
	<ul style="list-style-type: none"> - 900ha property; 1,000 head annually for venison production; 300 head velvet herd - Started processing venison in 2002 - Exports to 30 countries - Commercial kitchen on the farm - 1803 high end brand for skins and antler products
	<ul style="list-style-type: none"> - Established by Mike and Nancy Kasprzak in 1990s - 'The Deer Farm' is based in Adelaide Hills, SA - Around 1,000 head of fallow deer - Birdwood Venison brand - Velvet, venison, genetics

Who are the other key stakeholders?



- Deer Industry Association of Australia (DIAA)
- Represents farmers, processors, transporters, breeders in the deer industry
- Peak body for the industry

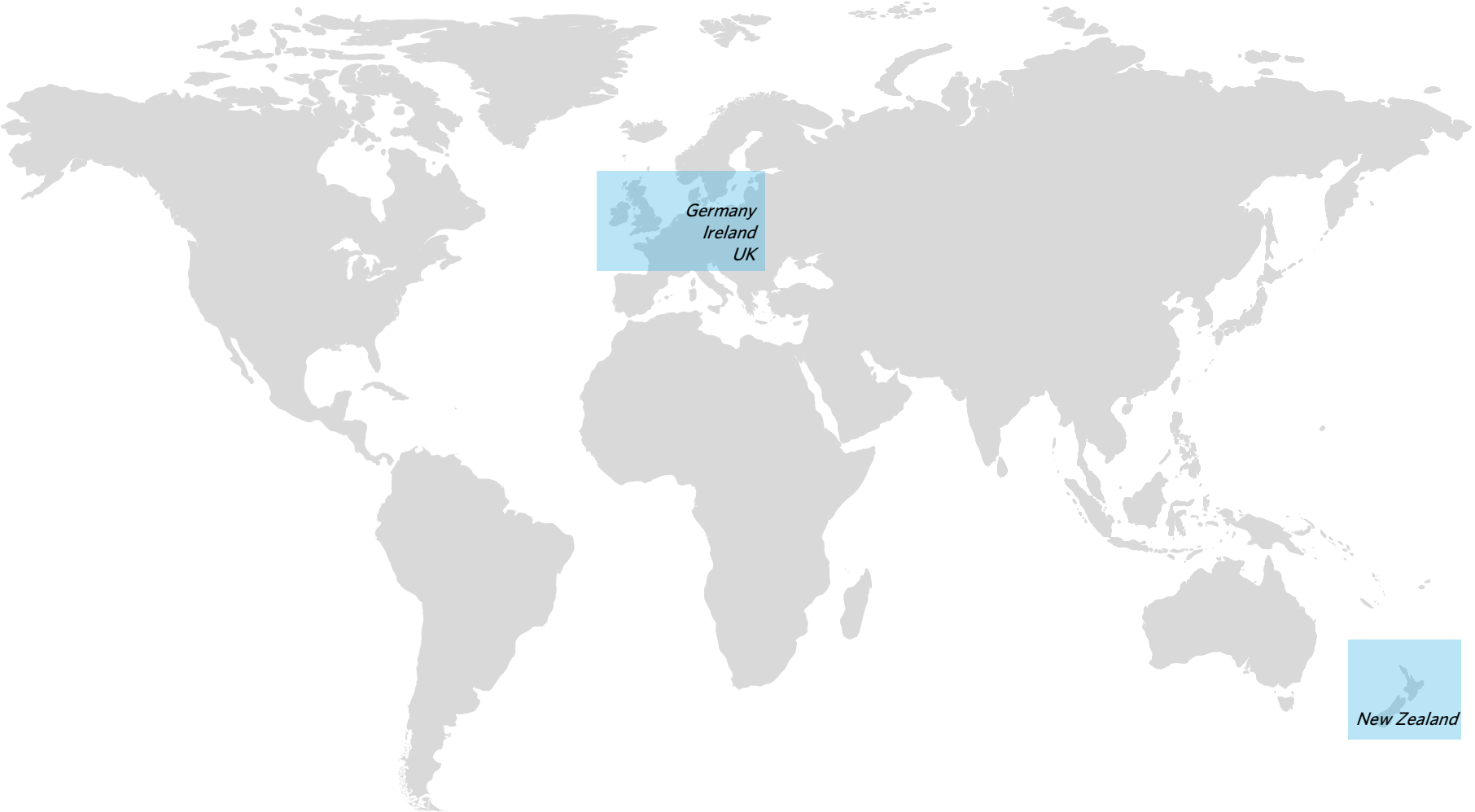


- Australian Deer Association
- Deer hunting advocacy group
- Formed in 1969
- Deer research and related conservation activities, lobbying for increased hunting opportunities and access to public lands



- Australian Veterinary Association
- Professional organisation that represents veterinarians across Australia
- Co-operation with DIAA to administer National Velvet Accreditation Scheme

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing



What does Dr. Food think?








“Meat from deer is private school-educated whereas indigenous but humble kangaroo meat attended a state school! In history in Europe, peasants were hanged for hunting the deer of the landed aristocracy and venison has always carried a rather exotic and posh image.

Germans are pro-deer meat but, in many countries where venison is known by consumers, it is the meat that they never quite get around to choosing from the menu and, indeed, it is most likely to be eaten in a restaurant. However, now in the UK, venison has a regular albeit small space at retail whether that be in upmarket Waitrose or broad market Tesco. Its success has been driven by 52 week availability and this has come via reliable supplies of venison from New Zealand during the European off-season. Mind you, in higher-consuming Germany, venison is eaten much more during what was their local hunting season – during colder months.

A sneaky way of Australia contemplating expansion of its deer industry is to study what mistakes the Kiwis made and to emulate their successes. Renaming NZ venison as ‘Cervena’ is a case study in itself of the pros and cons of establishing a world class deer industry.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1951	Shanghai, China State Owned Enterprise Shanghai Municipal Government	US\$11.5b	Dairy, food, beverages, wine, food service, agriculture, real estate, finance	China NZ Australia	www.brightfood.com Large food processing and agriculture SOE; 50% stake in Silver Fern Farms (NZ) sheep and venison producer
	1948	Invercargill, NZ Co-operative 5,000 farmers	NZ\$1.4b 4,700	Sheep, venison, beef	NZ Global	www.alliance.co.nz Exports to 65 countries; 8 processing sites in NZ; world's largest processor and exporter of sheep meat
	2004	Hastings, NZ Private Hickey, Ross, Evans	NZ\$50m 30	Wagyu beef, venison	NZ USA UK	www.firstlight.farm Producers and marketers of venison and grass fed wagyu beef; sales team in NZ, USA & UK; 200 farmer suppliers; out sources processing 3rd party operators
	1988	Vernon, USA Private Mark Mitchell	N/A	Venison, wagyu beef, game meats, lamb, buffalo, wild boar, charcuterie	USA Global	www.broadleafgame.com Food distribution company; initially importer of NZ venison, expanded to other premium specialty meat; one of largest importers of NZ venison in USA
	1990	Auckland, NZ Private Andy and Vinnie Duncan	N/A	Venison	NZ Global	www.duncan-nz.com New Zealand's leading specialised venison processor and marketer; 2 purpose built facilities;



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Silver perch is a freshwater fish with natural distribution through Murray-Darling River system. It is currently sold to live fish trade in Asian restaurants or whole chilled to the fish markets. Numerous traits make it suitable for aquaculture.		\$4.5m (2016)	\$5-10m by 2025
Capital intensive to produce	●				
Mechanically harvested	◐				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Increasing demand for protein - Increasing demand for environmentally sustainable seafood - Potential to use agricultural water storage facilities as grow out systems (e.g. cotton industry) - Health benefits (very high omega 3 levels) 		<ul style="list-style-type: none"> - Export markets are not yet developed (still potential in domestic to realise) - Muddy flavour needs to be controlled (due to blue green algae in the water) 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Live trade (for fish tanks in Asian restaurants) - Fresh and frozen, whole and filleted for food service - Fresh and frozen, whole and filleted for retail - Prepared products (e.g. crumbed, battered, formed) - Fish oil and extracts 		<ul style="list-style-type: none"> - Land based system is commercially viable - Aquaculture production systems based on similar species in USA, China, Greece, Italy and Spain can provide fast follow model for Australia - Australia can compete with low cost producers in export markets 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers	●	<ul style="list-style-type: none"> - Barramundi - Mulloway - Wild caught fish - Imported farmed fish species 	<ul style="list-style-type: none"> - Asia - Africa - All wild catch exporting countries 		
Can we get to the world price?	○	AUSTRALIA			
Attractive competitive set	◐	<ul style="list-style-type: none"> - High performance genetics available - Required skills for success - Leverage country reputation 			
OVERALL	●				

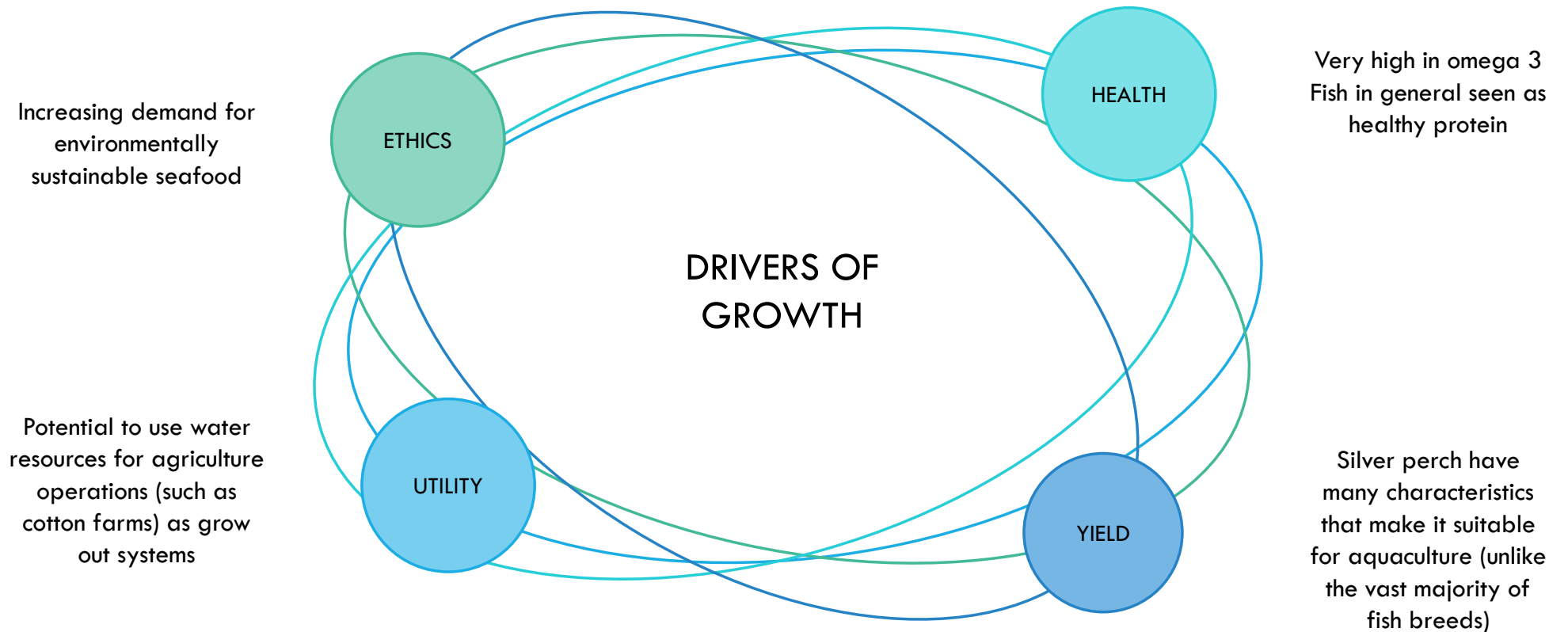
What is silver perch?



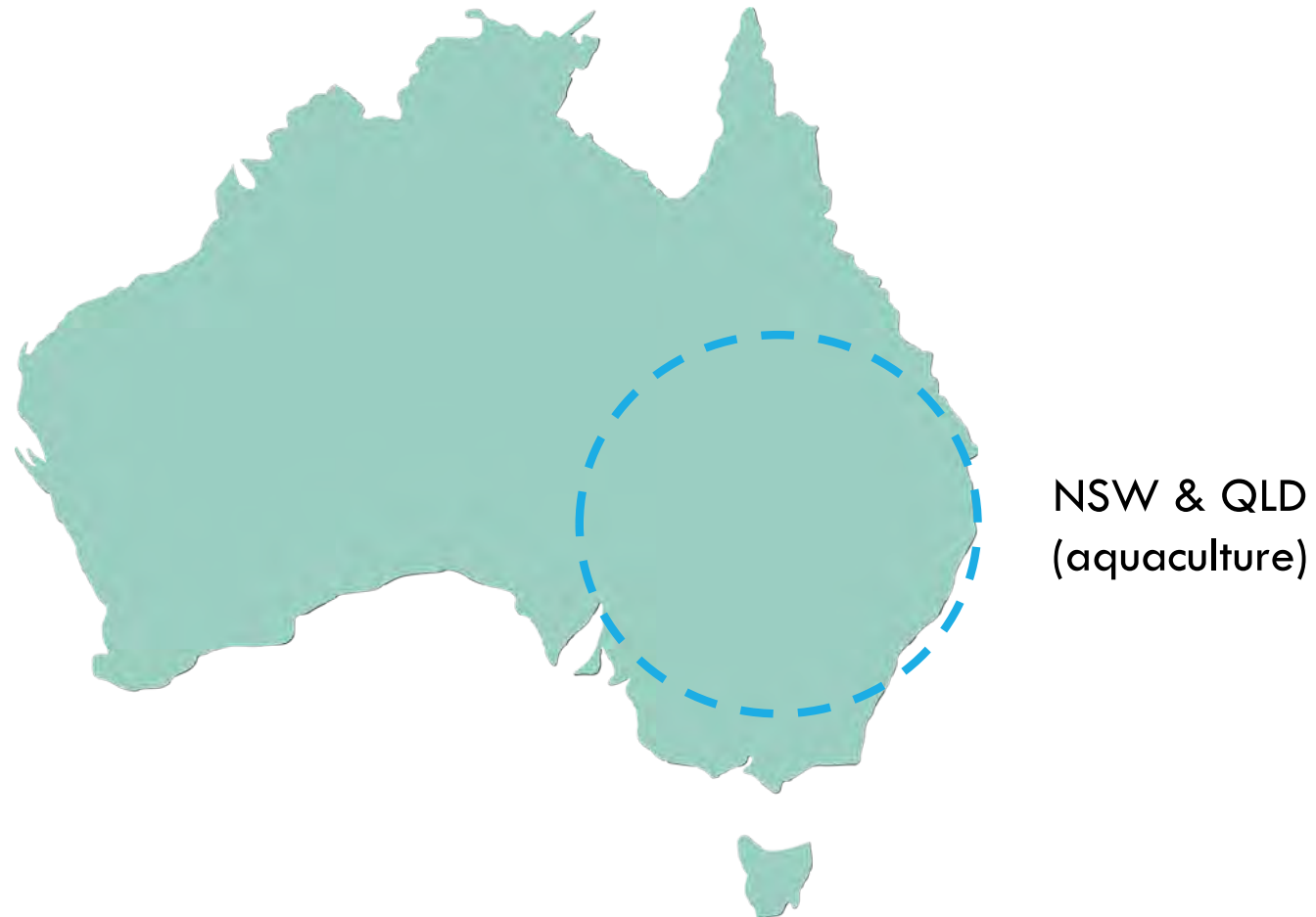
PRODUCT PROFILE

Common names	Silver perch, grunter, Murray perch, black bream, silver bream, bidyan
Scientific name	<i>Bidyanus bidyanus</i>
Type of fish	Fresh water fish
Cultivation cycle	Spawn in late spring and early summer; 9 months to grow out pond; 600-800g in 18months; can grow to 8 kg
Suited climate	Prefer areas of rapid water flow; almost extinct in wild
Part eaten	Flesh
Origin	Endemic to Murray-Darling river system
Established in AU	Native

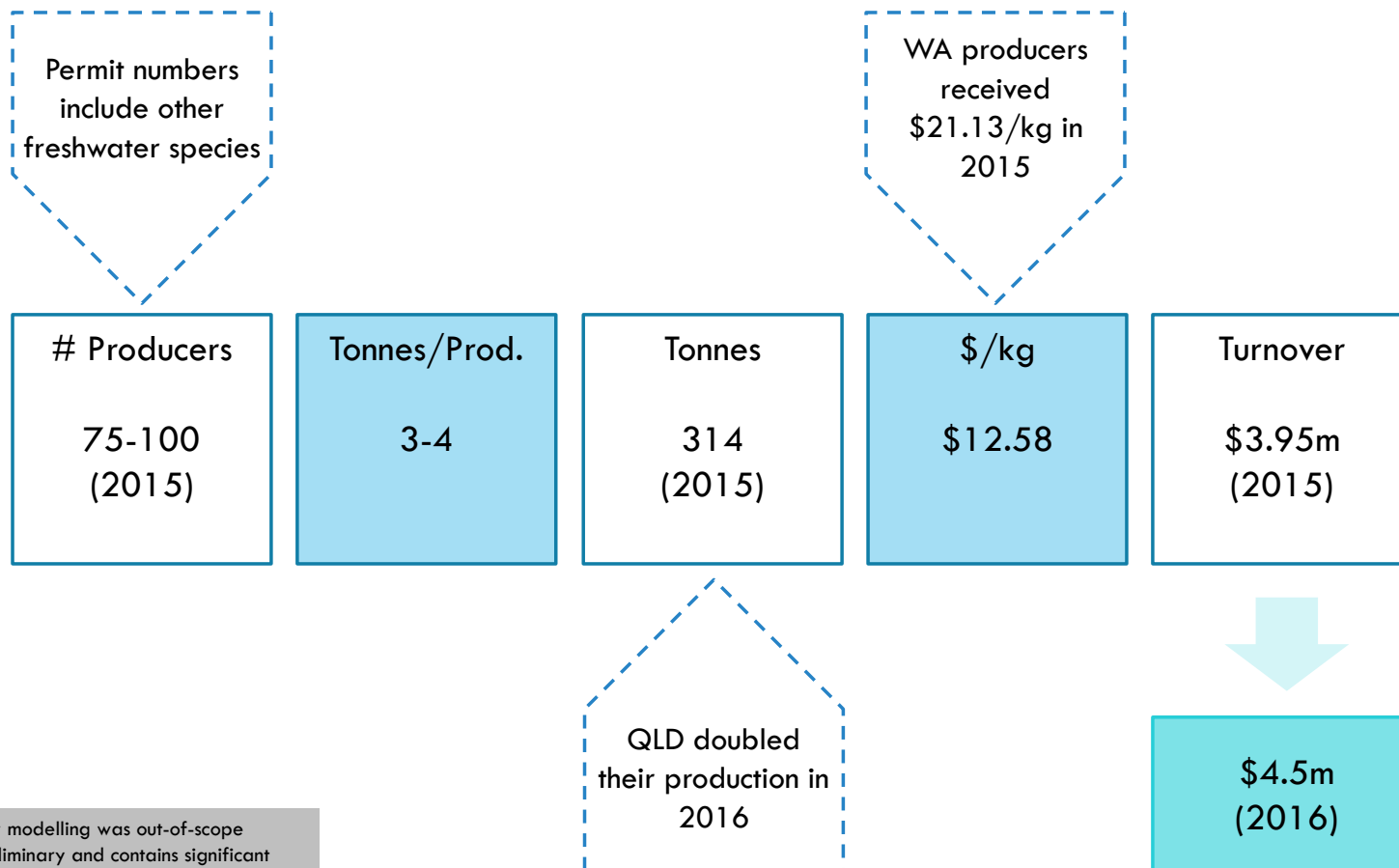
What is driving its success?



Where is it produced in Australia?



What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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Who are the pioneering Australian firms?

AUSTRALIAN FIRMS

DETAIL

Jamberoo Aquaculture

- Freshwater fish farm based in Jamberoo, NSW
- Silver perch, golden perch, blue claw yabbies, fish food
- Farm dam, aquaponics and restaurant sales

Pioneer Fish Farm

- Based in Gloucester, NSW
- Silver perch specialists
- Part of Australian Fresh Fish marketing group of 7 silver perch farmers

Abington
AQUACULTURE

- Freshwater aquaculture facility to supply native fish to Australia and international markets
- Fingerlings and full grown fish
- Australian bass, silver perch, gold perch, barramundi, mangrove jack
- Based in Childers, QLD
- Plans to export fresh fish direct to China

Who are the other key stakeholders?



- National Aquaculture Council
- Peak body representing the interests of the Australian aquaculture industry

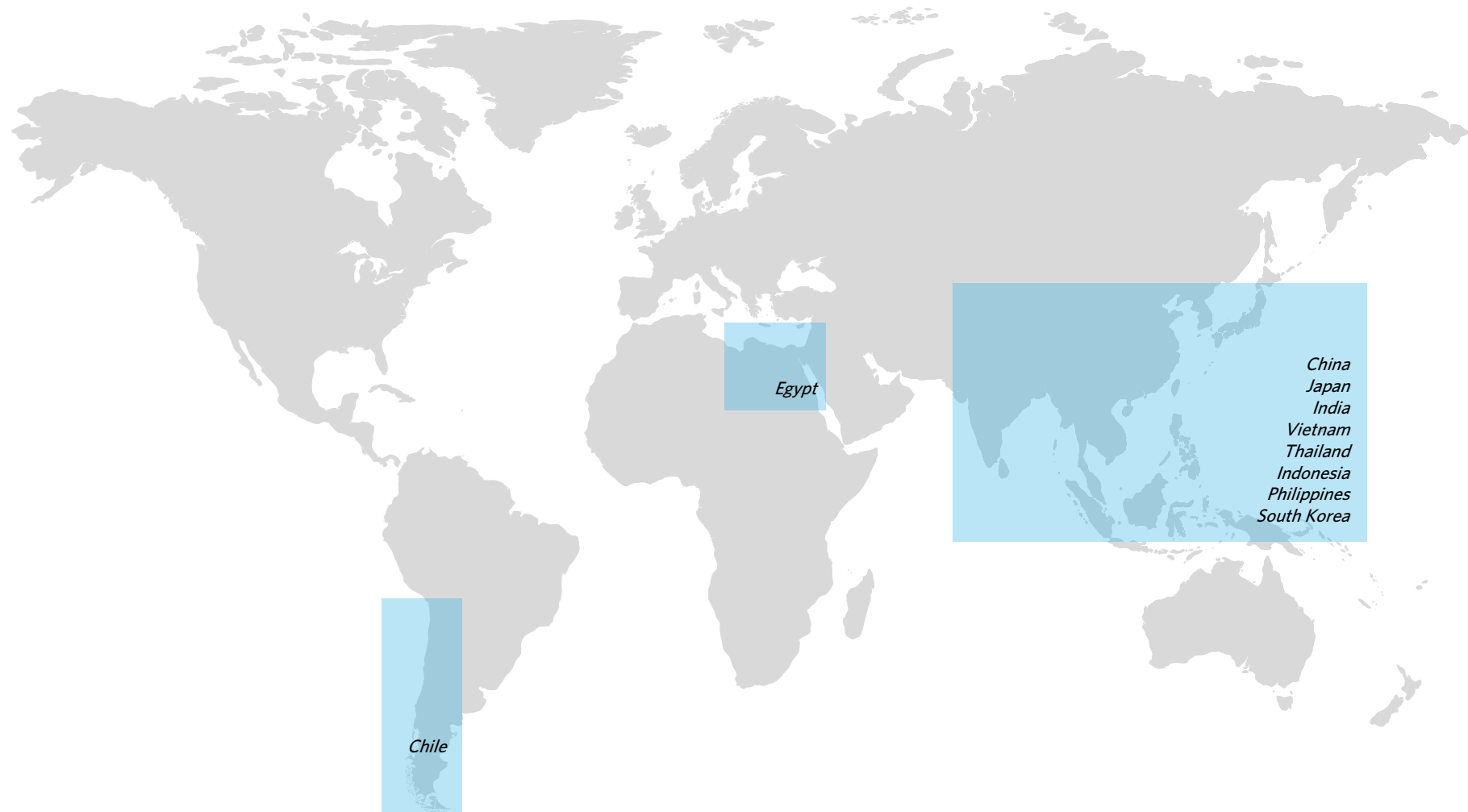


- NSW Aquaculture Association
- Peak industry body for land based aquaculture in NSW
- State also has the NSW Silver Perch Growers Association



- Aquaculture Association of Queensland Inc.
- Representative body for producers of freshwater finfish and crayfish in QLD

Who are the competition for export markets?

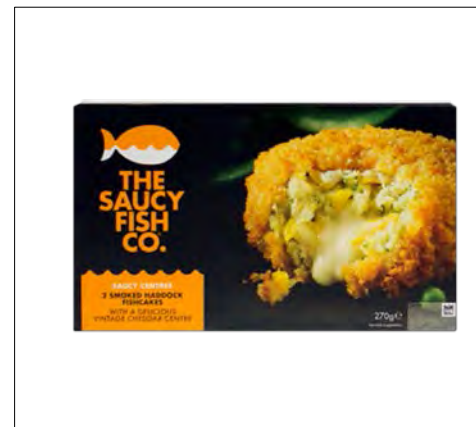


How can you add value to it?

Processed products



Further value added processing



Note: other fish species used as suggestion. Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes



What does Dr. Food think?



“Dr. Food never ceases to be surprised that an island as big as Australia (a) is a relatively low consumer per capita of fish and (b) 70%+ of the fish consumed domestically is imported. However, fish is on-trend with consumers and there is a substantial appetite for and, often, a willingness to pay a premium for “local” fish. In principle, Silver perch’s prospects look good, particularly if its growth rate and feed conversion efficiency is anything like that of many types of Pangasius and Tilapia. But, here’s the rub – the latter 2 dominate the low price end of the white fish market. In 12 years, Vietnam has grown its seafood exports (white fish and prawns) to over US\$8 billion. In Mexico recently, I noticed Pangasius (Basa) fish fillet selling at US\$3 per kg. in Walmart stores.

The challenge for Australian-grown pond grown white fish will be to justify the substantial premium that they must carry if large-scale aquaculture is to be successful. Australian consumers are sympathetic and relatively loyal to Australian food producers. Local product will or should have a distinct advantage on supply chain integrity, but the local product must have a compelling and well-communicated product story.”

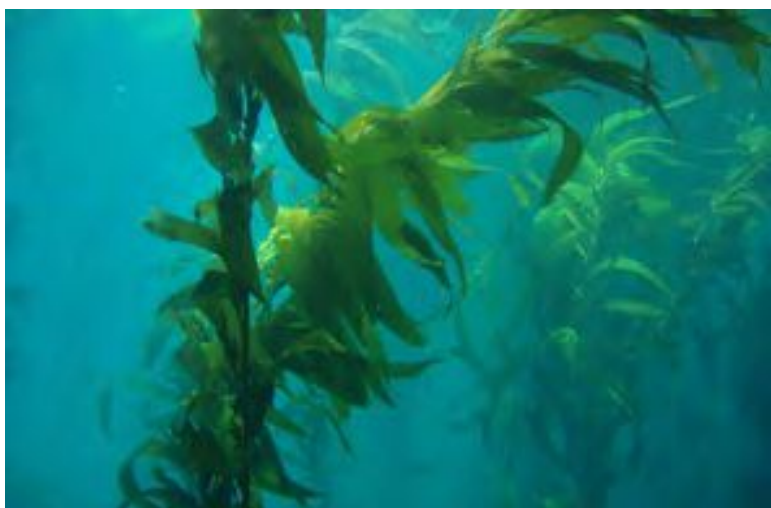
Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 MARUHA NICHIRO	1943	Tokyo, Japan Public TYO: 1333	¥863.8b (15) US\$7.6b 12,335	Wild catch, aquaculture, processed fish, processed foods, frozen foods, meat (beef, pork, chicken), fishmeal, fine chemicals, storage & logistics	Japan Asia Nth America Europe Australia NZ	www.maruha-nichiro.co.jp www.westwardseafoods.com www.australfisheries.com.au World's largest seafood company by turnover; over 200 companies in group in 26 countries
 Mazzetta Company, LLC*	1987	Illinois, US Private Mazzetta family	US\$425m TBD	Lobster, finfish, mussels, prawns, crab	US Canada New Zealand Norway	www.mazzetta.com www.hofseth-as.no Sources 306 items from 33 countries; one of top seafood suppliers in North America; shareholder in Hofseth International (NO), Sanford (NZ)
 NISSUI	1911/ 1943	Tokyo, Japan Public TYO: 1332	¥638.4b (14) US\$5.6b 8,240	Wild catch, processed fish, processed foods, fine chemicals	Japan Asia Americas Europe NZ Australia	www.nissui.co.jp www.australianlongline.com.au www.anzco.co.jp www.sealord.com 75 subsidiaries & 33 assoc. companies
 marineharvest	1965	Bergen, Norway Public OSE:MHG; NYSE:MHG	€3.6b 12,717	Aquaculture salmon, trout, processed seafood	Norway Scotland Canada Ireland Chile	www.marineharvest.com One of the largest seafood companies in the world; world's largest producer of Atlantic salmon; operations in 24 countries
 Cooke	1985	News Brunswick, Canada Private Cooke family	US\$1.8b 5,000	Aquaculture salmon, seabass, seabream, wild caught salmon, shellfish, finfish, value added products	Canada USA Chile Spain Scotland	www.cookeseafood.com Finfish aquaculture and wild catch company known for its acquisitions



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		<p>Australia is a net importer of seaweed products (-\$20m).</p> <p>Australian kelps contain some of the highest contents of alginate in the world.</p> <p>Australian seaweed can leverage image of pristine, isolated waters of southern Australian coastline.</p>		\$2.5m (2012)	\$10-15m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	●	<ul style="list-style-type: none"> - Staple ingredient in Japanese (and other Asian) cuisine - Trend for "Asian fusion" and unique ingredients at high end restaurants - Functional ingredient in many processed foods - Demand for plant based alternatives - Growth in demand for nutraceutical extracts (used in supplements and pharmaceuticals) 	<ul style="list-style-type: none"> - Federal and State environmental legislation limit potential for large, sea based, coastal seaweed cultivation - There is over supply of seaweed in Asian markets - Lack of international production model and information for cultivated seaweed 		
Wide spread of prices	●				
Origin important or called out at POS	◐				
COMPETITORS					
Biosecurity or other domestic barriers	○	VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Can we get to the world price?	◐	<ul style="list-style-type: none"> - Functional ingredient (gums, emulsifiers, colouring) - Nutraceutical supplements - Pharmaceutical extracts - Medical grade biopolymers - Biofuels - Fertilisers - Animal feed - Ornamental plants for aquariums 	<ul style="list-style-type: none"> - Australia has the skill set to develop both its seaweed cultivating and harvesting industries - Value added processing can be done cost effectively in Australia, producing agar, alginic acid, beta-carotenoids functional, high value ingredients 		
Attractive competitive set	●				
AUSTRALIA					
High performance genetics available	●				
Required skills for success	◐	DOMESTIC	EXPORTERS		
Leverage country reputation	◐	<ul style="list-style-type: none"> - Imported products - Alternative fertilisers 	<ul style="list-style-type: none"> - China - Indonesia - Philippines - Japan - Chile - Iceland 		
OVERALL	●				

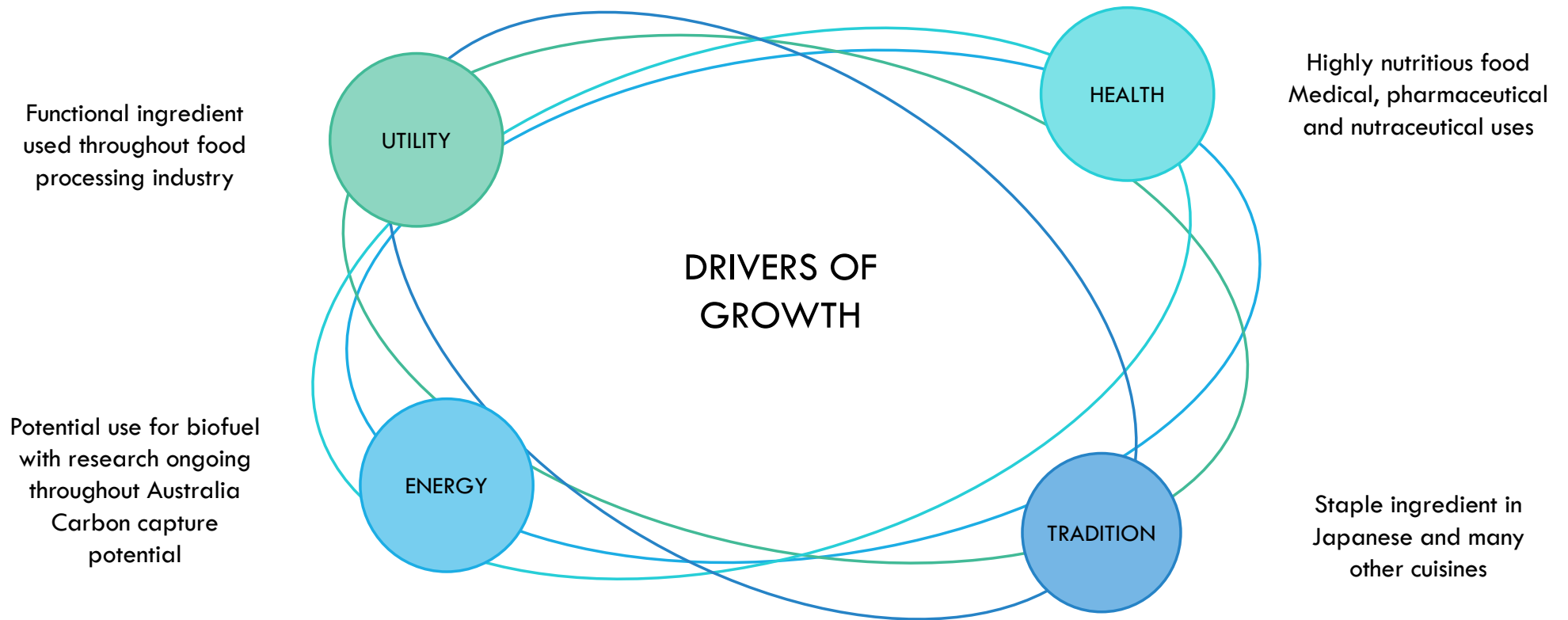
What is seaweed?



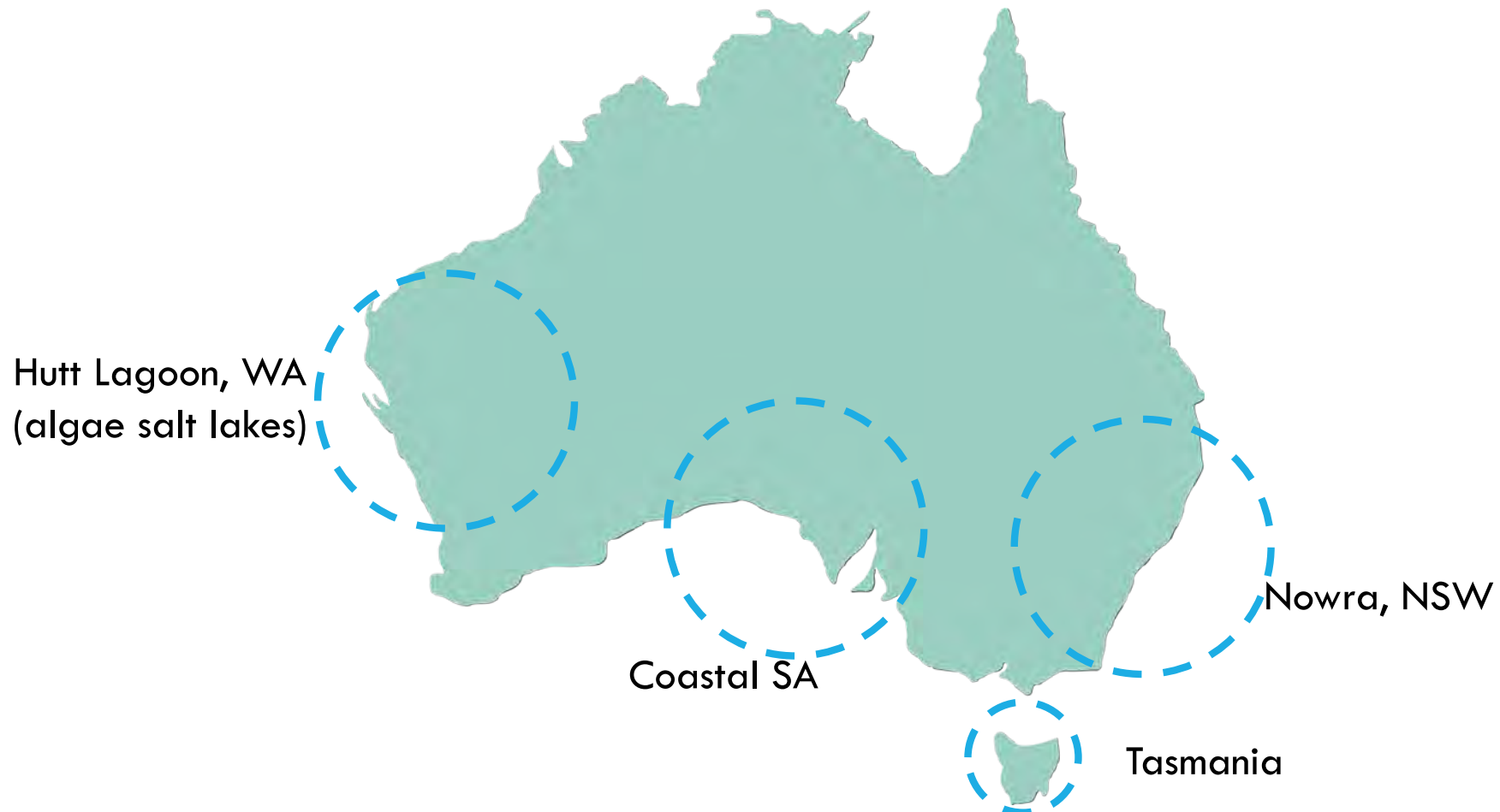
PRODUCT PROFILE

Common names	Seaweed, algae
Scientific name	Neither algae or seaweed are a single taxonomic entity
Type of plant	Multicellular, marine algae; red, green and brown
Cultivation cycle	Kelp has growth rate of half a metre a day
Suited climate	Salt water with sufficient light and somewhere to have firm attachment point
Part eaten	The frond as whole food; extracts include agar, alginate, carrageenan
Origin	Use as food originates in Japan in 4 th century
Established in AU	Australia has over 2,000 varieties of seaweed

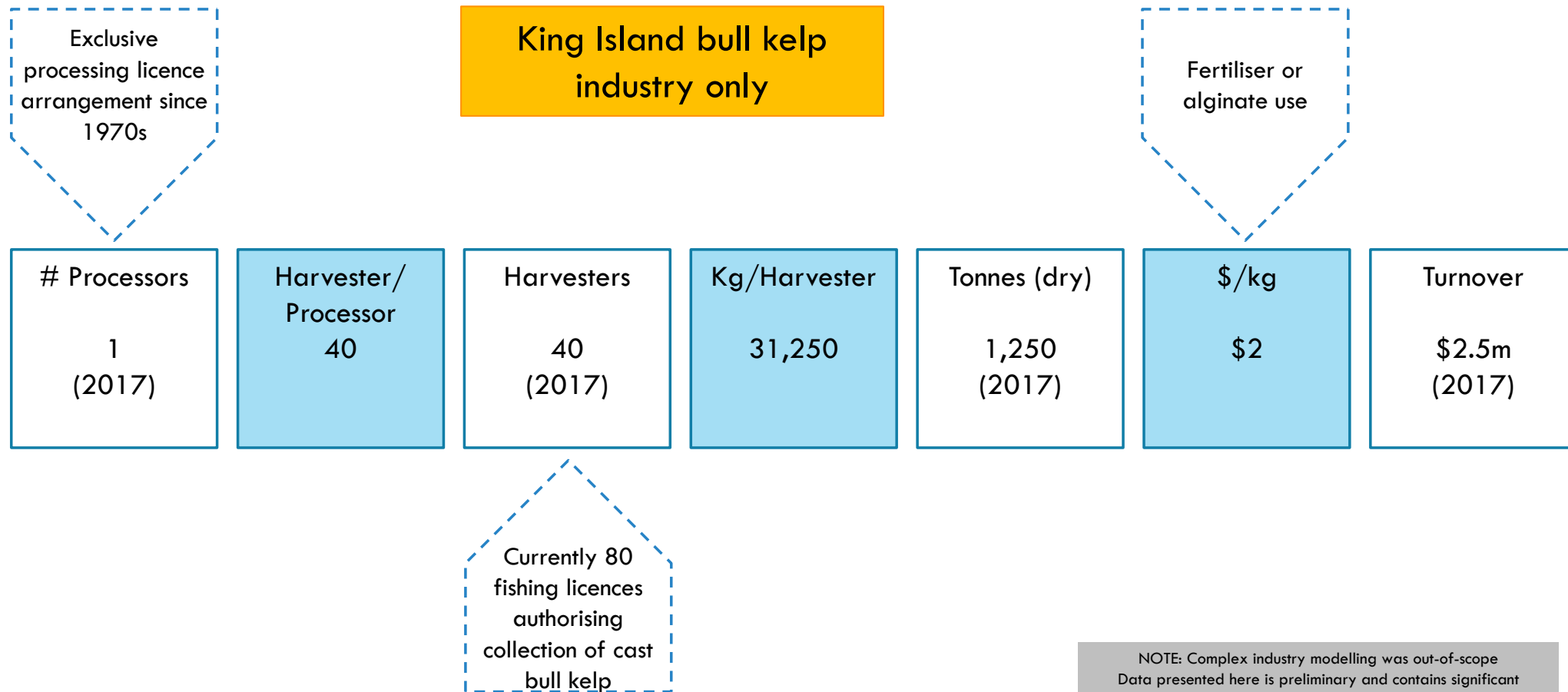
What is driving its success?



Where is it produced in Australia?





What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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 Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Based in Shoalhaven, NSW - Chief Scientist Dr Pia Winberg is Australia's leading expert in seaweeds - Grows unique seaweed biomass for use in biomaterials, cosmetics, dermatological care, food, nutraceuticals, pharmaceuticals - Food business, PhycoFood; seaweed pasta, dukkah, muesli bars
	<ul style="list-style-type: none"> - Based on Limestone Coast, South Australia - Acquired by Qingdao Gather Great Ocean Algae Industry Group in 2013 - Organic farming, resource development and international trading scopes of business - Investing A\$21m in developing operation - Fertiliser and animal feed; imports seaweed products
	<ul style="list-style-type: none"> - Processing site for receiving, drying and milling stormcast Bull Kelp on King Island, Tasmania - Local and export sales (Norway, USA (FMC – majority of production)) - Kelp is dried and milled in granules and powder - Sole licence holder for processing kelp on King Island since 1970s - Bull kelp harvesting on King Island generates \$2.5m annually, with 80 harvester licences (40 active individuals) - Supplies about 5% of world production of alginates

Who are the other key stakeholders?



- National Aquaculture Council
- Peak body representing the interests of the Australian aquaculture industry

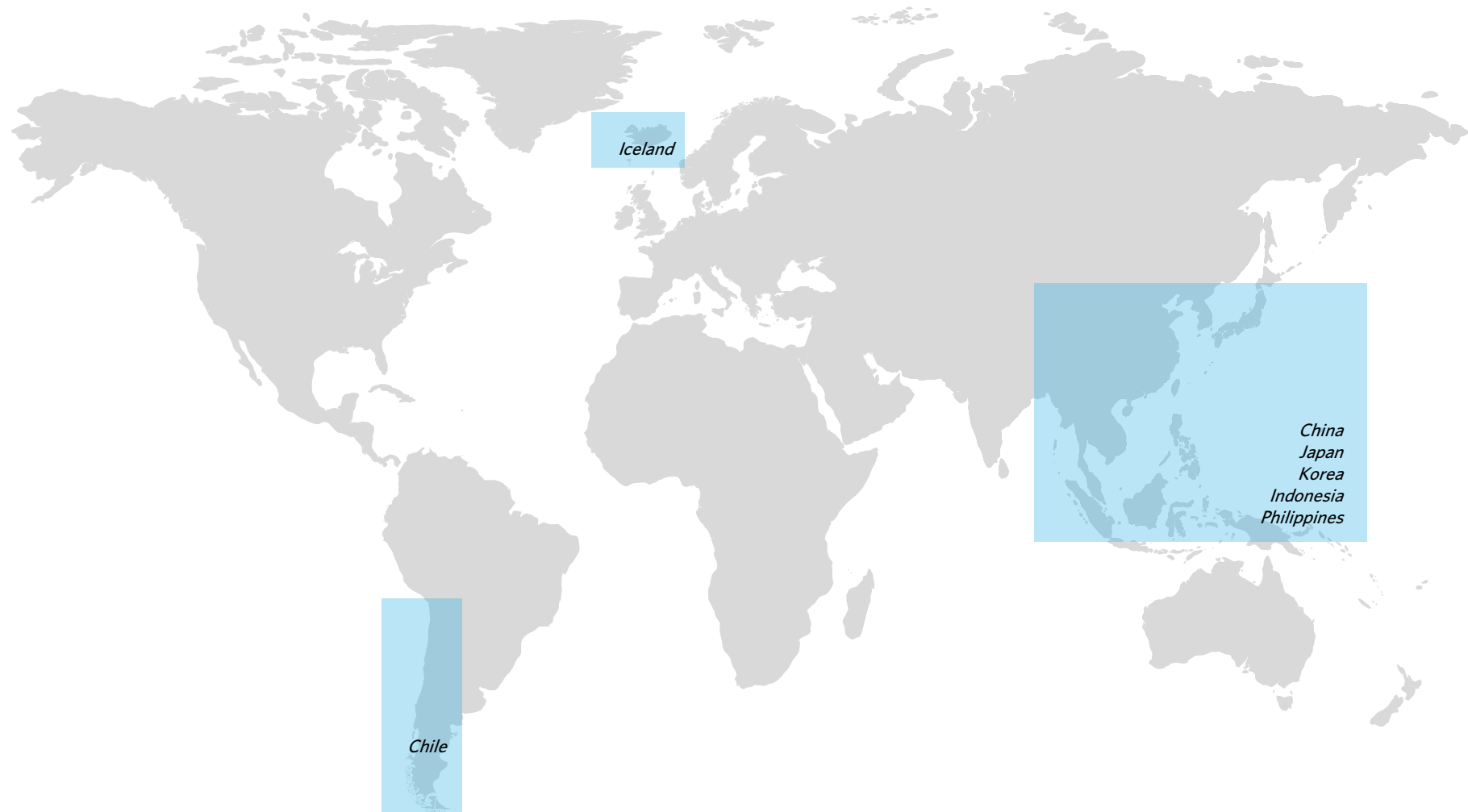


- Shoalhaven Marine and Freshwater Centre
- Extensive research into seaweed cultivation, processing and uses
- Base of Seaweeds Australia; industry association set up by RIRDC in 2009



- South Australian Research and Development Institute
- Extensive research into seaweed cultivation, processing and uses

Who are the competition for export markets?

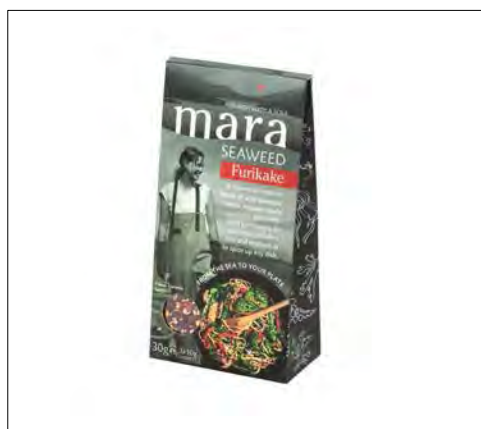


How can you add value to it?

Processed products



Further value added processing



What does Dr. Food think?


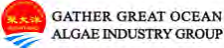





“There is huge international interest in seaweed as a food and a fuel and it is attracting substantial funds from the same Silicon Valley investors that seem bound and determined to disrupt the global livestock and meat industry through innovative plant-based protein production.

An Asian food ingredient staple for centuries, not surprisingly current seaweed production is in and around Asian country seashores. On the one hand this identifies the competitive threat for Australia, *viz.* Asian market understanding, production know-how and low cost structures, but on the other hand, there is pervasive consumer concerns about pollution of and damage to Asian coastal waters and, therefore, perhaps an opportunity for Australia to claim a “clean & green” supplier stake.

Winners in this industry will operate at scale and this may prove challenging for Australian firms to gain the coastal approvals (e.g. on environmental/social impacts) necessary for timely expansion of commercial plans.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 <p>BASF We create chemistry</p>	1865	Ludwigshafen, Germany Public FWB:BAS	€57.6b 114,000	Chemicals, plastics, performance products, functional materials and solutions, crop protection, oil, gas	Europe North America Global	www.basf.com Largest chemical producer in the world; beta carotene production algae salt lakes in WA and SA
	2000	Qingdao, China Private	N/A	Alginate, carrageenan, joan glue, iodine, pharmaceutical extracts, protein feed	China Australia Global	en.judayang.com Largest seaweed multi processing company in China; breeding, sourcing, processing, research JVs; exports to over 50 countries; investment in processing plant in South Australia via AKP, A\$21m
	1883	Philadelphia, USA Public NYSE:FMC	US\$4b 7,000	Insecticides, pesticides, herbicides, fertilisers, lithium	North America Global	www.fmc.com One of world's largest producers of alginates; acquired DuPont's Crop Protection business in 2017
	2006	Herzliya Pituach, Israel Private	N/A 15	Fresh sea lettuce, gracilaria, puree, powder	Europe	www.seakura.net Considered a world leader in developing, harvesting and manufacturing seaweed; landbased aquaculture, sold fresh
	1935	Pittsburgh, USA Public NYSE:GNC	US\$2.5b 16,800	Weight loss, bodybuilding, nutritional supplements, vitamins, natural remedies, health and beauty	North America Global	www.gnc.com Major buyer of BASF Australia's beta keratin produced in WA and SA

Source: company website; company annual report; various published articles and reports; Coriolis analysis

REDCLAW CRAYFISH

INDICATED
MARKET
DEMAND

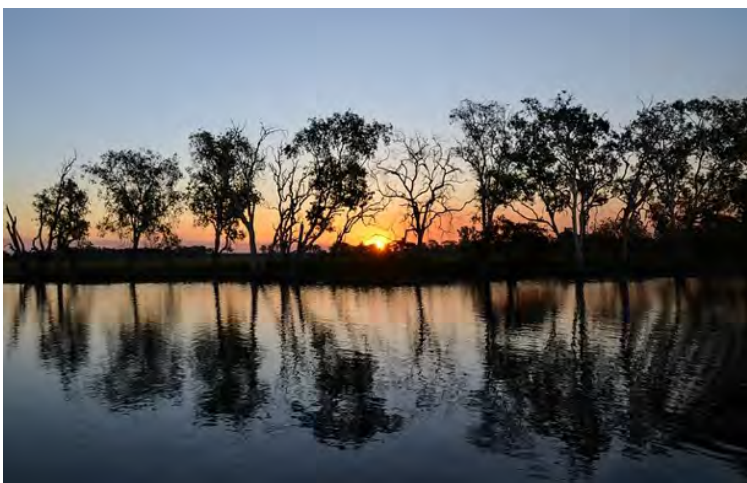


PASS INTO
STAGE II

Y

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Strong, growing demand for Australian crustaceans, particularly spiny red rock lobster. Redclaw crayfish industry is growing and attracting investment. Great attributes for aquaculture: fecund, fast growing, no major disease issues.</p>		\$1.7m (2017)	\$3-5m by 2025
Capital intensive to produce	●				
Mechanically harvested	◐				
Value-added opportunities	◐				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	◐	<ul style="list-style-type: none"> - Premium seafood product - High value placed on premium shellfish in China (e.g. as banquet centre pieces) - Move towards sustainably sourced seafood 	<ul style="list-style-type: none"> - Production of redclaw in New Caledonia, Mexico, South America, Belize, China, Indonesia, Israel, Morocco, Panama, Spain, USA (less than 10% of world production) - Lack of production information for some species and few stand alone models to follow - Water restrictions and droughts 		
Wide spread of prices	◐	VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Origin important or called out at POS	●	<ul style="list-style-type: none"> - Live exports - Prepared products - Live aquarium trade - Sustainable seafood marketing - Chitin extract - Tourism opportunities 	<ul style="list-style-type: none"> - Australia can maintain its relatively disease free status - Consistent supply can be achieved in order to capture high value export markets (8 new large operations in planning stages in 2018) - Australia will continue to ban live crayfish imports - Recent breakthroughs in production technology will continue 		
COMPETITORS		KEY COMPETITORS			
Biosecurity or other domestic barriers	●	DOMESTIC	EXPORTERS		
Can we get to the world price?	◐	<ul style="list-style-type: none"> - Other Australian freshwater crayfish species (marron, yabbies) - Australian saltwater lobsters (rock, tropical, scampi) - Other shellfish - Imported cooked, frozen and prepared crayfish/lobster products 	<ul style="list-style-type: none"> - China (91% of world production of freshwater crayfish) - United States - Bangladesh - Thailand 		
Attractive competitive set	○				
AUSTRALIA					
High performance genetics available	◐				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	◐				

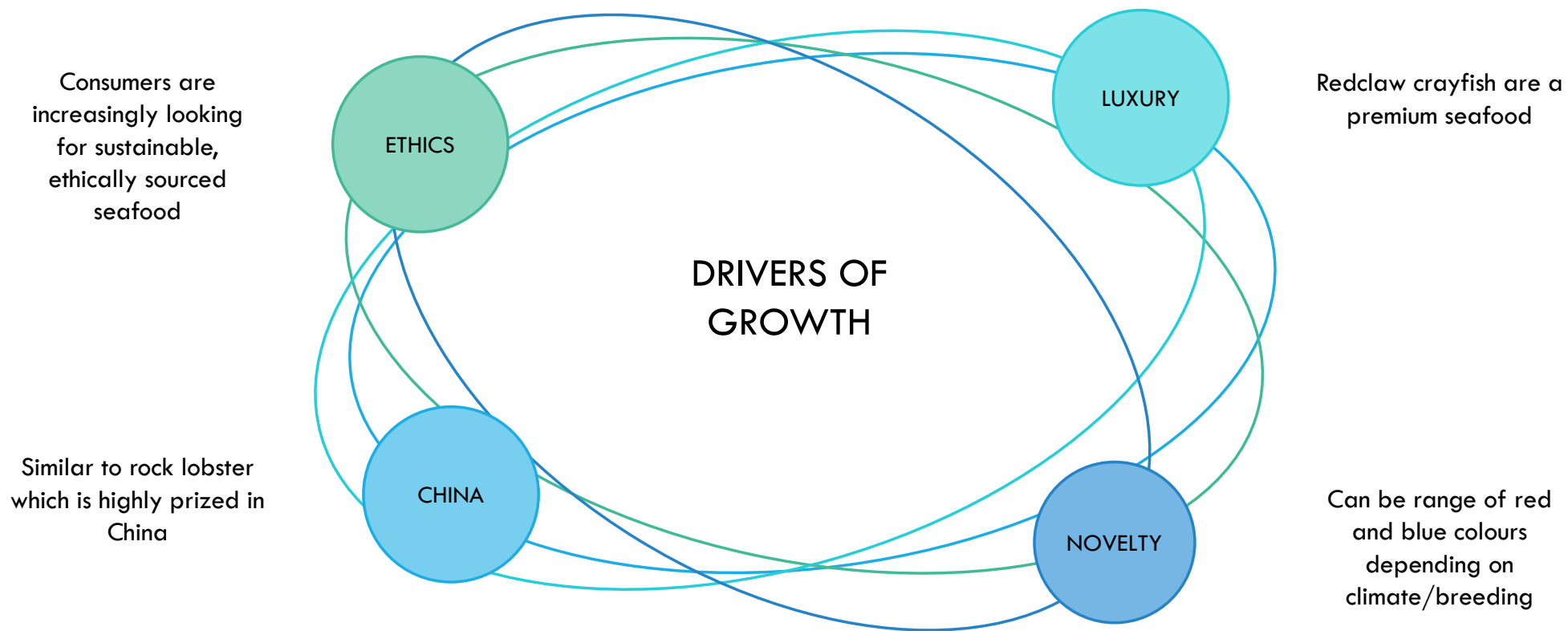
What is redclaw crayfish?



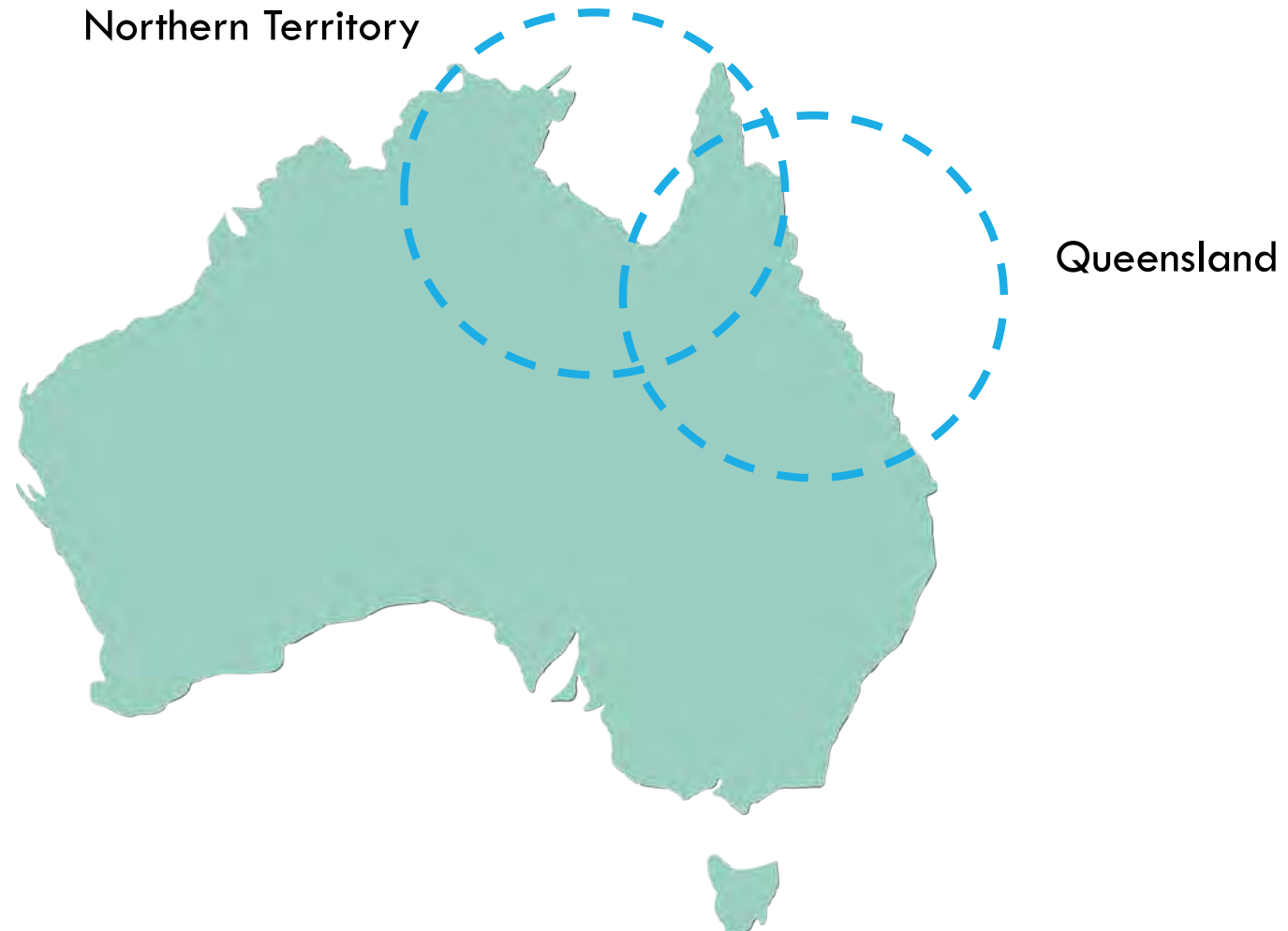
PRODUCT PROFILE

Common names	Redclaw, tropical blue crayfish, freshwater blueclaw crayfish
Scientific name	<i>Cherax quadricarinatus</i>
Type of animal	Freshwater detritivore crayfish
Cultivation cycle	6-12 months to sexual maturity/harvest; can grow to 600g
Suited climate	Tropical and subtropical freshwater ponds, creeks, rivers
Part eaten	Flesh in tail, legs and claws
Origin	Native to tropical and subtropical regions of Australia and Papua New Guinea
Established in AU	Native; populations outside of natural range in every state excluding Tasmania

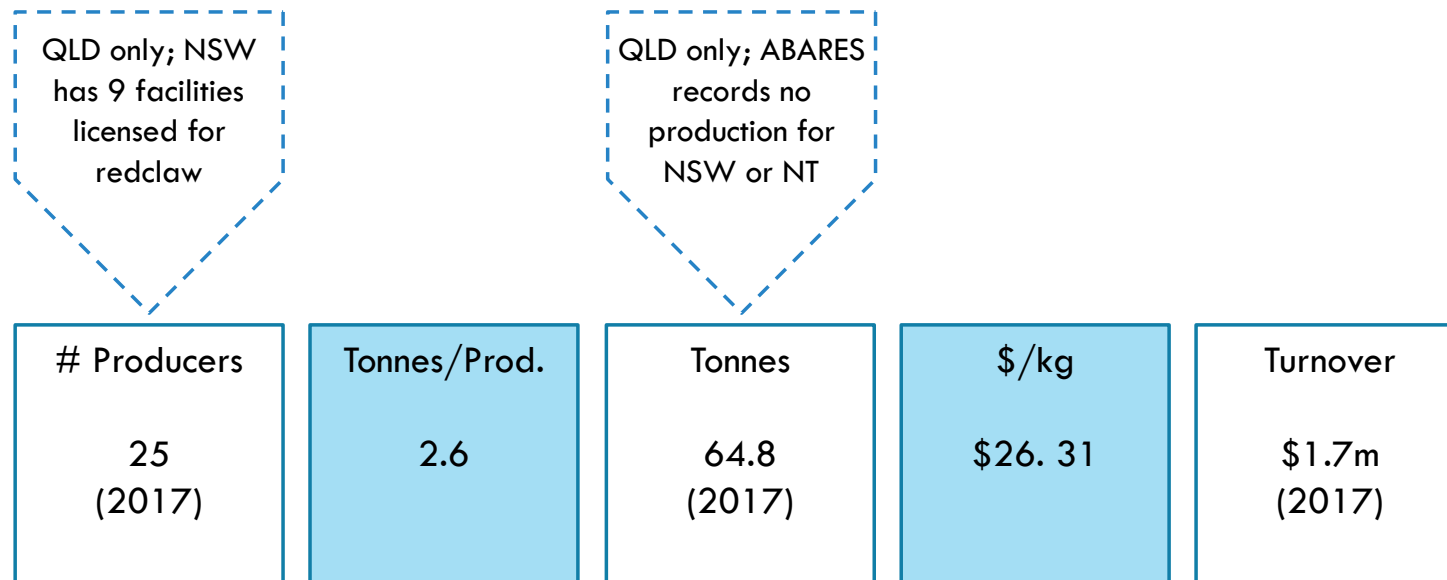
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Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
<p><i>Freshwater Australian</i> Crayfish Traders</p>	<ul style="list-style-type: none"> - Based in Tarome, QLD - 80ha property with 70 freshwater dams - Produce around a million redclaw crayfish each year, as well as other freshwater fish and shrimps - Moved from export to selling to local bait, aquarium and restaurant markets direct
	<ul style="list-style-type: none"> - Redclaw aquaculture operation based in Theebine, QLD - Live and prepared crayfish products, broodstock - Live export accredited - Largest operation in south east QLD; 5ha of 75 ponds
	<ul style="list-style-type: none"> - Hatchery business based in Townsville, QLD - Promoting 'batch-in, batch-out' stocking method - Involved in numerous research projects
	<ul style="list-style-type: none"> - Based in Atherton Tablelands, QLD - 25 acres with ~30 ponds - Partnership with ACH to supply eggs for hatchery - Involved in numerous research projects, industry associations

Who are the other key stakeholders?



- National Aquaculture Council
- Peak body representing the interests of the Australian aquaculture industry



- Queensland Crayfish Farmers Association
- Provides support and education to redclaw and potential redclaw farmers



- NSW Aquaculture Association
- Peak industry body for land based aquaculture in NSW

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing








What does Dr. Food think?



“Emphasise Redclaw Australian indigenous claim and Trademark **“Australian Redclaw”** crayfish name.

Asian market for live product highest value destination – but does the term crayfish translate effectively into Mandarin. Has particular potential in China where the colour RED connotes “Happiness” and “Good Luck”. Like NZ Cervena deer meat, would an Asian-friendly export name for the Redclaw (e.g. “Good Luck Lobster” in bright red colouring) be a good way to differentiate the offer?”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 MARUHA NICHIRO	1943	Tokyo, Japan Public TYO: 1333	¥863.8b (15) US\$7.6b 12,335	Wild catch, aquaculture, processed fish, processed foods, frozen foods, meat (beef, pork, chicken), fishmeal, fine chemicals, storage & logistics	Japan Asia Nth America Europe Australia NZ	www.maruha-nichiro.co.jp www.westwardseafoods.com www.australfisheries.com.au World's largest seafood company by turnover; over 200 companies in group in 26 countries
 Mazzetta Company, LLC*	1987	Illinois, US Private Mazzetta family	US\$425m TBD	Lobster, finfish, mussels, prawns, crab	US Canada New Zealand Norway	www.mazzetta.com www.hofseth-as.no Sources 306 items from 33 countries; one of top seafood suppliers in North America; shareholder in Hofseth International (NO), Sanford (NZ)
 NISSUI	1911/ 1943	Tokyo, Japan Public TYO: 1332	¥638.4b (14) US\$5.6b 8,240	Wild catch, processed fish, processed foods, fine chemicals	Japan Asia Americas Europe NZ Australia	www.nissui.co.jp www.australianlongline.com.au www.anzco.co.jp www.sealord.com 75 subsidiaries & 33 assoc. companies
 湖北莱克集团 HUBEI LAKER GROUP	2002	Hubei, China	N/A 5,000	Farmed crayfish, freshwater fish, aquatic vegetables, other products	China Europe USA Japan Korea	www.hblaker.com Leading crayfish producer in Chinese industry; 200,000t annually
 HUASHAN	2005	Dalian, China Best Foodstuff (Dalian) Co.	US\$12.6m N/A	Crayfish, cod, haddock, salmon, pollack, ocean perch, scallops	China Europe Americas	www.huashanfoods.com 10,000t production



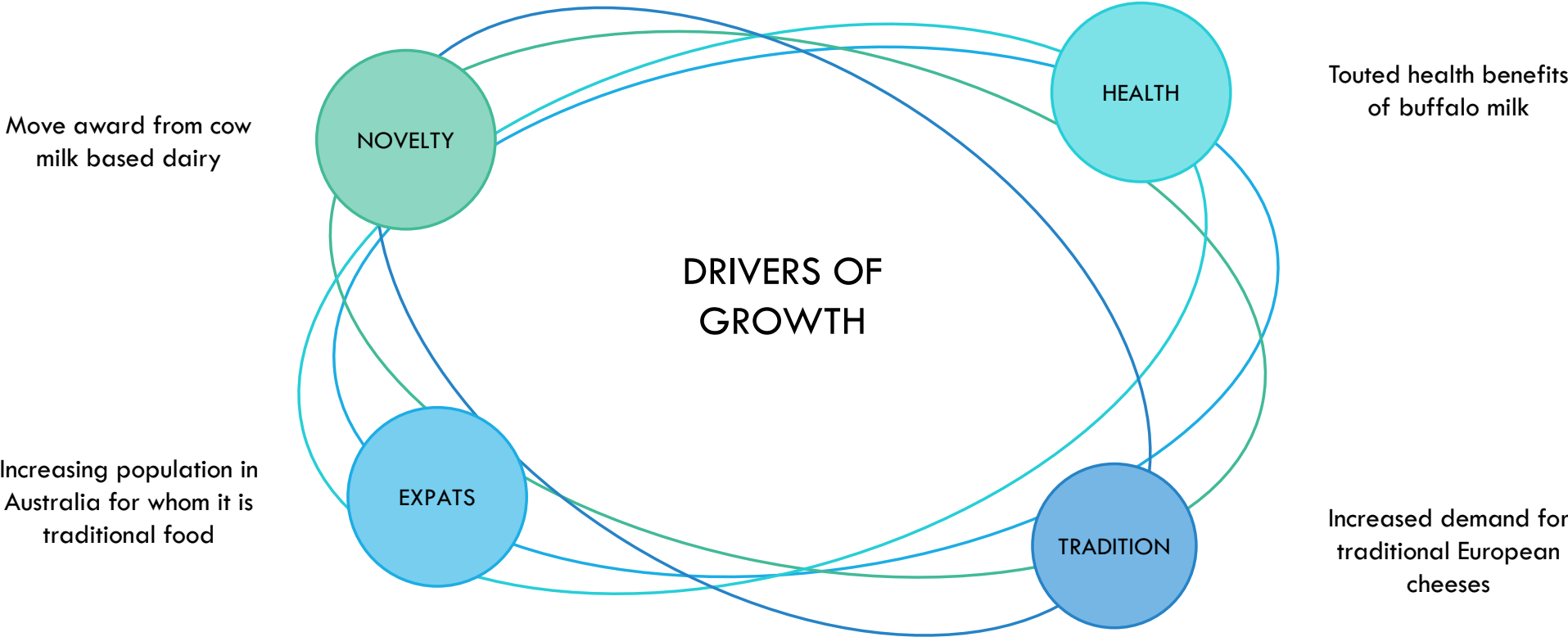
QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Buffalo have been milked for thousands of years.</p> <p>There is growing demand for specialist cheeses – particularly "buffalo mozzarella" - and for non-bovine milk in general. Australia has feral herd of buffalo, a meat buffalo industry and an emerging dairy buffalo sector.</p>		\$2.3m (2012)	\$10-15m by 2025
Capital intensive to produce	●				
Mechanically harvested	◐				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Move away from bovine dairy - Health benefits of buffalo milk - Increased demand for traditional European style cheeses - Demand from expats for traditional products 		<ul style="list-style-type: none"> - Feral herd is swamp buffalo while high quality dairy comes from Mediterranean buffalo (stock imported by one producer and semen by others to improve genetics) - Meat market is limited by lack of export abattoirs - Licences and permits required to farm, banned in some locations (Kimberley, WA) 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	●	<ul style="list-style-type: none"> - Cheese (e.g. mozzarella, feta, labna) - Yoghurt - Ice cream - Cosmetics (e.g. soaps, body lotion) - Live export (Chile, South Africa, NZ, Japan) - Buffalo meat - Leather 		<ul style="list-style-type: none"> - Genetic material will continue to be able to be imported to improve breeding of dairy herd - Feral herd remains TB free - Export abattoir becomes available to utilise male calves - Increased demand from dairy processors for non bovine milk continues 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	◐				
Can we get to the world price?	◐				
Attractive competitive set	◐				
AUSTRALIA					
High performance genetics available	●				
Required skills for success	◐				
Leverage country reputation	●				
OVERALL	●				
		DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Other milks (cow, goat, sheep, camel) - Plant based milks - Imported cheeses - Cheaper cow milk mozzarella 	<ul style="list-style-type: none"> - European traditional mozzarella producers - India - Pakistan - China 		

What is buffalo milk?



PRODUCT PROFILE	
Common names	Water buffalo, river buffalo
Scientific name	<i>Bubalus bubalis</i>
Type of animal	Large bovid; three broad categories – swamp (northern Australian feral population), riverine, Mediterranean (dairy buffalo)
Cultivation cycle	Sexual maturity at 2 years
Suited climate	Tropical regions of the world, with available deep water for wallowing
Uses	Fluid milk, fresh dairy products especially cheese, potential for powders and infant formula
Origin	South Asia, South East Asia, China
Established in AU	1820s; dairy buffalo imported in 1994

What is driving its success?

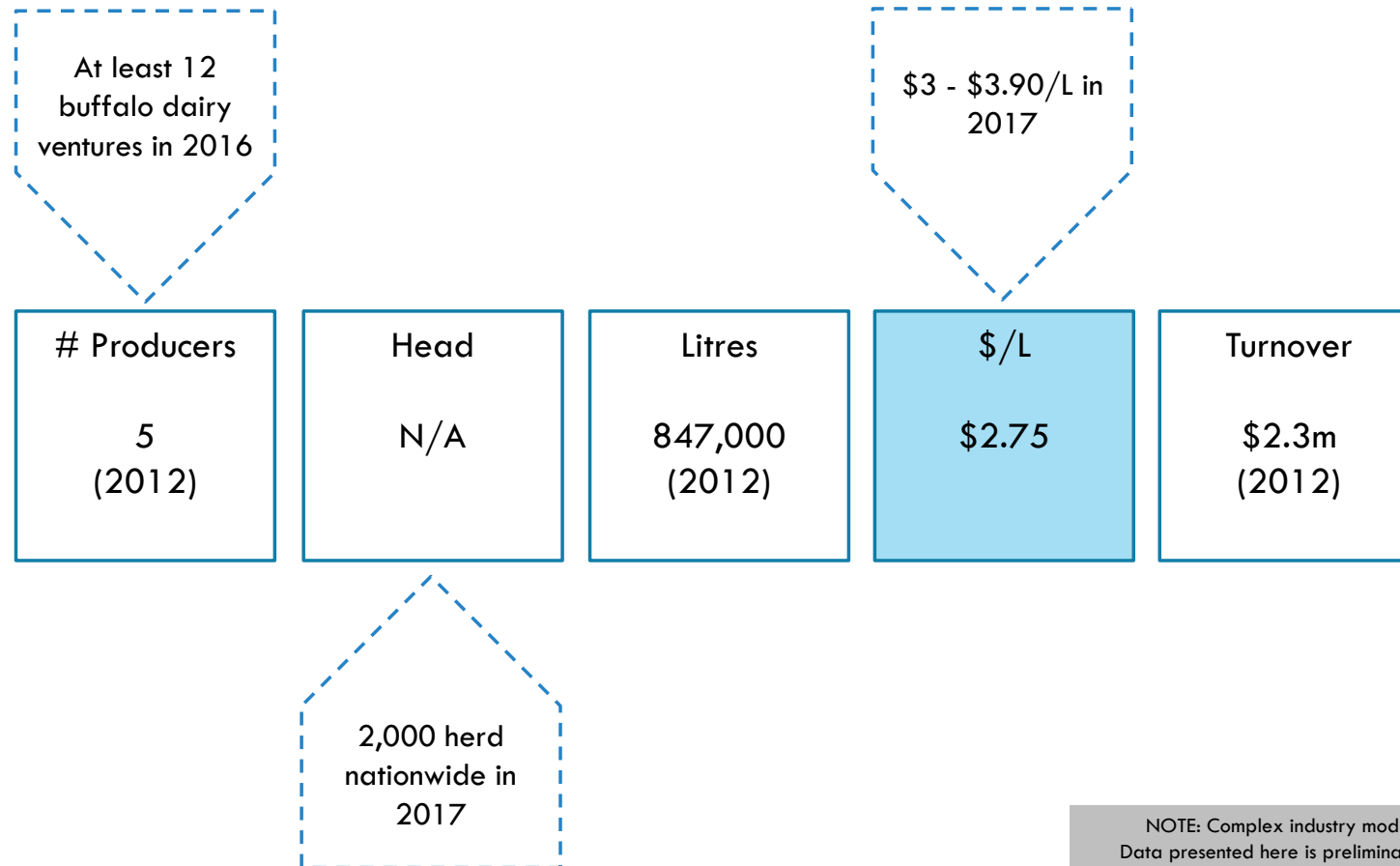


Where is it produced in Australia?






Dairy operations in QLD,
NSW, VIC, TAS, SA;
small herds exist across
Australia

What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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 Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Based in Thomastown, VIC - Also owns retail outlet 'La Latteria Mozzarella Laboratory' - Acquired Donnybrook's cheese factory in 2010 - Mozzarella, fresh, smoked and specialty cheeses, buffalo milk - Supplied buffalo milk by Australian Dairy Buffalo Co
	<ul style="list-style-type: none"> - Based in Yambuk, VIC - 400 head of buffalo, 250 in active milking herd - 800 litres per day milk production - 100% pure Riverine buffalo herd - Yoghurt, curd, mozzarella, hard and fresh style cheeses
	<ul style="list-style-type: none"> - Family owned cheese manufacturer and retail deli and café - Based in Marrickville, NSW - Buffalo and cow milk cheeses - Boccocini, mozzarella, fior di latte, burrata, fresco, mascarpone - Retail and food service - Supplied buffalo milk by Australian Dairy Buffalo Co

Who are the other key stakeholders?



- Northern Territory DPIR's Beatrice Hill Farm
- Breeding program to build up purebred breeder herd to supply Australian industry
- One of AU's largest herds of Riverine buffalo

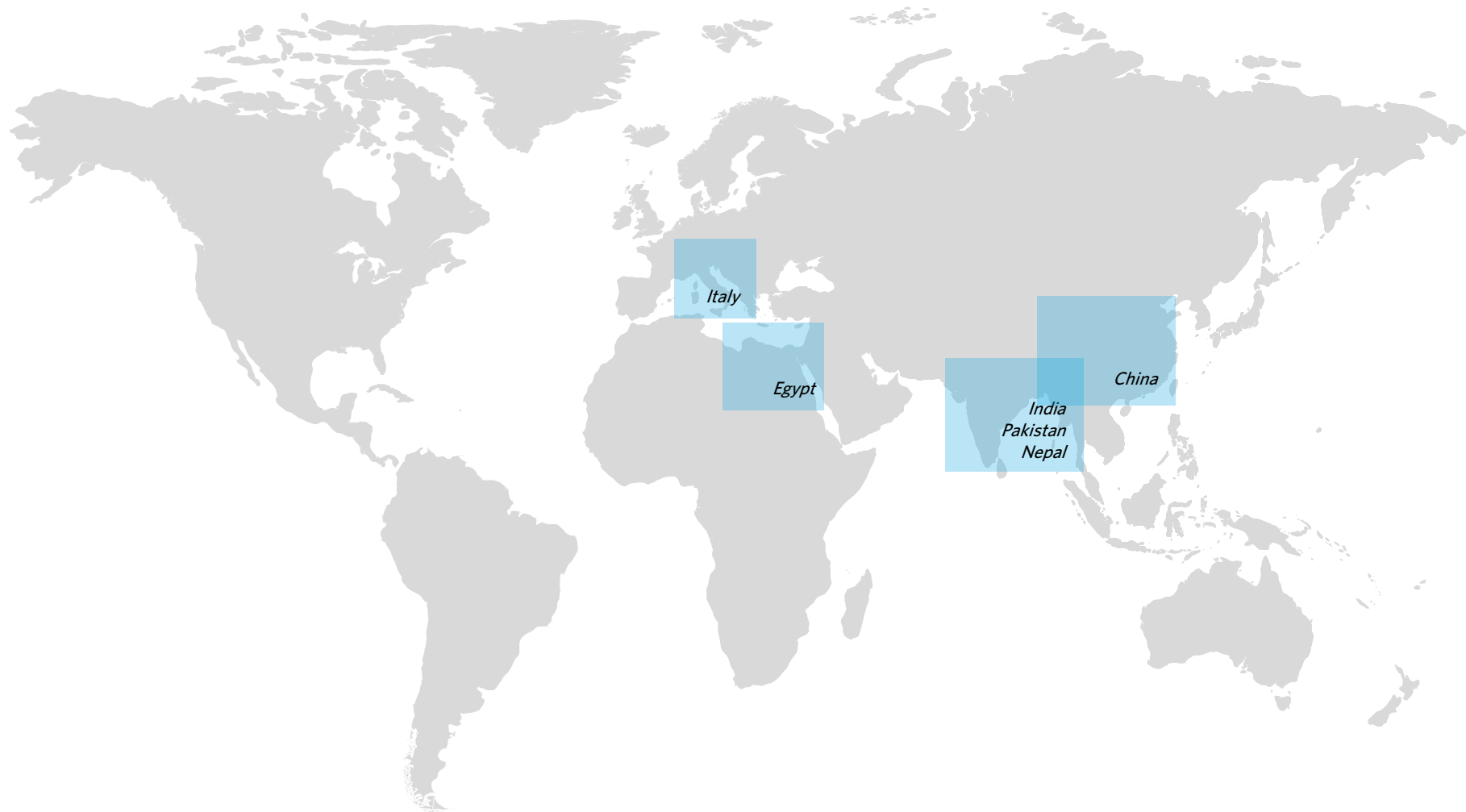


- Australian Buffalo Council Inc
- Formed in 2000 to promote and consolidate the industry



- Represents specialist and artisan cheese industry
- Education, awareness, extension role
- Not-for-profit member-based industry association

Who are the competition for export markets?



How can you add value to it?

Processed products








What does Dr. Food think?



“Does tropical buffalo milk have the same physical and nutritional properties as the Italian Mediterranean equivalent? Given the proportion of Australians who have Italian connections and the general interest in Mediterranean foods and food styles in the country, the domestic market for buffalo milk products probably has the best potential.

A particular product focus should be on mozzarella stressing its provenance, authenticity and freshness (the highest value mozzarella in delis and upscale Italian restaurants is labelled with location of buffalo ‘estate’ and time of cheese production as, rather than aged being an attribute as it is for many cheeses, freshness is a key discriminating variable for authentic mozzarella.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1992	Hyderabad, India Public BSE:519552	Rs 2643 N/A	Buffalo and cow milk, cream, curd, ice cream, cheese, butter, milk powder, fresh and long life	India	www.heritagefoods.in One of the leading dairy companies in India; processing capacity of 1.9m litres per day
	1987	Alexandria, Egypt Private Wahab, Nassar, Montasser	N/A 700	Buffalo and cow milk, cheese, yoghurt, ice cream, desserts, cream, butter	Egypt Middle East Africa	www.alasdekaa.net One of the leading dairy product manufacturers in Alexandria
	2007	Sindos Thessaloniki, Greece Private Mpekas family	N/A	Buffalo milk, flavoured milk, cheese, ice cream, rice pudding, yoghurt, butter	Greece Europe	www.oikogeneiampeka.gr 1,500 sq m facilities
	2007	Clevedon, New Zealand Private Dorresteyn family	N/A	Buffalo milk, cheese, yoghurt	NZ	www.clevedonbuffalo.co.nz First buffalo farm in NZ; 200 head of Riverine buffalo
	1950	Capua, Italy	N/A	Buffalo mozzarella, burrata, ricotta, butter, buffalo meat	Italy Europe USA Canada	www.fattoriegarofalo.it Produces buffalo mozzarella from Campania a denominazione di origine protetta (DOP); 5,000t of product per year, 3,000 head of buffalo



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		<p>Camel milk has been consumed by humans for over 6,000 years.</p> <p>Australia has wild population of camels that are disease free, from which small, managed herds have been drawn.</p> <p>Australia currently exports to New Zealand and Singapore, albeit at very small amounts</p>		\$0.8m (2016)	\$5-10m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Health properties of camel milk - Move away from bovine dairy - Diaspora of traditional camel milk consumers 		<ul style="list-style-type: none"> - Camels dislike cool and wet environments; areas where they thrive are a distance from processing and consumer base - Nutritional quality of milk is partially defined by grazing conditions; hay should make up 75% of diet - Currently low world trade in camel milk; product is produced and consumed locally - Currently incompatible with UHT treatment - Major expansion projects planned with may threaten existing pricing schedule 	
Wide spread of markets/buyers	◐	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Camel dairy products (e.g. cheese, yoghurt, beverages, milk powder, infant formula) - Camel meat (human consumption and petfood), leather, oil, wool - Cosmetic products (e.g. soap, body lotion, lip balm, etc..) - Textiles - Tourism activities - Racing stock and activities - Live trade/stud animals (\$25,000/head cost to import to US from AU) 		<ul style="list-style-type: none"> - Improvements in areas of animal husbandry, camel nutrition, milk yield and product safety can occur - Australia can maintain its disease free herd status - Demand will continue to outstrip supply - Fresh camel milk imports into Australia will continue to be banned - Poor local image of camels as feral and dirty can be overcome to promote as premium health product 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	◐				
Can we get to the world price?	○				
Attractive competitive set	○				
AUSTRALIA					
High performance genetics available	○				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	●				
		DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Other milks (cow, goat, sheep) - Plant based milks - Imported camel milk powder 	<ul style="list-style-type: none"> - North Africa - East Africa - Middle East - Parts of Asia 		

What is camel milk?

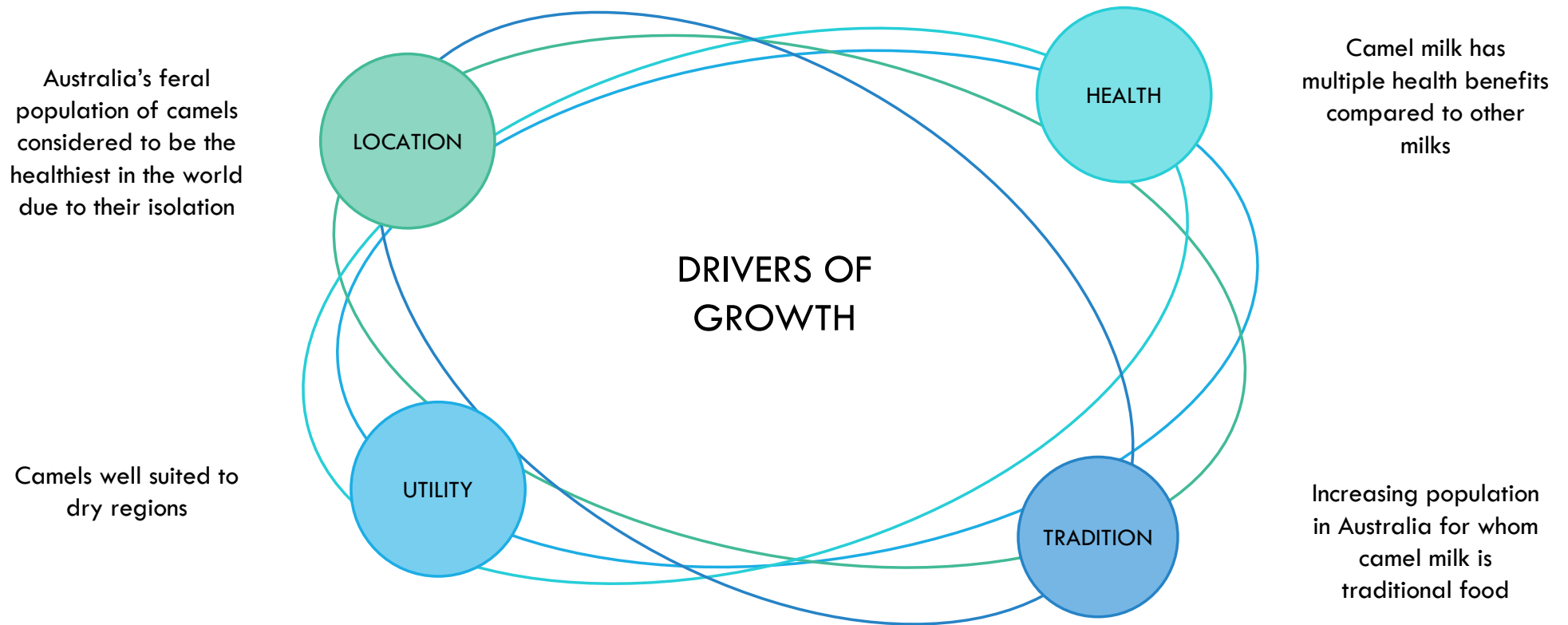


PRODUCT PROFILE

Common names	Camel
Scientific name	<i>Camelus dromedarius</i>
Type of animal	Even-toed ungulate
Cultivation cycle	Gestation of 12 months, milked for 18 months, rested for 18 months; calves suckling for 18 months
Suited climate	Semi-arid to arid regions; North Africa, Middle East, Australia
Uses	Milk, beverages, yoghurt, ice cream, milk powder, cosmetics
Origin	North America during the Eocene; first domesticated in Somalia and southern Arabia
Established in AU	1840; Australia has the largest population of feral camels in the world, around 700,000



What is driving its success?



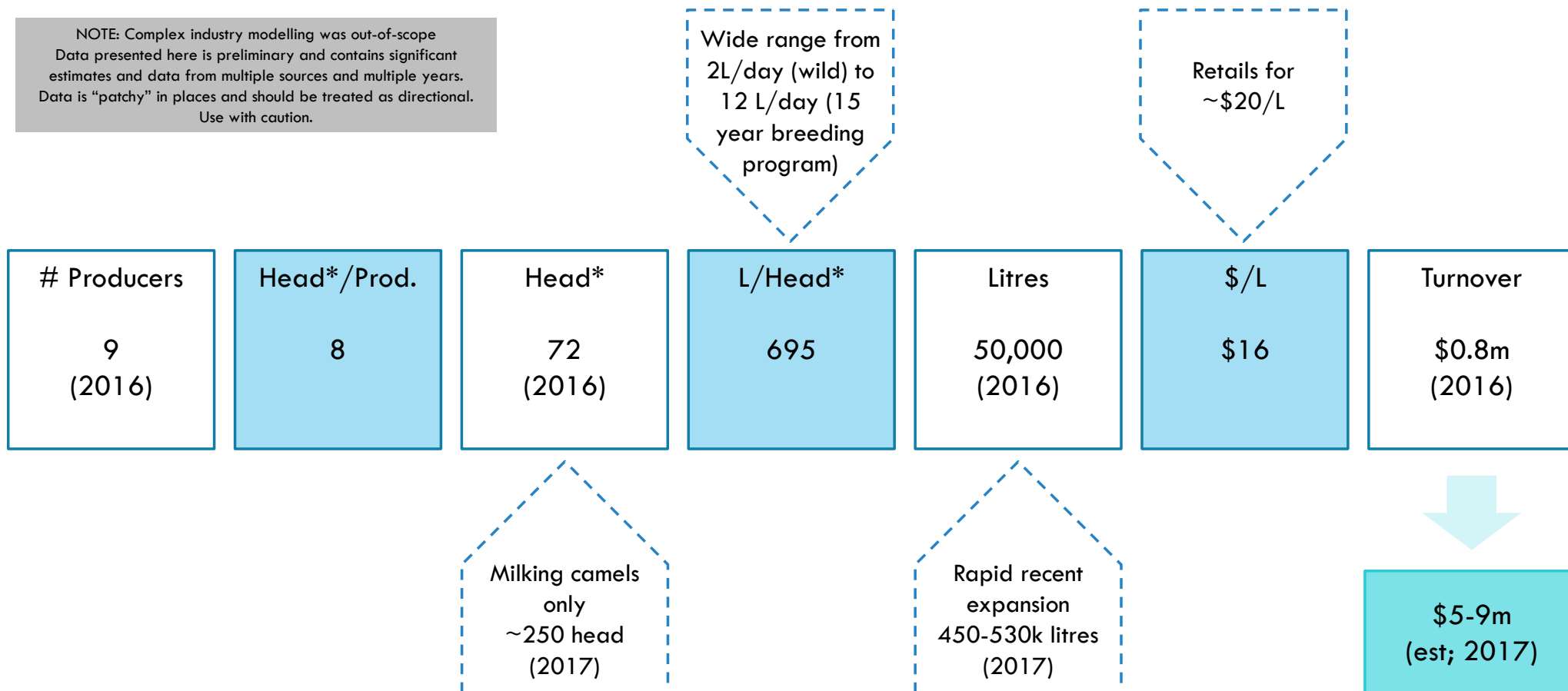
Where is it produced in Australia?

QLD, NSW, VIC, SA
& WA have
commercial camel
milk operations





What are the industry metrics?

NOTE: Complex industry modelling was out-of-scope
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 Use with caution.



* Milking camels only. Source: RIRDC Publication No 17/009; various published articles; Coriolis analysis and estimates

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Established in 2014 in Victoria by Megan and Chris Williams - First licensed camel milk dairy farm in Victoria - 480 acre farm; new dairy built at end of 2016 - 200 herd, 50 milkers - Fresh camel milk, milk powder, skin care - Exports to Thailand, Singapore, China
	<ul style="list-style-type: none"> - Established by Stephen Geppert and Gilad Berman with Henry Steingiesser, Kim Chance and Marcel Steingiesser - First commercial operation in WA; initially Australian Camel Dairies in 2012 - 793 ha in Dandaragan, WA - 150 herd, 50 milkers - Fresh camel milk
	<ul style="list-style-type: none"> - Based in on 850 acres in Harrisville, QLD - Owned and operated by The Australian Wild Camel Corporation - Largest commercial camel dairy and milk processing, breeding and farming operation outside of the Middle East; 3rd largest in the world - Expanding from 450 to 2,500 camels over next two years, currently 65 milkers - Fresh camel milk, feta, fromage blanc, gelato, skin care, tours, café and store

Who are the other key stakeholders?

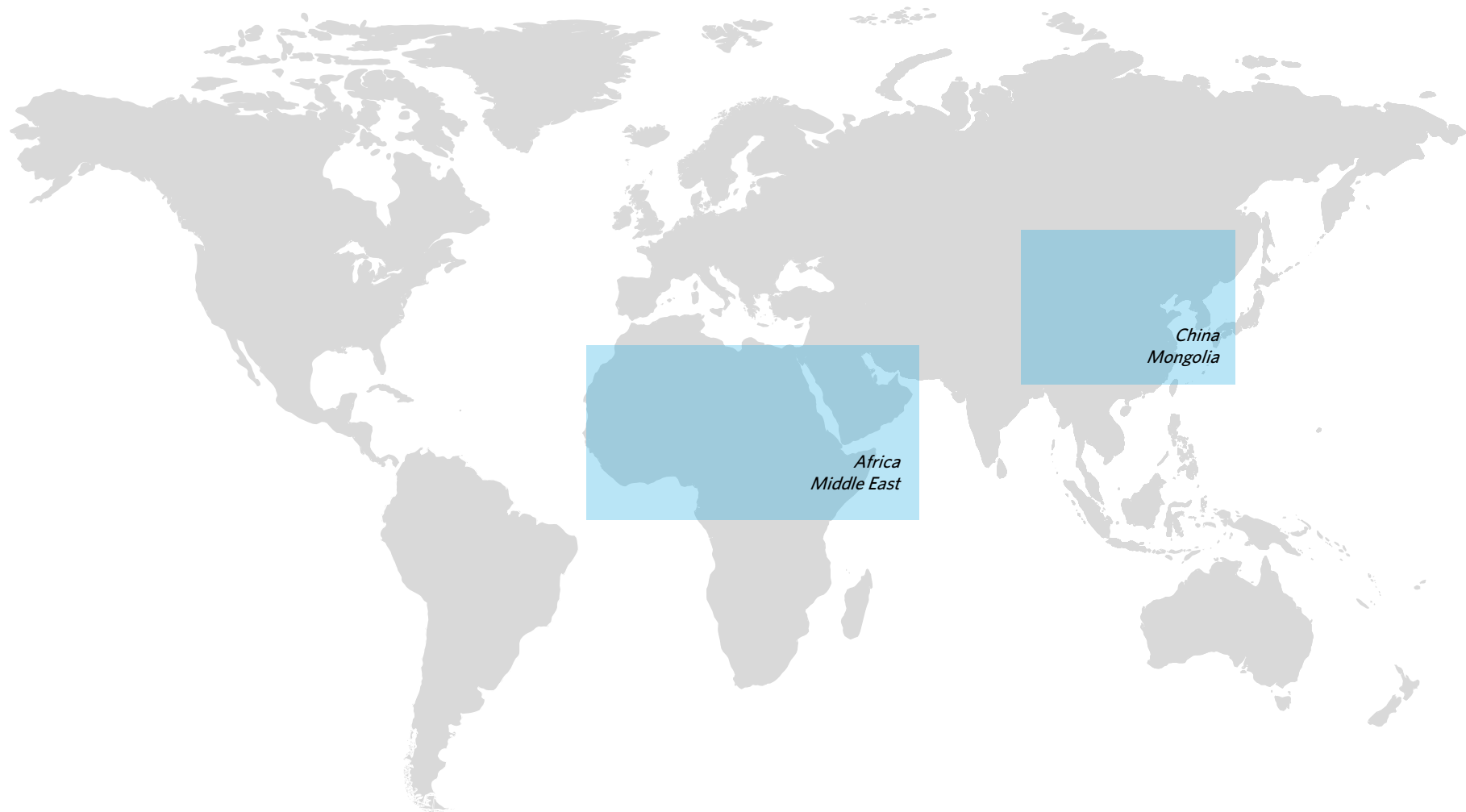


- Australian Camel Industry Association Inc
- Supporting the Australian camel industry while promoting responsible camel management in our environment



- Rural Industries Research & Development Corporation (RIRDC)
- Developed 10 year R&D plan for camel milk industry in 2016
- Hosted Australian Camel Milk Industry Forum in May, 2017

Who are the competition for export markets?



How can you add value to it?

Processed products








What does Dr. Food think?



“Arguably, the “Supermilk” of milks, camel milk from Australia will have its highest value in the domestic market in liquid form but its wide-ranging health claims (e.g. controlling diabetes) may be best exploited in a market such as China – where consumers are more aware, concerned and willing to pay a premium for foodstuffs with notable health benefits; and where the “local” Mongolian product is perceived to be shaky from a food integrity perspective.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	2003	Dubai, UAE	N/A	Camel milk, flavoured milk, laban, ghee, cheese, butter, ice cream, labneh, milk powder, whey powder	UAE Middle East Europe Malaysia	www.camelicious.ae 4,200 camels; born out of research at the Central Veterinary Research Laboratory in Dubai; first fully integrated camel milk production facility in world
	2014	Los Angeles, USA Private Wahab	N/A	Fresh and frozen camel milk, kefir, milk powder, soap, skincare	USA UK Global	www.desertfarms.com Sourced from farms in Missouri, Indiana and Ohio run by Amish communities; UK sourced from small farms in UK and Europe
	2015	Rajasthan, India Private	N/A	Camel milk powder, soap, camel milk chocolate, fresh milk	India Europe	www.aadvikfoods.com Can order online
	2014	Melbourne, Australia Private UAE investors Musab Majid	N/A	Fresh camel milk, milk powder, soap	UAE Australia USA Europe	www.camilkdairy.com.au Farms in Victoria, AU and Abu Dhabi, UAE; 3 rd largest in UAE, 1,100 camels; plans for farms in USA, Morocco and Europe; \$8m pilot farm in Victoria; total A\$50m investment over 3 stages
	1981	Al Ain, UAE Private Government	US\$136m 750	Cow milk, flavoured milk, yoghurt, laban, UHT milk, functional beverages, camel milk, camel milk powder, camel milk ice cream, juice	UAE Middle East	www.alaindairy.com One of the 3 largest dairy producers in UAE; 2,500 camels; new farm in 2015



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Chillies are native to Mexico, a climatic peer to large parts of Australia.</p> <p>Ongoing trend and demand for spicier food, from top end restaurants right through to the major fast food chains.</p> <p>Global chilli trade is worth nearly US\$30b.</p>		\$8.5m (2016)	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Staple in many of the world's cuisines - Pharmaceutical and industrial uses - Growing trend towards spicier food (reflected in fast food menus) - Perceived health benefits (natural "high" from consumption) - Demand for new and interesting varieties of produce 	<ul style="list-style-type: none"> - China accounts for 46% of global chilli production - New chilli diseases have been detected in Australia in recent years - Market prices for chillies and capsicums fluctuate considerably 		
Wide spread of prices	<input checked="" type="radio"/>				
Origin important or called out at POS	<input checked="" type="radio"/>				
COMPETITORS					
Biosecurity or other domestic barriers	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Processed chilli products (dried, paste, frozen, powder, canned) - Chilli hot sauce - Chilli flavourings and rubs - Chilli oils and essences - Pharmaceutical grade extracts (capsaicin) 	<ul style="list-style-type: none"> - Recent trend for spicy food continues, ensuring ongoing demand from fast food chains - Australia can leverage reputation to compete with cheaper producers - Australia does not allow imports of fresh chillies from the major cheap producers 		
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>	DOMESTIC	EXPORTERS		
Required skills for success	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Imported fresh chillies (from selected countries only) - Imported processed chilli products 	<ul style="list-style-type: none"> - China - Mexico - Turkey - Indonesia - India - Spain 		
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input checked="" type="radio"/>				

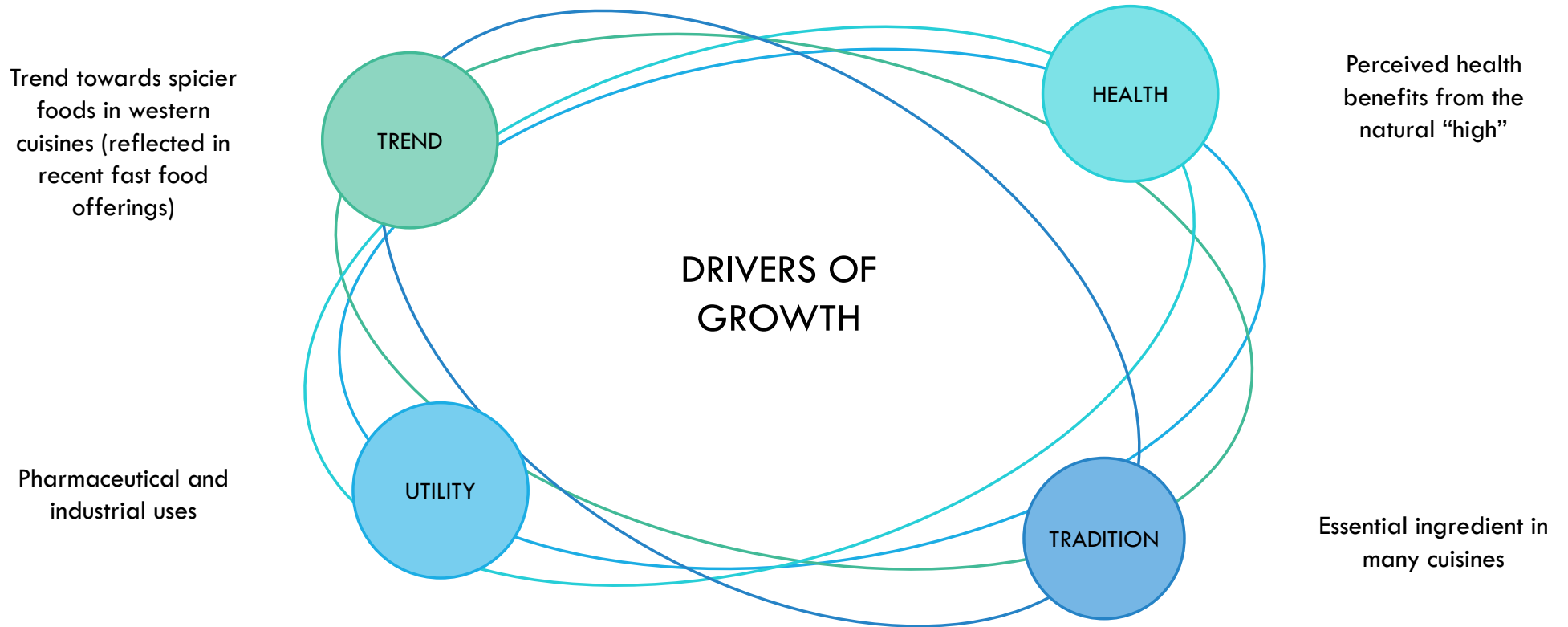
What are chillies?



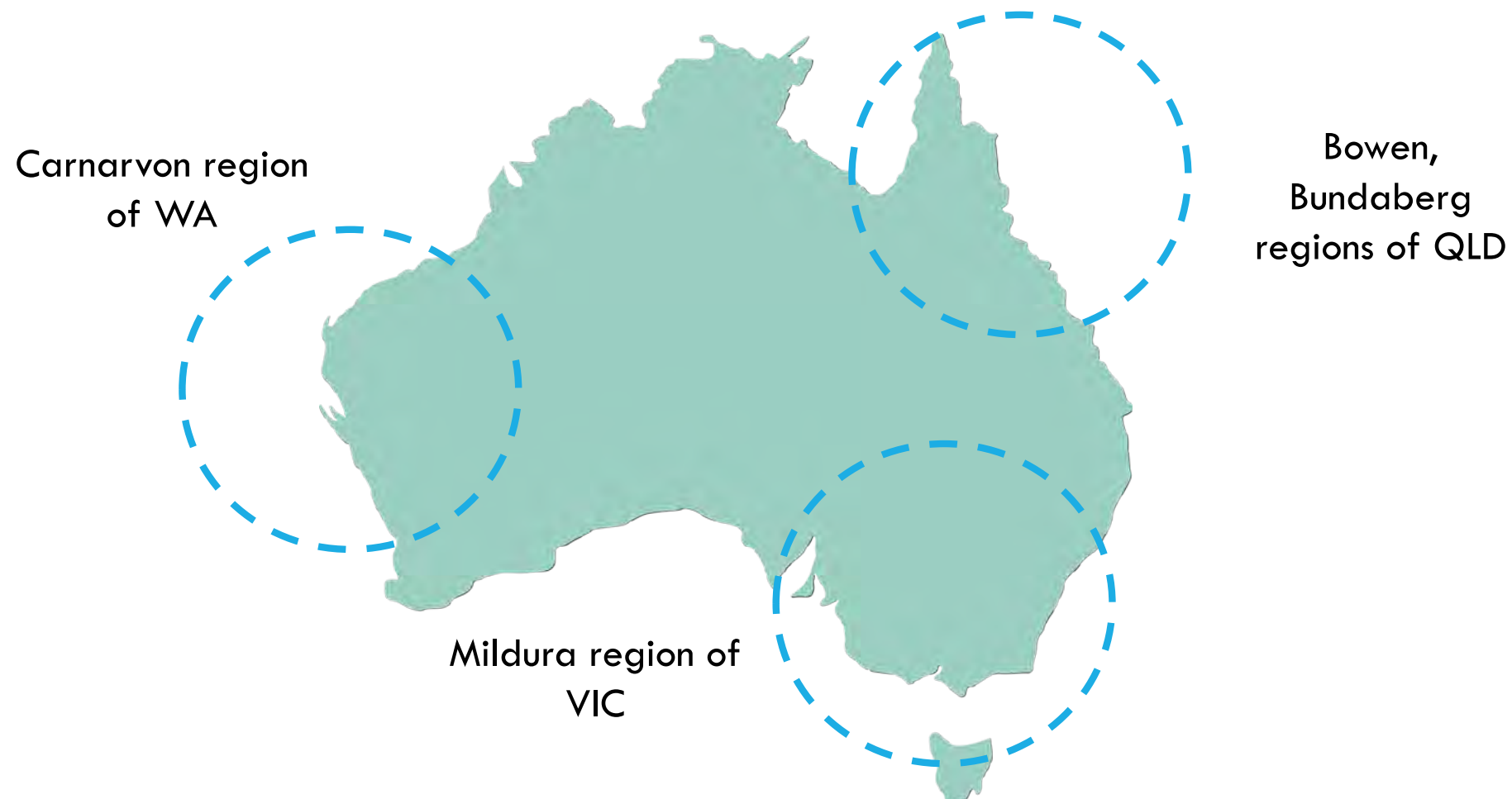
PRODUCT PROFILE

Common names	Chillies, chilli pepper
Scientific name	<i>Capsicum frutescens</i>
Type of plant	Flowering plants in nightshade family
Cultivation cycle	Semi perennials grown as annuals commercially
Suited climate	Tropical and subtropical regions
Part eaten	Berries or pods; fresh or dried
Origin	Central and South America
Established in AU	Likely to have come with settlers or returning soldiers

What is driving its success?



Where is it produced in Australia?



What are the industry metrics?




Not including capsicum growers also growing chillies

# Producers	Ha/Producer	Hectares	T/Ha	Tonnes	\$/kg	Turnover
181 (2009)	1.2	222 (2014)	9.75	2,165 (2016)	\$3.93	\$8.5m (2016)

Tonnes produced has only increased by 13 tonnes since last Ha figure in 2014

NOTE: Complex industry modelling was out-of-scope
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 Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Based in Bundaberg, QLD since 1995 - Founded by David De Paoli - Largest chilli company in Australia - Fresh chillies, pureed chilli, herbs, ginger, garlic, vegetables, citrus, mangoes, apples, Avo Fresh cold pressed avocado
	<ul style="list-style-type: none"> - Established in 1984 - Based in Braeside, VIC - Australia's leading processor of fresh garlic to food industry - Supplies to wholesalers and retailers - Crushed garlic, ginger, chilli, whole or processed vegetables
	<ul style="list-style-type: none"> - Based in Canningvale, WA - Farms in Kununurra, Broome, Gingin, Wanneroo in Western Australia - Grow chillies, ginger, garlic, herbs, vegetables - Supply to Coles for over 13 years

Who are the other key stakeholders?



- AUSVEG
- Industry representative body for vegetable and potato growers
- Agripolitical advocacy, R&D, and service provision

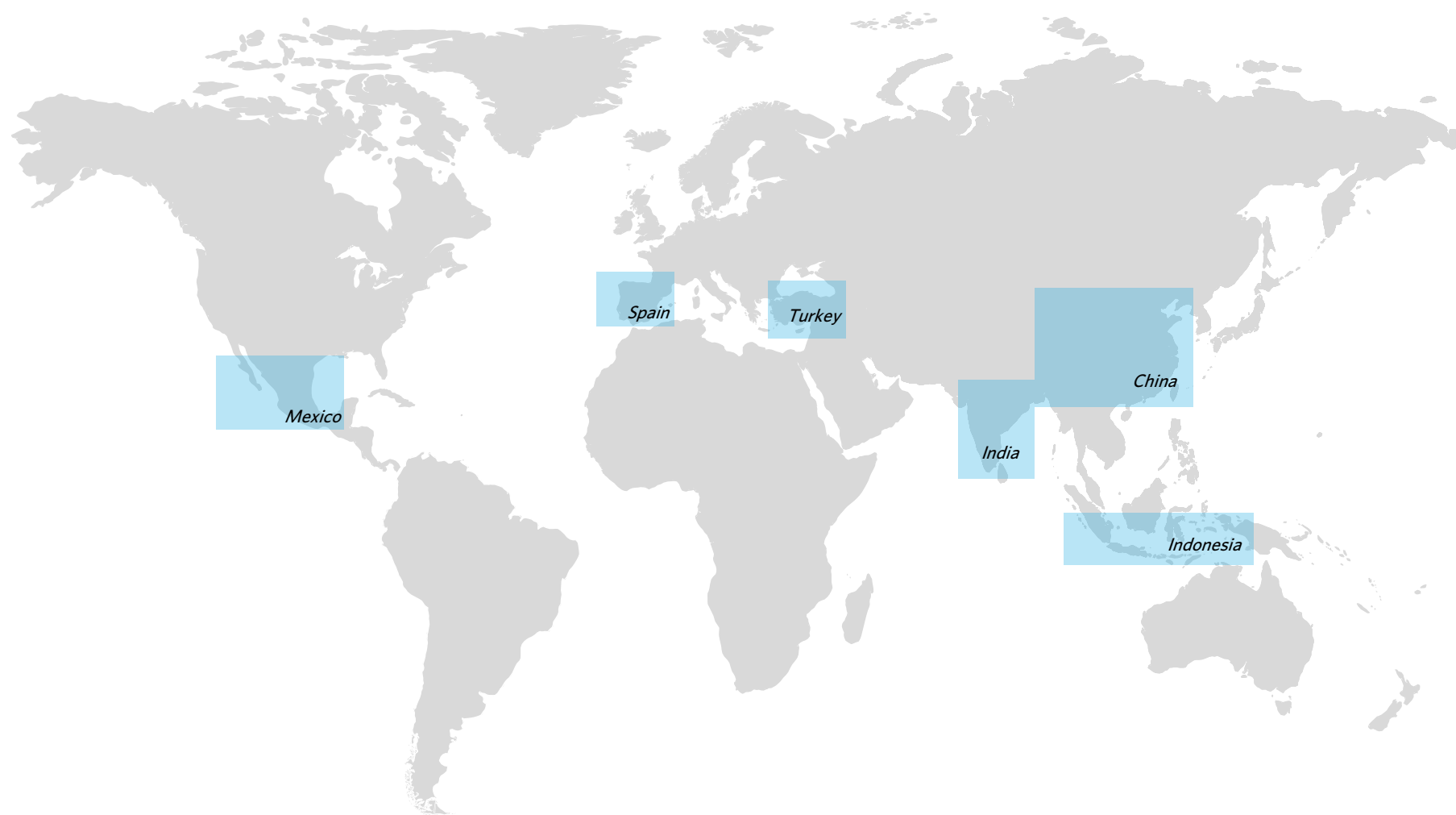


- Growcom
- Peak representative body for Queensland horticulture
- Independent, not-for-profit organisation
- Long term growth and profitability of horticultural farms and the industry



- Horticulture Innovation Australia
- Not-for-profit, grower – owned R&D and marketing company
- Invests over \$100m annually

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing



What does Dr. Food think?



“Western” consumers are showing more interest in experimenting with spicier foods. However, their palates are still extraordinarily conservative by the standards of, say, Southern and Eastern Thais, and Szechuan food consumers in China (of course, Szechuan pepper is not a chilli but it is lip-numbingly hot!).

The best route for Australian chillies might be to target the conservative palate and not try to compete at the high range of the Scoville scale (the international measuring scale for “hotness’ in chilli peppers).”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1980	Irwindale, USA Private Tran family	US\$60m+ 200	Chilli hot sauce (chili garlic, sriracha, sambal oelek)	USA Global	www.huufong.com Manufacturer of world famous sriracha sauce
	1868	Avery Island, USA Private McIlhenny family	US\$200m 200	Tabasco chilli sauce (8 varieties)	USA Global	www.tabasco.com Sold in over 185 countries; worlds most famous hot sauce
	1992	Virudhunagar, India Private VPSA Paramasiva Nadar Group	N/A	Whole spices, powders, oleresins, seasonings	India China Global	www.paprikaoleos.com Family have been spice traders since 1909; one of leading exporters of red chillies from India
	2009	Kunming City, China Private	N/A	Paprika and capsicum oleoresin, capsaicin powder, crystals	China Global	www.sinochili.com Chili pepper breeding, growing, processing and marketing; 4,000t of paprika and capsicum oleoresin production; owns China's largest chili farms; 73m sq m
	1948	Lake Forest, USA	N/A	Prescription pharmaceuticals, consumer health products, animal health	USA Global	www.akorn.com Niche pharmaceutical company; Zostrix branded capsaicin based pain relief; manufacturing in USA, India, Switzerland



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		While mainly known for its starchy tuber, the leaves and stems are also edible. Australia imports over 2,000 tonnes a year and produces 1,100 tonnes. Australia is free of the pests and diseases present in other producing countries.		\$5.0m (2012)	\$10-15m by 2025
Capital intensive to produce					
Mechanically harvested					
Value-added opportunities		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Range of health benefits including low GI - Extremely versatile vegetable that can be a sweet or savoury ingredient - Staple ingredient around the world 		<ul style="list-style-type: none"> - Very little of global production enters world trade - Considered to be staple of developing countries (no premium positioning) 	
Wide spread of markets/buyers		VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices		<ul style="list-style-type: none"> - Taro vegetable crisps - Taro oven fries - Baby food - Processed into paste, flour, flakes, meal, powder - Extruded products (noodles, pasta, pellets) - Taro starch products - Functional foods (gums, emulsifiers, smoothing agents) - Alcohols, high fructose enriched syrups - Dietary fibre supplements - Industrial uses (fillers, plastic modifiers) - Cosmetic and dusting powders - Bioactive compounds 		<ul style="list-style-type: none"> - Australian dollar would not price Australian produced taro out of key markets - Increased and improved mechanisation is possible to reduce production costs closer to world price - Australia can undertake value added processing to functional ingredients 	
Origin important or called out at POS		KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers					
Can we get to the world price?					
Attractive competitive set					
AUSTRALIA					
High performance genetics available					
Required skills for success					
Leverage country reputation					
OVERALL					
		DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Potato products - Other starch products - Other functional food ingredients 	<ul style="list-style-type: none"> - Nigeria - China - Ghana - Cameroon - Fiji - United States 		

What is taro?

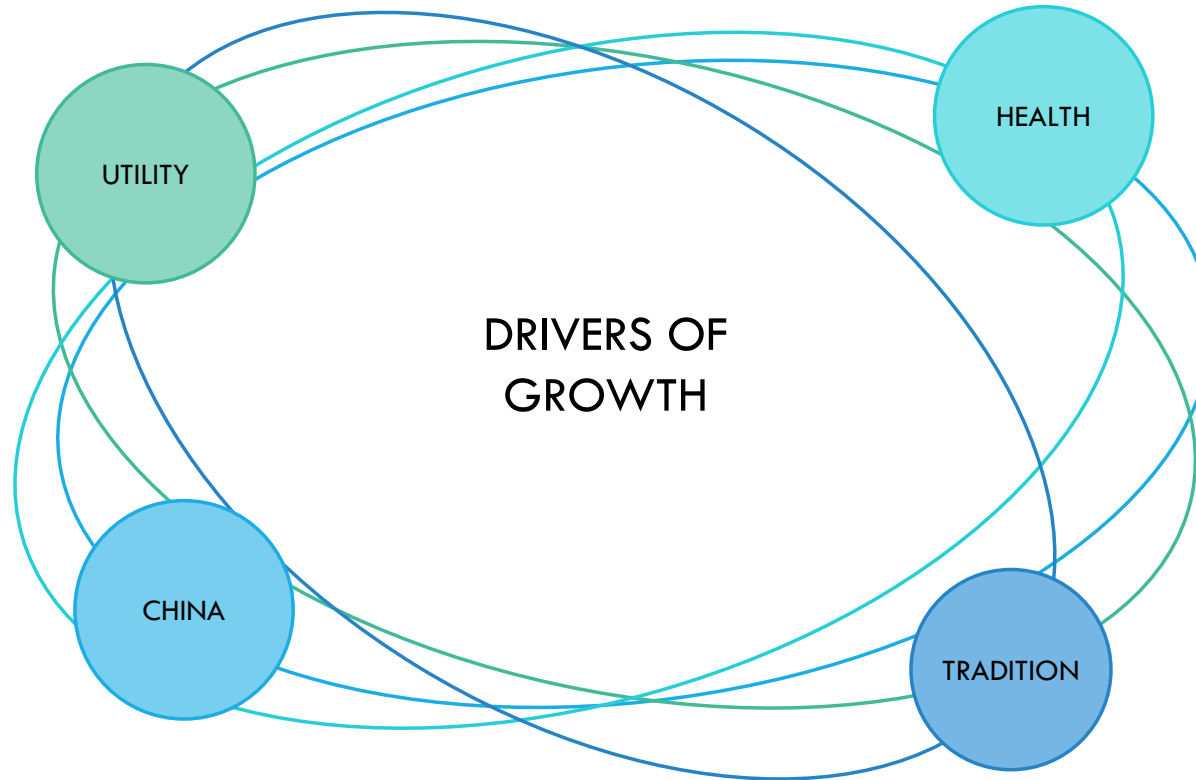


PRODUCT PROFILE

Common names	Taro, dasheen, cocoyam, malanga
Scientific name	<i>Colocasia esculenta</i>
Type of plant	Perennial, tropical plant
Cultivation cycle	6-12 months to mature
Suited climate	Wet tropical regions
Part eaten	Corm, leaf, stalk
Origin	East India, Nepal, Bangladesh
Established in AU	Before European settlement

What is driving its success?

Extremely versatile vegetable that can be used as sweet or savoury ingredient
 Many industrial uses (functional ingredient, alcohol, syrup, fibre, powders)

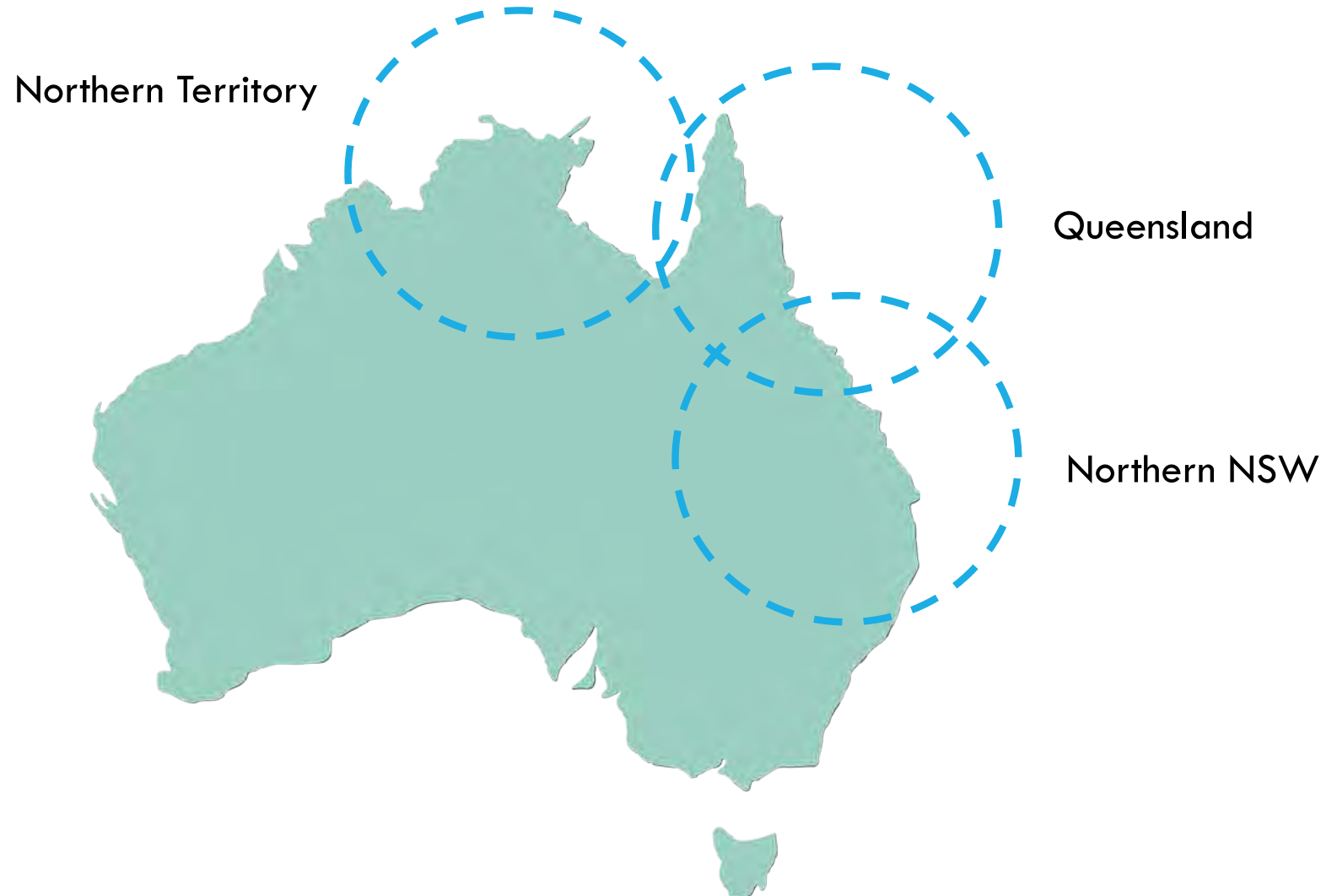


Range of health benefits such as low GI

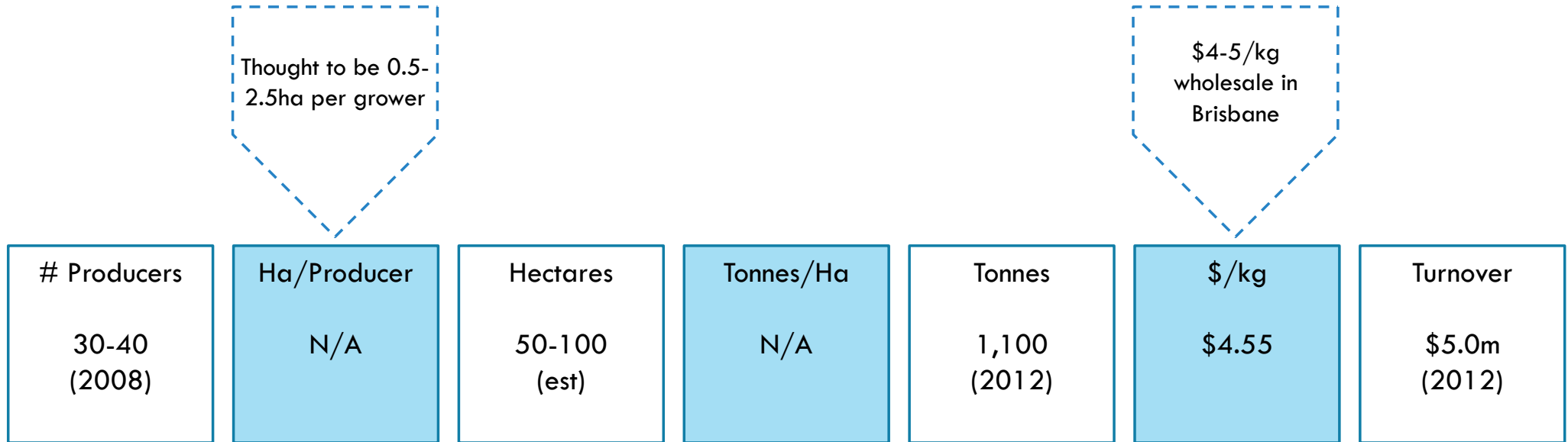
Traditional food during Chinese Moon Festival in China and Taiwan

Staple, traditional ingredient in cuisines from around the world

Where is it produced in Australia?





What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Peter & Alison Salleras, third generation farmers - 260 acres of tropical fruit orchards at East Feluga, north of Cairns, QLD - Grows range of different crops to test market and runs tours of farm
	<ul style="list-style-type: none"> - Based in Brisbane, QLD - Australia's largest importer of fresh and frozen taro - Supplies throughout Australia to majors and independents
<p>WHING CREEK TREEFARM</p>	<ul style="list-style-type: none"> - Based in El Arish, QLD - David Chandlee - 4ha orchard; partly commercial, partly collection of exotic fruit trees - Involved with Taro Growers Australia

Who are the other key stakeholders?



- Growcom
- Peak representative body for Queensland horticulture
- Independent, not-for-profit organisation
- Long term growth and profitability of horticultural farms and the industry

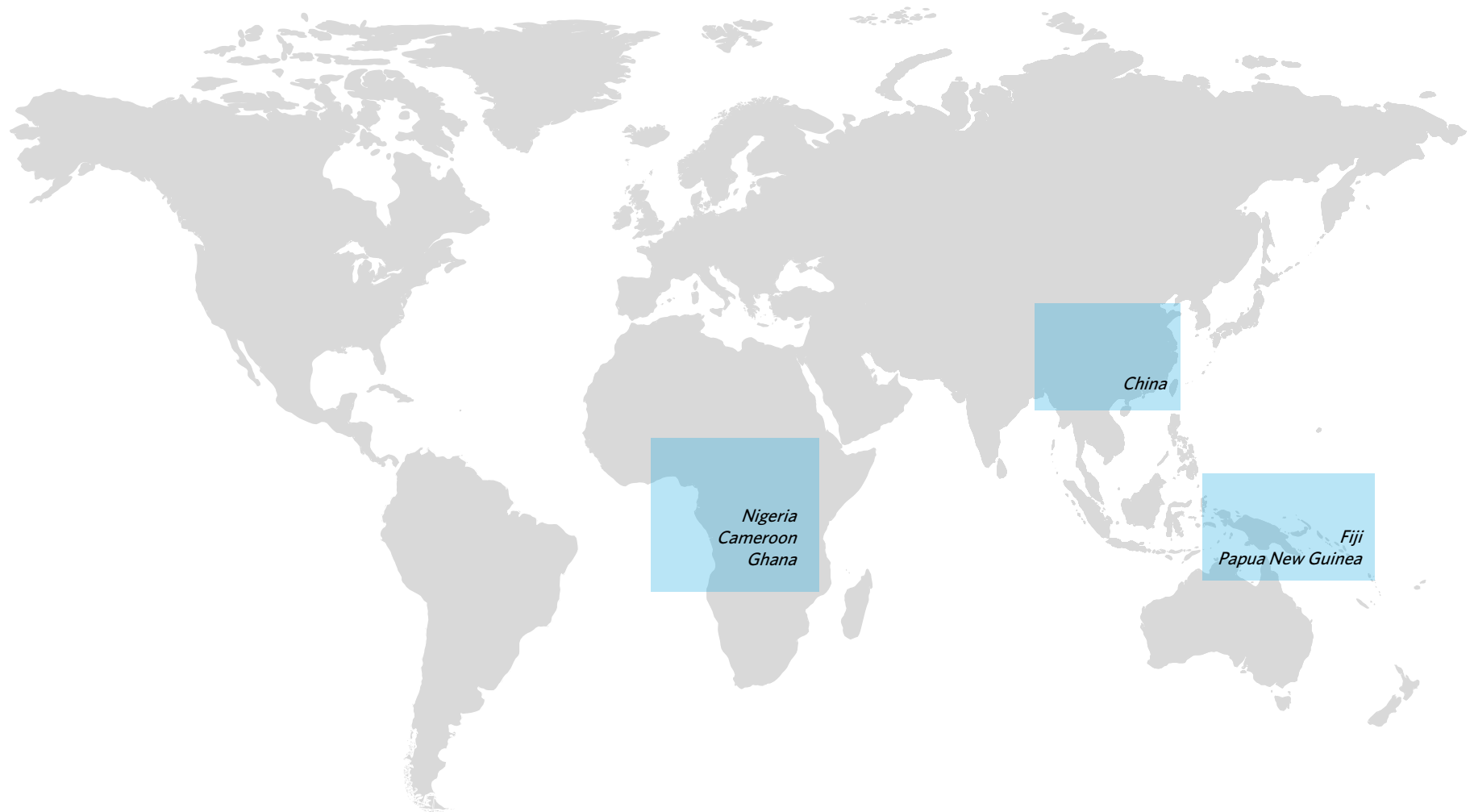


- Taro Growers Australia
- Established in 2002
- Works with QLD Department of Agriculture and Fisheries and AgriFutures for research projects



- Horticulture Innovation Australia
- Not-for-profit, grower – owned R&D and marketing company
- Invests over \$100m annually

Who are the competition for export markets?



How can you add value to it?

Processed products



Source: various company websites; Coriolis analysis. Photo credit: fair use/fair dealing; low resolution; complete product/brand for illustrative purposes






What does Dr. Food think?



“For Westerners, Taro root is an acquired taste and many may elect to eschew consumption of it when presented as a sweet, dense dessert.

However, in Asia, the Caribbean and tropical parts of Latin America it is a much loved staple and valued for its digestive benefits, particularly in Asia where problems associated with bowel movements are popularly discussed around the meal table!”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 <p>Thai Agri Foods Public Company Limited</p>	1986	Samutprakarn, Thailand Public	N/A 1,580	Canned fruit, coconut milk, sauces, curry pastes, juice, frozen prepared foods	Thailand Global	www.thaiagri.com Exports to 70 countries
	2009	Medley, USA	N/A	Snow peas, sugar snap, Asian vegetables, baby vegetables, tropical fruits	USA Global	www.vegaproduce.com Sources produce from Central and South America
	1946	Honolulu, Hawaii	N/A 180	Taro, poi, pancake mixes, lomi salmon, precut vegetables, sprouts, vegetables	Hawaii Global	www.tarobrand.com One of Hawaii's largest produce processors and distributors; retail, industrial and private label
	1993	New York, USA Public NASDAQ:HAIN	US\$2.853b 7,825	Infant and toddler nutrition, yoghurt, organic and natural food products, plant based meat and dairy alternatives	USA Canada Europe Global	www.hain.com www.terrachips.com Manufacture, market, distribute and sell organic and natural products in over 80 countries worldwide; Terra vegetable chips subsidiary
	2006	Honolulu, Hawaii	N/A	Taro starch powder, pancake mix, muesli bars, cookie mix, cookies	Hawaii	www.voyaging-foods-2.myshopify.com Gluten free products using taro, sweet potato and breadfruit



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Extremely drought resistant crop, successfully grown on marginal soils. Huge demand in Asia for the product in multiple forms (e.g. starch). Large joint venture project underway in Queensland since 2012 (some red tape issues).</p>		\$1-5m (est)	\$5-10m by 2025
Capital intensive to produce					
Mechanically harvested					
Value-added opportunities		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Demand for "free from" foods (gluten, grain and nut free) - High in resistant starch - Fourth largest source of food carbohydrates globally (behind wheat, maize, rice) 		<ul style="list-style-type: none"> - If prepared incorrectly (or raw) can produce cyanide (bitter cassava) - Possible allergy (if allergy to latex) - Contains antinutrients (saponins, phytate, tannins) - Undergoes postharvest physiological deterioration once harvested, oxidising the plant and rendering it unpalatable - Strong competition from developing nations (e.g. China investing in Cambodia) 	
Wide spread of markets/buyers					
Wide spread of prices					
Origin important or called out at POS		VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
COMPETITORS		<ul style="list-style-type: none"> - Chips - Flour, meal, starch - Seasoning (reduced cassava juice) - Bread, crackers, empanadas dough - Tapioca and garri - Desserts - Alcoholic spirits - Extracts of amino acids, citric acid, MSG - Industrial uses (paper, bioplastics, bio ethanol, etc.) - Animal feed 		<ul style="list-style-type: none"> - Queensland's CasTech's JV achieves their planned 6,000 ha plantings (110-150ha in 2015) and construct the planned flour and starch mill - Demand for functional starches and gluten free flours continues to increase - Australia can compete with lower cost producers 	
Biosecurity or other domestic barriers					
Can we get to the world price?					
Attractive competitive set		KEY COMPETITORS			
AUSTRALIA		DOMESTIC		EXPORTERS	
High performance genetics available		<ul style="list-style-type: none"> - Imported cassava flours and starches - Other flours and starches - Other starchy vegetables 		<ul style="list-style-type: none"> - Nigeria - Thailand - Indonesia - Brazil - Ghana - Democratic Republic of the Congo - Vietnam 	
Required skills for success					
Leverage country reputation					
OVERALL					

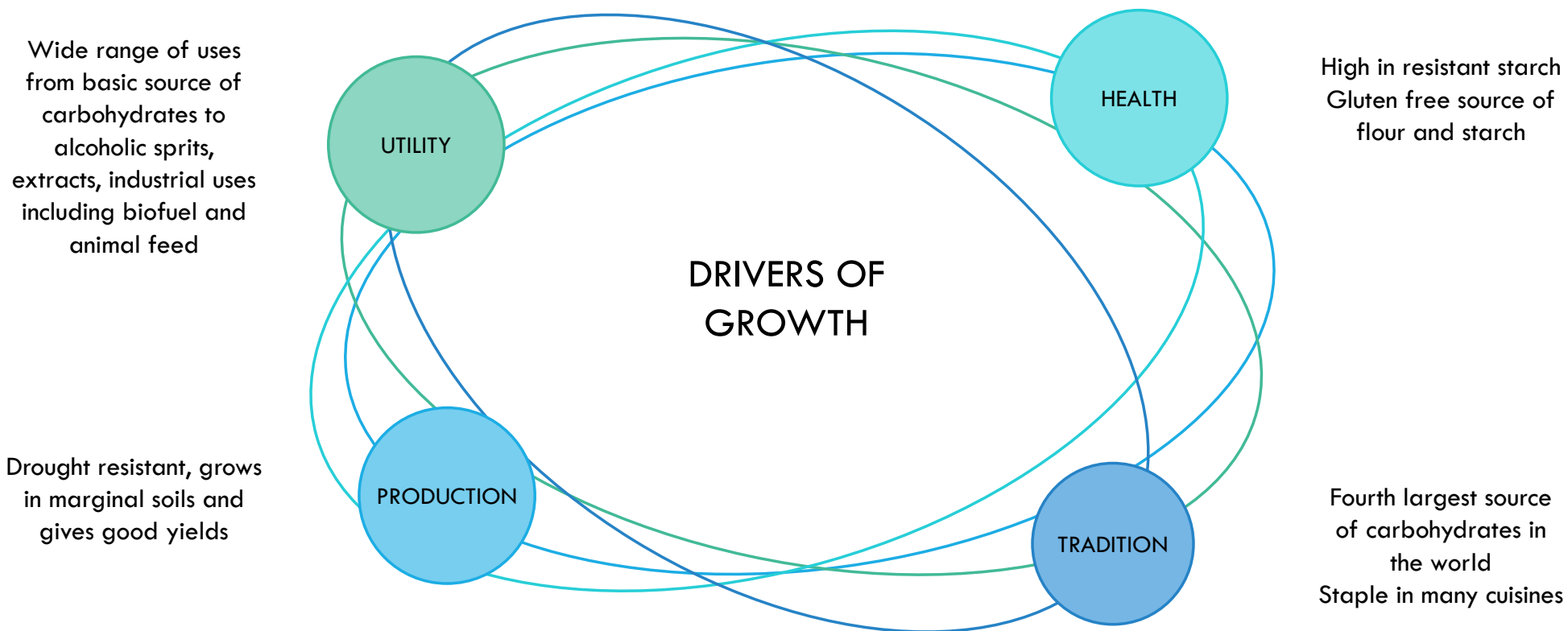
What is cassava?



PRODUCT PROFILE

Common names	Cassava, Brazilian arrowroot, manioc, tapioca, yuca
Scientific name	<i>Manihot esculenta</i>
Type of plant	Woody shrub
Cultivation cycle	Perennial but cultivated as an annual
Suited climate	Tropical and sub tropical regions
Part eaten	Root
Origin	Western Brazil
Established in AU	1979 first commercial enterprise

What is driving its success?



Where is it produced in Australia?






What are the industry metrics?

TO BE DETERMINED – NO IDENTIFIED INDUSTRY DATA

# Producers	Ha/Producer	Hectares	Kg/Ha	Tonnes	\$/kg	Turnover
N/A	N/A	N/A	N/A	N/A	N/A	\$1-5m (est)

NOTE: Complex industry modelling was out-of-scope
Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years.
Data is "patchy" in places and should be treated as directional.
Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
 <p>The logo for CassTech features three green leaves above the text 'CassTech' in a bold, sans-serif font.</p>	<ul style="list-style-type: none"> - Unlisted public company farming cassava since 2008 but links to Australia's first commercial cassava enterprise in 1979 (Australian Cassava Production) - Focus on research to improve yields and are achieving 70t per hectare on 75ha experimental farm; 10ha nursery with 35 varieties - Running pilot scale tapioca flour plant; flour was sold through Three Spades brand - JV with CJ Chieljendang to develop 6,000ha in Burdekin, QLD in 2012 (status of project unclear)
 <p>The logo for Cheeky Foods features the word 'cheeky' in a green, rounded font above 'foods' in a dark blue, bold font. A stylized leaf is to the right, and 'QUALITY IMPORTED PRODUCTS' is written in small letters below.</p>	<ul style="list-style-type: none"> - Based in Melbourne, VIC - Importing and distributing food products from South America - Frozen fruit pulps, prepared frozen vegetable products (cassava sticks, fries, breads), flours, snacks, confectionery
 <p>The logo for SSM Brand is an oval with a red background and a yellow border. The letters 'SSM' are in white, bold font, with 'BRAND' in smaller white letters below.</p>	<ul style="list-style-type: none"> - Based in Brisbane, QLD - Australia's largest importer of fresh and frozen taro and other pacific island foods - Supplies throughout Australia to majors and independents

Who are the other key stakeholders?



- AUSVEG
- Industry representative body for vegetable and potato growers
- Agripolitical advocacy, R&D, and service provision

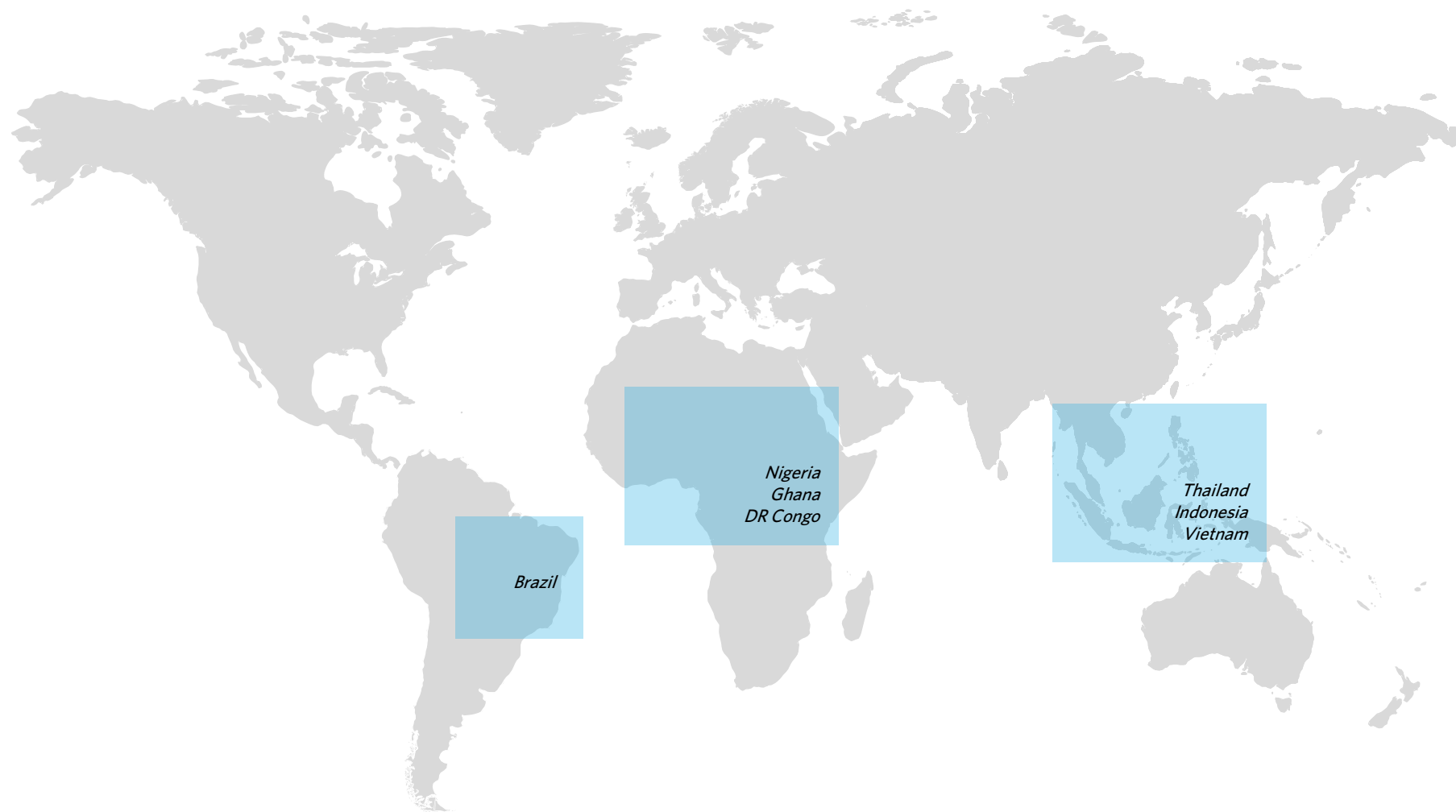


- Growcom
- Peak representative body for Queensland horticulture
- Independent, not-for-profit organisation
- Long term growth and profitability of horticultural farms and the industry



- Horticulture Innovation Australia
- Not-for-profit, grower – owned R&D and marketing company
- Invests over \$100m annually

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing








What does Dr. Food think?



“Cassava may find its best market in Australia as livestock feed in the Northern tropical areas and, needless-to-say, given the cyanide poisoning nature of the fresh root requires further processing.

Immigrants from countries where cassava products are pervasive present a domestic target market fuelled, not least, by the megatrend towards snacking in Australia and elsewhere.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1953	Seoul, South Korea Public KRX:001041	US\$13.4b 6,000	Food ingredients (sugar, sweeteners, flour, oil), food, pharmaceuticals, biotechnology	South Korea Global	www.cj.co.kr Offices in China, USA, Philippines, Indonesia, Vietnam, Brazil, Australia, Japan, Singapore; (stalled?) JV with CassTech in Australia to grow 6,000ha of cassava
	1974	Bangkok, Thailand	N/A	Tapioca, rice	Thailand Global	www.stc-group.com Tapioca starch production
	2000	Khampheng Phet, Thailand	N/A	Tapioca starch, chips, rice, animal feed	Asia Global	www.tcstapiocastarch.com One of largest tapioca starch manufacturers in Thailand; reent investment in using by-products in animal feed; 90% export
	1973	Longmont, USA Private	N/A	Honey, natural sweeteners (agave, cassava, coconut), pancake syrups, beverages	USA North America	www.madhavasweeteners.com Started as honey supplier out of commune in 1970s
	2010	Singapore Private	N/A	Cassava and other root vegetable chips, crackers, corm snacks	Singapore Asia	www.cassavarep.com Exports to 10 countries

Source: company website; company annual report; various published articles and reports; Coriolis analysis



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"	
PRODUCT		Prunes have health benefits including being a natural laxative and source of antioxidants. Wider dried fruit category is attractive and growing. Need to develop a clear, compelling Australia position and point-of-difference.		\$7.9m* (2016)	\$10-15m by 2025	
Capital intensive to produce						
Mechanically harvested						
Value-added opportunities						
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES			
Wide spread of markets/buyers		<ul style="list-style-type: none"> - Health benefits (natural laxative, antioxidant) - Growing demand for dried fruit - Demand from California - US research into health benefits of prunes driving global demand (broaden appeal) 	<ul style="list-style-type: none"> - 96% of production located in NSW, particularly Griffith region - 3 to 5 years to reach first commercial harvest - Limited prune processors/packers in Australia (2 large and 2 small) - Growers have fresh alternative, risking dry supply - Increase supply from Chile (albeit lower quality to AU) 			
Wide spread of prices						
Origin important or called out at POS						
COMPETITORS						
Biosecurity or other domestic barriers		VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE			
Can we get to the world price?		<ul style="list-style-type: none"> - Organic, sun-dried production methods - Juice - Pureed in single serve pouches (baby food, elderly) - Extracts/essence - Laxative treatments - Nutraceutical supplements 	<ul style="list-style-type: none"> - Exports can be increased - USA will continue to look to spread risk of drought and water costs in California by sourcing from Australia or investing in production here - Consistent Australian production levels can be achieved 			
Attractive competitive set						
AUSTRALIA						KEY COMPETITORS
High performance genetics available						DOMESTIC
Required skills for success		<ul style="list-style-type: none"> - Imported prunes - Other dried fruit - Pharmaceutical laxatives 	<ul style="list-style-type: none"> - Chile - Argentina - South Africa - France - Italy 			
Leverage country reputation						
OVERALL						

*Value of production of fresh plums grown for drying, wholesale value of dried prunes was \$28.5m. Source: Horticulture Innovation Australia 2015/16 Australian Horticulture Statistics Handbook; Coriolis analysis and estimates

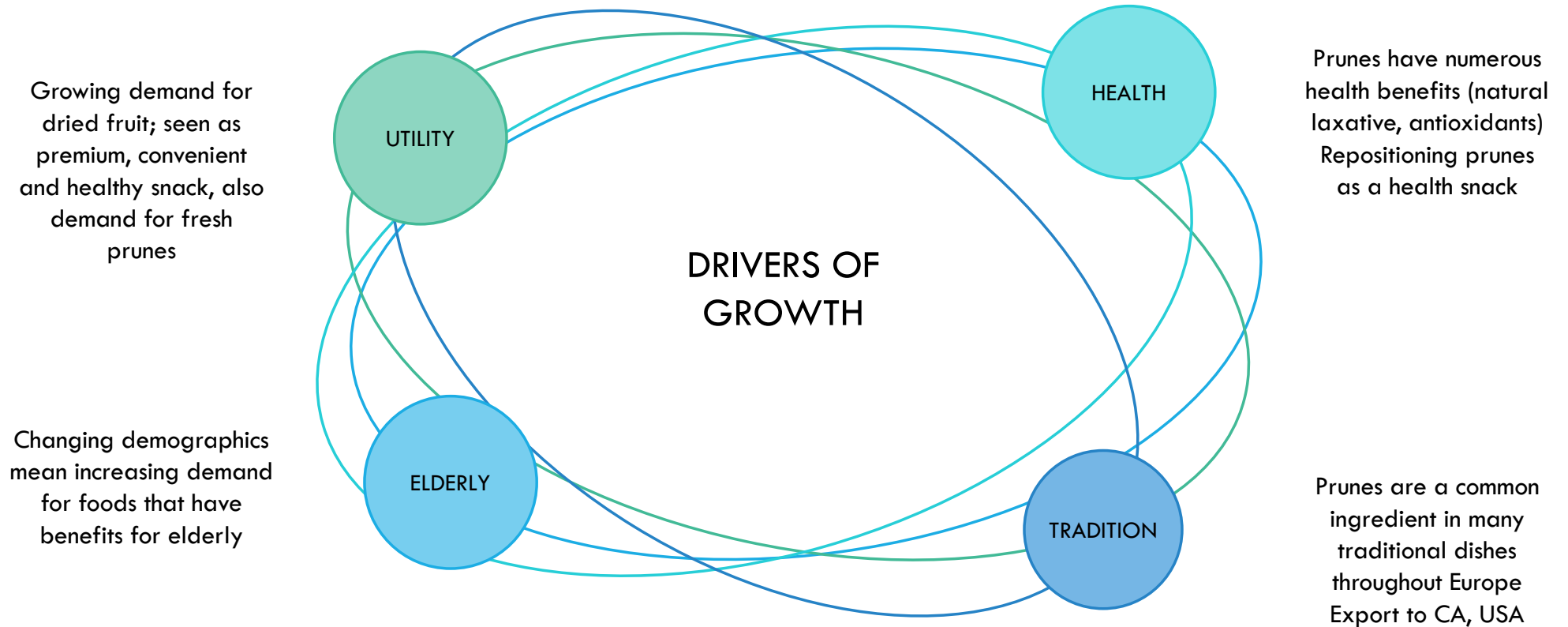
What are prunes?



PRODUCT PROFILE

Common names	Prunes, dried plums, D'Agen plums
Scientific name	<i>Prunus domestica</i>
Type of plant	Summer fruit tree
Cultivation cycle	3-5 years to reach commercial harvest
Suited climate	Warm or cool temperate zone
Part eaten	Fruit of the tree; dried
Origin	Eastern European and Caucasian mountains; D'Agen prune variety in 13 th century in Southwest of France
Established in AU	1866 D'Agen prune tree imported

What is driving its success?

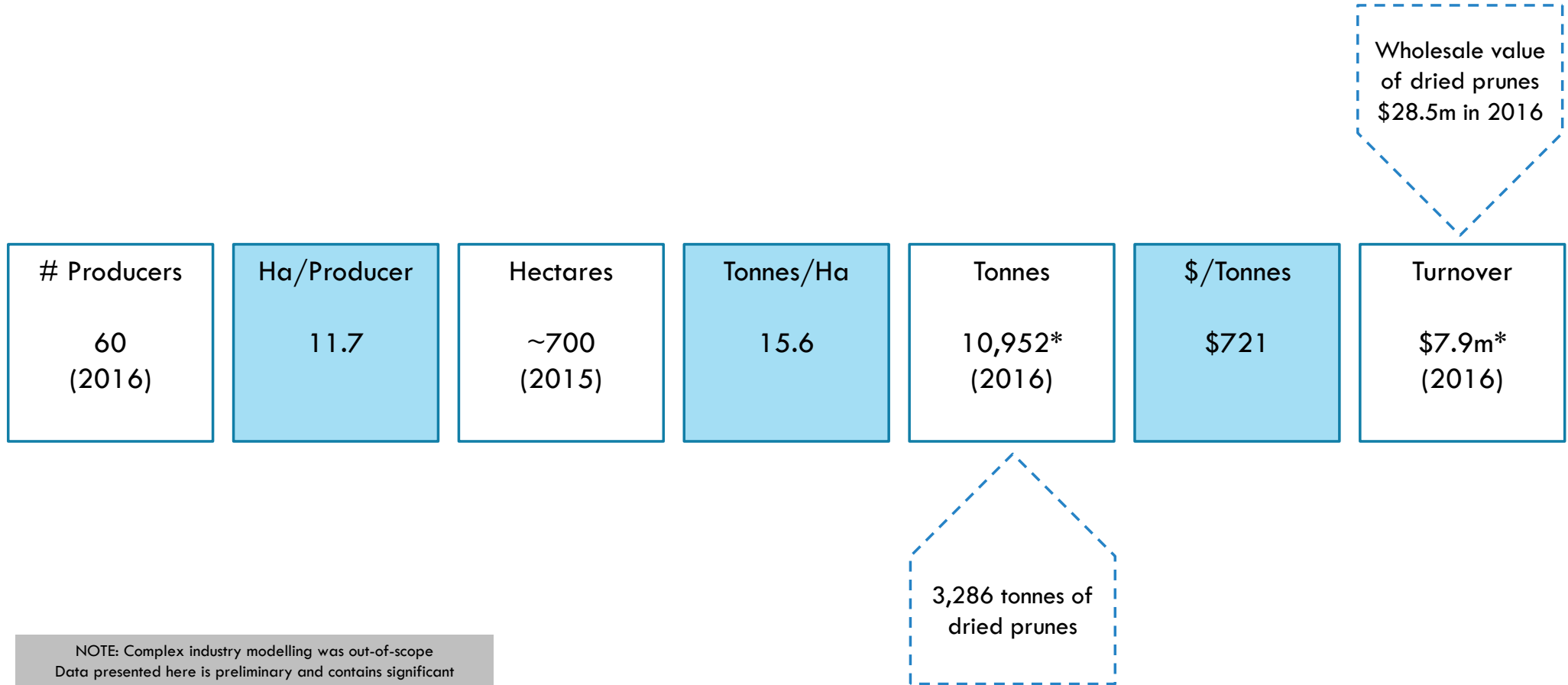


Where is it produced in Australia?



Young and
Griffith regions
of NSW (96%);
Cobram in VIC

What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
 Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years. Data is "patchy" in places and should be treated as directional. Use with caution.

* Fresh plums. Source: Aus Prunes website; Horticulture Innovation Australia 2015/16 Australian Horticulture Statistics Handbook; Prune Strategic Investment Plan 2017-2021; various published articles; Coriolis analysis and estimates

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
 <p>ROYAL NUT COMPANY EST. 1987</p>	<ul style="list-style-type: none"> - Family owned business based in Rowville, VIC - Source and manufacture nuts, nut butters, dried fruit, legumes and grains, health & snack foods, confectionery, spices - Sell pitted and unpitted Australian prunes, as well as Chilean prunes
 <p>ANGAS PARK EST. BAROSSA VALLEY 1911</p>	<ul style="list-style-type: none"> - Owned by Bright Food Group (China) via Manassen Food Group - Processing facilities in Victoria - Pitted and unpitted Australian prunes - Retail, industrial, exports
 <p>Verity EST. 1927</p>	<ul style="list-style-type: none"> - Country Foods Pty Ltd - Started as grower co-operative in 1927 - Based in Young, NSW - Sources plums from Yong, Griffith and Murrumbidgee regions - 100% Australian owned - Prunes and figs

Who are the other key stakeholders?



- Australian Prune Industry Association

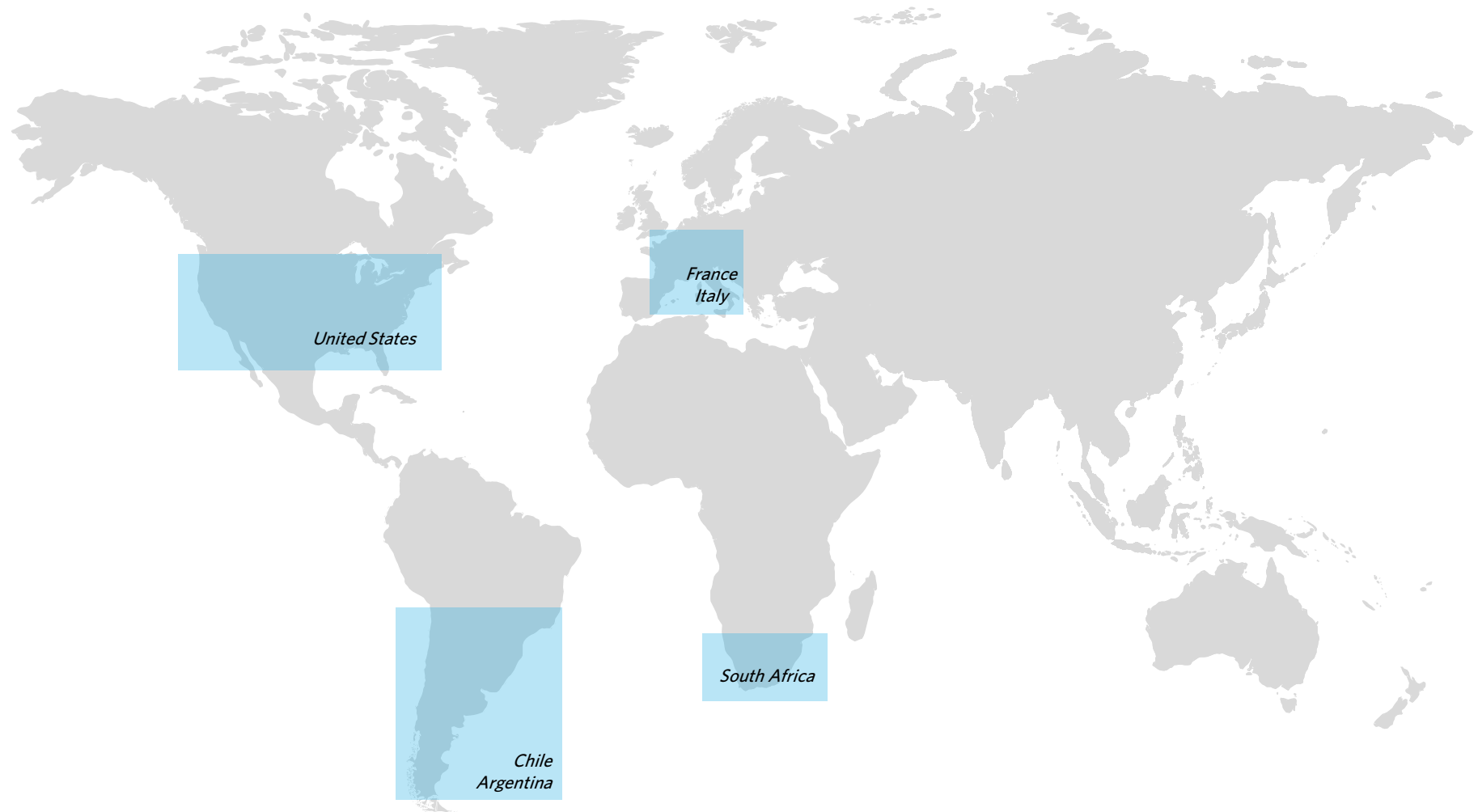


- Summerfruit Australia Limited
- Peak industry body for growers
- Industry voice on a national and international level
- Works to maximise profitability for the industry



- Horticulture Innovation Australia
- Not-for-profit, grower – owned R&D and marketing company
- Invests over \$100m annually

Who are the competition for export markets?

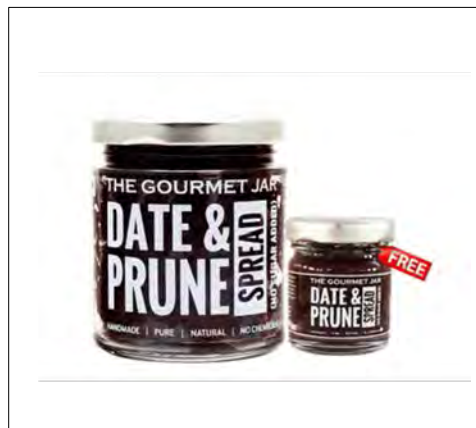


How can you add value to it?

Processed products



Further value added processing








What does Dr. Food think?



“The global market for prunes is unusual in that, in history, the focus has been on infants and pensioners with a huge age gap in between – the principal benefit being associated with improving bowel movement. The one global prune brand – Sunsweet from California – stoically positions prunes/dried plums as a tasty and nutritious weight management snack. Prices in the global market have been bedevilled by periodic oversupply generally emanating from Chile. Yet, prunes tick many of the trend boxes that are current – e.g. natural, healthy, lightly processed. The market for plum juice offers potential – globally led by Sunsweet’s SunSmart brand which is a tart and highly nutritious full strength juice.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1917	Yuba City, USA Co-operative 250 growers	US\$302m N/A	Prunes, prune juice, plum juice, dried coconut, green mango, mango, pineapple, cherries, cranberries, blueberries, apricots, dates, fruit and nut clusters, chocolate covered prunes	USA Chile Global	www.sunsweet.com 25% of global prune market; 60,000t of prunes processed annually; sourcing some plums from Australia
	1912	Kingsburg, USA Co-operative	US\$382m N/A	Raisins, prunes, dried apricots, cranberries, apples, figs, dates, chocolate covered dried fruit, raisin bread	USA Global	www.sunmaid.com
	1906	Vacaville, USA Private Mariani family	N/A	Dried summer fruit, dried berries, dried tropical fruit, yoghurt covered raisins, nut muesli bars, raisins, dates, organic dried fruit, probiotic products	USA Global	www.mariani.com Sells 125m pounds of dried fruit products a year
	2007	Emeryville, USA Private Campbell Soup (Public; NYSE:CPB)	US\$115m ~60	Infant formula, baby food (bowls, pouches), puffed snacks, wafers, snack bars, crackers, smoothies, fruit rolls	USA Global	www.plumorganics.com
	1941	Santiago, Chile	N/A 350	Prunes, prune juice	Global	www.prunesco.com 3,500 ha planted over 150 orchards; 20,000t of prunes; biggest exporter in southern hemisphere; 28% of Chilean production; exports to 50 countries, 98% of production



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Exotic tropical fruit little known currently to Australian consumers. Real opportunities to create a strong brand and own the category in the local market. Considered luxury fruit in Japan where Australia has trade access for fresh rambutan.		\$3.8m (2012)	\$5-10m by 2025
Capital intensive to produce					
Mechanically harvested					
Value-added opportunities		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		- Luxury item in Japan - Demand for new and exotic fruits - Consumer knowledge of closely related lychee - Visually striking		- Highly perishable, difficult to handle with short shelf life - Growing region susceptible to destructive tropical cyclones - Labour intensive crop	
Wide spread of markets/buyers					
Wide spread of prices					
Origin important or called out at POS		VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
COMPETITORS		- Canned - Ice cream and sorbet flavouring - Juice, beverage flavouring - Desserts - Jam - Gift giving (if shelf life could be extended)		- Technology can increase shelf life of the fresh fruit - Australia can develop a consistent supply in order to export to valuable Japanese fresh rambutan market - Australia can re-establish export markets of early 2000s - Imports of fresh rambutans continue to be banned in Australia	
Biosecurity or other domestic barriers					
Can we get to the world price?					
Attractive competitive set		KEY COMPETITORS			
AUSTRALIA		DOMESTIC	EXPORTERS		
High performance genetics available		- Imported canned rambutan - Lychees and longans - Other tropical fruit	- Thailand - Malaysia - Indonesia - Honduras		
Required skills for success					
Leverage country reputation					
OVERALL					

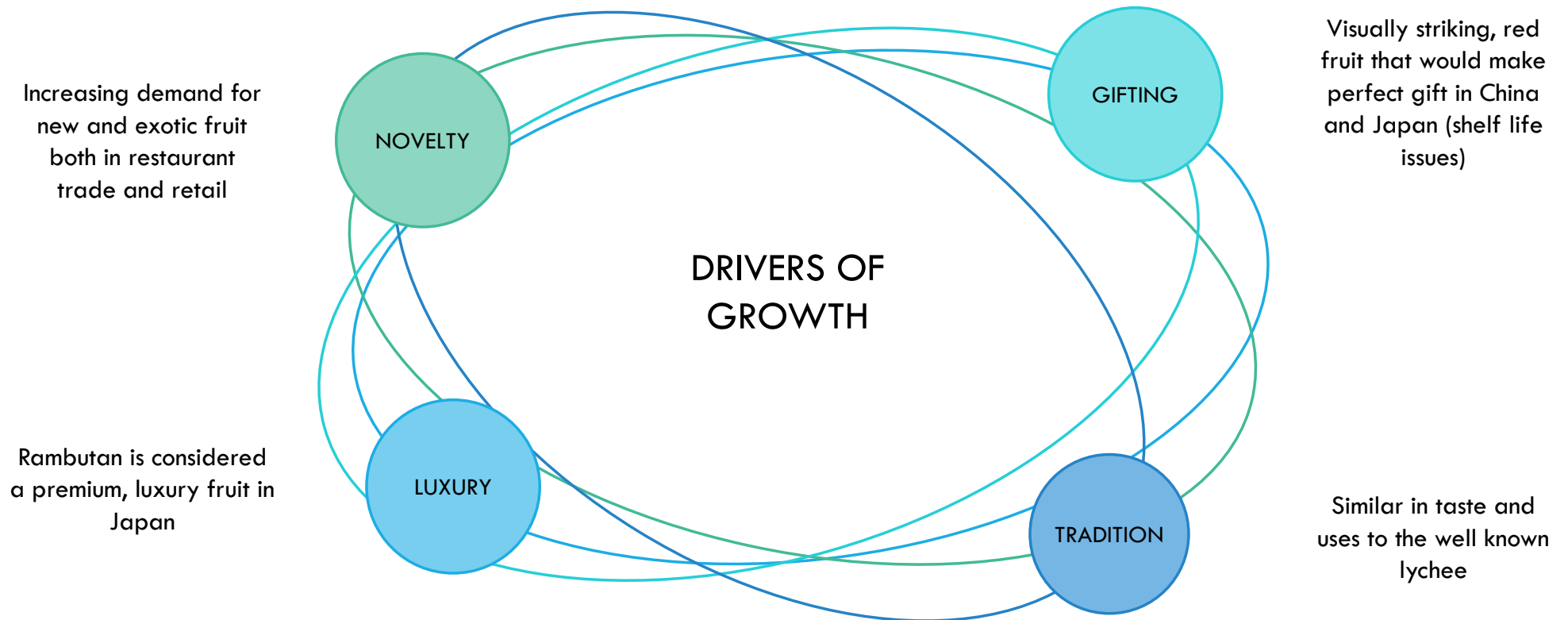
What is rambutan?



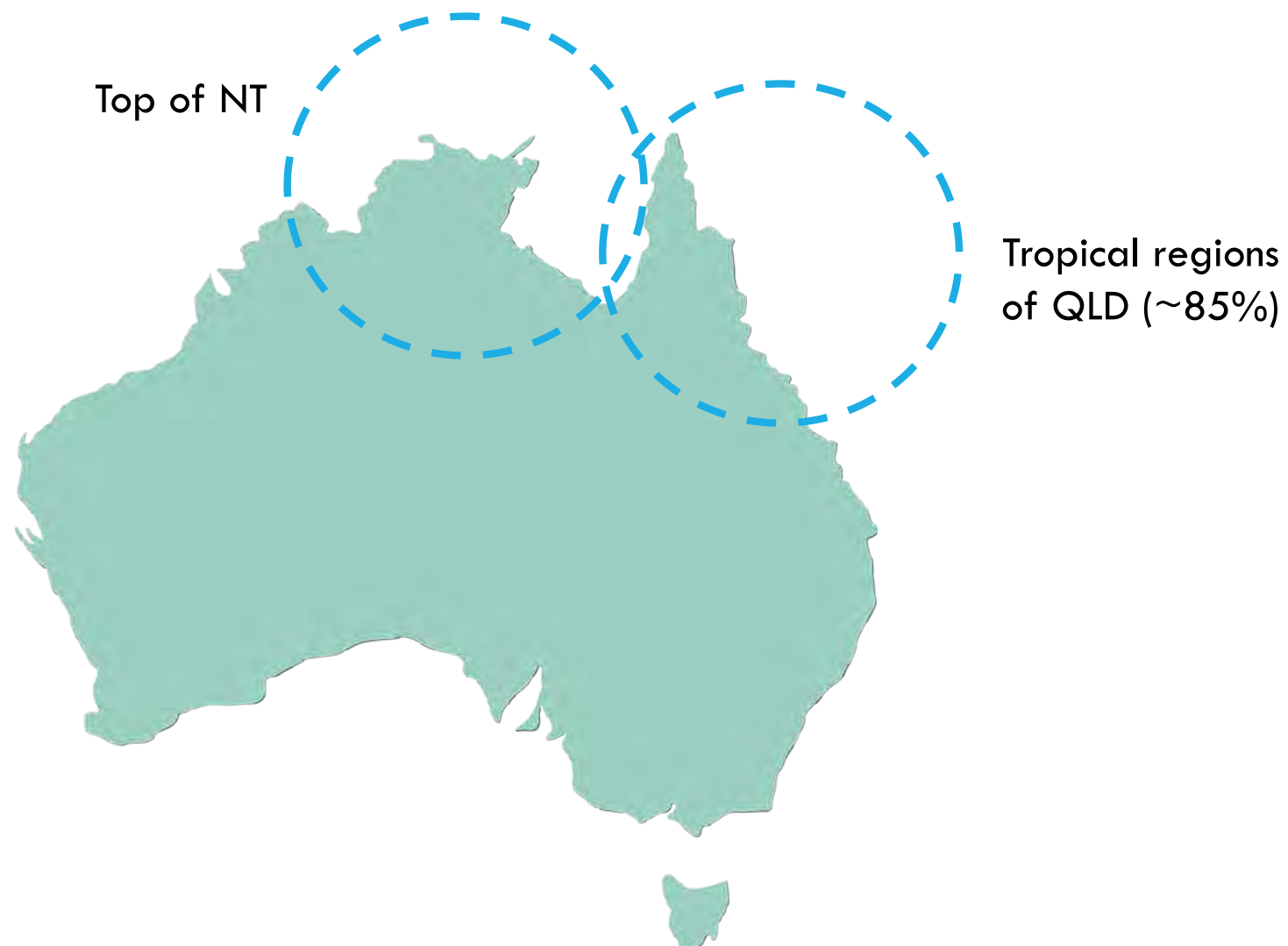
PRODUCT PROFILE

Common names	Rambutan, hairy lychees
Scientific name	<i>Nephelium lappaceum</i>
Type of plant	Evergreen fruit tree
Cultivation cycle	Fruit after 2-3 years, optimum production after 8-10 years; single or double fruit season
Suited climate	Warm tropical climates; within 12-15° of the equator
Part eaten	Aril, seed
Origin	Malay-Indonesian and other regions of tropical South East Asia
Established in AU	Around 1930s in areas around Cairns

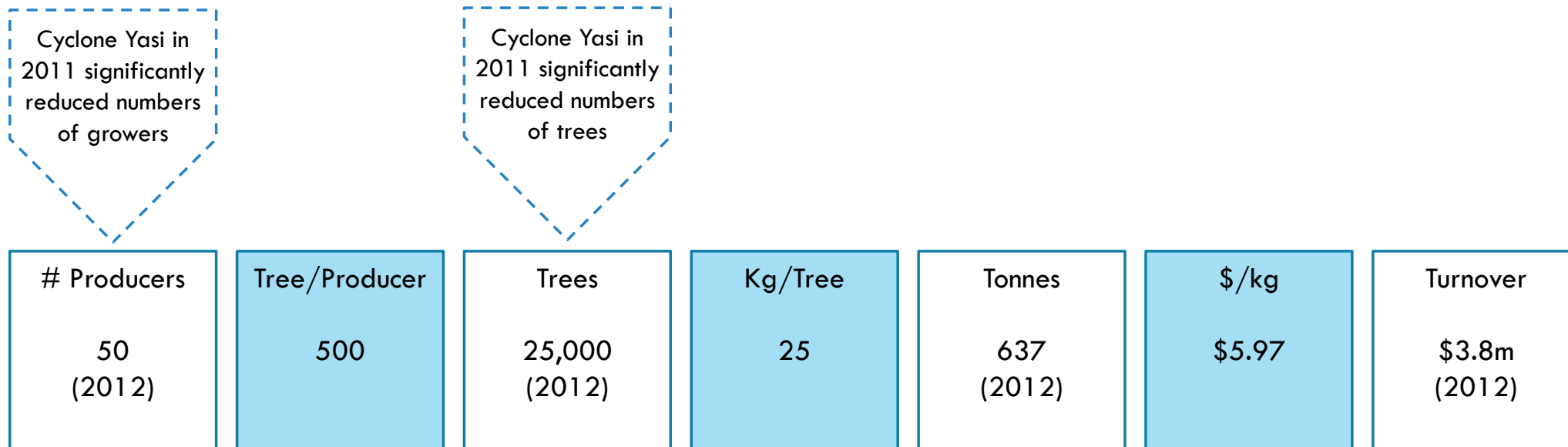
What is driving its success?



Where is it produced in Australia?





What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
 Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years.
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 Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Tropical fruit grower based at Cape Tribulation, QLD - Breadfruit, mangosteen, rambutan (major crops), durian, chempadek, soursop, mamey sapote, black sapote, abiu, pitaya, maprang, miracle fruit - Accommodation and fruit tasting tours - Solar panels and generator power
	<ul style="list-style-type: none"> - Peter & Alison Salleras, third generation farmers - 260 acres of tropical fruit orchards at East Feluga, north of Cairns, QLD - Grows range of different crops to test market and runs tours of farm
<p>ZAPPALA TROPICALS</p>	<ul style="list-style-type: none"> - Based in Bellenden Ker, QLD - Transitioned to tropical fruits in 1980s over uncertainty in the sugar industry - Rambutan, durian, mangosteen, pomello, jackfruit, black sapote, chempadek, cut flowers, nursery sales

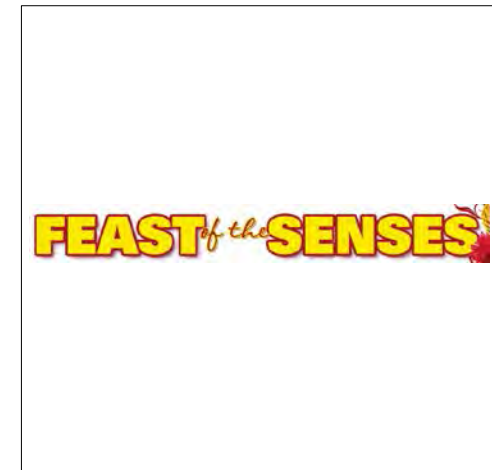
Who are the other key stakeholders?



- Tropical and Exotic Fruits Association
- Established in 2007
- Represents members across all of Northern Australia
- Run by NT Farmers

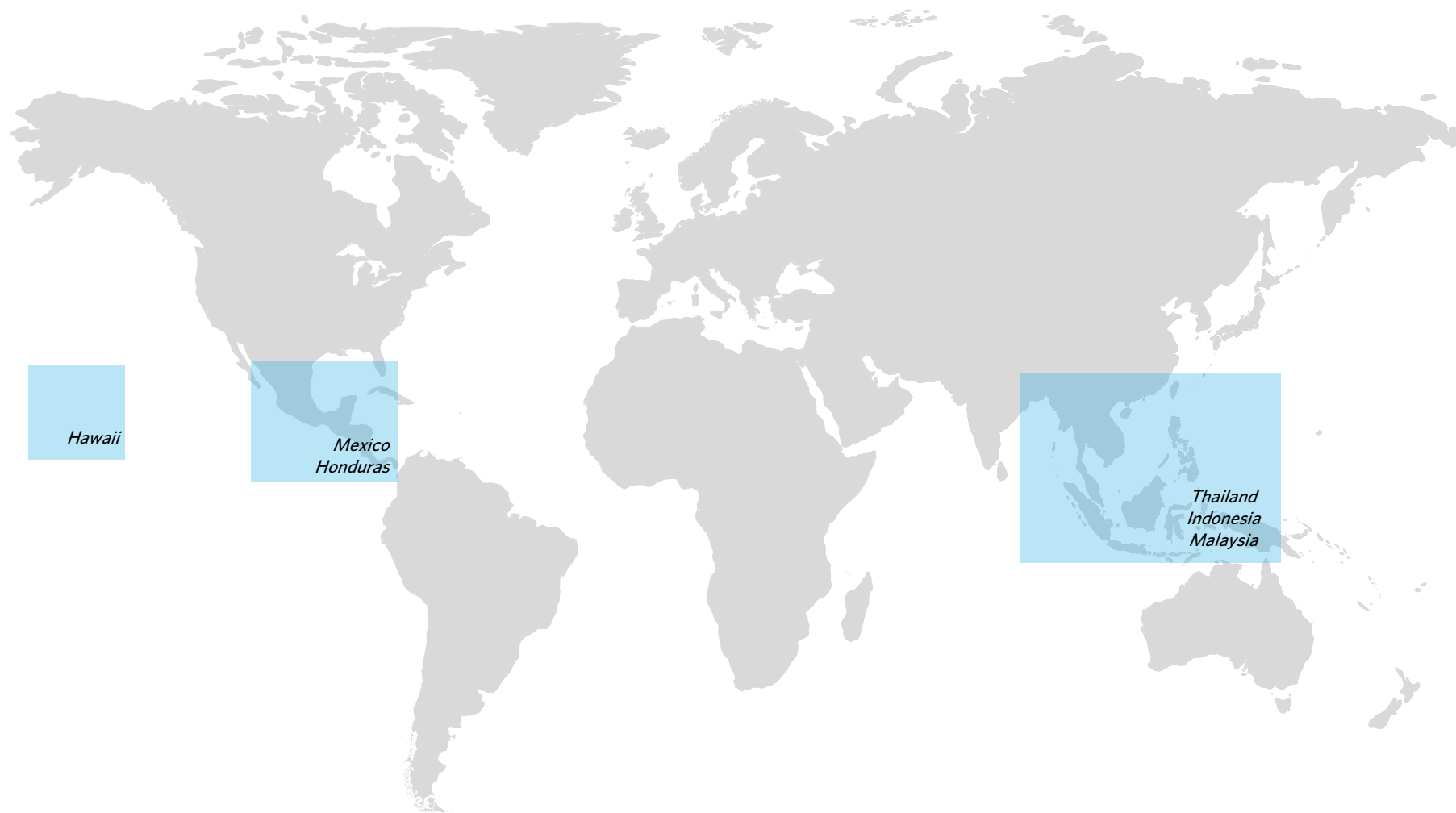


- Fraser Coast Subtropical Fruit Club (one of several across Australia)
- 100 growers Australia wide
- Hobby growers exchange fruit and tips on how to best grow exotic fruit



- North Queensland premier tropical food event
- Showcases tropical produce over 6 days
- Held in March in Innisfail, QLD
- Support from Tourism & Events QLD

Who are the competition for export markets?



How can you add value to it?

Processed products







What does Dr. Food think?



“Wonderfully exotic looking and easy to peel, “Grown in Australia” rambutans do and will make a juicy and delicious addition to domestic tropical fruits.

Penetrating export markets in Asia will be challenging but, if harvest windows are counter-seasonal to Asian grown fruit, then, opportunities may emerge in up-market retail stores in Singapore and Hong Kong.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 Thai Agri Foods Public Company Limited	1986	Samutprakarn, Thailand Public	N/A 1,580	Canned fruit, coconut milk, sauces, curry pastes, juice, frozen prepared foods	Thailand Global	www.thaiagri.com Exports to 70 countries
	1851	California, USA Private Murdock	US\$4.8b 25,000	Bananas, fresh fruit (70%), fresh vegetables, bagged salads, prepared fruit and vegetables	Global	www.dole.com #1 Producer, marketer and distributor; 300 products to 90 countries; privatised again in '13 when acquired by Murdock
	2009	Medley, USA	N/A	Snow peas, sugar snap, Asian vegetables, baby vegetables, tropical fruits	USA Global	www.vegaproduce.com Sources produce from Central and South America
HAINAN FARMERS AND FRUIT CRAFTSMEN AGRICULTURAL DEVELOPMENT	2016	Boating, China Co-operative	N/A	Mangoes, lychees, wax apples, longan, rambutan	China	133ha of orchards
	N/A	Ho Chi Minh City, Vietnam	N/A	Fruit, coffee, seafood, pepper, cashew	Global	www.tropicexports.com #1 trading company in Vietnam

PITAYA (DRAGON FRUIT)

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

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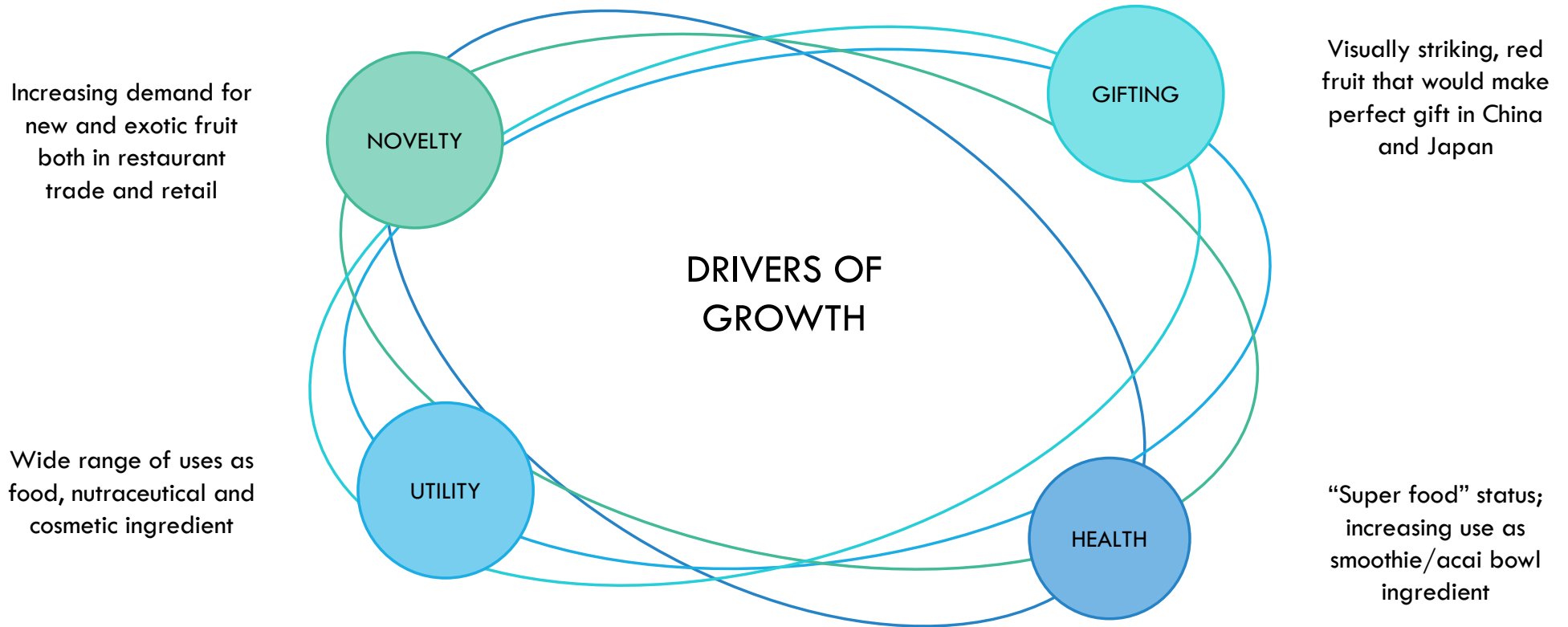
QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Very striking fruit with "superfood" halo.</p> <p>Red and white fleshed varieties are grown in Australia, with red fleshed being the more valuable.</p> <p>Popular cosmetics industry ingredient.</p>		\$2.3m (2012)	\$5-10m by 2025
Capital intensive to produce					
Mechanically harvested					
Value-added opportunities					
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers		<ul style="list-style-type: none"> - Demand for new and exotic fruits - Visually striking - "Super food" status - Relatively long shelf life for a tropical fruit 	<ul style="list-style-type: none"> - Labour intensive as handpicked - Imports of fresh pitayas are now permitted from Vietnam (as of Jan 2017; 3 tonnes arrived in Melbourne in Sept 2017) 		
Wide spread of prices		VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Origin important or called out at POS		<ul style="list-style-type: none"> - Juice, smoothies - Beverage flavouring - Jams, marmalades and jellies - Sorbet, ice block flavoring - Desserts - Chips - Pickles - Powdered ingredient - Phytoalbumin antioxidant extracts - Soaps, cosmetics (body scrubs, lip balm, shampoo, etc.) - Perfume, scents (household products, candles) - Tourism attraction 	<ul style="list-style-type: none"> - Health claims ("super food" status) will continue and be backed up by research - Australian cosmetics industry will embrace pitaya as ingredient - Australia can reach world price on powder/extracts/nutraceutical 		
COMPETITORS		KEY COMPETITORS			
Biosecurity or other domestic barriers		DOMESTIC	EXPORTERS		
Can we get to the world price?		<ul style="list-style-type: none"> - Imported fresh pitaya from Vietnam - Imported processed pitaya - Other tropical fruit - Other "superfood" powders and ingredients 	<ul style="list-style-type: none"> - Central and South America - USA (Texas) - Israel - Thailand - Vietnam - Malaysia 		
Attractive competitive set					
AUSTRALIA					
High performance genetics available					
Required skills for success					
Leverage country reputation					
OVERALL					

What is pitaya (dragon fruit)?

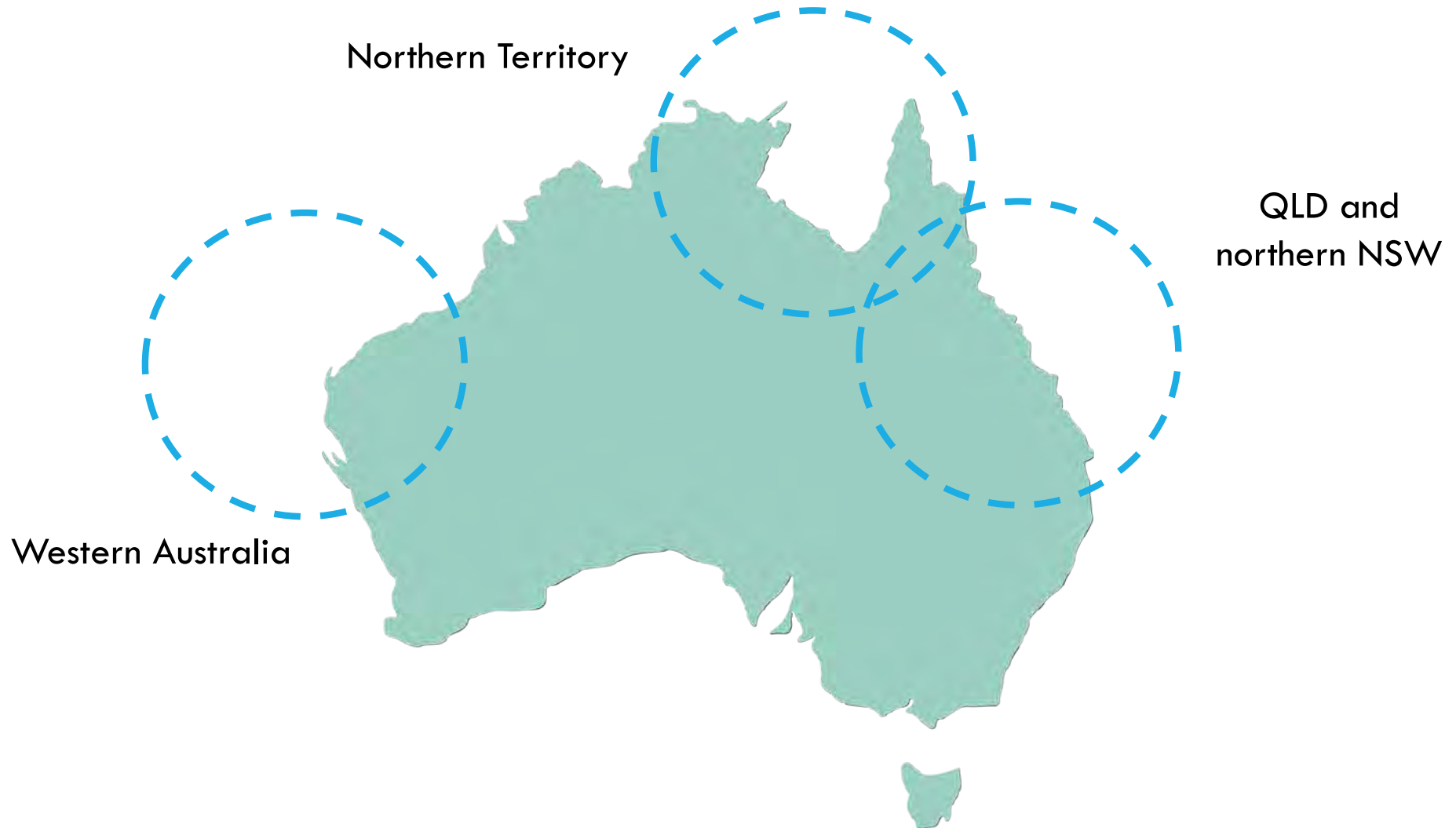


PRODUCT PROFILE	
Common names	Pitaya, pitahaya, dragon fruit
Scientific name	<i>Hylocereus undatus</i> (white flesh); <i>Hylocereus costaricensis</i> (red flesh)
Type of plant	Climbing cacti
Cultivation cycle	First flowering 12-15 months if grown from cutting; harvest fruit 1 month after flowering; can fruit up to 6 times during season
Suited climate	Dry tropical climates with moderate amount of rain
Part eaten	Flesh of the fruit, seeds, flowers
Origin	Mexico
Established in AU	1970s

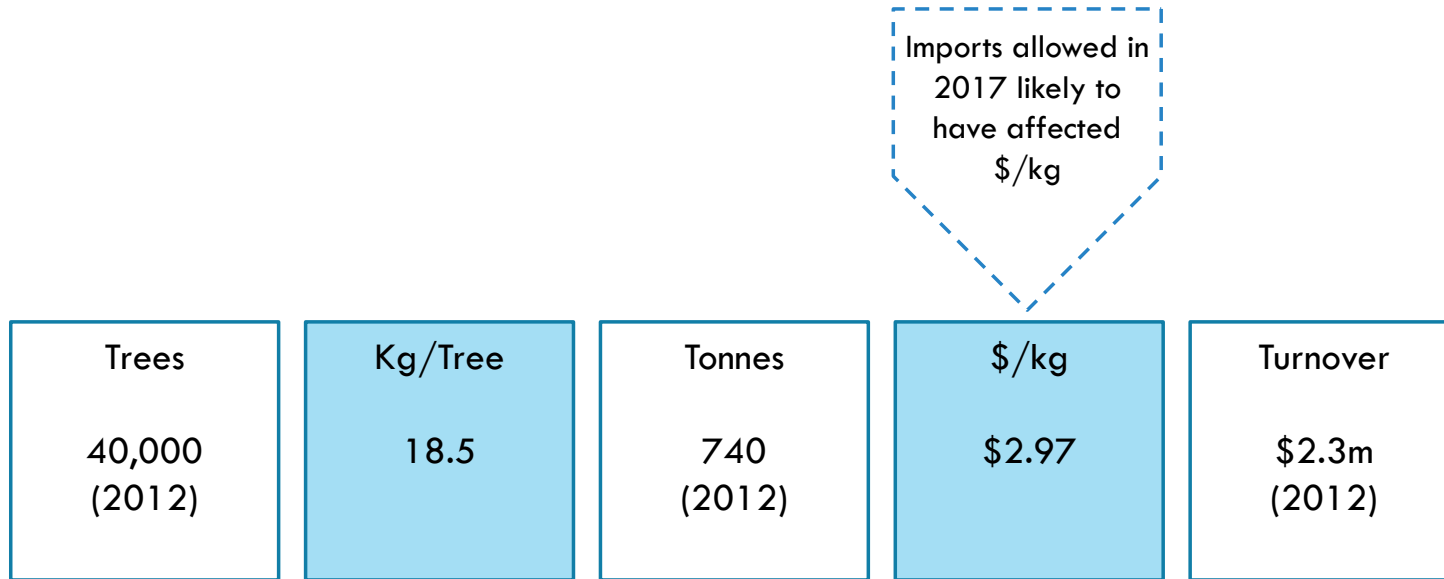
What is driving its success?



Where is it produced in Australia?





What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
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 Use with caution.

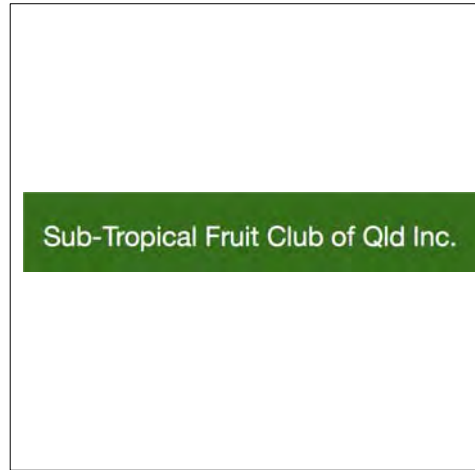
Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Based in Burleigh Heads, QLD - Organic, freeze dried pitaya powder - Sourced from South East Asia
	<ul style="list-style-type: none"> - Peter & Alison Salleras, third generation farmers - 260 acres of tropical fruit orchards at East Feluga, north of Cairns, QLD - Grows range of different crops to test market and runs tours of farm
<p>MARCUS KARLSSON</p>	<ul style="list-style-type: none"> - Based in Humpty Doo, NT - 6 ha plantation - Local and interstate markets - Largest dragon fruit farm in Australia - 16,000 trays per season

Who are the other key stakeholders?



- Tropical and Exotic Fruits Association
- Established in 2007
- Represents members across all of Northern Australia
- Run by NT Farmers

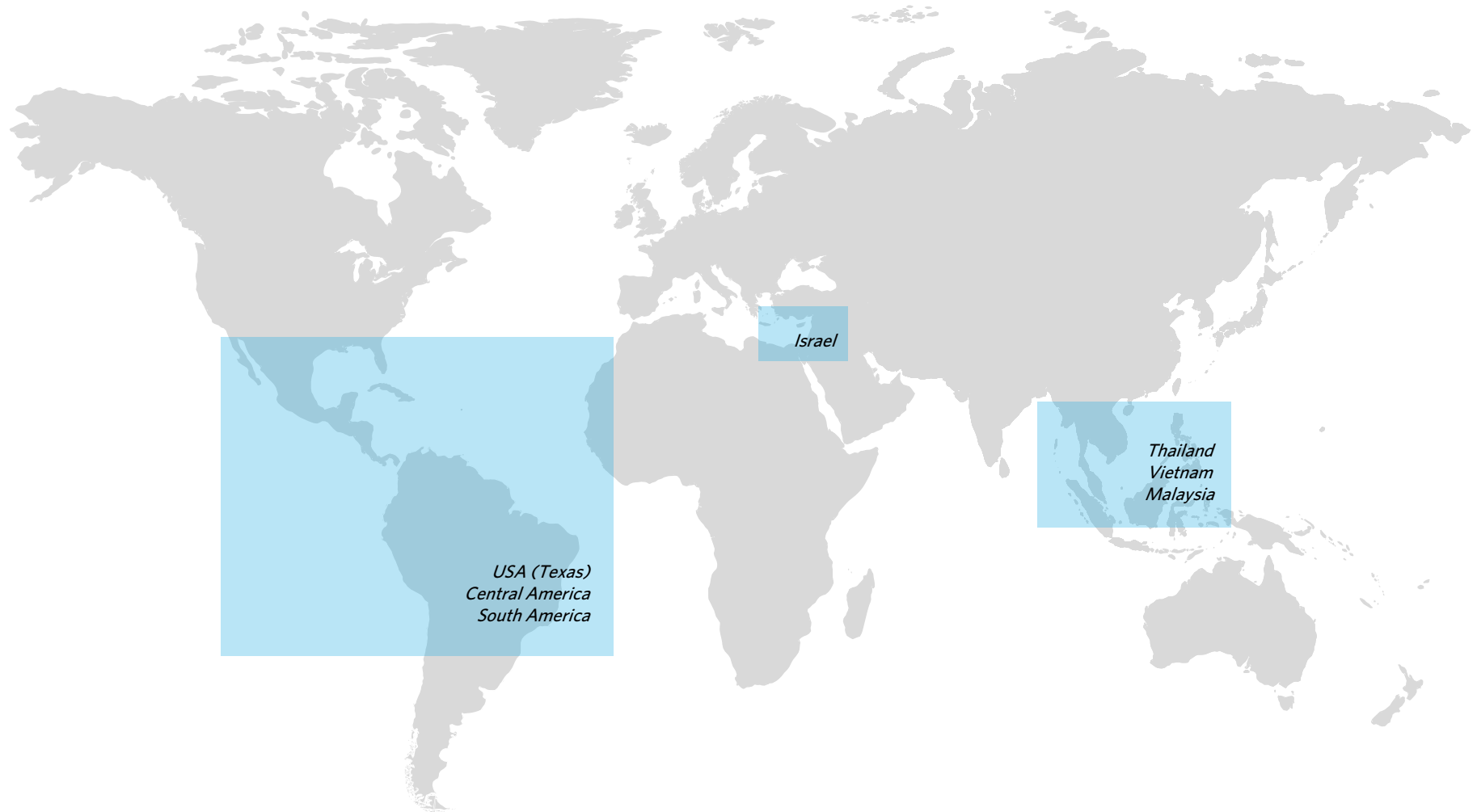


- Sub-Tropical Fruit Club of QLD Inc
- Promotes the growing and use of rare, unusual and common fruit, bush foo and vegetables



- Australian Horticultural Exporters' and Importers' Association (AHEIA)
- Name change in 2017
- Drawn into debate over allowing imports of Vietnamese dragon fruit in 2017

Who are the competition for export markets?



How can you add value to it?

Processed products



Further value added processing








What does Dr. Food think?



“Exotic looking but bland to taste, pitaya needs varietal development to improve its taste and give it “oomph”, otherwise it will be doomed to be used as a centre piece in a fruit bowl decoration only to be discarded as it deteriorates as consumers reach for tastier eating fruit.”

Who are the potential commercial partners?

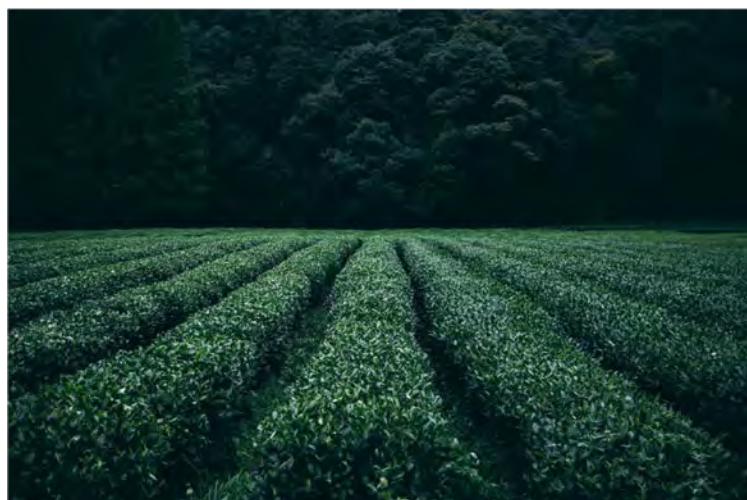
FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1992	Ho Chi Minh City, Vietnam	N/A 2,000	Real estate developments, hospitality and luxury hotels, plantations	Vietnam Asia	www.ctgroupvietnam.com Real estate development company; plans to develop \$140m dragon fruit farm in NT; agreement signed in 2014, scandal involving NT MP.
	2008	Ho Chi Minh City, Vietnam	N/A	Pitaya, fruit, vegetables, seafood	Asia China Canada	www.vinagrino.com 200t/day of pitaya packed per day
	1994	Sao Paulo, Brazil	N/A	Pitaya and acai sorbets	Brazil	www.frooty.com.br 40t of product per day
	2008	California, USA	N/A	Pitaya and acai frozen puree, frozen cubes	USA Australia	www.pitayaplus.com Has Australian website; sourced in Central America; 150 single mothers employed there, 250 organic farmers
	2007	Ho Chi Minh City, Vietnam	N/A	Pitaya, mango	Asia Australia	www.hoangphatfruit.com Exported first shipment of pitaya to Australia in 2017; two processing plants; supply 10,000t of pitaya, mango, etc per year; supply from 1,000ha of pitaya

Source: company website; company annual report; various published articles and reports; Coriolis analysis



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"	
PRODUCT		<p>9.8 million Australians drink at least one cup of tea a week. Globally an estimated 18-20 billion cups of tea are consumed daily. An Australian tea would appeal to a significant subset of local and global consumers.</p>		\$2.0m (2012)	\$5-10m by 2025	
Capital intensive to produce						
Mechanically harvested						
Value-added opportunities						
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES			
Wide spread of markets/buyers		<ul style="list-style-type: none"> - Traditional beverage globally - Health benefits (antioxidants) - Move to premium teas (often herbal or fruit, but still general halo effect) 	<ul style="list-style-type: none"> - Main Australian grown brands are not in premium range in supermarkets - Correct post harvest storage and processing after 12 hours is essential; dictates proximity to processing facilities - Coffee has surpassed tea in recent years as beverage of choice - Green tea and herbal/fruit teas are taking market share from black tea 			
Wide spread of prices		VALUE-ADDED OPPORTUNITIES	<p>WHAT YOU WOULD NEED TO BELIEVE</p> <ul style="list-style-type: none"> - "Australian grown" premium will continue to apply in domestic market and can be leveraged in export markets - Black tea will not lose any more ground to green and herbal teas and coffee 			
Origin important or called out at POS		<ul style="list-style-type: none"> - Ready to drink products - Bubble tea drink/Asian style tea shops - Weight loss products - Extracts - Fragrances - Cosmetics (anti-ageing face creams) 				
COMPETITORS		KEY COMPETITORS				
Biosecurity or other domestic barriers		<table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Australian grown green tea - Imported teas - Herbal teas - Coffee - Other beverages </td> <td> <ul style="list-style-type: none"> - India - China - Sri Lanka - Kenya - Argentina - Indonesia - Vietnam </td> </tr> </tbody> </table>				DOMESTIC
DOMESTIC	EXPORTERS					
<ul style="list-style-type: none"> - Australian grown green tea - Imported teas - Herbal teas - Coffee - Other beverages 	<ul style="list-style-type: none"> - India - China - Sri Lanka - Kenya - Argentina - Indonesia - Vietnam 					
Can we get to the world price?						
Attractive competitive set						
AUSTRALIA						
High performance genetics available						
Required skills for success						
Leverage country reputation						
OVERALL						

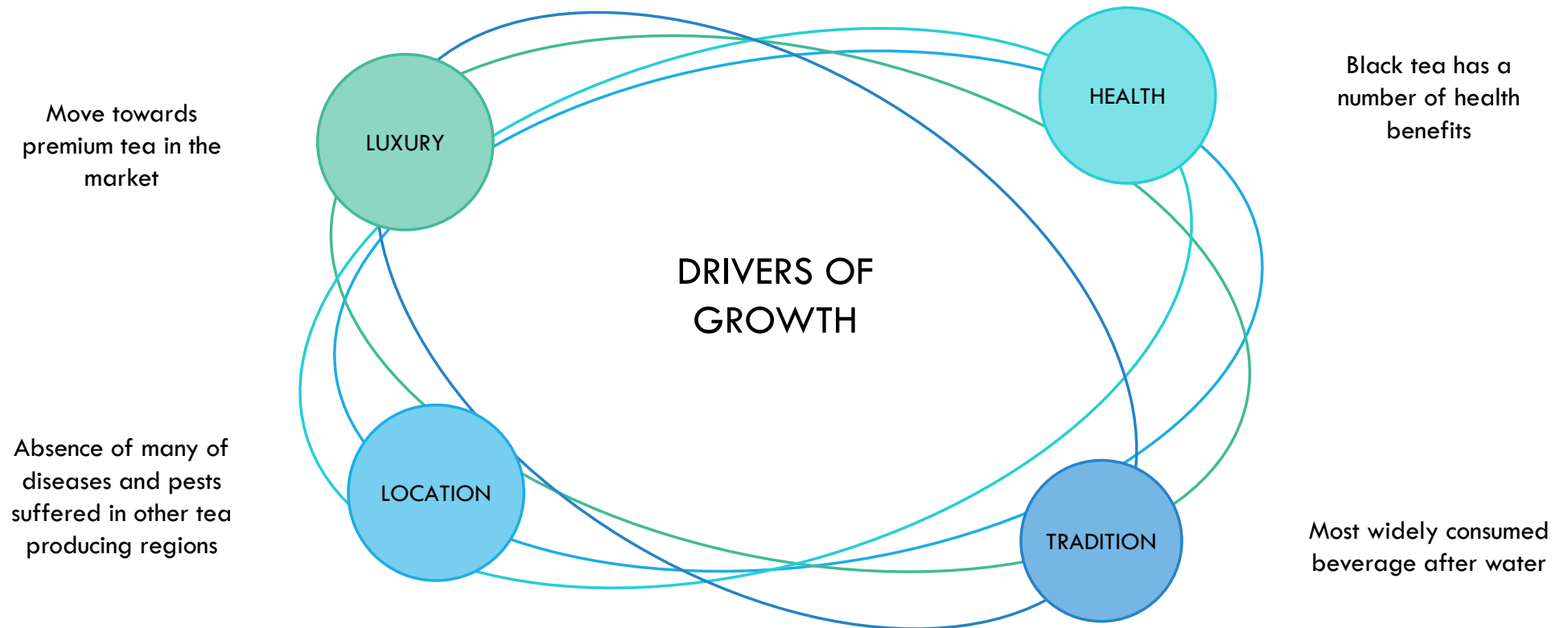
What is black tea?



PRODUCT PROFILE

Common names	Black tea
Scientific name	<i>Camellia sinensis</i>
Type of plant	Evergreen flowering shrub
Cultivation cycle	Kept pruned into a shrub; picked every 1-2 weeks once 2 years old; productive life of 50-100 years
Suited climate	Tropical and subtropical regions; ideally at high elevation for quality
Part eaten	Leaves and tip; twigs and stems can be used for Kukicha (twig tea)
Origin	East Asia, Indian subcontinent, South East Asia
Established in AU	1880s with plants from Sri Lanka

What is driving its success?



Where is it produced in Australia?






What are the industry metrics?

# Producers	Ha/Producer	Hectares	T/Ha	Tonnes	\$/kg	Turnover
10 (2012)	50.6	506 (2012)	2.5	1,254 (2012)	\$1.59	\$2.0m (2012)

5,647 tonnes of
fresh leaves
harvested

NOTE: Complex industry modelling was out-of-scope
Data presented here is preliminary and contains significant
estimates and data from multiple sources and multiple years.
Data is "patchy" in places and should be treated as directional.
Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Australia's largest tea grower - Based on Atherton Tablelands, QLD - Established in 1882 - 1,000 acres producing 6m kilograms of fresh tea leaves annually - Australian grown black tea, imported organic herbal range
	<ul style="list-style-type: none"> - Based in Murwillumbah in northern NSW - Established in 1978 - 250,000 tea bushes - Blends Australian grown tea with imported teas - Produces black and green tea
	<ul style="list-style-type: none"> - Established in 1978 by Nicholas family - Based on the Cubbagudta Plantation in Daintree region, QLD - 100% Australian grown, unblended black tea

Who are the other key stakeholders?



- Australian Tea Masters
- Tea training and education organisation
- Hold Golden Leaf Awards; only tea competition in Australia
- Organise Australian International Tea Expo



- Australasian Tea Association
- New, not-for-profit organisation for tea communities in Australasian region
- Strengthening relationships and sharing knowledge

Who are the competition for export markets?



How can you add value to it?

Processed products



What does Dr. Food think?








“A niche marketing opportunity for home grown tea with success contingent on tea quality and mechanical harvesting.

Tea is the world’s Number 1 hot beverage but, in Australia and many Western countries, has been placed in the shadows by the extraordinary growth in out-of-home coffee drinking.

However, tea may have its day in the sun soon as it is becoming increasingly fashionable to drink special teas/teas with a story. Significantly, Starbucks in the USA is mounting a marketing push on teas.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1894	DK Rotterdam, Netherlands Public AMS:UNA; LSE:ULVR; NYSE:UN&UL	€52.7b 169,000	Personal care, home care, food, dairy products, refreshment (tea and tea based beverages)	Global	www.unilever.com Operates in over 100 countries; 306 factories in 69 countries (all products); sells in 190 countries; Lipton and PG Tips brands
	1935	London, UK Public LSE:ABF (Weston Family 54%)	£12.8b (15) £3.2b Grocery 124,000	Grocery (tea, baking ingredients, bread, spices, beverages, cereals, oils, processed meat, sugar, agriculture, ingredients, retail)	Europe Americas Africa Asia Australia	www.abf.co.uk www.georgewestonfoods.com.au Operations in 48 countries; Twinings brand
	1960	Kolkata, India Public NSE:TATGLOBAL	US\$1.26b 3,166	Tea, coffee, water	India Europe USA Global	www.tataglobalbeverages.com #2 manufacturer and distributor of tea; sells in over 40 countries; Tetley, Tata Tea brands; JVs with Starbucks, PepsiCo, Zhejiang Tea Group
	1950	Zhejiang, China	>US\$100m >1,000	Tea (black, green, oolong, pu'er, white)	China Africa Middle East USA Japan	www.zjtea.com China's largest tea company; world's leading green tea exporter; 40,000t exported annually; 8,000ha of tea plantations
	1866	Vevrey, Switzerland Public SIX:NESN; EuroNext:NESTS; OTC Pink:NSRGY; BSE:500790; NSE:NESTLEIND	US\$90.8b 328,000	Dairy products, pet care, beverages (water, coffee, juice), food (prepared, frozen, aids, cereal), nutrition (infant, adult), confectionery	Global	www.nestle.com www.orioncokolada.cz www.cailler.ch/en 418 factories; factories in 36 countries



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Chia wins "buzzword bingo" as a seed, a 'superfood' and an ancient grain Chia is more than food – it also overlaps into the wider health platform. Australia has led in global marketing and branding of chia, particularly in value-added products.</p>		\$3.9m (2012)	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input checked="" type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Ancient grains, superfood, popular ingredient - High in omega-3 		<ul style="list-style-type: none"> - Cheap imports of chia from South America - Severely impacted by rain at the wrong time during harvesting 	
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Processed chia (pods, desserts, shots) - Chia beverages, energy drinks, health drinks - Organic chia 		<ul style="list-style-type: none"> - Ongoing select-breeding programs successfully increase both yields and health properties of chia - Chia will continue to produce high value value-added chia based products - The NT will continue to grow chia seeds economically - Able to develop a unique Australia story and brand message around chia products 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	<input checked="" type="radio"/>	DOMESTIC	EXPORTERS		
Can we get to the world price?	<input type="radio"/>	<ul style="list-style-type: none"> - Imported chia products - Other ancient grains - Other ancient seeds and grains (sorghum, buckwheat, amaranth, farro, teff etc.) 	<ul style="list-style-type: none"> - Mexico - South America 		
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				

What is chia?



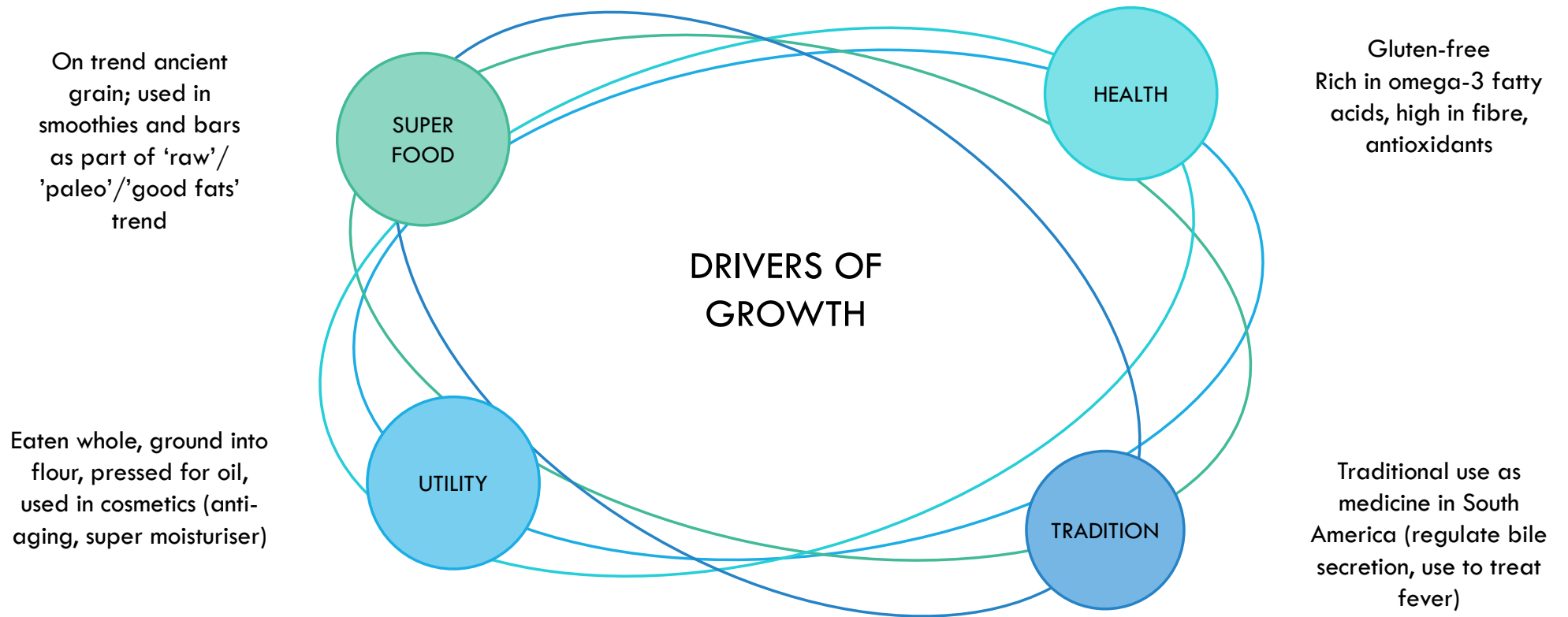
PRODUCT PROFILE

Common names	Chia
Scientific name	<i>Salvia hispanica</i>
Type of plant	Annual herb in mint family
Cultivation cycle	Grown in dry season (in Ord)
Suited climate	Low rainfall, tropical and subtropical 18-27C
Part eaten	Seed/grain
Origin	Central/South America
Established in AU	2005 (commercial crop)

Where is it produced in Australia?

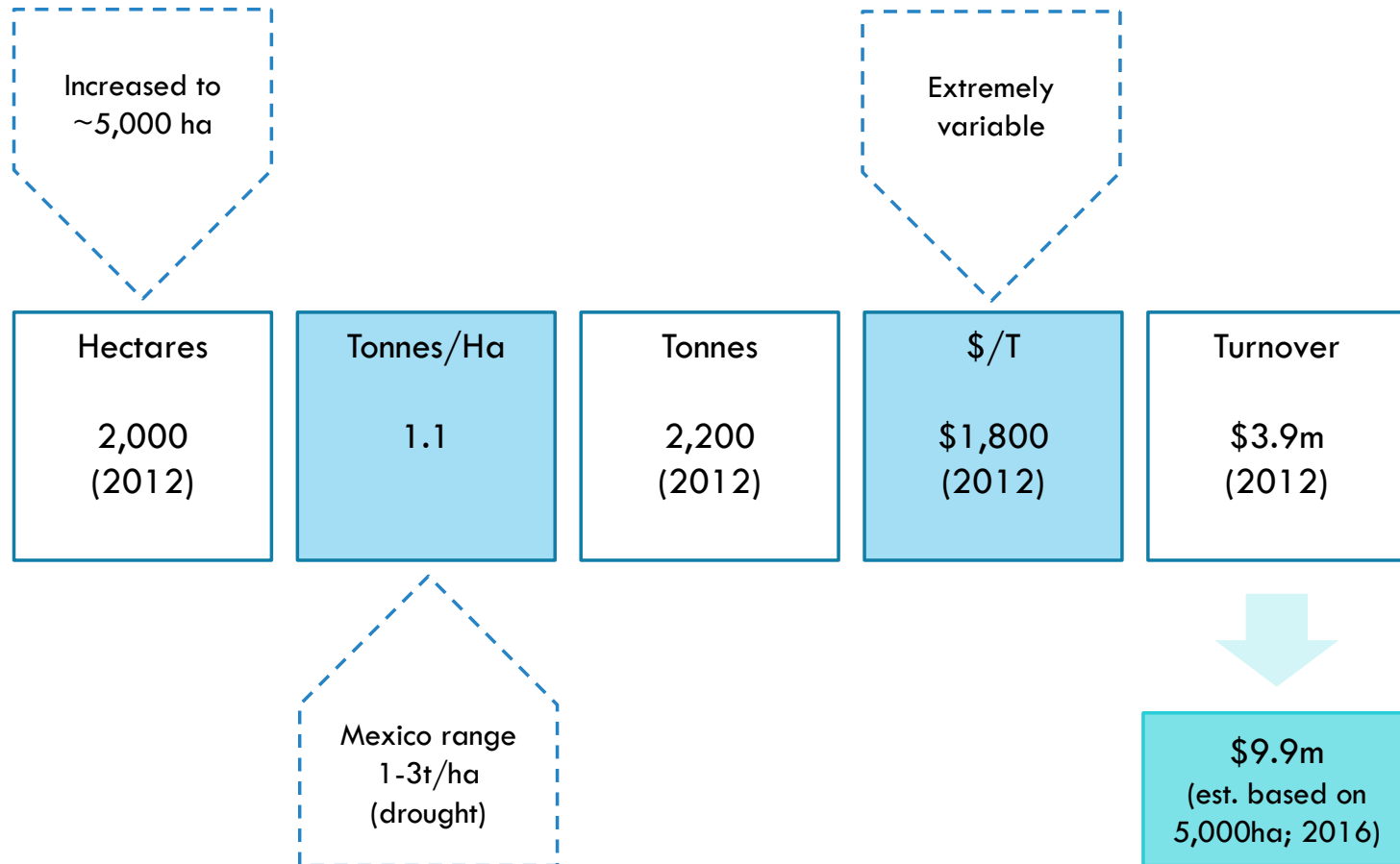


What is driving its success?



What are the industry metrics?

NOTE: Complex industry modelling was out-of-scope
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 Use with caution.



Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Founded by John Foss in 2003 - Established chia industry in Northern Australia - Chia whole, oil, flour, powder, pods, oats and chia mix - Grown in Kimberley, WA; processed in Melbourne, VIC; company based in USA
	<ul style="list-style-type: none"> - Kimberley Agricultural Investment (KAI) - Parent Shanghai Zhongfu (CEO Jian Zhong Yin) - Growing chia in Ord Development; S1 250ha, S2 360ha – potential for total land 27,000ha
	<ul style="list-style-type: none"> - Based in Ferntree Gully, VIC - Established in 1987 - Health food with emphasis on plant based products - Breakfast cereals and muesli bars

Who are the other key stakeholders?



- Ord River District Co-operative Ltd (ORDCO)
- Independent agricultural co-operative with 60 active members
- Represents 95% of farmers in the Ord region



- Northern Australia Crop Research Alliance
- Based in the East Kimberley (Ord River Irrigation Area)
- ORDCO, The Chia Co and Kai Australia



- Office of Northern Australia
- (Department of Industry, Innovation and Science)
- Established in 2009 help implement the White Paper of Developing Northern Australia

Who are the competition for export markets?



How can you add value to it?

Processed products








What does Dr. Food think?



“Chia has long legs! i.e. it has and will continue to have traction in markets for healthy, natural, nutritious foods.

Under the “ancient grains” umbrella, the tiny seeds have a plethora of prime benefits with only one downside – the small size of chia seeds tend to ensure that, in their whole form, they stick in between the teeth of the consumer.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	N/A	Beijing, China Hemp Industrial Group (HMI Group)	N/A	Chia	Global	www.purechia.co Sources, grows, processes, markets and distributes chia products globally (estimate market for chia products \$2.5b 2017)
	1898	Cooranbong, NSW Charity Seventh-day Adventist Church	N/A	Breakfast foods, breakfast drinks, plant milks; plant based meat alternatives, soups, spreads	Australia NZ India Asia	www.sanitarium.com.au Weetbix, Up&Go, So Good brands; Life Health Foods subsidiary
	1986	Jiangsu, China Jiansu Longliqi Bioscience Co	N/A 10,000	Cosmetics, health care products (plus household, furniture, real estate and logistics)	China	www.longrichbioscience.com Leading cosmetic company in China
	1909	Clichy, France Public Euronext:OR	€25.8b 89,300	Cosmetics, skincare, fragrances, haircare	Global	www.loreal.com World's leading cosmetics company; present in 140 countries; 42 factories worldwide
	2014	Mt Pleasant, USA Private	N/A	Cosmetics, skincare	USA South America	www.mayachia.com Range based on chia oil; patented supercritical extraction process used



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Amaranth is primarily grown as an animal fodder crop, both in Australia and worldwide. There is an emerging market for the product for human consumption. Real growth is possible if the Australia industry can "do a chia".</p>		\$1-2m (est)	\$5-10m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input checked="" type="radio"/>				
Value-added opportunities	<input type="radio"/>				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	<input type="radio"/>	<ul style="list-style-type: none"> - Requirement for low cost, high value animal feeds - Opportunity as a stock feed to replace traditional feed - Fast growing ancient grain with high in nutritional value (26% crude protein, 4% crude fat, 35% fibre and 34% carbohydrates) - High protein crop producers 10x the amount of fodder/ha than competition, thereby reducing the cost of meat production 10-20% 	<ul style="list-style-type: none"> - Birds - Currently small 'emerging crop' therefore difficult to achieve scale efficiencies beyond fodder - Ability to turn into a noxious weed 		
Wide spread of prices	<input type="radio"/>				
Origin important or called out at POS	<input type="radio"/>				
COMPETITORS		VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Biosecurity or other domestic barriers	<input type="radio"/>	<ul style="list-style-type: none"> - Animal feed/fodder crop (including aquaculture) - Cereals (gluten-free) - Breakfast muesli - Flour (gluten-free) 	<ul style="list-style-type: none"> - Fodder trials will successfully develop a high yielding crop suitable for Australian conditions using CN breeds in partnership with Amaranth Ecological Technology (Shenzhen) Co. Ltd - Ongoing research into health properties (antioxidant benefits) of amaranth for human consumption - AU able to grow a premium seed (organic?) to achieve a premium 		
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>				
AUSTRALIA		KEY COMPETITORS			
High performance genetics available	<input checked="" type="radio"/>	DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Ancient grain and grain and seed superfood competitors - Imports of ancient grains - Fodder – barley, wheat, pulses 	<ul style="list-style-type: none"> - USA - China 		
Required skills for success	<input type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				

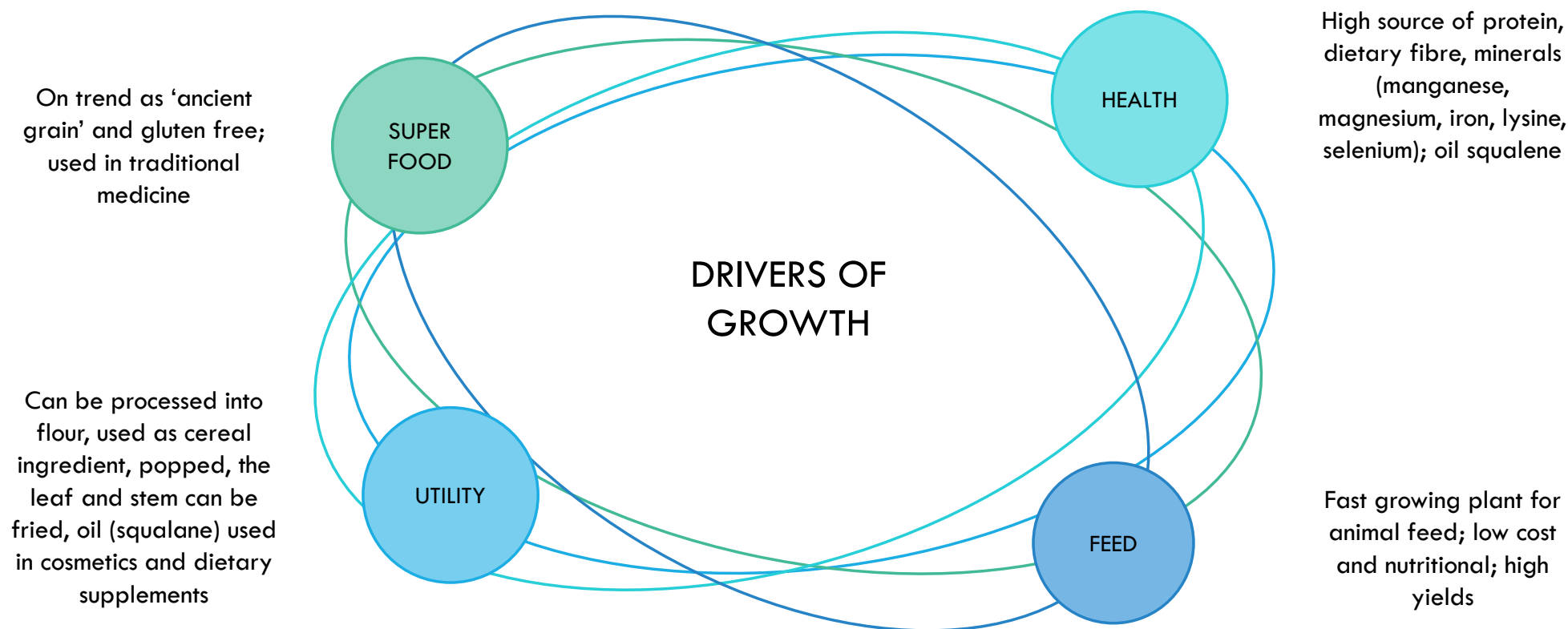
What is Amaranth?



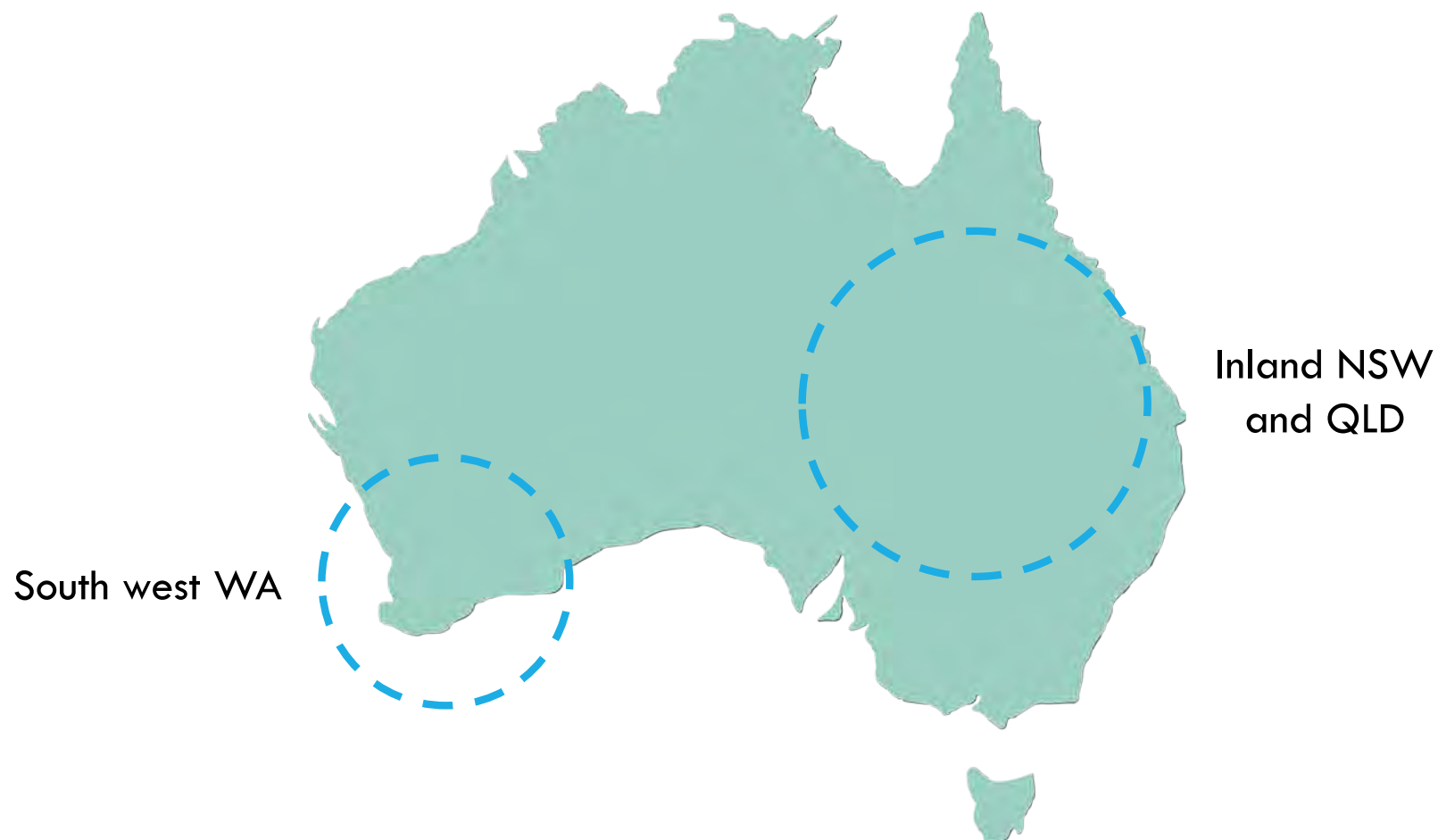
PRODUCT PROFILE

Common names	Amaranth, pigweed
Scientific name	<i>Amaranthus</i>
Type of plant	Perennial plant
Cultivation cycle	Annual
Suited climate	Tropical and temperate climates
Part eaten	Seed (Pseudocereal), leaf/stem, oil
Origin	Mesoamerica
Established in AU	Native version in Australia

What is driving its success?



Where is it produced in Australia?



What are the industry metrics?

TO BE DETERMINED
NO IDENTIFIED INDUSTRY DATA

# Producers	Ha/Producer	Hectares	Kg/Ha	Tonnes	\$/kg	Turnover
N/A	N/A	N/A	N/A	N/A	N/A	\$1-2m (est)

NOTE: Complex industry modelling was out-of-scope
Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years. Data is "patchy" in places and should be treated as directional. Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Southern Dirt Growers Group based in Kojonup, WA - Pioneer commercial scale production of amaranth in partnership with Amaranth Ecological Technology Co (China) - Sole rights to trial and distribute their strain of amaranth in Australia
	<ul style="list-style-type: none"> - Australia's leading organic and natural food supplier - Ethically sourced pantry staples and health products - Established in 2002 by Matt and Karen Ward - Based in Alexandria, NSW - Supplies imported organic amaranth
	<ul style="list-style-type: none"> - Based in Cheltenham, VIC - Supplier of whole foods; organic, non GMO, free from, etc. - Exclusive to health food stores - Sources products locally and globally - Amaranth flakes, flour and puffed in range

Who are the other key stakeholders?



- Southern Dirt Grower Group
- Based in Kojonup, WA
- Aims to create and sustain vibrant, healthy prosperous farms and communities
- Signed deal with Amaranth Ecological Technology (Shenzhen) Co

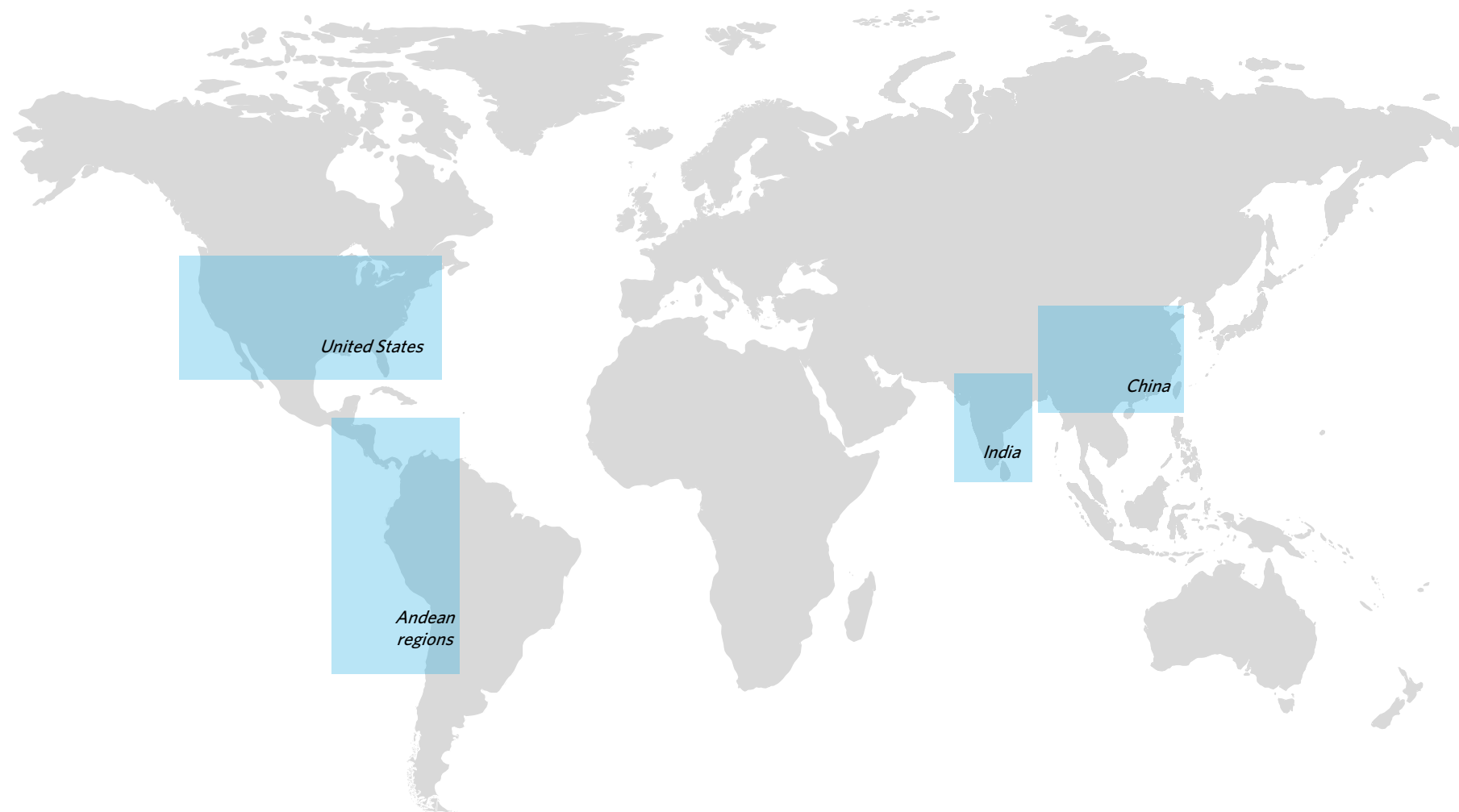


- Grains and Legumes Nutrition Council
- Independent authority on nutrition and health benefits of grains and legumes
- Not-for-profit, recognised health promotion charity



- GrainGrowers
- Independent grain farmer representative organisation
- 18,000 members across Australia
- Goal of more efficient, sustainable and profitable grain production sector

Who are the competition for export markets?



How can you add value to it?

Processed products



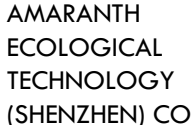




What does Dr. Food think?



“Amaranth has short legs! i.e. it, too, is listed under the “ancient grains” umbrella but has failed to grab the same level of attention that the food media has sprayed liberally on chia.

It has excellent nutritional credentials but needs an uplifting story to establish itself in the mind’s eye of millennial consumers.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	N/A	Shenzhen, China	N/A	Amaranth (as fodder)	China Australia	800,000ha in CN, 2017; looking to expand production globally for animal feed; Chinese public private partnership; closed loop feed and protein chain; MOU with Southern Dirt, WA
	1957	Jilin, China	N/A	Research into Amaranth	China	www.bcsfxy.com 20 years of plant breeding research into amaranth, high yielding dwarf var.
	1993	New York, USA Public NASDAQ:HAIN	US\$2.853b 7,825	Infant and toddler nutrition, yoghurt, organic and natural food products, plant based meat and dairy alternatives	USA Canada Europe Global	www.hain.com Manufacture, market, distribute and sell organic and natural products in over 80 countries worldwide
	2011	Kununurra, Australia Shanghai Zhongfu	N/A	Chia, sorghum, cattle	Australia	www.kai-australia.com.au Kimberley Agricultural Investment (KAI); Ord River Development; potential for 27,000ha
	1988	Gujarat, India	N/A	Amaranth, flax, sesame, cumin, mustard, fenugreek, fennel, psyllium, coriander, etc.	India Global	www.viralspices.com One of the leading manufacturers, suppliers & exporters of conventional & organic seeds, oilseeds, spices, grains and pulses



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Mustard seed has the potential to be the next canola, a successful rotation and companion crop, producing a high value essence.		\$3-5m (est)	\$5-10m by 2025
Capital intensive to produce	○				
Mechanically harvested	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Popular seed used for mustard sauce, preserving, oil - High source of oil and protein (oil 47%, meal = 44% protein) - Used as ingredient for wasabi - Demand for natural solutions to farming (e.g. biofumigant properties on weeds and fungal pathogens) 		<ul style="list-style-type: none"> - Climate change (performs best with moist soil and cool temperatures) - Farmers won't risk breaking from wheat, canola rotation - No reliable market for mustard - Not triazine tolerant (herbicide tolerance) 	
Wide spread of markets/buyers	◐	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Essence (volatile oil - glucosinolates) - Condiment ingredient for wasabi - Oil - Pastes (develop a unique AU paste) - Powders - Seeds whole 		<ul style="list-style-type: none"> - AU strength in growing canola transferable to mustard seed - Able to grow the higher yielding brown and black seed mustards - Increase production in SA and VIC to increase volumes at AMO (processing) facility - Research health benefits to identify unique AU characteristics of crop - Crop will maintain its premium over canola to incentivise farmers - New breeds will continue to outperform canola in dry years - Mustard will offer higher yields to wheat as a rotational crop 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers	●	<ul style="list-style-type: none"> - Imported mustard seeds - Imported mustard products 	<ul style="list-style-type: none"> - Canada - Ukraine - Russia - India - Pakistan 		
Can we get to the world price?	◐				
Attractive competitive set	●				
AUSTRALIA					
High performance genetics available	◐				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	●				

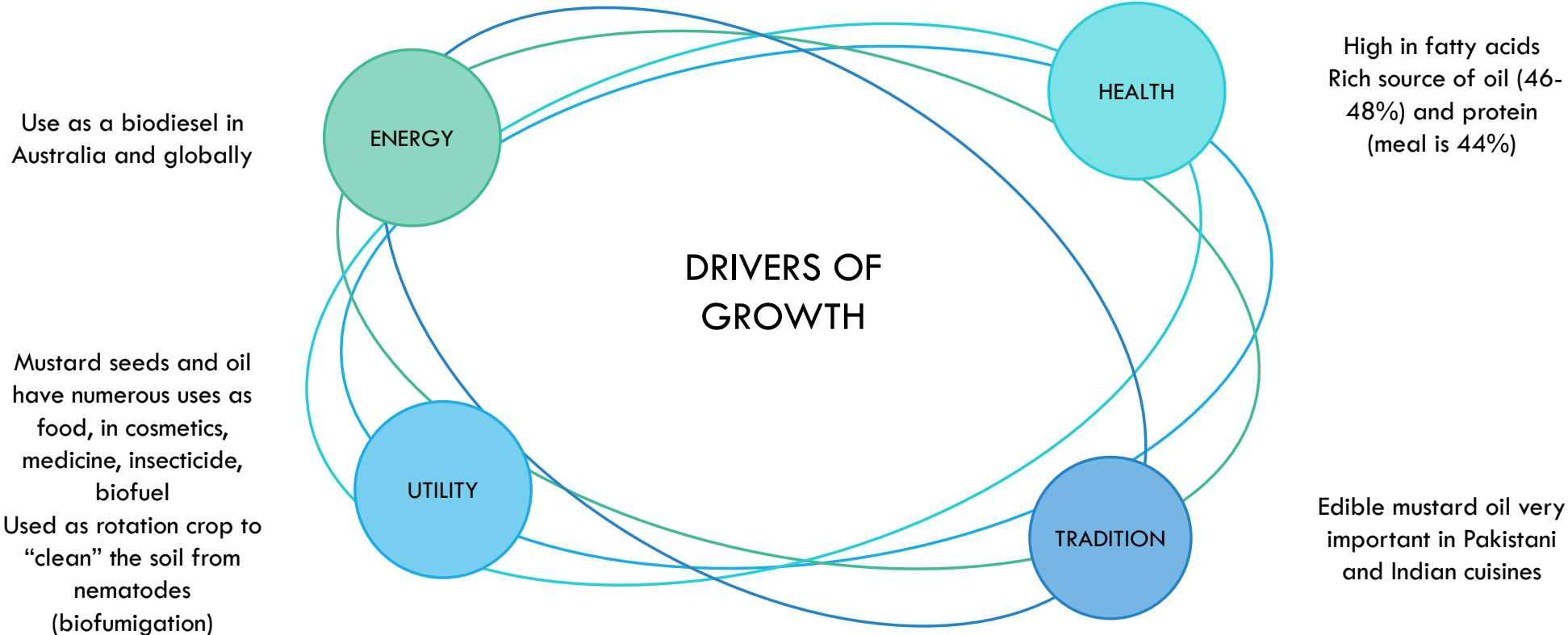
What is mustard seed?



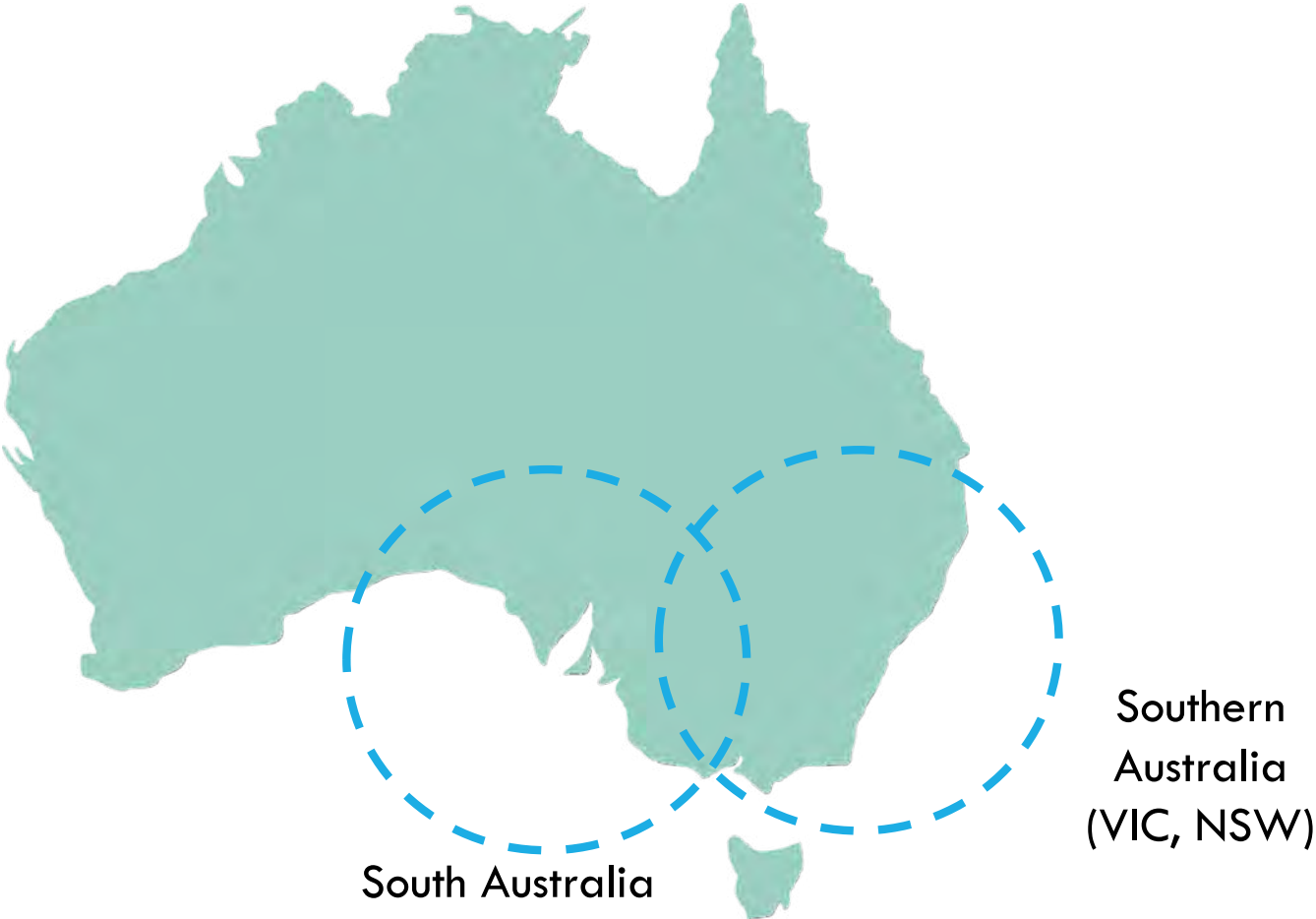
PRODUCT PROFILE

Common names	Yellow mustard, brown mustard, oriental mustard
Scientific name	<i>Sinapis hirta</i> (mild white) <i>S. alba</i> (white), <i>Brassica nigra</i> (black), <i>B. juncea</i> (oriental)
Type of plant	Herb
Cultivation cycle	Annual (often in rotation), matures 80-90 days
Suited climate	Temperate
Part eaten	Greens, seed
Origin	Temperate Europe
Established in AU	1980s commercially

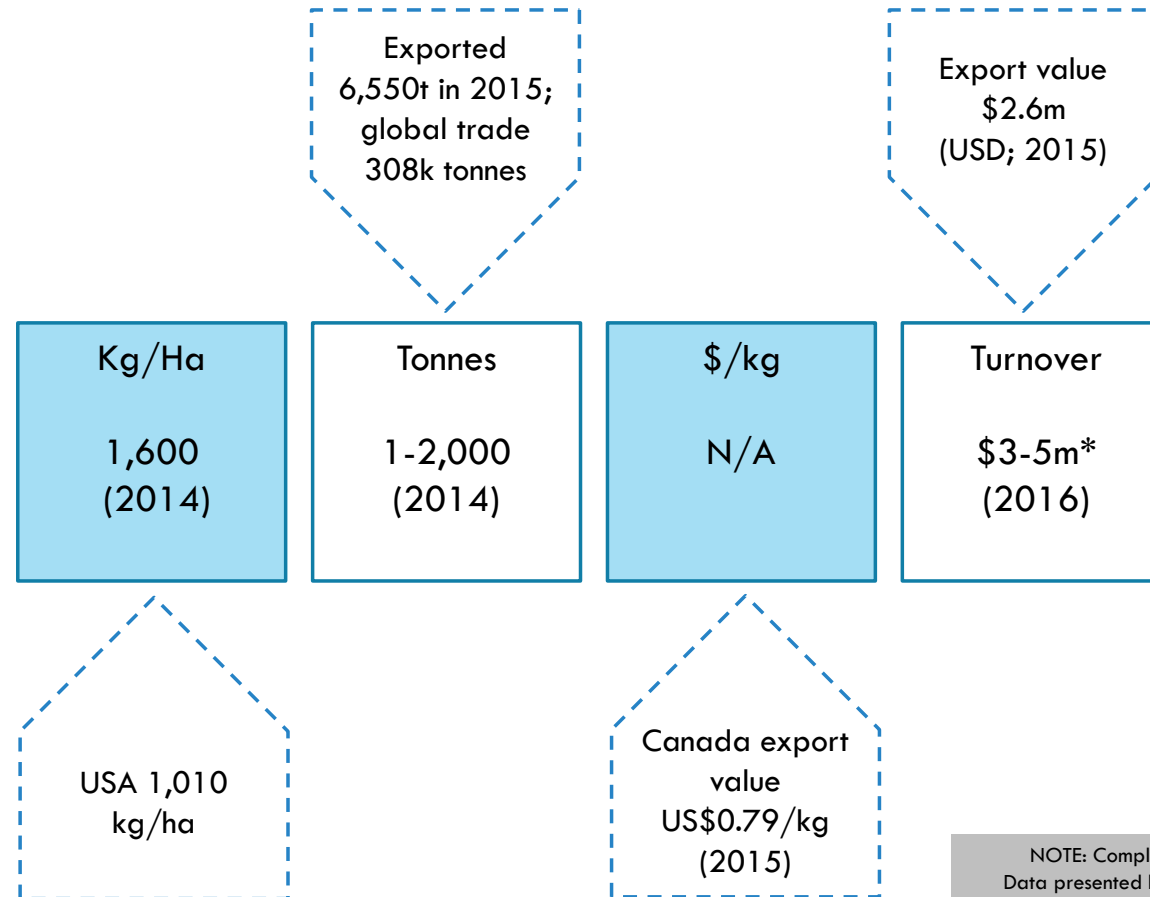
What is driving its success?



Where is it produced in Australia?






What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
 Data presented here is preliminary and contains significant estimates and data from multiple sources and multiple years. Data is "patchy" in places and should be treated as directional. Use with caution.

* Coriolis estimate; Source: various published articles; UN FAO data; Coriolis analysis and estimates

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
 <p>YANDILLA MUSTARD OIL ENTERPRISE PTY LTD</p>	<ul style="list-style-type: none"> - Based in Wallendbeen, NSW - Specialising in production of cold pressed mustard seed oil - Uses mustard variety specially bred by CSIRO - 20,000l oil in 2014, from 120 t seed - Oils, meal, pickles, therapeutic oil, whole grain powder, dips
 <p>AUSTRALIAN mustard oil</p>	<ul style="list-style-type: none"> - Based in Young, NSW - Established 2014 - Processed 1,000 t in 2014; 4,000t storage capacity - Premium volatile oil from mustard seed - Contains glucosinolates and is used in wasabi - Exports volatile oil to Japan, oil to India, Sri Lanka, Fiji
 <p>BioWorks</p>	<ul style="list-style-type: none"> - Established in 2005 - Based in Henderson, WA - Purchases mustard oil from Riverland Oilseed in Pinjarra, WA - Biodiesel capacity of 4m litres per annum; plans to expand to 6m - Collects used cooking oil locally as well to produce biofuel and animal feed

Who are the other key stakeholders?



- Australian Oilseeds Federation
- Represents common interest of all Australian oilseed industry participants
- Promote the development, expansion and improvement of oilseed production

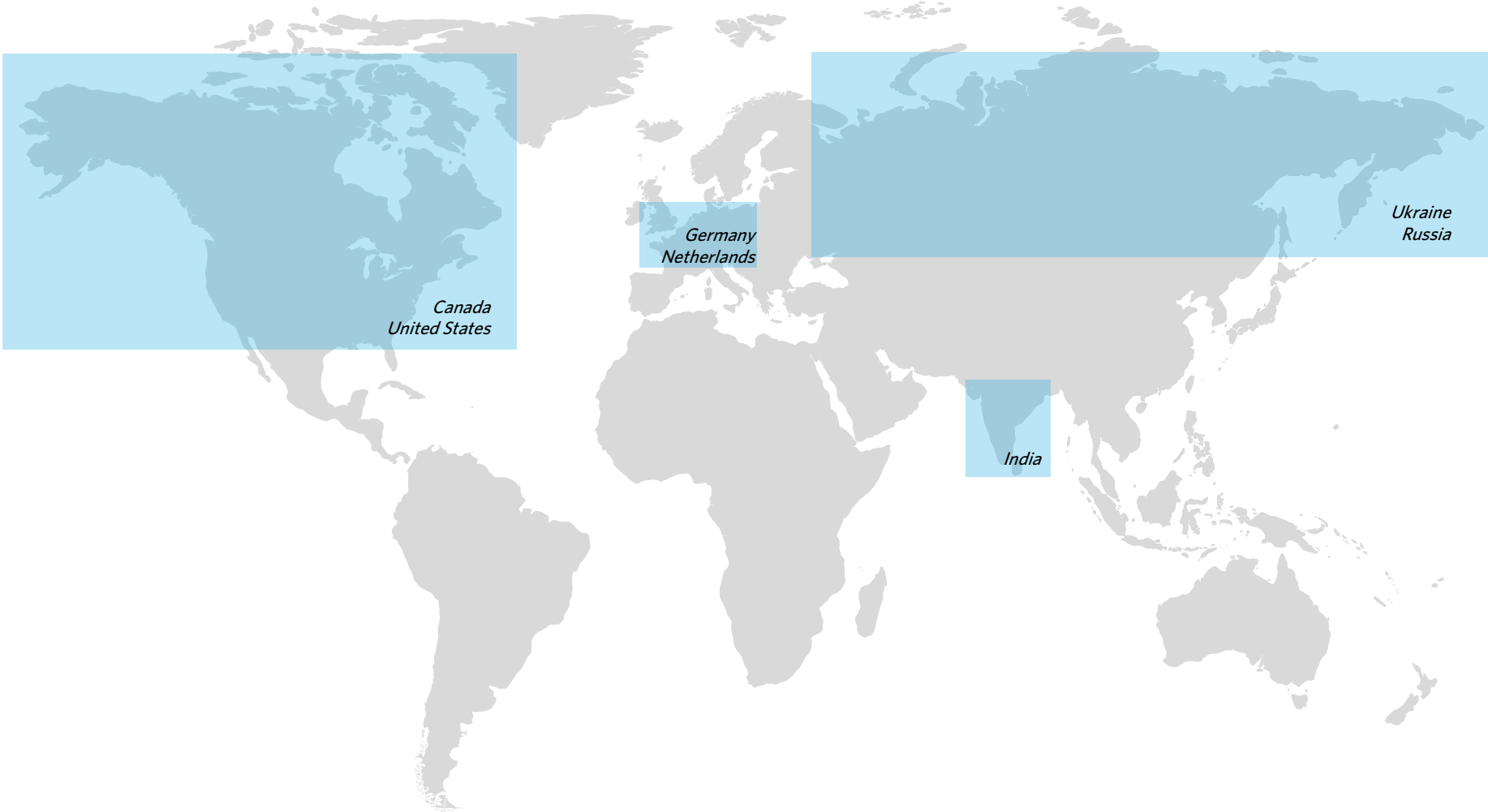


- Southern Cross University, Plant Science Department
- Brassica research
- Research project with Australia Mustard Oil to develop new lines of mustard and increasing glucosinolates



- Commonwealth Scientific and Industrial Research Organisation
- Australia's largest patent holder
- Over 15 years of mustard seed trials

Who are the competition for export markets?



How can you add value to it?

Processed products






What does Dr. Food think?



“The “big” money in mustard is in the value of established brands: in 2017, Reckitt Benckiser sold its French’s Mustard and Frank’s Red Hot Sauce – both brand leaders in their respective categories in the USA – for US\$4.2 bn. which was an eye-watering 10X sales.

Mustard market prospects look good in developed markets as the strong taste of many mustards replace the need for salt being added. Whilst sugar is the current principal demon on the food additive block at the moment, salt content is not too far behind. ”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1814	Norwich, England Unilever (Public)	N/A	Mustards, condiments sauces, seasons and shakes, meal kits	Global	www.colmans.co.uk One of the world's most famous brands of mustard; owned by Unilever
		Saskatoon, Canada	N/A	Crop protection solutions using mustard compounds	Canada	www.mpttechnologies.com Developed novel solutions using components of the mustard plant for pest control of nematodes and soil-borne diseases
	2009	Saskatchewan, Canada Not-for-Profit Saskatchewan Mustard Development Commission & Canadian Mustard Assoc.	N/A	Mustard research and development	Canada	www.mustard21.com Focus on value added mustard industry; researching into uses and yields
	1850	Sydney, Australia	N/A	Brassica research and genomics	Australia	www.sydney.edu.au Faculty of Science; Indian mustard breeding programs and research projects
	1967	Grand Forks, USA Private	N/A	Mustard seed, powder, flour, bran, buckwheat, sunflower, safflower	USA	www.minndak.com Own and operated one of the most automated mustard mills in the world; operations in Grandforks, Drayton, Donaldson, Dickinson

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"				
PRODUCT		Australia is net importer of lavender oil. There is growing demand from the cosmetics industry. Tasmania has doubled planting area (coming online now).		\$1.3m (2012)	\$3-5m by 2025				
Capital intensive to produce	●								
Mechanically harvested	●								
Value-added opportunities	●								
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES						
Wide spread of markets/buyers	◐	<ul style="list-style-type: none"> - Supply constraints (Insect borne disease in France) - Increasing demand (strong markets in EU, USA, Japan, China) - Demand for natural ingredients in cosmetics - Tourism into agricultural regions increasing Chinese interest in Australian produce 	<ul style="list-style-type: none"> - Ensure oil quality standards appropriate for end use - Inconsistent quality of oil from small on-farm facilities - Finding market opportunities at the appropriate scale - Four years for crop to reach its peak oil production - Must ensure oil meets all the national and international standards - Must be registered for Therapeutic Goods 						
Wide spread of prices	◐	VALUE-ADDED OPPORTUNITIES							
Origin important or called out at POS	●	<ul style="list-style-type: none"> - Perfume/fragrances (cosmetics, soaps) - Antiseptic - Essence for aromatherapy - Tourism activities 							
COMPETITORS		KEY COMPETITORS							
Biosecurity or other domestic barriers	◐	<table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Imported oils - Alternative fragrances </td> <td> <ul style="list-style-type: none"> - Bulgaria - France - England - Russia - USA - Canada - Africa - Europe </td> </tr> </tbody> </table>	DOMESTIC	EXPORTERS	<ul style="list-style-type: none"> - Imported oils - Alternative fragrances 	<ul style="list-style-type: none"> - Bulgaria - France - England - Russia - USA - Canada - Africa - Europe 	WHAT YOU WOULD NEED TO BELIEVE		
DOMESTIC	EXPORTERS								
<ul style="list-style-type: none"> - Imported oils - Alternative fragrances 	<ul style="list-style-type: none"> - Bulgaria - France - England - Russia - USA - Canada - Africa - Europe 								
Can we get to the world price?	○	<ul style="list-style-type: none"> - Able to produce the more sought after high quality oil (English) at their maximum yields (5t flowers/ha) - Able to increase production beyond the 3.5t, with an increase in commercial production - Able to supply oil beyond domestic market - Able to produce a consistently high quality product - Scale able to be reached to achieve economies of scale with harvesting machinery and drying and distillery equipment (e.g. Essential Oils of Tasmania perfume plant, sourcing variety of plants across 300ha in TAS) 							
Attractive competitive set	●								
AUSTRALIA									
High performance genetics available	●								
Required skills for success	◐								
Leverage country reputation	◐								
OVERALL	●								

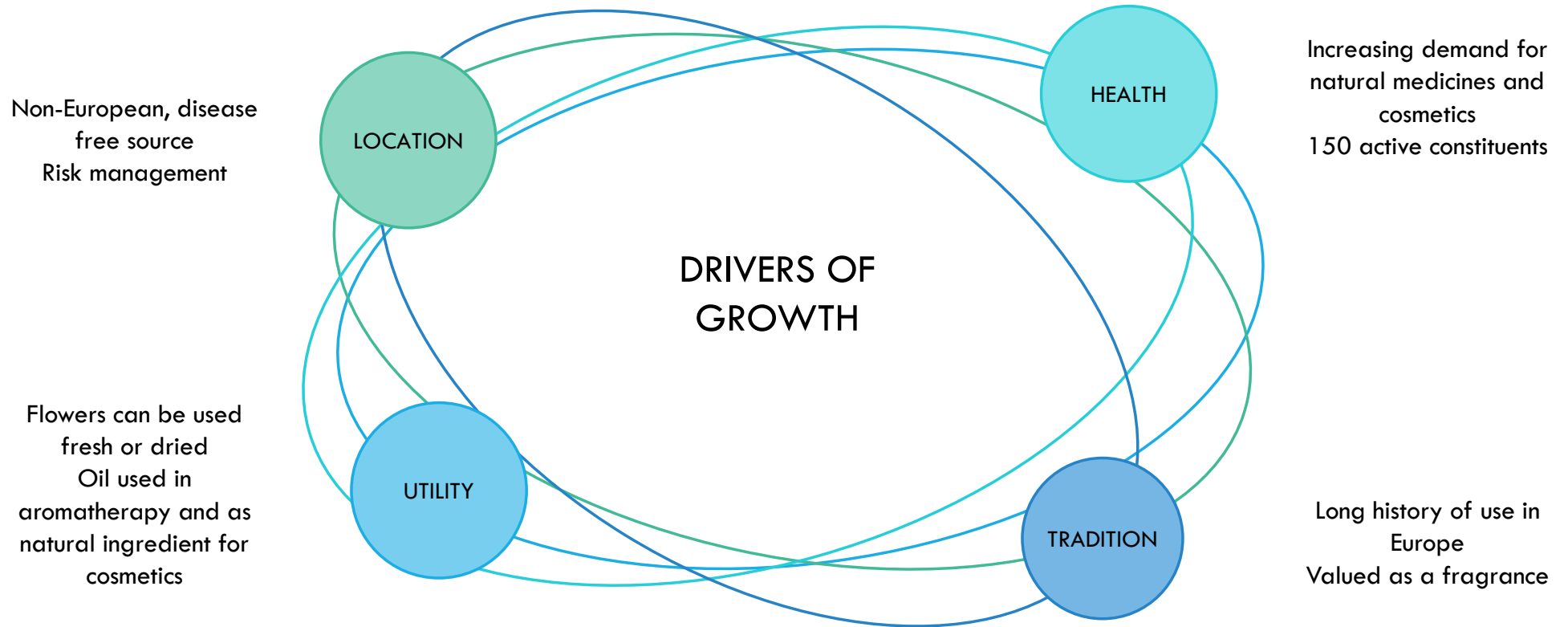
What is lavender oil?



PRODUCT PROFILE

Common names	Lavender oil
Scientific name	<i>Lavandula latifolia/angustifolia</i>
Type of plant	Herbaceous flowering perennial plant
Cultivation cycle	Flowers in summer and harvested late summer
Suited climate	Mediterranean/temperate
Part eaten	Flower used for essential oil
Origin	Old World
Established in AU	N/A

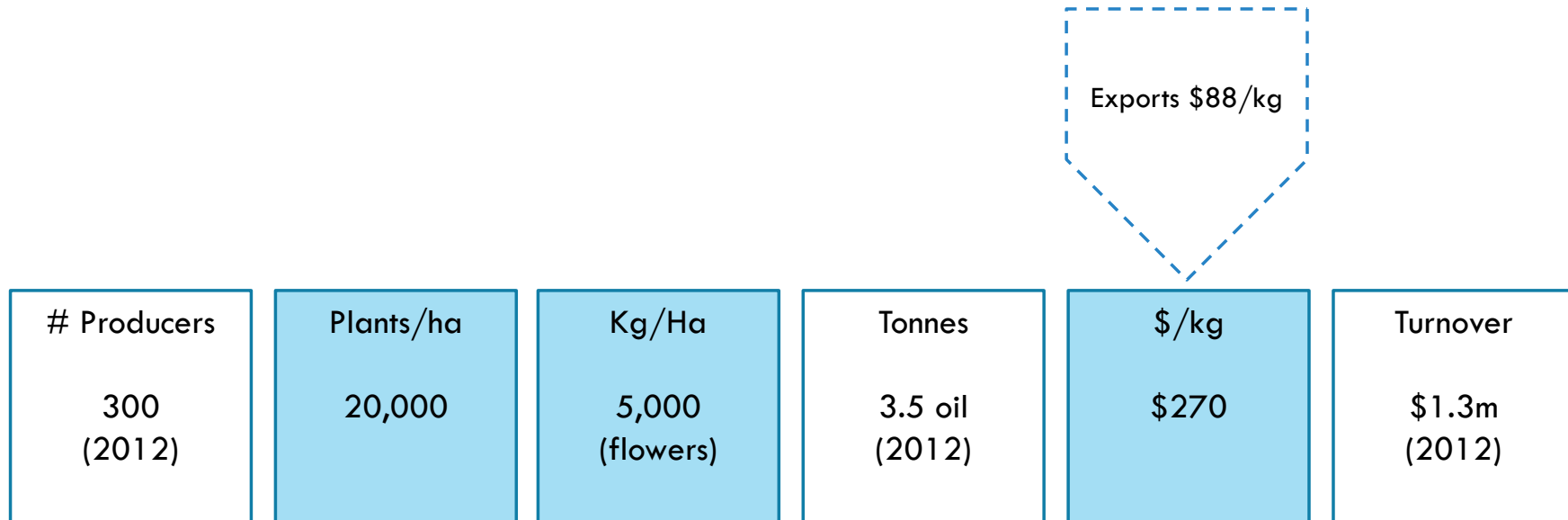
What is driving its success?



Where is it produced in Australia?





What are the industry metrics?



NOTE: Complex industry modelling was out-of-scope
Data presented here is preliminary and contains significant
estimates and data from multiple sources and multiple years.
Data is "patchy" in places and should be treated as directional.
Use with caution.

Who are the pioneering Australian firms?

AUSTRALIAN FIRMS	DETAIL
	<ul style="list-style-type: none"> - Based in Nabowla, TAS - Tourist facility at Estate - Distillery with oils suitable for perfume and cooking - Since 1922 - Established by London perfumer CK Denny with French sourced lavender
	<ul style="list-style-type: none"> - Based in Port Arthur, TAS - Established by Brendan and Clare Dean - 16,000 plants; harvest and distill from at two sites - Tours since 2014; café, store
	<ul style="list-style-type: none"> - Produce a range of essential oils and plant extracts for food, flavour and fragrance markets - Wild Island fragrance brand; part of Atlas Pearls and Perfumes Ltd group of companies - Contract growers over 15ha from Tasmania; full control and traceability - Export to USA, UK, Europe

Who are the other key stakeholders?



- Lavender Australia
- Support commercial growers and distillers of lavender essential oil
- Peak body for lavender in Australia

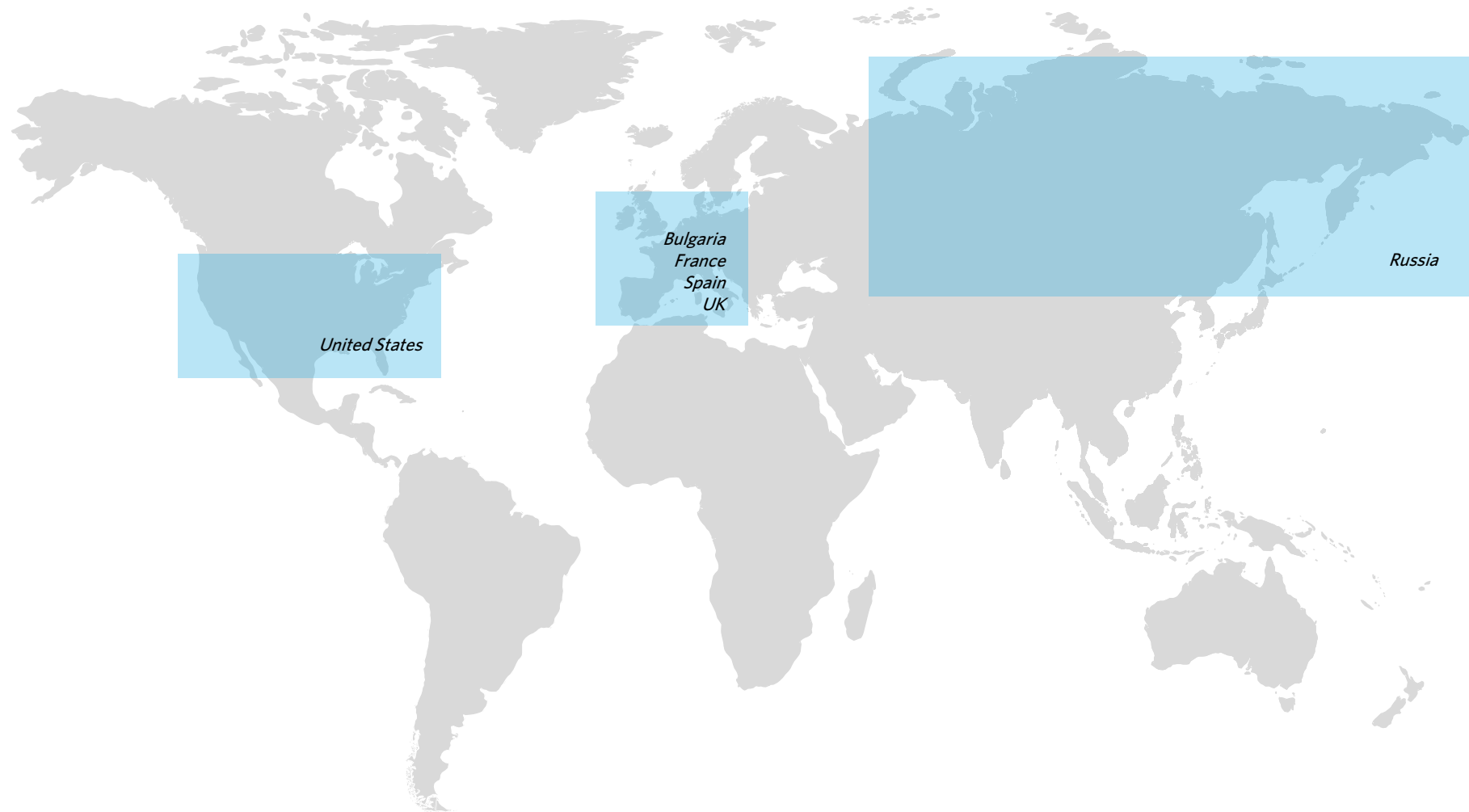


- The Australian Lavender Growers' Association Inc (TALGA)
- Non-profit voluntary association
- Dedicated to the promotion of the Australian lavender industry



- Essential Oils Producers Association of Australia
- Promoting and facilitating the production of essential oils and allied products in Australia

Who are the competition for export markets?



How can you add value to it?

Processed products



What does Dr. Food think?








“The lavender fields of Grasse, France are in bloom between mid-June and August and are a major tourist attraction. Why not emulate this in Australia?”

Long an ingredient in perfumes, soaps, etc., lavender has been immortalised via nursery rhymes (“Lavender’s blue dilly dilly, lavender’s green, when I am king dilly dilly, you shall be queen”!).

Retro-perfumes are increasingly in vogue and the lavender story is having a renaissance.”

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	2005	Changsha, China Naturalin Gio-Resources Co	N/A	Plant, algae, mushroom, fruit, vegetable, tea extracts	China, Global	www.naturalin.com Natural ingredients manufacturer, plant extracts for food and beverage and cosmetics
	N/A	Guangzhou, China Sellion/ Jiarou Refined Deci Co	N/A	Fragrances, cosmetics	China	www.sellion.cn 90% of cosmetics and fragrances exported
	1986	Jiangsu, China Jiansu Longliqi Bioscience Co	N/A 10,000	Cosmetics, health care products (plus household, furniture, real estate and logistics)	China	www.longrichbioscience.com Leading cosmetic company in China
	1909	Clichy, France Public Euronext:OR	€25.8b 89,300	Cosmetics, skincare, fragrances, haircare	Global	www.loreal.com World's leading cosmetics company; present in 140 countries; 42 factories worldwide
	1976	Manosque, France Public SEHK:00973	€1.2b 8,371	Cosmetics, skincare, fragrances, homeware	France Global	www.loccitane.com Global retailer of beauty products and homeware; branded retail stores

CONTENTS

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APPENDIX II: Results of Stage I: Category Analysis (53 profiles)	319
APPENDIX III: Results of Global Trade Data Analysis	409

Appendix II: Results of Stage I Category Analysis

Stage I of the screening process identified, sized and ranked the high potential emerging industries

STAGE I
(Appendix II)

STAGE II
(Appendix I)

IDENTIFY, MEASURE AND SCREEN

STAGE I.I

- Identification of all existing agriculture & aquaculture industries
- Divide into categories by size of industry in Australia

No Farming Activity Identified

Hobby (\$10k-\$1m)

Emerging (\$1m-\$10m)

Secondary (\$10-\$100m)

Major (\$100m+)

TOTAL 53

Meat (8 emerging)
Aquaculture (6 emerging)
Dairy (3 emerging)
Vegetables (12 emerging)
Nuts (2 emerging)
Fruit (8 emerging)
Coffee, Tea, Spices etc. (3 emerging)
Arable Crops (3 emerging)
Oilseeds & Vegetable Oils (4 emerging)
Fibre (2 emerging)
Essential Oils & Pharma. (2 emerging)

ASSESS AND RANK

STAGE I.II

STAGE I.III

QUALITATIVE ASSESSMENT (Appendix II)

QUANTITATIVE ASSESSMENT (Appendix III)

1 page profile

Qualitative score card

Global and domestic qualitative assessment

Evaluated global trade data against growth metrics

Screened for size and growth

TOTAL 26

PROFILE INDUSTRY

STAGE I.IV

Good

Better

Best

- Better and Best Industries Profiled*
- Answers 10 key questions for each industry
 - What is it?
 - What is driving success?
 - Where is it produced in Australia?
 - What are the industry metrics?
 - Who are the pioneering Australian firms?
 - Who are the key stakeholders?
 - Who are the competition for export markets?
 - How can you add value?
 - Who are the potential commercial partners?
 - What does Dr Food think?

QUALITATIVE ATTRACTIVENESS SCORECARD 01

LOW ○ MEDIUM ◐ HIGH ●

Product	Capital intensive to produce	Mechanically harvested	Value-added opportunities	Wide spread of markets/ buyers	Wide spread of prices	Origin important or called out at POS	Biosecurity or other domestic barriers	Can we get to the world price?	Attractive competitive set	High performance genetics available	Required skills for success	Leverage country reputation	OVERALL
MEAT													
Wild pigs	○	○	◐	◐	◐	●	●	○	●	○	●	◐	◐
Rabbit meat	○	●	●	◐	◐	◐	●	◐	●	○	◐	●	◐
Deer meat	●	●	●	○	◐	●	●	●	●	◐	○	●	●
Guinea fowl	◐	●	◐	◐	◐	●	●	◐	●	○	◐	●	◐
Camel meat	○	◐	◐	◐	◐	●	●	○	○	●	◐	●	◐
Buffalo meat	○	◐	●	●	◐	●	●	○	○	◐	◐	●	◐
Emu meat	○	○	●	○	○	●	●	●	●	○	◐	●	◐
Ostrich meat	◐	○	◐	○	◐	◐	◐	○	◐	○	◐	◐	○
AQUACULTURE													
Silver perch	●	◐	●	●	◐	●	●	○	◐	◐	●	●	●
Seaweed	●	●	●	●	●	◐	○	◐	●	●	◐	◐	●
Marron crayfish	●	◐	◐	◐	●	●	●	●	○	◐	●	●	●
Redclaw crayfish	●	◐	◐	◐	◐	●	●	◐	○	◐	●	●	◐
Yabby crayfish	○	○	○	◐	○	◐	●	○	○	○	●	●	○
Mulloway	●	◐	◐	●	◐	●	●	○	○	○	●	●	◐
DAIRY													
Sheep milk	●	●	●	●	◐	●	●	◐	◐	◐	●	●	●
Buffalo milk	●	◐	●	●	●	●	◐	◐	◐	●	◐	●	●
Camel milk	●	●	●	◐	◐	●	◐	○	○	○	●	●	●

Source: Coriolis analysis

QUALITATIVE ATTRACTIVENESS SCORECARD 02

LOW ○ MEDIUM ◐ HIGH ●

Product	Capital intensive to produce	Mechanically harvested	Value-added opportunities	Wide spread of markets/buyers	Wide spread of prices	Origin important or called out at POS	Biosecurity or other domestic barriers	Can we get to the world price?	Attractive competitive set	High performance genetics available	Required skills for success	Leverage country reputation	OVERALL
VEGETABLES													
Parsnip	○	●	◐	◐	○	◐	◐	◐	◐	◐	●	●	◐
Chillies	○	●	●	●	●	●	●	○	○	◐	●	●	●
Garlic	○	◐	◐	◐	○	◐	○	○	○	◐	●	◐	○
Turnip	○	●	○	◐	○	○	◐	◐	◐	○	●	●	◐
Taro	◐	◐	●	●	●	◐	●	◐	◐	○	●	●	●
Fennel	○	◐	●	●	◐	◐	○	◐	○	●	●	●	◐
Okra	○	○	●	◐	○	◐	◐	○	○	○	●	●	◐
Bitter melon	○	○	●	●	◐	○	●	○	○	○	◐	◐	◐
Snake bean	○	○	○	◐	○	◐	●	○	○	○	●	●	○
Globe artichoke	○	○	●	●	◐	◐	○	◐	◐	●	●	●	◐
Cassava	◐	●	●	●	◐	◐	◐	◐	○	●	●	●	●
Wasabi	●	○	◐	◐	●	●	●	◐	●	○	◐	●	◐
NUTS													
Chestnuts	●	●	●	●	◐	◐	●	◐	●	○	●	●	●
Hazelnuts	●	●	●	●	◐	●	●	◐	●	●	●	●	●
FRUIT													
Prunes	◐	●	◐	◐	◐	●	◐	◐	●	◐	●	●	●
Custard apple	○	○	◐	◐	○	◐	◐	○	○	○	●	●	○
Rambutan	◐	○	◐	●	○	◐	●	○	○	◐	●	●	◐

QUALITATIVE ATTRACTIVENESS SCORECARD 03

LOW ○ MEDIUM ◐ HIGH ●

Product	Capital intensive to produce	Mechanically harvested	Value-added opportunities	Wide spread of markets/ buyers	Wide spread of prices	Origin important or called out at POS	Biosecurity or other domestic barriers	Can we get to the world price?	Attractive competitive set	High performance genetics available	Required skills for success	Leverage country reputation	OVERALL
FRUIT													
Jackfruit	◐	○	●	●	●	●	●	◐	○	◐	●	●	●
Pitaya (dragon fruit)	◐	○	●	●	◐	◐	○	●	●	○	●	●	◐
Mangosteen	◐	○	◐	◐	○	◐	○	○	○	◐	◐	●	○
Pomegranate	●	◐	●	●	◐	●	◐	○	◐	●	◐	●	●
Guava	◐	○	○	◐	○	◐	○	○	○	○	●	●	○
COFFEE, TEA, SPICES & COCOA													
Black tea	◐	●	◐	●	◐	●	○	○	○	●	●	●	◐
Coriander seed	○	●	◐	●	○	○	○	○	◐	◐	○	◐	○
Cocoa bean	◐	○	●	●	○	●	○	○	○	○	◐	○	○
ARABLE CROPS													
Chia	○	●	●	◐	◐	○	●	○	○	◐	◐	●	◐
Amaranth	○	●	◐	◐	◐	◐	◐	○	◐	●	◐	●	◐
Buckwheat	◐	●	●	◐	○	●	◐	○	●	◐	●	●	◐
OILSEEDS & VEGETABLE OILS													
Flax seed/ linseed	●	●	●	●	◐	●	◐	○	●	○	◐	●	●
Mustard seed	○	●	●	◐	◐	●	●	◐	●	◐	●	●	●
Hemp seed	●	●	●	●	◐	●	◐	○	●	◐	◐	●	●
Poppy seed	●	●	●	◐	◐	◐	◐	○	◐	●	●	◐	◐

QUALITATIVE ATTRACTIVENESS SCORECARD 04

LOW ○ MEDIUM ◐ HIGH ●

Product	Capital intensive to produce	Mechanically harvested	Value-added opportunities	Wide spread of markets/ buyers	Wide spread of prices	Origin important or called out at POS	Biosecurity or other domestic barriers	Can we get to the world price?	Attractive competitive set	High performance genetics available	Required skills for success	Leverage country reputation	OVERALL
FIBRE													
Alpaca fibre	○	○	●	●	◐	◐	●	○	◐	○	◐	◐	◐
Goat fibre	○	◐	●	●	◐	◐	○	◐	◐	●	●	◐	◐
ESSENTIAL OILS													
Eucalyptus oil	●	●	●	●	●	◐	○	◐	◐	●	●	●	●
Lavender oil	●	●	●	◐	◐	●	◐	○	●	●	◐	◐	●

Meat

Aquaculture

Dairy

Vegetables

Nuts

Fruit

Coffee, Tea, Spices, Sweeteners & Cocoa

Arable Crops

Oilseeds & Vegetable Oils

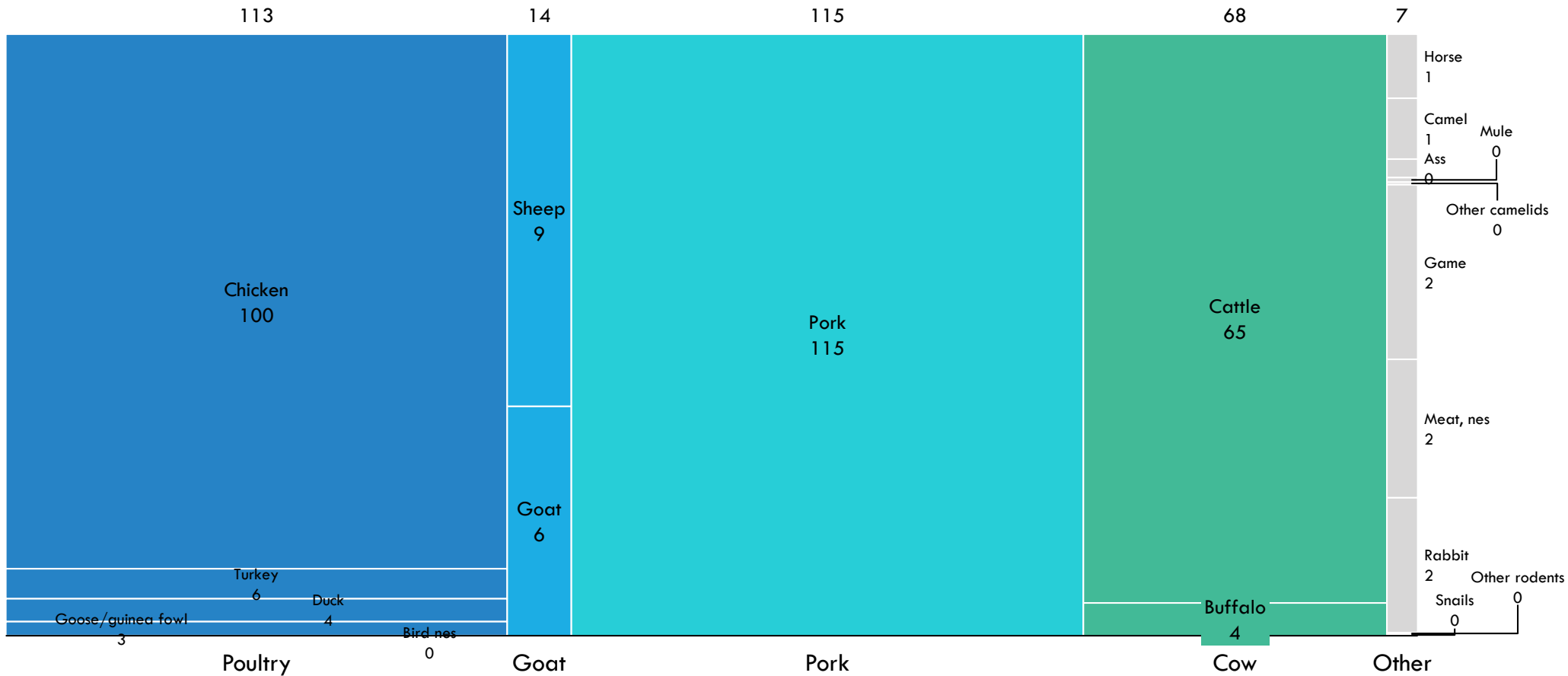
Fibre

Essential Oils, Pharmaceutical & Other

A handful of large species dominate global meat production

GLOBAL MEAT PRODUCTION BY TYPE TONNES; M; 2014

TOTAL = 318m tonnes

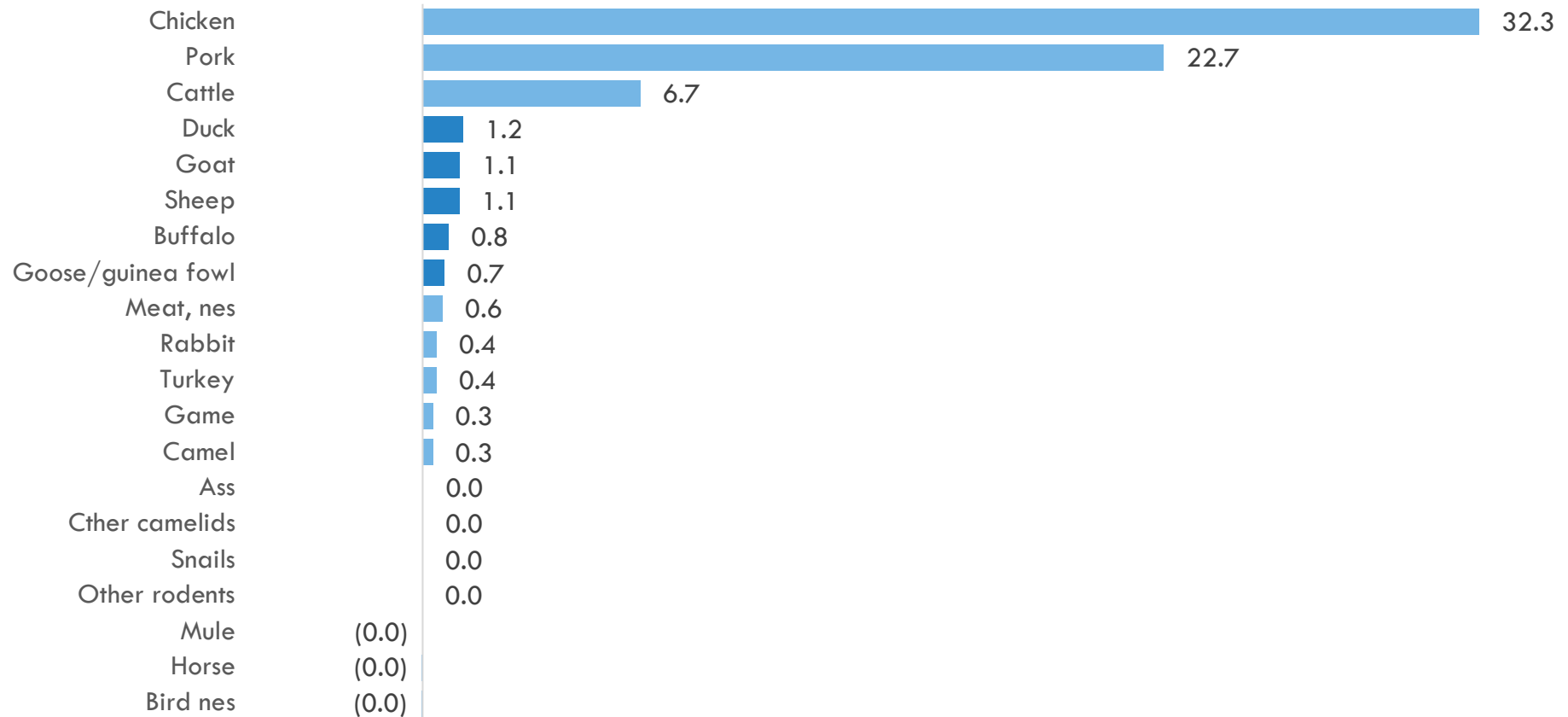


M = millions; NES= Not Elsewhere Specified; Source: UN FAOSTAT; Coriolis analysis and estimates

While absolute volume growth is coming from the major global meats, a range of smaller species are growing

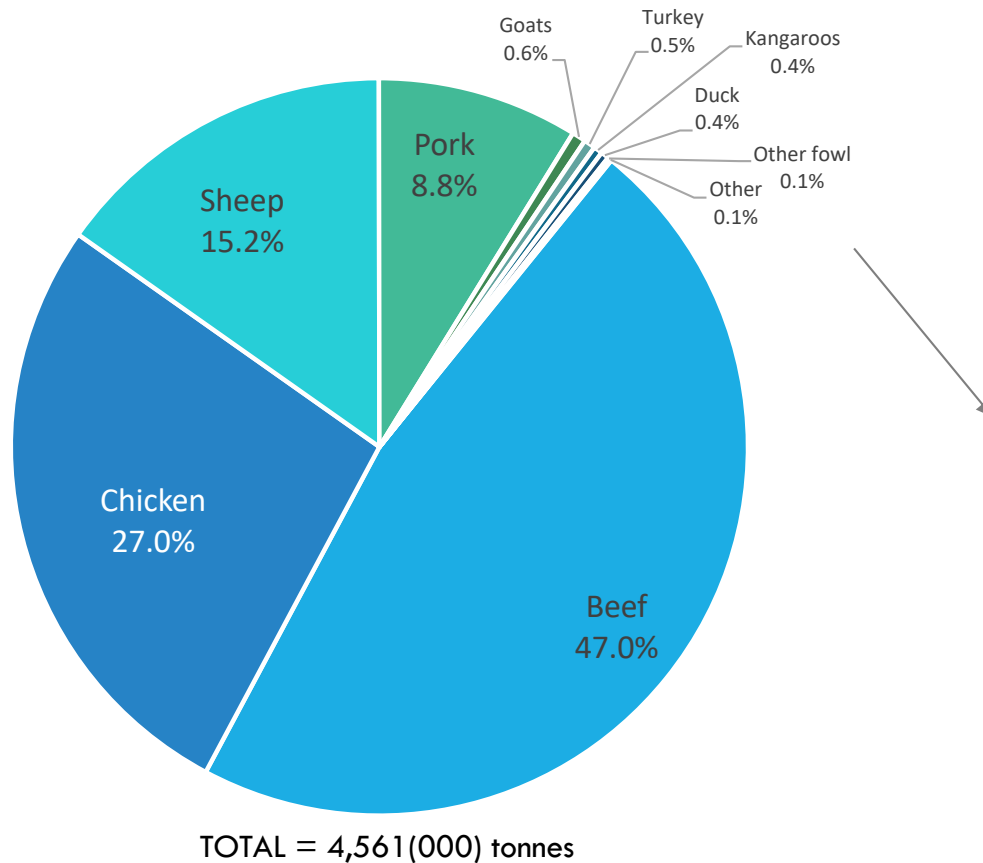
10Y GLOBAL MEAT PRODUCTION GROWTH BY SPECIES

TONNES; M; 2004-2014



The Australian meat industry is currently focused on beef, chicken, sheep and pork; all other species ~2% (primarily goats, turkey, duck & wild kangaroo)

AUSTRALIAN MEAT PRODUCTION TONNES; 000; 2017 or as available



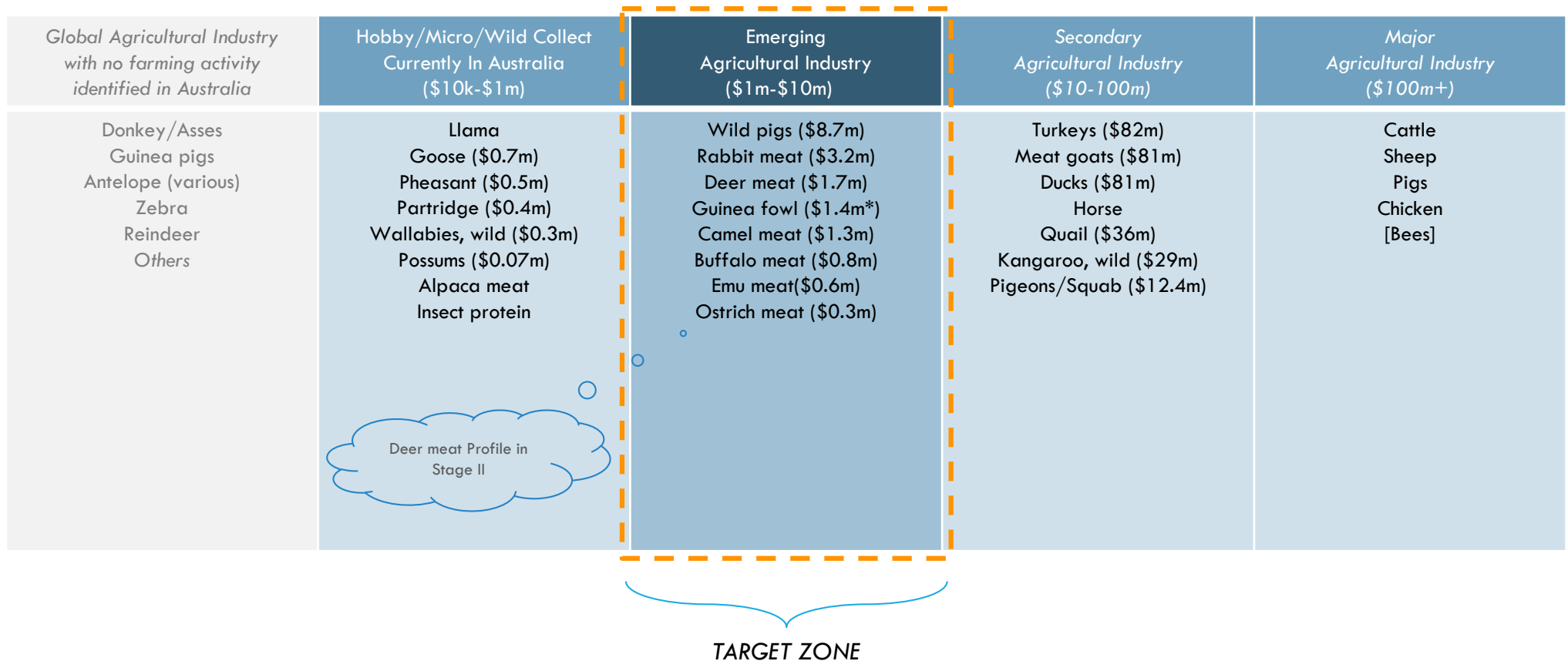
PRELIMINARY

Type	Head Slaughter	Production Tonnes
Beef	14.8m	2,142,760
Chicken	653.6m	1,229,713
Sheep	29.7m	693,483
Pork	5.2m	402,672
Goats	1,781,000	27,600
Turkey	3.3m	23,039
Kangaroos	1,768,000	17,670
Duck	7.1m	16,005
Other fowl	8.4m	4,912
Wild pigs	112,400	1,405
Camel meat	2,750	1,288
Rabbit meat	182,000	265
Deer meat	5,784	223
Emu meat	3,108	37
Wallabies	10,000	29
Ostrich meat	1,001	28
Buffalo meat	171	19
Possoms	3,949	8
Alpaca	N/A	4

Eight emerging meat/livestock species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

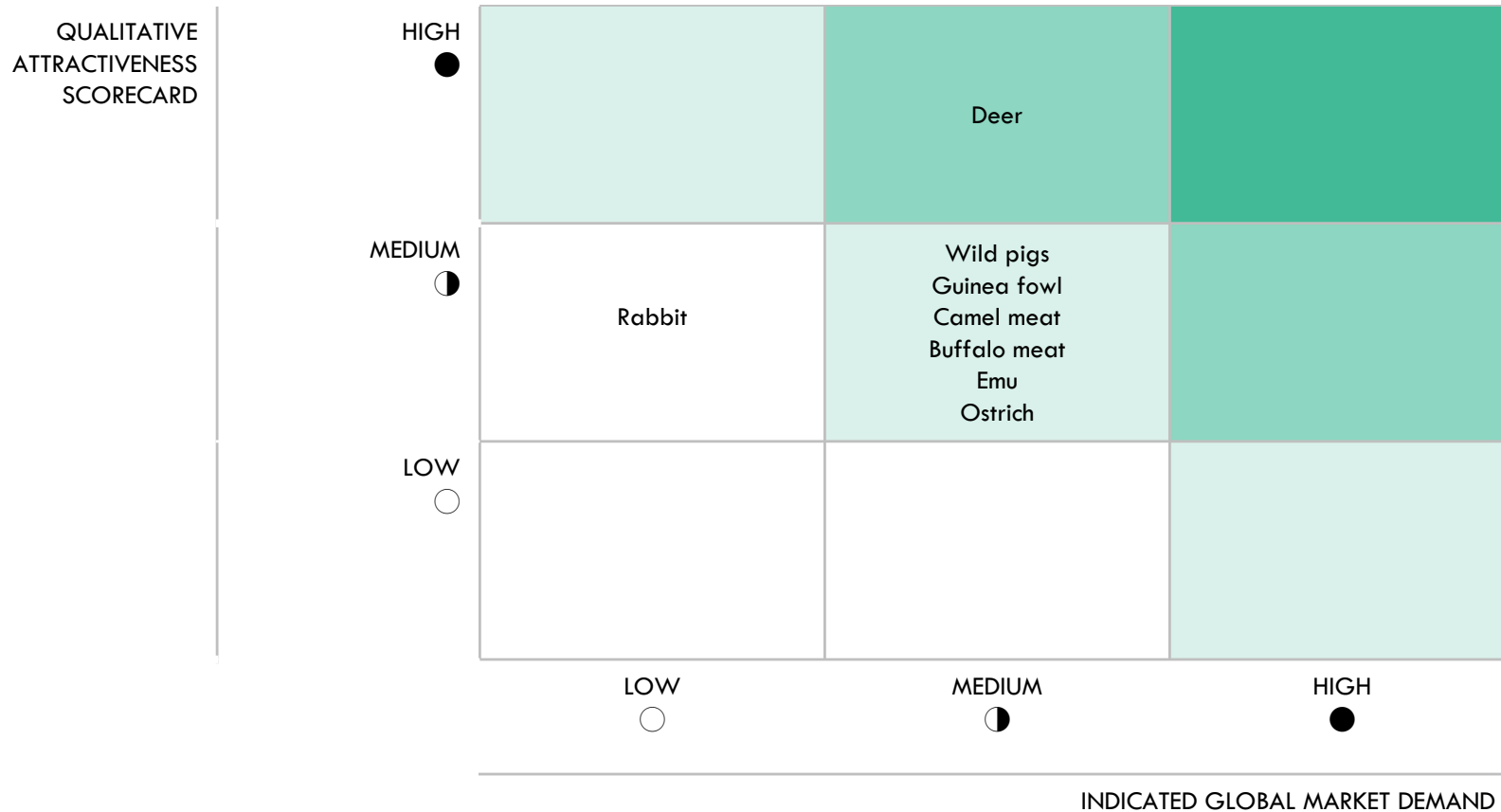


1. Gross value unless stated otherwise; Buffalo, emu and ostrich included; under \$1m as of 2012; *Retail value. Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING MEAT OPPORTUNITIES EVALUATION MATRIX

Model; 2017





QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		Wild pig has been a significant part of diets worldwide for centuries. Chefs and consumers are ready for something different on the menu. Opportunity exists for distinctive, premium wild pork, especially into foodservice.		\$8.7m (2012)	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically processed	<input type="radio"/>				
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Wild pig perceived to be healthier than farmed pork - Healthy meat alternative compared to traditional beef and lamb - Consumers looking to diversify their meat options - Export growth due to seasonal weather conditions in EU impacting supply - Able to tell an Australian brand story 		<ul style="list-style-type: none"> - Numbers controlled culled due to environmental impact on land and impact of wildlife - Seasonal variations due to weather – limited to no control of supply - Market restrictions where countries require ante-mortem examination - More susceptible to swine diseases - Lack of accredited hunters 	
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Pre-prepared steaks, ready-meal ingredients - Retail-ready packaging - Pre-prepared cuts for foodservice - Jerky - Pet food industry 		<ul style="list-style-type: none"> - Numbers maintained in the wild to service customers - Australia maintains the number of wild pig hunters (accredited to harvest pigs for human consumption) - Australia can maintain its disease-free status in many pig diseases - Industry able to achieve a continuity of supply 	
Origin important or called out at POS	<input checked="" type="radio"/>	KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Farmed pork - Chicken - Beef - Sheep & Goat - Other meat proteins 	<ul style="list-style-type: none"> - USA - Germany - Poland - Hungry - Spain 		
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input checked="" type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input type="radio"/>				
OVERALL	<input type="radio"/>				

RABBIT MEAT

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Rabbit has been trapped wild and farmed since the dawn of time. Rabbit has gone from being "poor man's chicken" to the latest thing on the menu. Australia can increase production for domestic supply and for international markets of this premium meat.		\$3.2m (2012)	\$5-10m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically processed	<input checked="" type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Healthy red meat alternative (high protein, low fat) - High growth rates compared to competition 		<ul style="list-style-type: none"> - Market access for rabbit meat - Disease entering farmed operations - Labour-intensive nature of industry results in high COP 	
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Value-added meat cuts - Prepared ready to cook cuts (sausages, patties, steaks etc..) - Pre-prepared meals - Jerky - Fur (for hats) - Skins (\$7/kilo; 2012) 		<ul style="list-style-type: none"> - Maintain or grow the \$30/kg export value - Able to reach industry scale and increase efficiencies - Able to reach competitive prices (\$20/kilo vs imports of \$5-6/kilo) - Continuous improvement of breeding stock - Ongoing access to processing facilities - Ongoing research around labour saving technologies 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	<input checked="" type="radio"/>				
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input checked="" type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				
		DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Alternative meats (ostrich, emu, crocodile, boar) - Red meats (beef, lamb, goat) 	<ul style="list-style-type: none"> - China - Argentina - France - Belgium - Hungary - Spain 		



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Guinea fowl are the nobility of the poultry world.</p> <p>Guinea fowl support the recent trend to "rediscovering" traditional English foods in restaurant industry.</p> <p>Guinea fowl can be marketed as an healthy, low fat, alternative poultry protein.</p>		\$1.4m* (2012)	\$3-5m by 2025
Capital intensive to produce					
Mechanically processed					
Value-added opportunities					
MARKETS		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
Wide spread of markets/buyers		<ul style="list-style-type: none"> - Healthy protein alternative to standard poultry - Demand for traditional English foods - Demand for interesting proteins from high end restaurants 		<ul style="list-style-type: none"> - Labour intensive, high cost of production - Uncertainties around feed requirements (e.g. protein rates etc.. limiting growth potential) - Supply fluctuates as low barriers to entry causing gluts that drives down prices - At risk of bird diseases (like all free range birds) 	
Wide spread of prices		VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Origin important or called out at POS		<ul style="list-style-type: none"> - Retail ready/pre-prepared meat cuts - Organs - Feathers (fly fishing use) - Tourist attraction 			
COMPETITORS		KEY COMPETITORS			
Biosecurity or other domestic barriers					
Can we get to the world price?		DOMESTIC	EXPORTERS	<ul style="list-style-type: none"> - Guinea fowl are able to grow their share of the game bird sector (currently duck, turkey and goose dominate this category) - Able to gain scale and increase throughput to drive down cost; 2012 35,000 head processed, dressed weight 42t = retail value \$1.428m - Genetics to improve the mortality rate, egg yield can be accessed 	
Attractive competitive set		<ul style="list-style-type: none"> - Chicken - Turkey - Duck - Goose - Squab - Pheasant - Partridge - Grouse - Quail 	<ul style="list-style-type: none"> - France - China - Hungary - Germany - Poland 		
AUSTRALIA					
High performance genetics available					
Required skills for success					
Leverage country reputation					
OVERALL					

* Retail value. Source: Poultry Hub website; RIRDC Publication No 14/069; Coriolis analysis and estimates



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Camel meat is valued as a delicacy in key markets. Australia is able to market premium camel meat for growth markets. Expansion in camel milk production will as a byproduct increase farmed camel meat supply.</p>		\$1.3m (2012)	\$3-5m by 2025
Capital intensive to produce					
Mechanically processed					
Value-added opportunities					
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers		<ul style="list-style-type: none"> - Growing income in Middle East, driving increased spend on F&B products - Regarded as a delicacy in Africa and the Middle East - Perceived medicinal benefits in several traditional medicines - Healthy alternative to mainstream proteins (less fat, less cholesterol) - Foodservice providers and chefs looking for new new thing 	<ul style="list-style-type: none"> - Potential for uncontrolled disease in the wild camel population affecting the farmed camels - Cost associated with rounding up wild camels - Camels dislike cool and wet environments; areas where they thrive are a distance from processing facilities 		
Wide spread of prices		VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Origin important or called out at POS		<ul style="list-style-type: none"> - Unique pet food ingredient - Leather - Camel oil - Edible offal - Camel milk - Textiles - Racing camels live exports to Middle East - Tourist attraction 	<ul style="list-style-type: none"> - Global slaughter trade will continue to increase - Australia able to achieve a premium about the world average - Able to grow exports (A\$4.8m; 2012); in particular to Middle East and China - Able to farm-finish the wild camels - Able to transition the petfood grade meat to human consumption - Able to maintain disease-free status (highly valued in ME) - Able to differentiate premium Australian camel meat 		
COMPETITORS		KEY COMPETITORS			
Biosecurity or other domestic barriers		DOMESTIC	EXPORTERS		
Can we get to the world price?		<ul style="list-style-type: none"> - Beef - Sheep - Other alternative proteins (buffalo, crocodile, kangaroo etc..) 	<ul style="list-style-type: none"> - Saudi Arabia - Djibouti - Sudan - Somalia - Mauritania - Egypt - UAE - Ethiopia - China - Pakistan 		
Attractive competitive set					
AUSTRALIA					
High performance genetics available					
Required skills for success					
Leverage country reputation					
OVERALL					



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Buffalo is a known product for both milk and meat in many countries. Health benefits include leaner meat and lower cholesterol. Opportunity exists to produce a range and brand of premium buffalo meat products (e.g. buffalo jerky).</p>		\$0.8m (2012)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically processed	<input type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Search for the "new new thing" - Appeal as low cholesterol and lean meat option - Efficient converters of feed to energy compared with beef - Increased scale of operations - Support of marketing and certifications e.g. TenderBuff 	<ul style="list-style-type: none"> - Lack of export abattoirs for buffalo meat - Licences and permits required to farm, banned in some locations (Kimberley, WA) 		
Wide spread of prices	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES	WHAT YOU WOULD NEED TO BELIEVE		
Origin important or called out at POS	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Value-added meat cuts - Prepared ready to cook cuts (sausages, patties, steaks etc..) - Pre-prepared meals - Jerky - Cosmetics (e.g. soaps, body lotion) - Live export - Buffalo milk - Leather/Skins 	<ul style="list-style-type: none"> - Able to optimise meat breeds (as opposed to dairy) - Buffalo maintain their disease free status - Buffalo meat is able to penetrate the market as a premium product in markets where it is traditionally seen as a cheap product and import - Export abattoirs available to process beef for export - Industry moves to breed Riverine (40% average higher growth rates) 		
COMPETITORS		KEY COMPETITORS			
Biosecurity or other domestic barriers	<input checked="" type="radio"/>	DOMESTIC		EXPORTERS	
Can we get to the world price?	<input type="radio"/>	<ul style="list-style-type: none"> - Beef - Sheep & goat - Other game meats 		<ul style="list-style-type: none"> - India - East Asia - South East Asia - Europe 	
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Emu meat is lean and healthy. Emu is an iconic poultry meat strongly associated with "Brand Australia." There are real opportunities to reposition the meat for export markets.</p>		\$0.6m (2012)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically processed	<input type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Low fat and low cholesterol, high protein meat option - Research around emu oil 		<ul style="list-style-type: none"> - Wild harvesting prohibited, must be licensed - Farm numbers in decline - Currently uneconomical to farm in Australia 	
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Meat cuts - Emu oil from rendered fat (health products for joint pain) - Skin for high quality leather - Feathers - Pet food ingredient - Eggs 		<ul style="list-style-type: none"> - Australian native bird can be successfully breed for commercial production - Continued research into tanning, genetics, oil medical efficacy to support the industry - Facilities available to process emu 	
Origin important or called out at POS	<input checked="" type="radio"/>	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	<input checked="" type="radio"/>				
Can we get to the world price?	<input checked="" type="radio"/>				
Attractive competitive set	<input checked="" type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				
		DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Chicken - Ostrich - Turkey - Other meat proteins 	<ul style="list-style-type: none"> - USA - Canada - India 		

OSTRICH MEAT

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Ostrich is a lean and healthy alternative to chicken with larger portion sizes.</p> <p>Ostrich has valuable meat and also has high value co-products</p> <p>Ostrich achieves high prices in export markets</p>		\$0.3m (2012)	\$3-5m by 2025
Capital intensive to produce					
Mechanically processed					
Value-added opportunities		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Healthy meat option: low fat and low cholesterol, high protein meat option - Demand for new and unique meats - Demand from EU, USA, Japan 		<ul style="list-style-type: none"> - Susceptible to Avian bird flu outbreaks - Declining industry results in declining support services and processing facilities - Industry nervous post boom bust of industry 	
Wide spread of markets/buyers		VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices		<ul style="list-style-type: none"> - Meat steaks, pre-prepared meals, ready to eat/serve - Skin (premium leather, high value items) - Oil (used in cosmetics industry, moisturiser, oil, soap) - Feathers (dusters, fashion) - Medical (tendons for human replacements etc..) 		<ul style="list-style-type: none"> - Can achieve South African yields at 12 months old: 27kg meat, 4.2m2 leather, 1kg feathers - Market is able to turnaround from its significant decline in production - Industry has the capacity to process the meat - Industry is able to identify market opportunities for the product - Industry is able to improve the genetic base 	
Origin important or called out at POS		KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers		<ul style="list-style-type: none"> - Emu - Beef, Veal - Other proteins 	<ul style="list-style-type: none"> - South Africa - China - Canada - USA - Pakistan 		
Can we get to the world price?					
Attractive competitive set					
AUSTRALIA					
High performance genetics available					
Required skills for success					
Leverage country reputation					
OVERALL					

Meat

Aquaculture

Dairy

Vegetables

Nuts

Fruit

Coffee, Tea, Spices, Sweeteners & Cocoa

Arable Crops

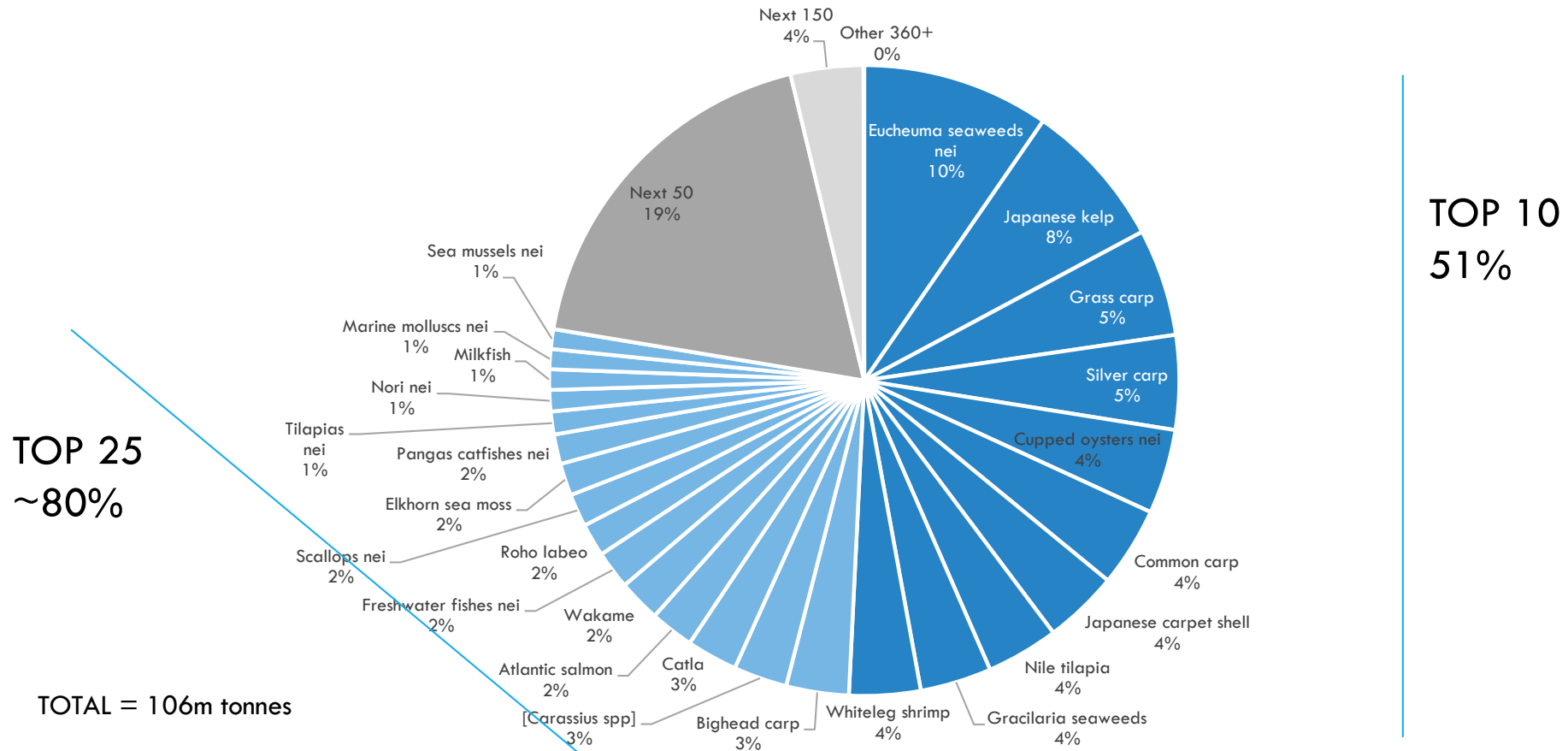
Oilseeds & Vegetable Oils

Fibre

Essential Oils, Pharmaceutical & Other

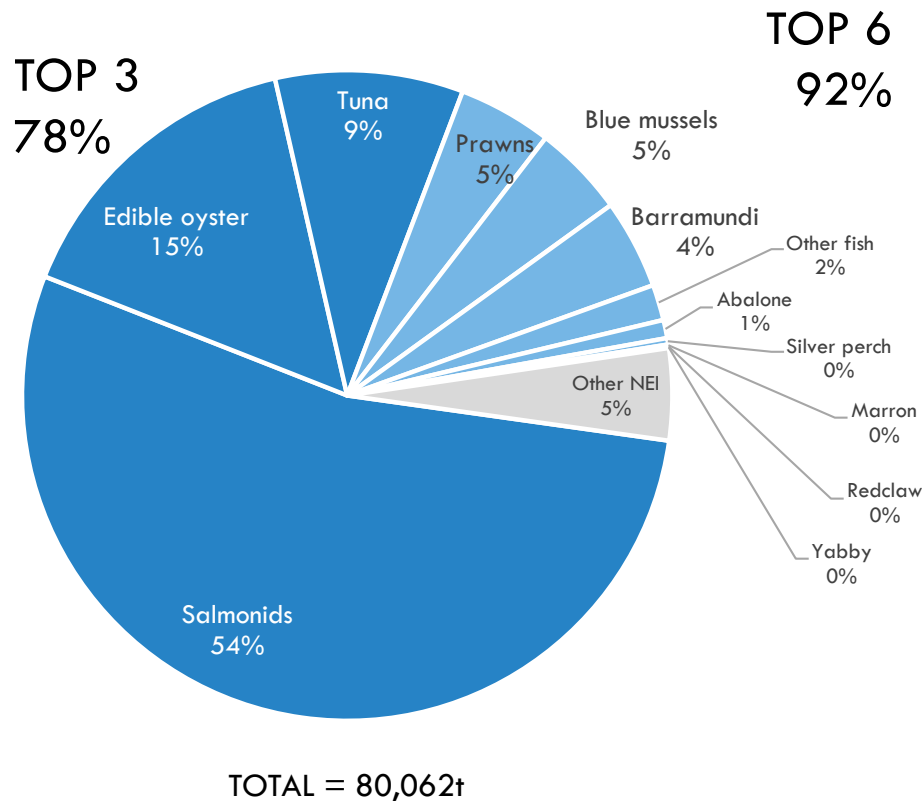
Globally, aquaculture has a small number of large species and a large number of small species; the top 25 species account for ~80%

GLOBAL AQUACULTURE PRODUCTION BY TYPE TONNES; M; 2014



The Australian aquaculture industry is currently focused on a handful of major species

AUSTRALIAN AQUACULTURE PRODUCTION TONNES; M; 2016

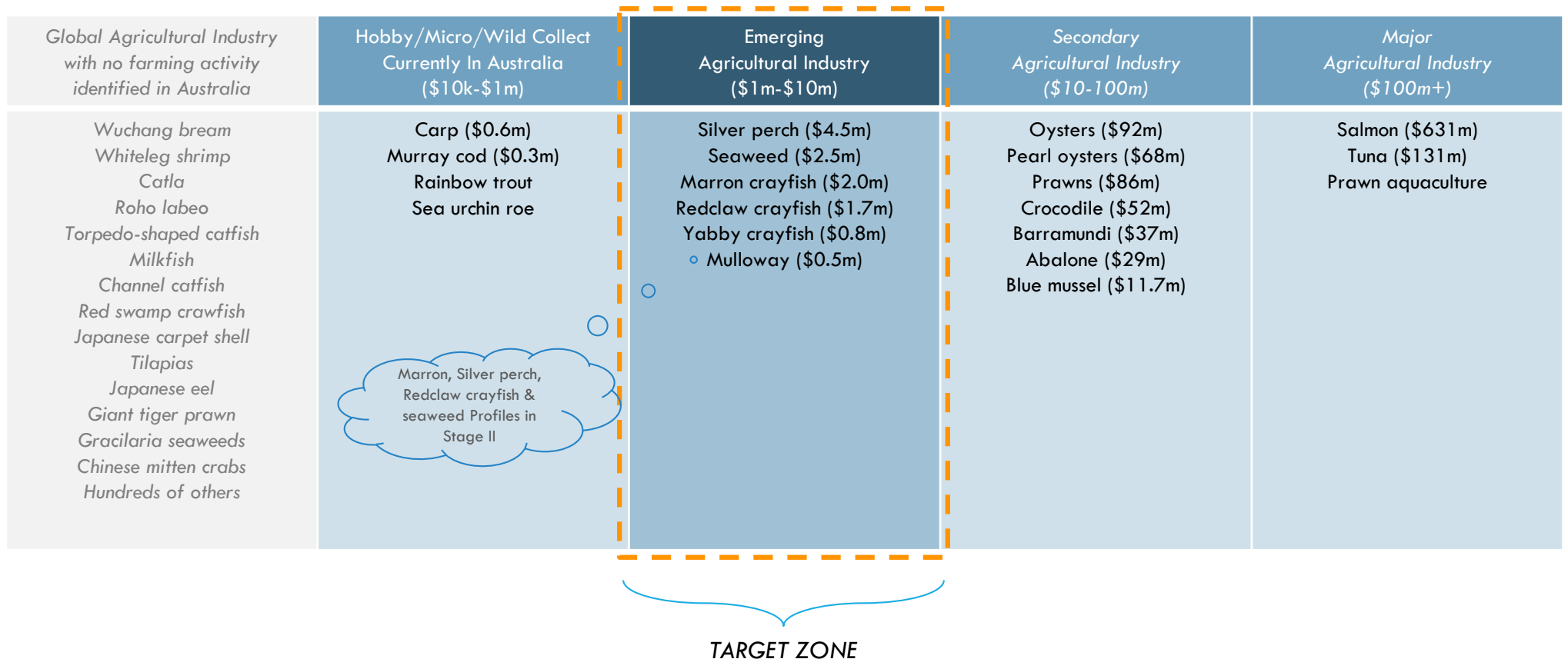


Type	Value A\$m; 2015	Production T; 2015
Salmonids	\$518	43,027
Tuna	\$154	7,486
Edible oyster	\$94	12,382
Pearl oyster	\$79	-
Prawns	\$60	3,742
Barramundi	\$33	3,560
Abalone	\$24	724
Other fish	\$20	1,420
Blue mussels	\$10	3,679
Silver perch	\$3	256
Marron	\$2	63
Redclaw	\$1	41
Yabby	\$1	37
Other NEI	\$58	3,645

Six emerging aquaculture species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →



1. Gross value unless stated otherwise; Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING AQUACULTURE OPPORTUNITIES EVALUATION MATRIX

Model; 2017



YABBY CRAYFISH

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Sustainable, unique Australian crustacean. Provides an additional revenue stream from existing ponds and other farm water resource. Opportunities in both domestic and export markets		\$0.8m (2015)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Premium seafood product - High value placed on premium shellfish in China (e.g. as banquet centre pieces) - Move towards sustainably sourced seafood 		<ul style="list-style-type: none"> - Lack of production information for some species and few stand alone models to follow - No live crayfish imports limits genetic improvements 	
Wide spread of markets/buyers	<input checked="" type="radio"/>				
Wide spread of prices	<input type="radio"/>				
Origin important or called out at POS	<input checked="" type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
COMPETITORS		- Live exports - Prepared products - Sustainable seafood marketing		<ul style="list-style-type: none"> - Australia can maintain its relatively disease free status - Industry can shift from harvesting farm dams to intensive aquaculture - Export market can be developed - Consistent supply can be achieved in order to capture high value export markets - Australia will continue to ban live crayfish imports 	
Biosecurity or other domestic barriers	<input checked="" type="radio"/>				
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>	KEY COMPETITORS			
AUSTRALIA		DOMESTIC	EXPORTERS		
High performance genetics available	<input type="radio"/>	<ul style="list-style-type: none"> - Other Australian freshwater crayfish species (marron, redclaw) - Australian saltwater lobsters (rock, tropical, scampi) - Other shellfish - Imported cooked, frozen and prepared crayfish/lobster products 	<ul style="list-style-type: none"> - China (91% of world production of freshwater crayfish) - United States - Bangladesh - Thailand 		
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Quick growth marine fish with high feed conversion rates. Attractive to consumers as a versatile, firm, white fleshed fish. Shifting to aquaculture as wild stocks are considered overfished in Australia.</p>		\$0.5m* (2012)	\$3-5m by 2025
Capital intensive to produce	●				
Mechanically harvested	◐				
Value-added opportunities	◐	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Increasing demand for protein - Increasing demand for environmentally sustainable seafood 		<ul style="list-style-type: none"> - Emerging industry with no clear model to follow for this particular species - Sea based cage industry limited by environmental concerns over sites and limited growth rates in sea cages - Limited sources for fingerlings stock 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Live trade (for fish tanks in Asian restaurants) - Fresh and frozen, whole and filleted for food service - Fresh and frozen, whole and filleted for retail - Prepared products (e.g. crumbed, battered, marinated) 		<ul style="list-style-type: none"> - Land based system is commercially viable - Aquaculture production systems based on similar species in USA, China, Greece, Italy and Spain can provide fast follow model for Australia 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	●	DOMESTIC	EXPORTERS		
Can we get to the world price?	○	<ul style="list-style-type: none"> - Barramundi - Silver Perch - Wild caught fish - Imported farmed fish species 	<ul style="list-style-type: none"> - Asia - Africa - All wild catch exporting countries 		
Attractive competitive set	○				
AUSTRALIA					
High performance genetics available	○				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	◐				

*NSW only. Source: RIRDC Publication No 14/069; Coriolis analysis and estimates

Meat

Aquaculture

Dairy

Vegetables

Nuts

Fruit

Coffee, Tea, Spices, Sweeteners & Cocoa

Arable Crops

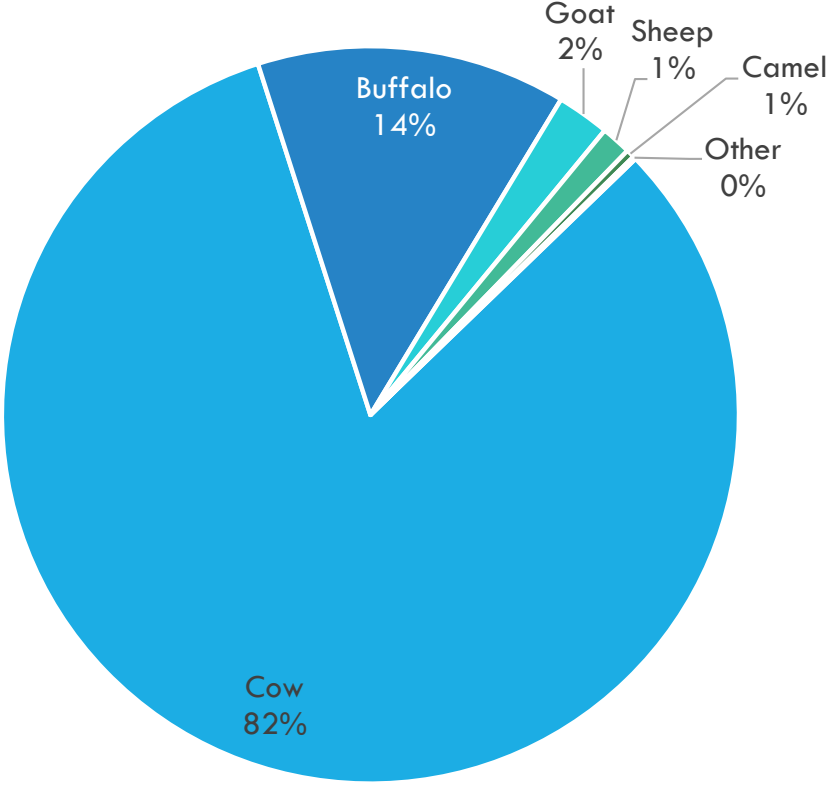
Oilseeds & Vegetable Oils

Fibre

Essential Oils, Pharmaceutical & Other

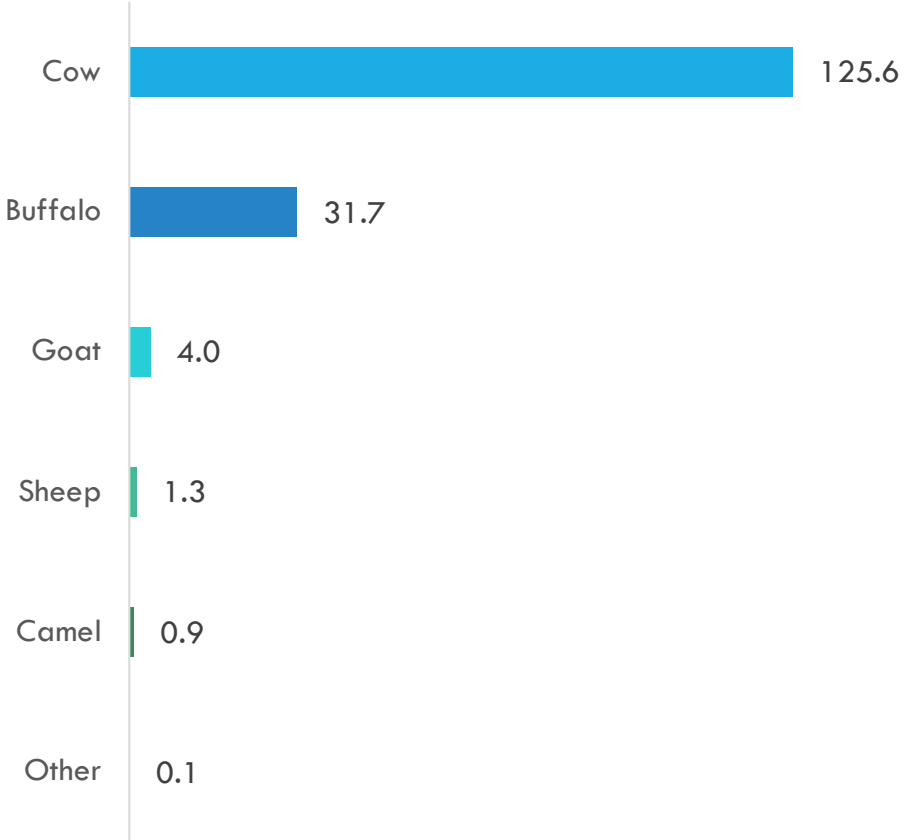
Global milk production is dominated by cows, followed by buffalo; secondary species are goat, sheep and camel

GLOBAL MILK PRODUCTION BY SPECIES
TONNES; M; 2014



TOTAL = 793m tonnes

10Y GLOBAL PRODUCTION GROWTH
TONNES; M; 2004-2014



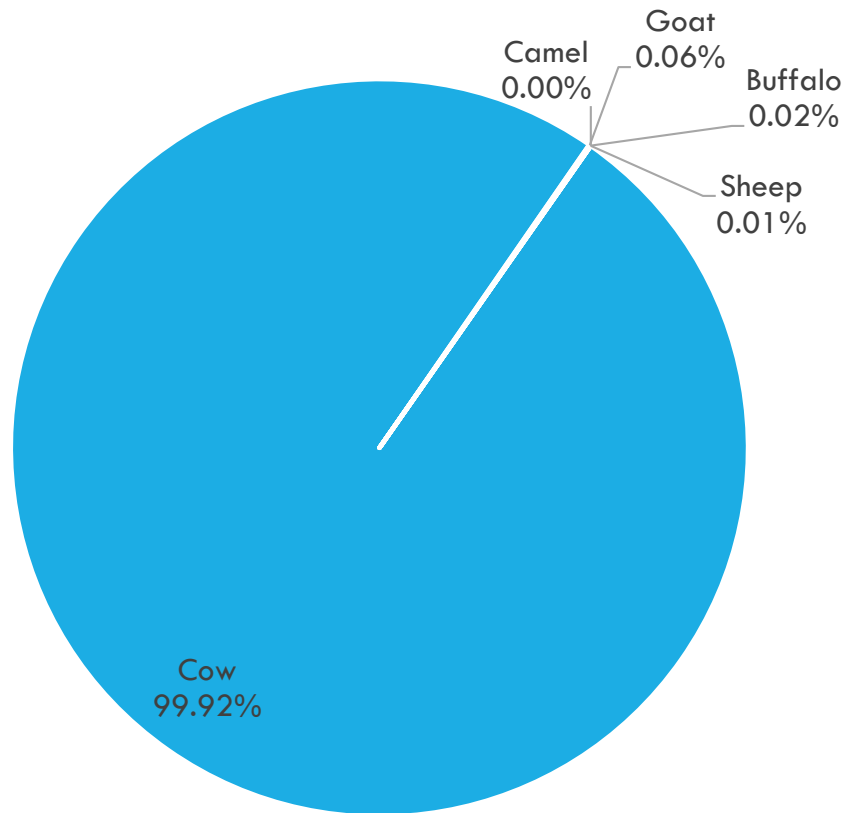
Note: Other includes horse (cf. Kumis), donkey/ass, yak and reindeer Source: UN FAOSTAT; Coriolis analysis and estimates

All Australian non-cow dairy species are small currently

AUSTRALIAN MILK PRODUCTION

LITRES; M; 2016 or as available

PRELIMINARY



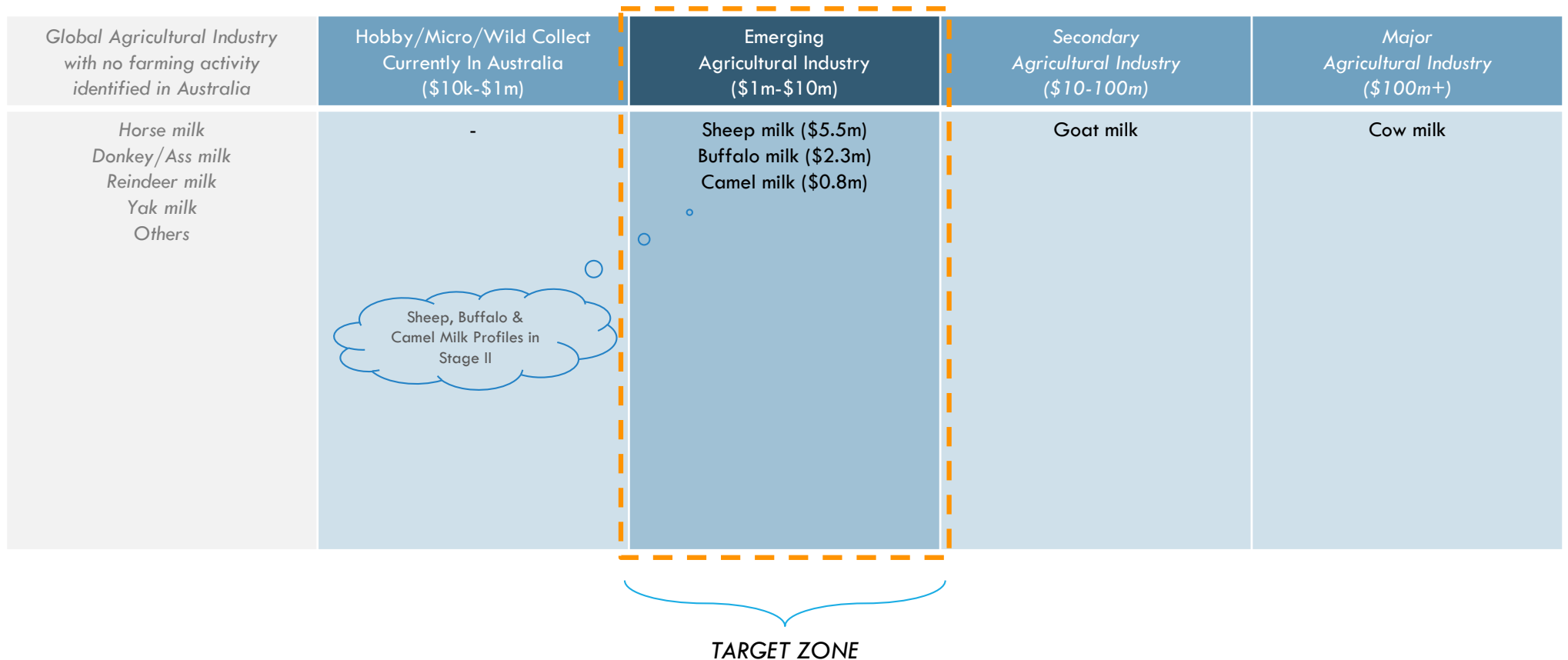
TOTAL = 9,547m litres

Type	Farms	Head	l/head	L
Cows	6,173	1.66m	5,669	9,539m
Goat	65	12,000	500	6m
Buffalo	5	2,000	750	1-2m
Sheep	8	4,000	125	0.5m
Camel	6	80-100?	600?	0.05m

Three emerging dairy species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

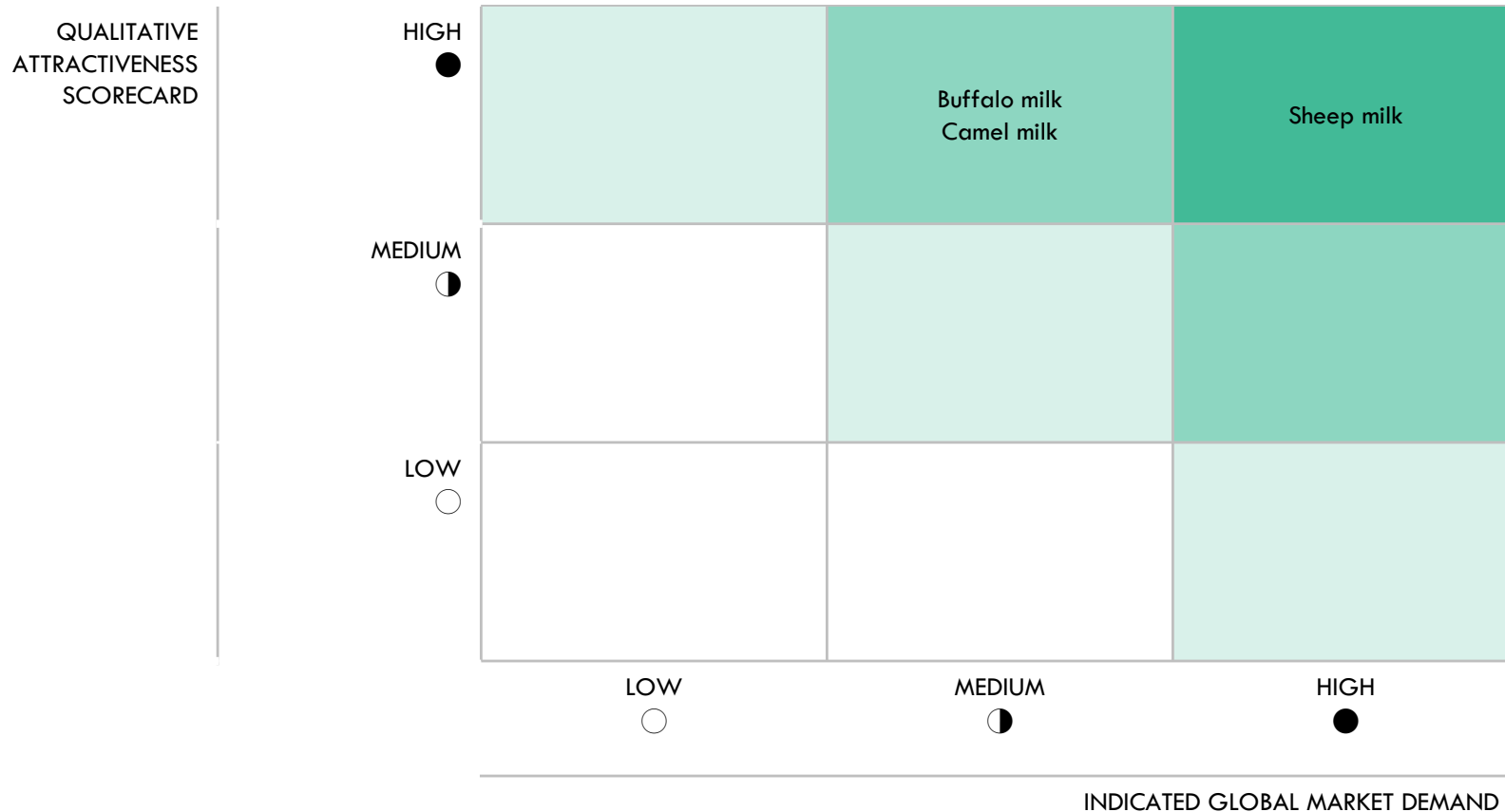


1. Gross value unless stated otherwise; Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING DAIRY OPPORTUNITIES EVALUATION MATRIX

Model; 2017



Meat

Aquaculture

Dairy

Vegetables

Nuts

Fruit

Coffee, Tea, Spices, Sweeteners & Cocoa

Arable Crops

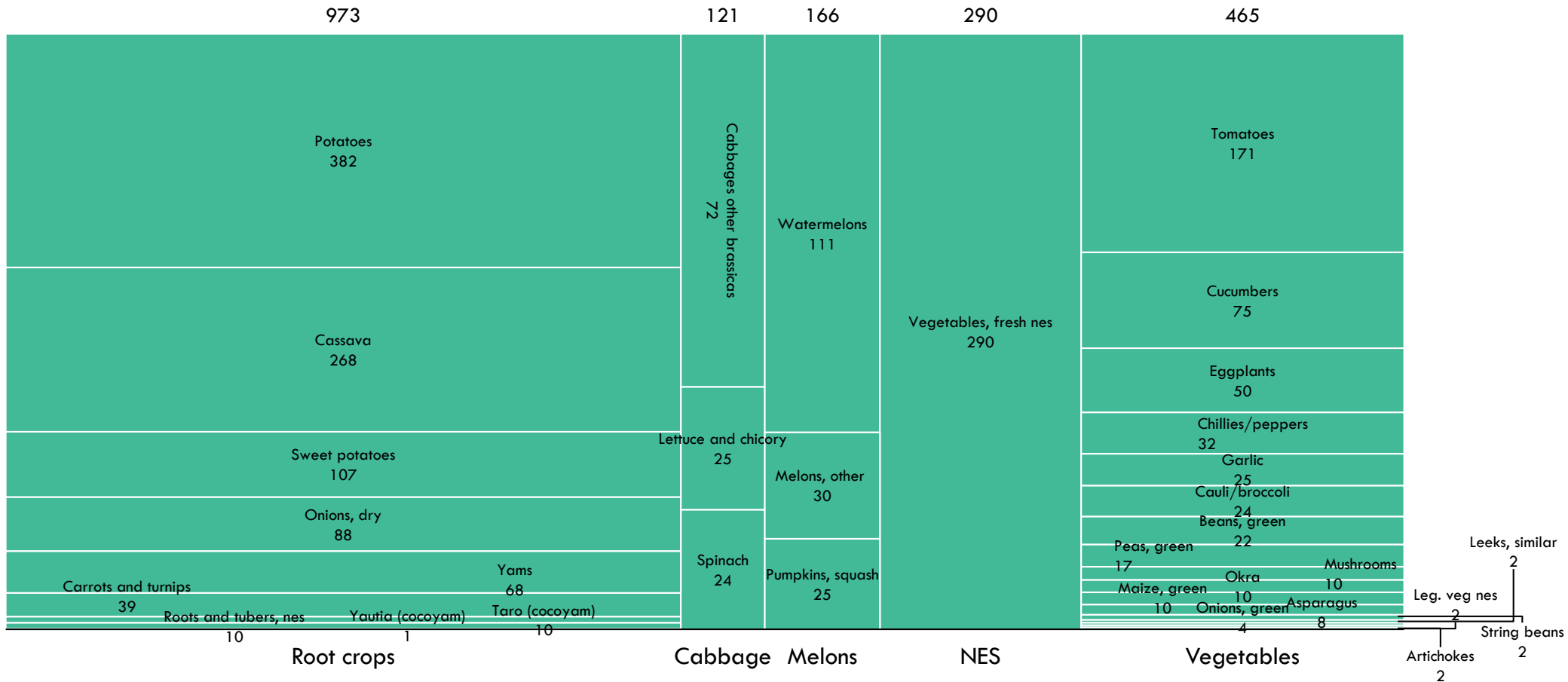
Oilseeds & Vegetable Oils

Fibre

Essential Oils, Pharmaceutical & Other

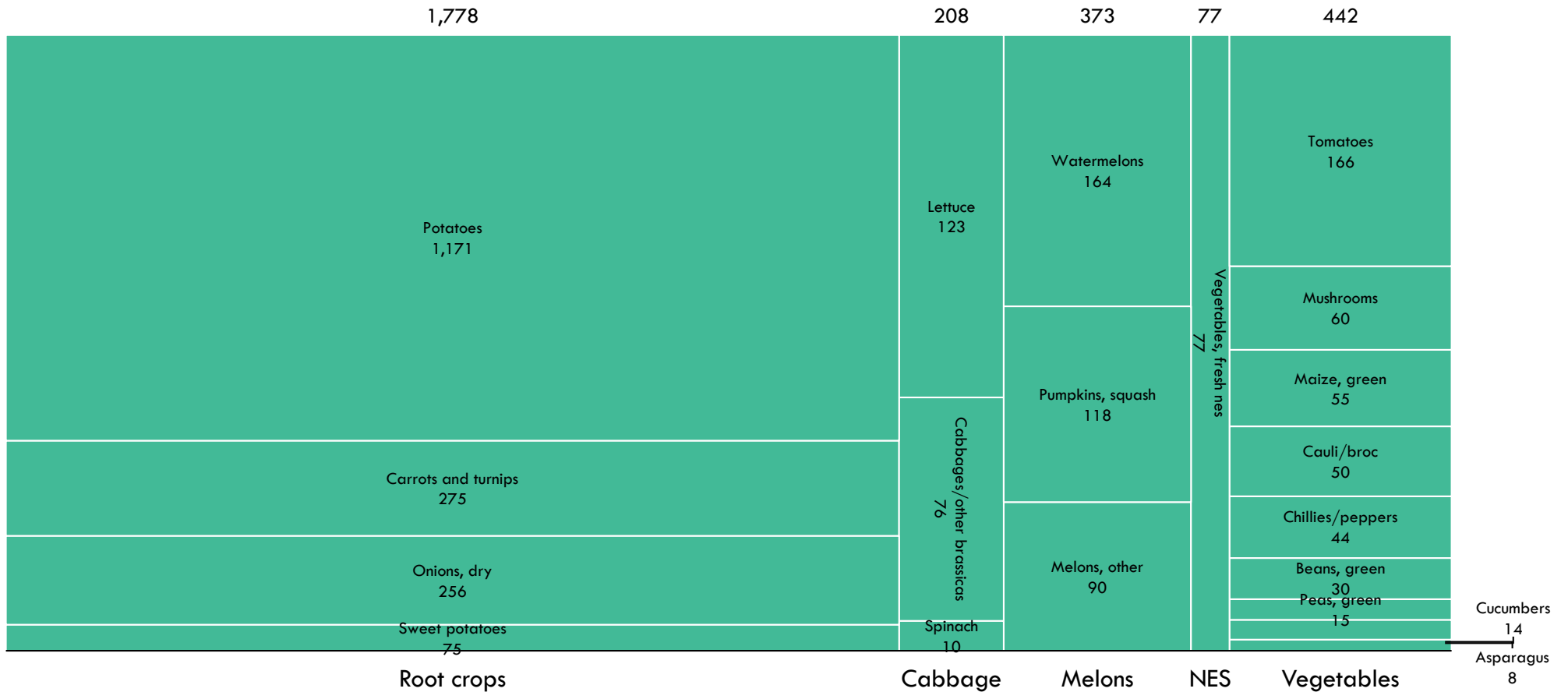
A wide range of vegetables are produced globally

GLOBAL VEGETABLE PRODUCTION BY TYPE TONNES; M; 2014



Australian vegetable production is more concentrated into fewer crops than the global situation

AUSTRALIA VEGETABLE PRODUCTION BY TYPE TONNES; 000; 2014



Twelve emerging vegetable species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

Global Agricultural Industry with no farming activity identified in Australia	Hobby/Micro/Wild Collect Currently In Australia (\$10k-\$1m)	Emerging Agricultural Industry (\$1m-\$10m)	Secondary Agricultural Industry (\$10-100m)	Major Agricultural Industry (\$100m+)
<p>Malanga/Cocoyam</p> <p>Yacon</p> <p>Jicama</p> <p>Lotus root</p> <p>Numerous others</p>	<p>Jerusalem artichoke</p> <p>Japanese pumpkin</p> <p>Yam</p> <p>Water chestnut</p> <p>Lemongrass</p> <p>Bush tomato</p> <p>Peruvian corn</p>	<p>Parsnip (\$9.1m)</p> <p>Chillies (\$8.5m)</p> <p>Garlic (\$7.7m)</p> <p>Turnip (\$7m)</p> <p>Taro (\$5m)</p> <p>Fennel (\$2.2m)</p> <p>Okra (\$5.7m)</p> <p>Bitter melon (\$2.0m)</p> <p>Snake bean (\$2.3m)</p> <p>Globe artichoke (\$1m)</p> <p>○ Cassava (\$1-5m)</p> <p>Wasabi (\$0.2m)</p>	<p>Sweet corn (\$66m)</p> <p>Other Asian vegetables (\$77m)</p> <p>Pumpkin (\$68m)</p> <p>Zucchini (\$61m)</p> <p>Sweet potato (\$61m)</p> <p>Peas (\$55m)</p> <p>Asparagus (\$54m)</p> <p>Celery (\$50m)</p> <p>Cabbage (\$43m)</p> <p>Cauliflower (\$42m)</p> <p>Spinach/Silverbeet/Kale (\$20m)</p> <p>Snow/snap pea (\$23m)</p> <p>Leek (\$19m)</p> <p>Spring onions (\$22m)</p> <p>Brussels sprouts (\$16m)</p> <p>Eggplant (\$16m)</p> <p>Truffles (\$12m)</p>	<p>Beetroot (\$11m)</p> <p>Parsnip (\$10-15m)</p> <p>Wombok (\$9.3m in 12)</p> <p>Parsley (\$8.2m in 09)</p> <p>Radish (\$8.4m in 09)</p> <p>Potatoes (\$800m+)</p> <p>Tomato (\$542m)</p> <p>Mushrooms (\$353m)</p> <p>Leafy salad (\$272m)</p> <p>Olives (\$217m)</p> <p>Broccoli (\$210m)</p> <p>Carrots (\$204m)</p> <p>Cucumber (\$164m)</p> <p>Onions (\$158m)</p> <p>Culinary herbs (\$134m)</p> <p>Head Lettuce (\$146m)</p> <p>Beans, French/runner (\$113m)</p> <p>Capsicum (\$139m)</p>

TARGET ZONE

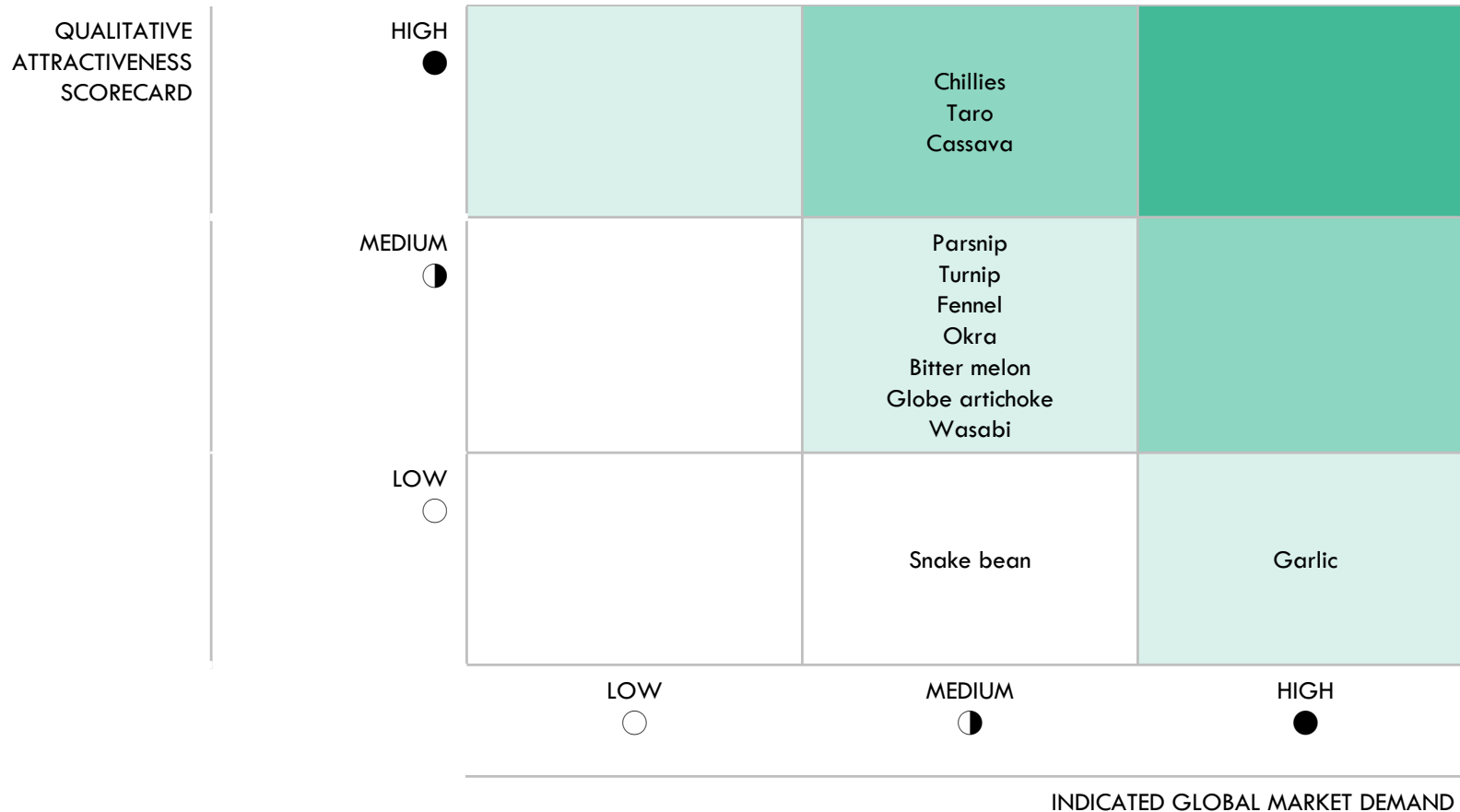
Chillies, Taro & Cassava Profile in Stage II

1. Gross value unless stated otherwise; Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING VEGETABLE OPPORTUNITIES EVALUATION MATRIX

Model; 2017





QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		<p>Parsnips are a common ingredient in soups and baby food.</p> <p>Parsnips are benefiting from a current foodservice trend for "traditional" British meals.</p> <p>Emerging evidence of health benefits are leading to increased consumer demand in USA and Europe.</p>		\$9.1m (2016)	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input checked="" type="radio"/>				
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Nostalgia for traditional English winter vegetables - Demand for 'clean label'/simple baby food - Increased demand for animal feed (parma ham pigs) - Use in traditional Chinese medicine - Potential health benefits (antioxidants, dietary fibre) 		<ul style="list-style-type: none"> - Currently almost no further processing in Australia (only 3% of production) - Parsnip germination in summer can be difficult 	
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Vegetable chips - Oven fries - Baby food - Soup - Beer ingredient (Northern Monk Brew Co. Parsnip and Black Pepper Dunkelweiss (UK)) - Parsnip wine - Essential oil (fragrance for cosmetic, household products) - Petfood ingredient 		<ul style="list-style-type: none"> - Australia can develop value added processing industry for parsnips - Export markets can be developed 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS		DOMESTIC		EXPORTERS	
Biosecurity or other domestic barriers	<input type="radio"/>	<ul style="list-style-type: none"> - Other root vegetables - Imported processed products 		<ul style="list-style-type: none"> - Europe - Asia 	
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF-THE-PRIZE"
PRODUCT		<p>Australians consume around 15,000 tonnes of garlic per year, currently 80% imported. Garlic has perceived health benefits and is common ingredient in natural cold and flu remedies. The Australian industry moving to year around supply.</p>		\$7.7m (2016)	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input checked="" type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>				
MARKETS		DRIVERS OF GROWTH	KEY RISKS & SENSITIVITIES		
Wide spread of markets/buyers	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Staple ingredient in almost all cuisines - Health benefits (immune system) - Move towards domestically produced produce - Increased interest in heirloom produce varieties 	<ul style="list-style-type: none"> - China major global producer (~85%) at much lower prices - Half of Australia's domestic production is from one firm (Australian Garlic Producers in VIC) - Currently over production in narrow supply window 		
Wide spread of prices	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Origin important or called out at POS	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Minced garlic - Marinated garlic cloves - Food service and food manufacturing ingredient (bulk minced, sliced, etc..) - Organic, heirloom breeds - Pharmaceutical extracts 		<ul style="list-style-type: none"> - Consumers willing to pay premium for domestically produced garlic - Food manufacturers can gain value from using domestically produced garlic in their products - Australian industry can achieve a year round supply - Imported garlic will continue to have to be fumigated (giving Australian garlic a healthy point of difference) 	
COMPETITORS		KEY COMPETITORS			
Biosecurity or other domestic barriers	<input type="radio"/>	DOMESTIC	EXPORTERS		
Can we get to the world price?	<input type="radio"/>	<ul style="list-style-type: none"> - Imported garlic - Imported processed garlic products - Spring onions, shallots 	<ul style="list-style-type: none"> - China - Mexico - Argentina - USA - Spain - Chile 		
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input checked="" type="radio"/>				
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Traditional European vegetable currently used primarily for animal feed. Turnips are benefiting from a current foodservice trend for "traditional" British meals. Real opportunities for a dramatic repositioning of the product.		\$7.0m	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input checked="" type="radio"/>				
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Nostalgia for traditional English winter vegetables - Excellent feed for dairy cows 		<ul style="list-style-type: none"> - Crop rotation is essential to prevent disease build up 	
Wide spread of markets/buyers	<input checked="" type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Canned root and greens - Pickled turnip - Dried (Asian ingredient) - Animal feed 		<ul style="list-style-type: none"> - Growth potential exists outside of animal feed market 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	<input checked="" type="radio"/>				
Can we get to the world price?	<input checked="" type="radio"/>				
Attractive competitive set	<input checked="" type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input checked="" type="radio"/>				
		DOMESTIC		EXPORTERS	
		<ul style="list-style-type: none"> - Other root vegetables - Other sources of animal feed 		<ul style="list-style-type: none"> - China - Uzbekistan - Russia - United States - Ukraine - Poland - Other Europe 	



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Bulb, foliage, seeds are used in many cuisines world wide. Hot ingredient currently in trendsetting restaurants. Grown in Tasmania for essential oil production.		\$2.2m (2016)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Used as spice in many cuisines - Medicinal uses 		<ul style="list-style-type: none"> - Major invasive weed, particularly along roads, railways and waterways 	
Wide spread of markets/buyers	<input checked="" type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Seeds are used as spice - One of primary ingredients of absinthe, also used in akavit - Fennel oil (bitter fennel variety) – used for flavouring and fragrance - Natural toothpaste flavouring - Animal fodder 		<ul style="list-style-type: none"> - Australian essential oil industry can compete with low cost producers India, Mexico 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers	<input type="radio"/>	<ul style="list-style-type: none"> - Locally grown fresh dill and other herbs - Imported dried fennel seeds - Imported star anise oil and fennel oil 	<ul style="list-style-type: none"> - India - Mexico - China - Vietnam 		
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input checked="" type="radio"/>				
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Emerging identification of significant health benefits in okra. Okra has a wide range of cosmetic and industrial uses. Plant suits Australia it has good drought tolerance.		\$5.7m* (2015)	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Health benefits (dietary fibre, vitamins, minerals) - Functional use as natural thickening agent in cooking - Demand for natural supplements - Common staple in many cuisines 		<ul style="list-style-type: none"> - Lack of consumer awareness and knowledge (has slimy texture) - Very labour intensive to harvest - Australia does not export any okra 	
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Canned, frozen - Dried as snack - Pickles - Okra oil - Extract powder - Nutritional supplements (okra pepsin) - Cosmetics - Hair care products (stimulates hair growth) - Industrial uses for bast fibre from stem of the plant 		<ul style="list-style-type: none"> - Further research will confirm health benefits (diabetes, liver disease, kidney disease) - Australia can develop a value added processing industry for okra (nutraceutical and cosmetic) 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS		DOMESTIC		EXPORTERS	
Biosecurity or other domestic barriers	<input type="radio"/>	<ul style="list-style-type: none"> - Imported processed okra - Other Asian vegetables 		<ul style="list-style-type: none"> - India - Nigeria - Iraq - Sudan - Cote d'Ivoire - Africa - Middle East 	
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				

*Northern Territory production only. Source: Northern Territory Government Department of Primary Industry and Fisheries Overview and Outlook 2015; Coriolis analysis and estimates



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Widely used in ethnic foods and traditional medicines. Well suited to winter production in Northern Territory and summer production in Queensland. Emerging identification of potential health benefits for diabetes and other chronic illnesses.		\$2.0m* (2015)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Widely used in Asian cuisines - Long use in traditional medicine of Asia, Africa, India, Turkey, etc. - Demand as a nutraceutical supplement (claims to lower blood glucose) - Increasing expat population in Australia looking for traditional foods 		<ul style="list-style-type: none"> - Production levels fluctuate widely - Highly perishable - Labour intensive harvesting 	
Wide spread of markets/buyers	<input checked="" type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Fresh ingredient in many dishes - Tea - Beverage flavouring - Supplements and powders - Cosmetics 		<ul style="list-style-type: none"> - Research can be undertaken to confirm traditional medicine uses - Domestic demand can be increased - Australia's reputation can be leveraged to command a premium for domestically produced supplements in order to compete with cheaper producers 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS		DOMESTIC		EXPORTERS	
Biosecurity or other domestic barriers	<input checked="" type="radio"/>	<ul style="list-style-type: none"> - Imported processed products - Other supplements and teas 		<ul style="list-style-type: none"> - China - India - Thailand - Philippines - Vietnam - Caribbean - Africa 	
Can we get to the world price?	<input type="radio"/>	AUSTRALIA			
Attractive competitive set	<input type="radio"/>	High performance genetics available		<input type="radio"/>	
		Required skills for success		<input type="radio"/>	
		Leverage country reputation		<input type="radio"/>	
OVERALL	<input type="radio"/>				

* Northern Territory production value only. Source: Northern Territory Government Department of Primary Industry and Fisheries Overview and Outlook 2015; Coriolis analysis and estimates



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Widely used in ethnic foods and traditional medicines. Interesting version of well known green bean. Small currently, but with potential for growth through consumer trial.		\$2.3m* (2015)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		- Common fresh ingredient in Asian curries and stir fries - Grows well in hot and humid climates where other green bean varieties are susceptible to heat damage - Increased demand for new and exotic produce - Increased expat population in Australia seeking traditional ingredients		- Lack of consumer awareness and understanding of variety (e.g. snake beans should not be cooked in water) - Lack of value added opportunities beyond canned or frozen - Competing with low cost domestic producers in countries where snake beans are commonly consumed	
Wide spread of markets/buyers	<input type="radio"/>				
Wide spread of prices	<input type="radio"/>				
Origin important or called out at POS	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
COMPETITORS		- Fresh ingredient in many cuisines - Dried as soup ingredient		- Australia will continue to not allow any snake bean imports	
Biosecurity or other domestic barriers	<input checked="" type="radio"/>				
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>	KEY COMPETITORS			
		DOMESTIC	EXPORTERS		
		- Imported canned and frozen snake beans - Other fresh green bean varieties - Processed green bean products	- India - Philippines - Malaysia - Caribbean - Asia		
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				

*Northern Territory production only. Source: Northern Territory Government Department of Primary Industry and Fisheries Overview and Outlook 2015; Coriolis analysis and estimates



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Traditional Mediterranean vegetable with multiple health benefits. Climatic peer Italy has a major industry. Currently no further processing in Australia using locally produced artichokes.		\$1.0m (2016)	\$3-5m by 2025
Capital intensive to produce	○				
Mechanically harvested	○				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Health benefits (antioxidants, dietary fibre, digestion, liver support) - Traditional Mediterranean vegetable 		<ul style="list-style-type: none"> - Only small amount of exports currently - No further processing in Australia - Very labour intensive harvesting 	
Wide spread of markets/buyers	●	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Prepared stuffed artichoke hearts - Dip - Tea - Liqueur (Campari's Cynar) - Nutraceutical supplements (powders, tinctures) - Fragrance 		<ul style="list-style-type: none"> - Australia can develop a value added processing sector for globe artichokes - Australia can grow its fresh exports from the current very low base of 7 tonnes (2016) - Australia can expand the range of export markets beyond New Caledonia (55%), Hong Kong (12%) and Thailand (8%) 	
Origin important or called out at POS	◐	KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers	○	<ul style="list-style-type: none"> - Imported fresh globe artichokes - Imported processed food products - Locally made food products using imported ingredients - Other vegetables 	<ul style="list-style-type: none"> - Italy - Egypt - Spain - Argentina - Peru - Algeria - China - Morocco - USA 		
Can we get to the world price?	◐				
Attractive competitive set	◐				
AUSTRALIA					
High performance genetics available	●				
Required skills for success	●				
Leverage country reputation	●				
OVERALL	◐				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Staple condiment accompanying sushi, sashimi and other Japanese dishes. Farm gate prices were \$200/kg for stems and \$35/kg for leaves in 2012. Relatively attractive competitive set in world market.		\$0.2m (2012)	\$3-5m by 2025
Capital intensive to produce	●				
Mechanically harvested	○				
Value-added opportunities	◐	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Increased popularity of sushi and sashimi outside of Japan - Superiority of fresh wasabi root over imported powders 		<ul style="list-style-type: none"> - Water supply needed for higher quality water grown wasabi - Very labour intensive and expensive to grow - Crop is only suitable for maximum summer temperatures of 25 degrees - Environmental issues around stream grown wasabi at a commercial level 	
Wide spread of markets/buyers	◐	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	●	<ul style="list-style-type: none"> - Water grown wasabi (which commands significantly higher prices than soil grown) - Processed stems - Wasabi powder - Pickles - Dressings - Flavouring ingredient (e.g. cheese, rice topping, dried pea snack, ice cream) 		<ul style="list-style-type: none"> - Australia can improve yields to reach Japan's levels - Markets can be found to allow large scale production in Australia - Japanese preference for domestically grown products can be overcome - Domestic restaurant industry will continue to embrace the product - Inability to import fresh wasabi into Australia will continue 	
Origin important or called out at POS	●	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	●				
Can we get to the world price?	◐				
Attractive competitive set	●				
AUSTRALIA					
High performance genetics available	○				
Required skills for success	◐				
Leverage country reputation	●				
OVERALL	◐				
		DOMESTIC	EXPORTERS		
		<ul style="list-style-type: none"> - Imported powder and other processed products - Horseradish substitute products 	<ul style="list-style-type: none"> - Japan - Taiwan - South Korea - New Zealand - Colombia - Canada 		

Meat

Aquaculture

Dairy

Vegetables

Nuts

Fruit

Coffee, Tea, Spices, Sweeteners & Cocoa

Arable Crops

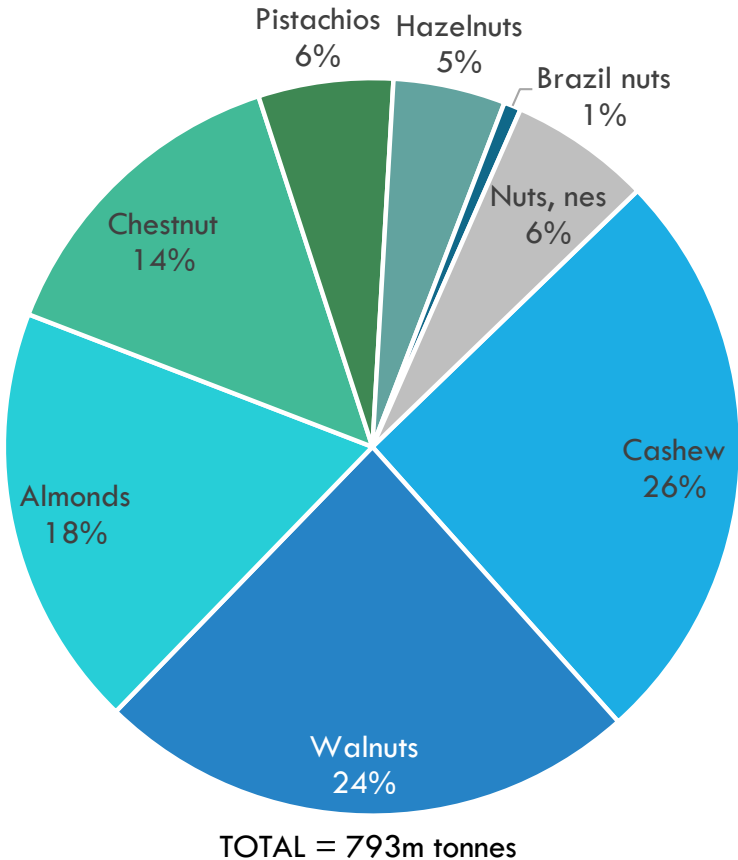
Oilseeds & Vegetable Oils

Fibre

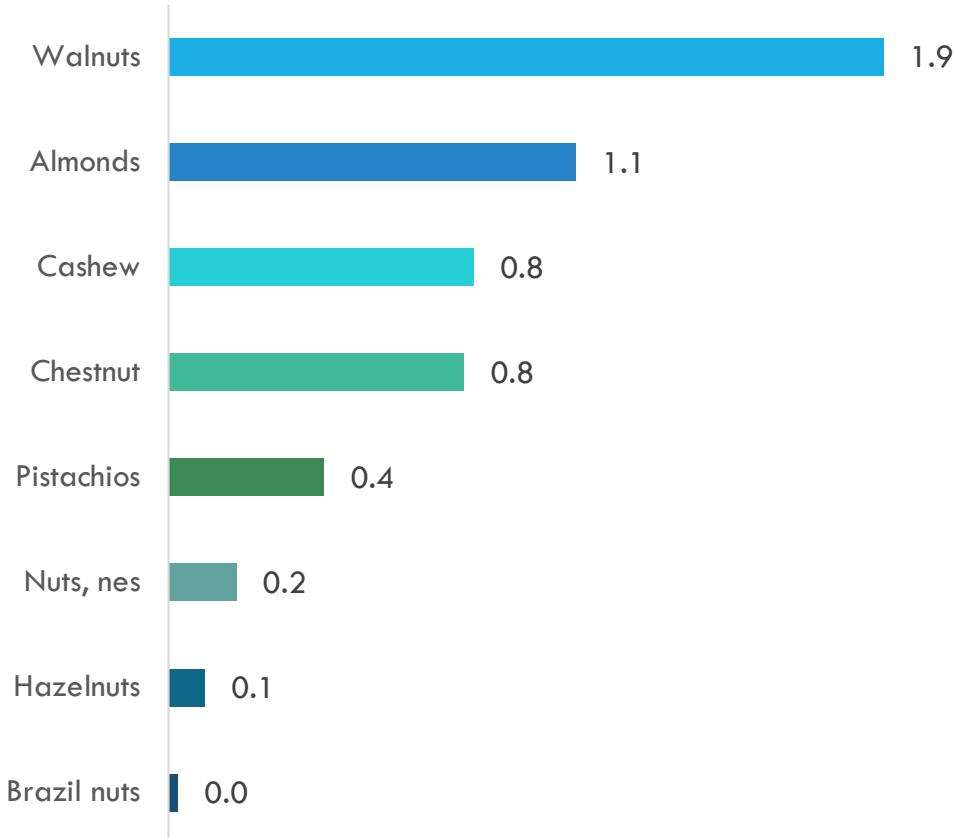
Essential Oils, Pharmaceutical & Other

Four nuts – cashew, walnut, almond and chestnut – account for over 80% of global production

GLOBAL NUT PRODUCTION BY TYPE
TONNES; M; 2014



10Y GLOBAL PRODUCTION GROWTH
TONNES; M; 2004-2014

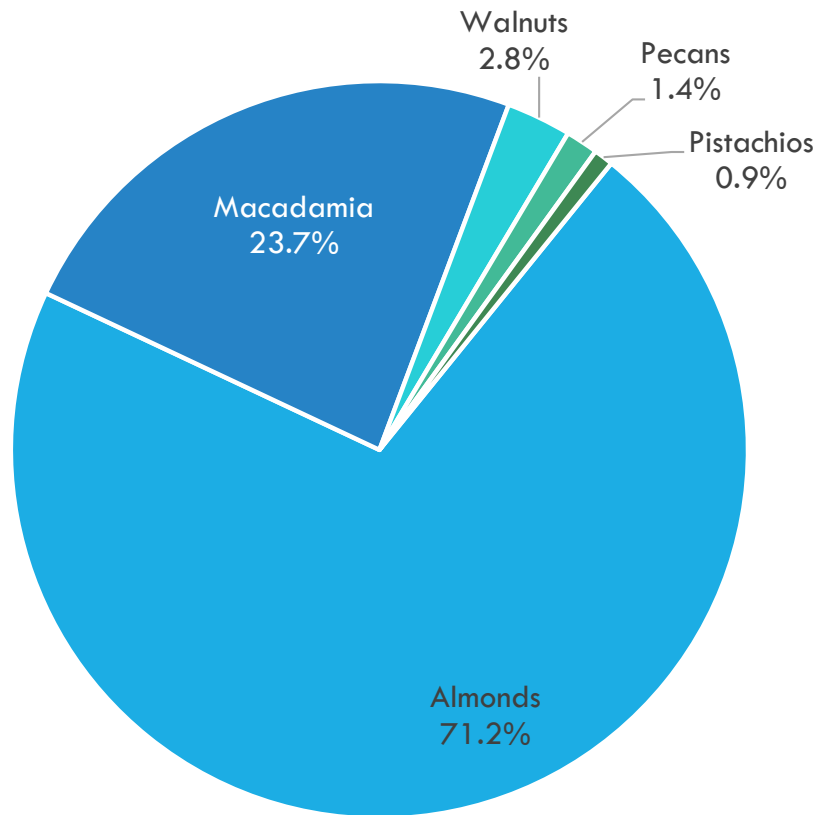


Note: Nuts nes (not elsewhere specified) includes coconuts, kola, filbert, hickory, karuka, macadamia and betel; Source: UN FAOSTAT; Coriolis analysis and estimates

The Australian nut industry is currently focused on almonds and macadamia; however five smaller nuts are at various stages of growth

AUSTRALIAN IN-SHELL NUT PRODUCTION TONNES; 2016

PRELIMINARY



TOTAL = 212,170t in-shell

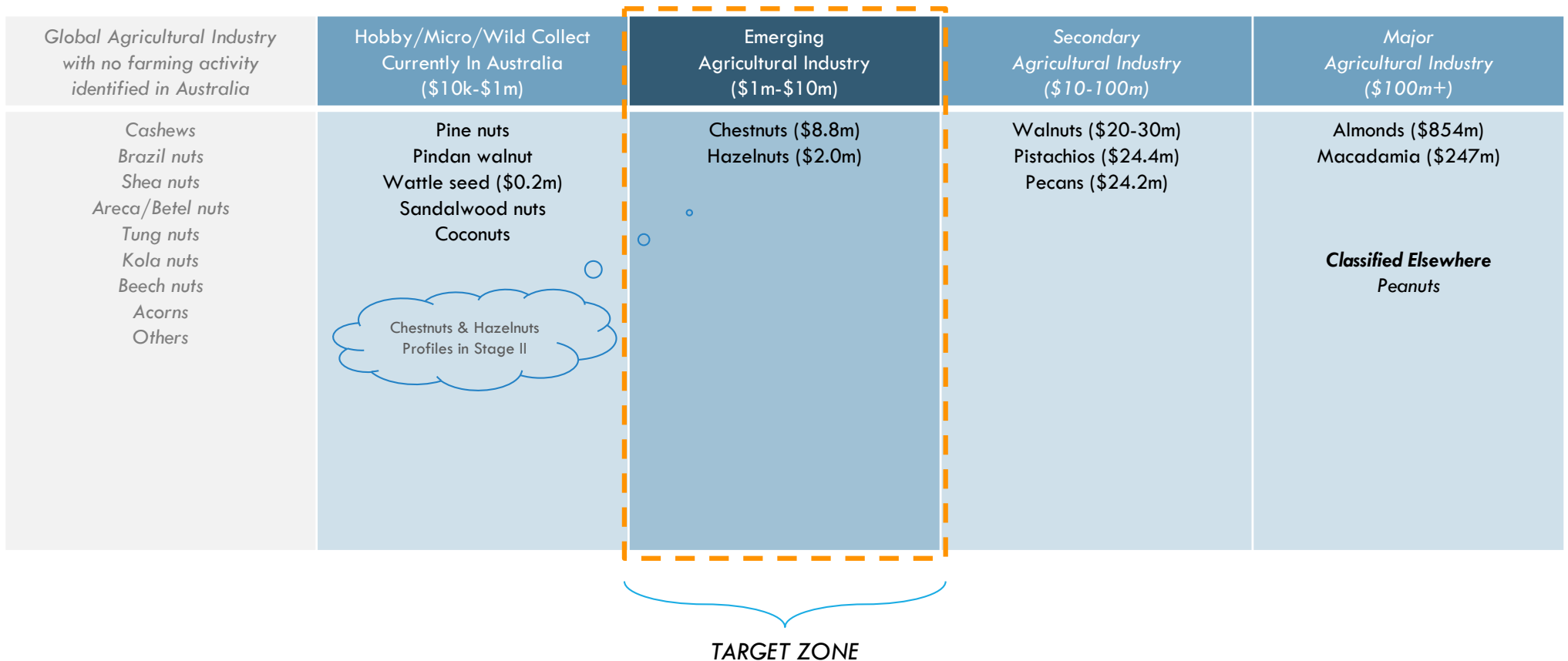
Type	Trees	Hectare	In-Shell	Shelled
Almonds	7.7m	31,115 (16)	150,000t (est*)	82,500t (16)
Macadamia	5.4m	19,000ha	50,000t (16)	16,700t
Walnuts	-	3,600ha	6,000t (16)	-
Pecans	-	1,350ha	3,000t (16)	1,650t (16)
Pistachios	-	950ha	1,800t (16)	-
Chestnuts	0.2m	1,300ha	1,200t (16)	-
Hazelnuts	0.1m	200ha/ 1,400ha	170t (16) 2,550t (21f)	-

*Assumes a 56% yield; Source: ANIC; UN FAO; ABS; AgriFutures; various published articles; Coriolis analysis and estimates

Two emerging nut species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

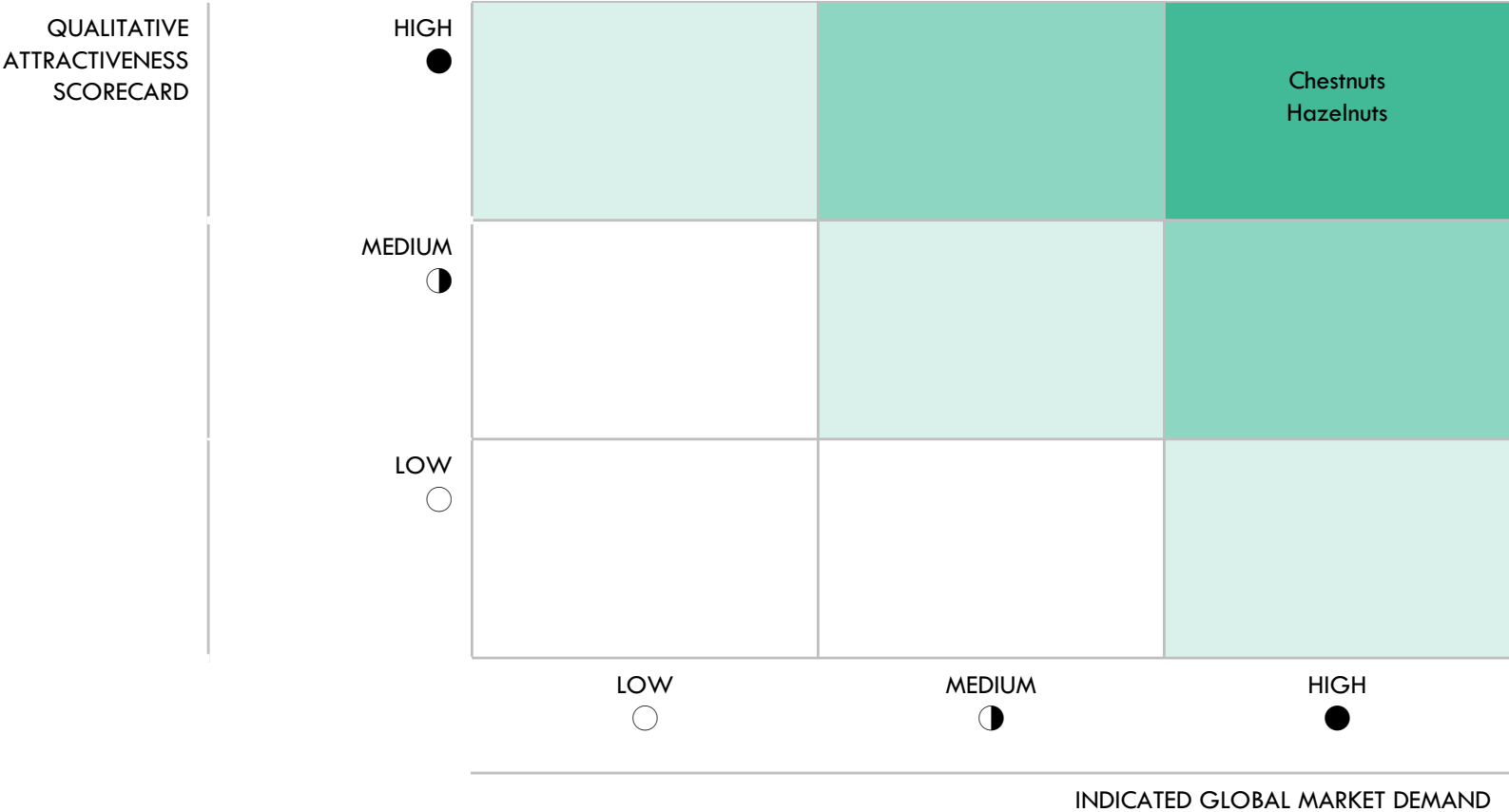


1. Gross value unless stated otherwise; Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING NUT OPPORTUNITIES EVALUATION MATRIX

Model; 2017



Meat

Aquaculture

Dairy

Vegetables

Nuts

Fruit

Coffee, Tea, Spices, Sweeteners & Cocoa

Arable Crops

Oilseeds & Vegetable Oils

Fibre

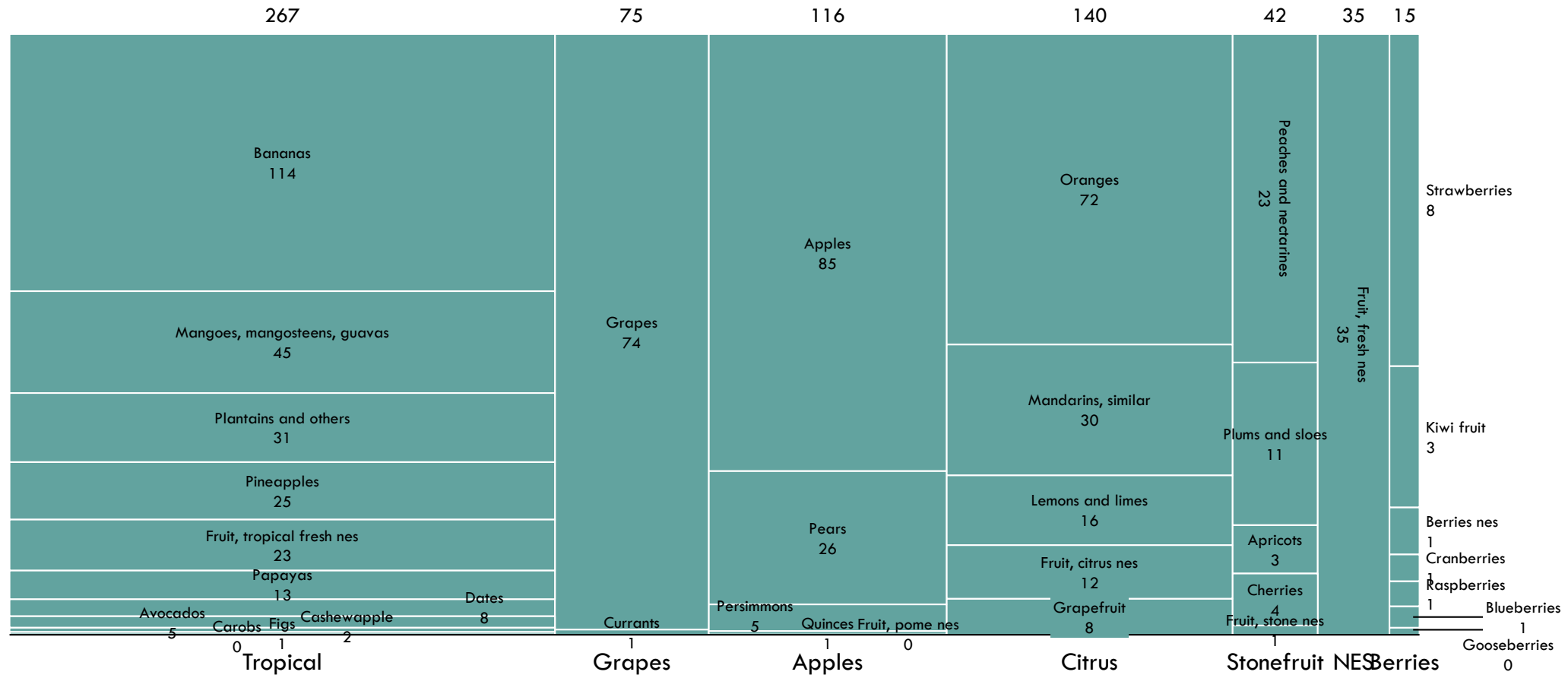
Essential Oils, Pharmaceutical & Other

A wide range of fruit are produced globally

GLOBAL FRUIT PRODUCTION BY TYPE

TONNES; M; 2014

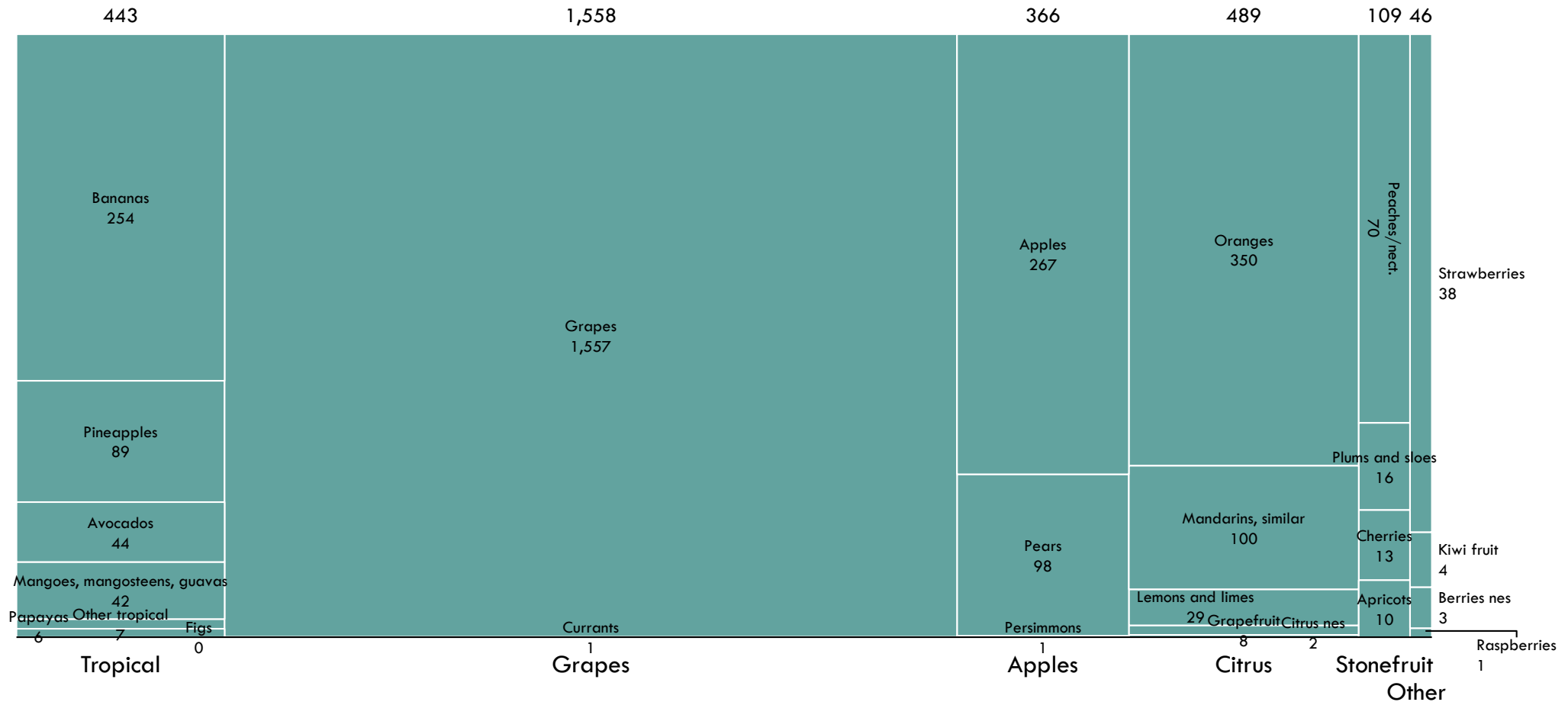
TOTAL = 689m tonnes



Australian fruit production is concentrated into a handful of large species

AUSTRALIAN FRUIT PRODUCTION BY TYPE TONNES; 000; 2014

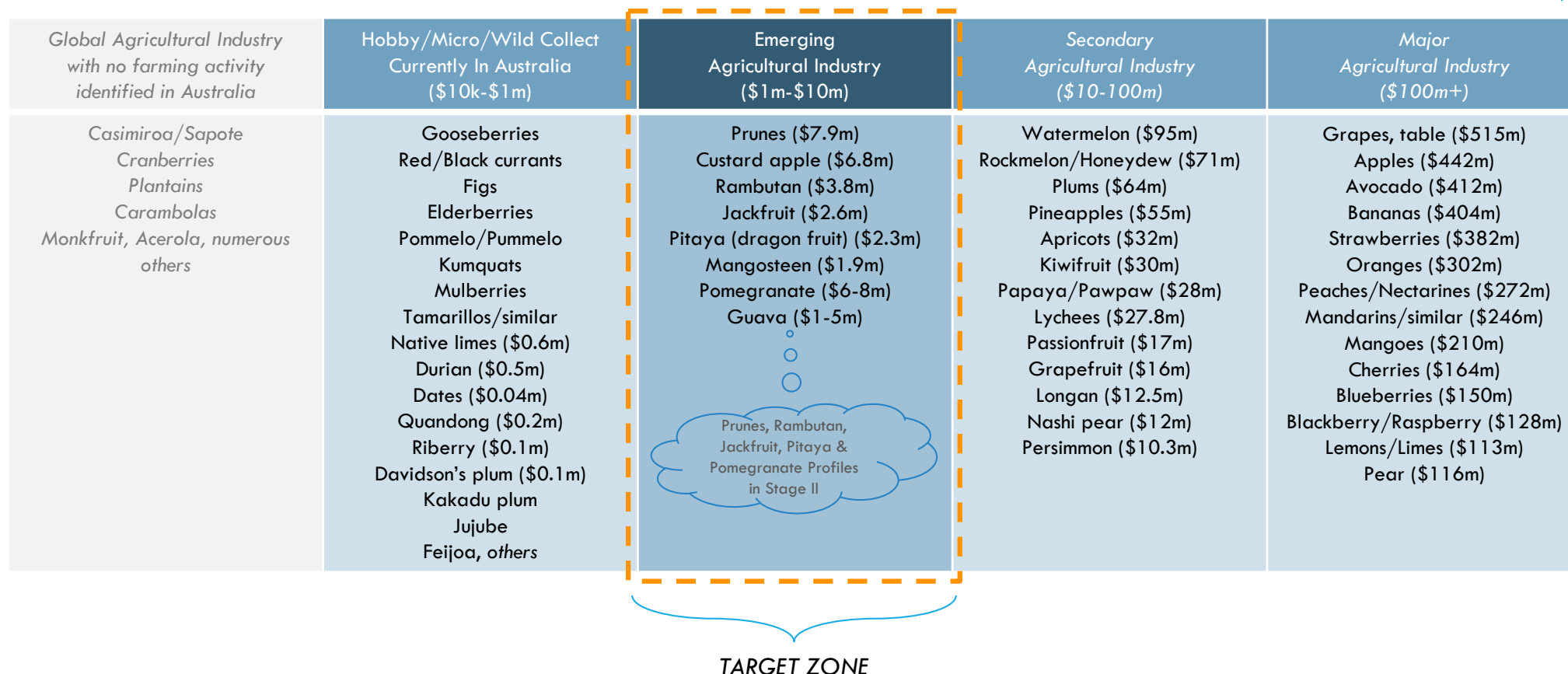
TOTAL = 2,015m tonnes



Eight emerging fruit species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

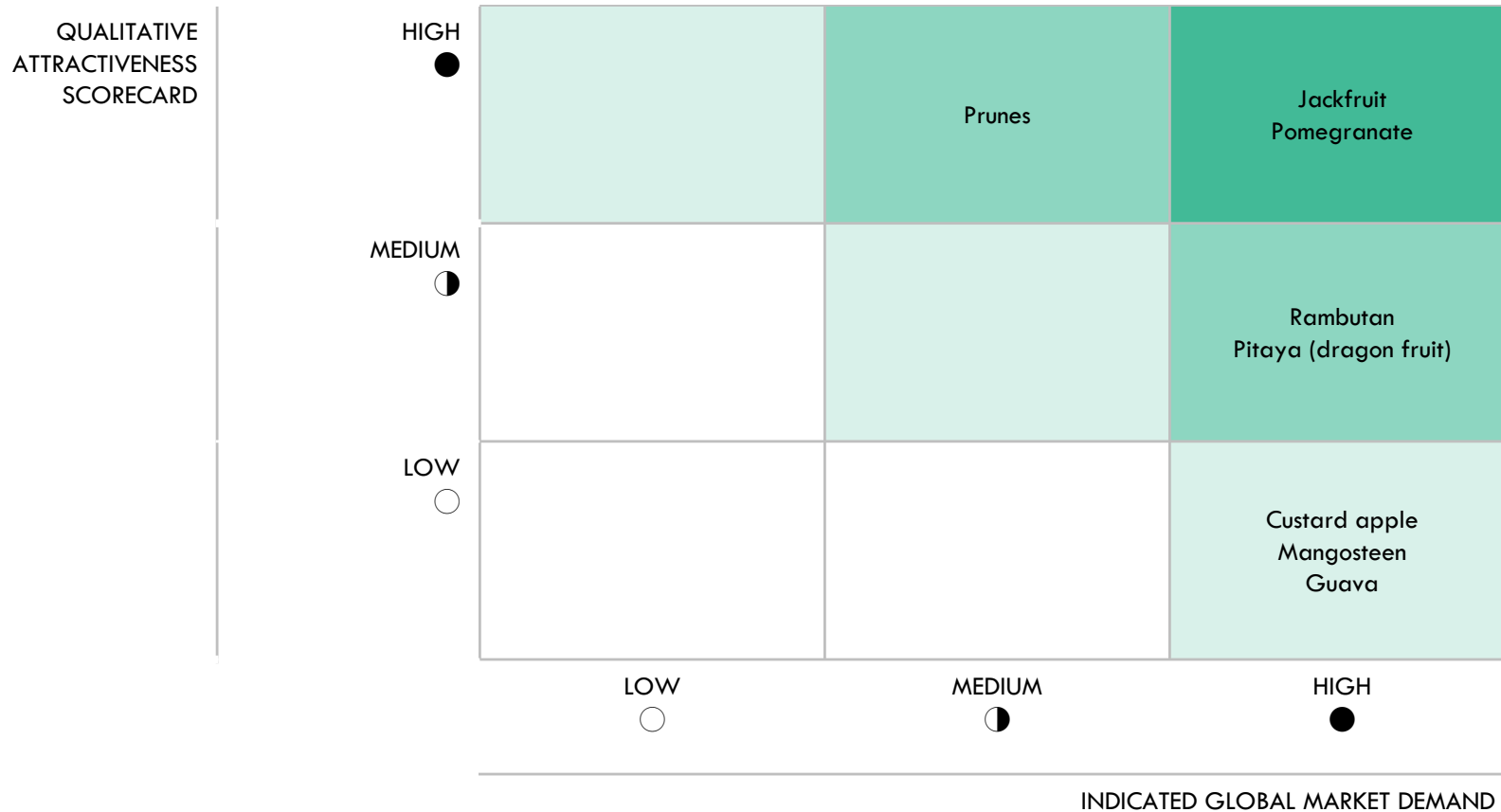


1. Gross value unless stated otherwise; Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING FRUIT OPPORTUNITIES EVALUATION MATRIX

Model; 2017



CUSTARD APPLE

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Custard apples are a soft, nutritious fruit suitable for elderly and babies. There is a unique variety of Custard Apple grown in Australia. Improved efficiencies and automation will unlock growth.		\$6.8m (2016)	\$10-15m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		- Counter season supply - Growth in local population for whom custard apple is traditional fruit - Demand for new and exotic fruits		- Low production per hectare with high production costs - Lack of new growers entering the market - Whole fresh fruit market only in Australia at present (at any scale) - Low knowledge and awareness in domestic market - Poor handling at retail level can lead to skin blackening and shortened shelf life - Lack of rootstock - Very labour intensive	
Wide spread of markets/buyers	<input checked="" type="radio"/>				
Wide spread of prices	<input type="radio"/>				
Origin important or called out at POS	<input checked="" type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
COMPETITORS		- Canned and pouch pulp - Juice - Flavoured beverages (dried tea, powdered mixes, mineral water) - Custard Apple seed oil - Liqueur - Baked products (Kalakand slice) - Nutraceutical extracts			
Biosecurity or other domestic barriers	<input checked="" type="radio"/>				
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>	KEY COMPETITORS		- Australia can obtain or retain trade access for fresh custard apples to key markets - Breeding program will continue to generate better varieties - Value added processing can be established in Australia - Consumer knowledge of handling and preparing can be improved	
AUSTRALIA		DOMESTIC	EXPORTERS		
High performance genetics available	<input type="radio"/>	- Imported custard apple products - Other winter tropical fruit - Dessert products	- Taiwan - Spain - Brazil - Chile - China		
Required skills for success	<input checked="" type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Visually striking tropical fruit with sweet, delicate flavour. Well suited to conditions in tropical parts of Australia. Traditional medicinal uses in Asian cultures.		\$1.9m (2012)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input type="radio"/>				
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Demand for new and exotic fruits - Visually striking 		<ul style="list-style-type: none"> - 7-10 years to initial fruiting, 12 years to commercial fruit - Strict climatic requirements - Imports of fresh mangosteens have been permitted from Thailand since 2004 	
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Canned, frozen - Juice - Desserts - Preserves, jam - Syrups - Nutraceuticals (traditional Asian medicinal use) 		<ul style="list-style-type: none"> - Australia can re-establish export markets of early 2000s - Research can lead to quicker growing varieties - Research confirms traditional medicinal uses and health benefits 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers	<input type="radio"/>	<ul style="list-style-type: none"> - Imported Thai mangosteens - Other tropical fruit - Imported processed products 	<ul style="list-style-type: none"> - Thailand (90% of production and almost all exports) - Malaysia - Philippines - Indonesia 		
Can we get to the world price?	<input type="radio"/>				
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input type="radio"/>				
Leverage country reputation	<input checked="" type="radio"/>				
OVERALL	<input type="radio"/>				



QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"						
PRODUCT		<p>Well known tropical fruit. Potential health benefits from carotenoids and polyphenols in leaves. Experienced growers in Australia.</p>		\$1-5m (est)	\$3-5m by 2025						
Capital intensive to produce	<input type="radio"/>										
Mechanically harvested	<input type="radio"/>										
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES							
MARKETS		<ul style="list-style-type: none"> - Demand for tropical fruits - Health benefits 		<ul style="list-style-type: none"> - Supplied to single fruit processor for beverage industry who moved to majority sourced overseas in 2012 							
Wide spread of markets/buyers	<input type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE							
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Canned - Juice - Frozen concentrate/puree - Flavouring for beverages - Flavouring for yoghurt, ice cream - Jams, preserves, jellies - Confectionery - Guava seed oil - Perfume/extract for cosmetics industry 		<ul style="list-style-type: none"> - Industry can regrow from crash in 2012 - Further value added processing beyond the beverage industry is possible in Australia 							
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS									
COMPETITORS											
Biosecurity or other domestic barriers	<input type="radio"/>										
Can we get to the world price?	<input type="radio"/>										
Attractive competitive set	<input type="radio"/>										
AUSTRALIA											
High performance genetics available	<input type="radio"/>										
Required skills for success	<input checked="" type="radio"/>										
Leverage country reputation	<input checked="" type="radio"/>										
OVERALL	<input type="radio"/>										
		<table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Imported processed products - Other tropical fruit </td> <td> <ul style="list-style-type: none"> - Central and South America - India - South Africa - Philippines - Taiwan </td> </tr> </tbody> </table>		DOMESTIC	EXPORTERS	<ul style="list-style-type: none"> - Imported processed products - Other tropical fruit 	<ul style="list-style-type: none"> - Central and South America - India - South Africa - Philippines - Taiwan 				
DOMESTIC	EXPORTERS										
<ul style="list-style-type: none"> - Imported processed products - Other tropical fruit 	<ul style="list-style-type: none"> - Central and South America - India - South Africa - Philippines - Taiwan 										

Meat

Aquaculture

Dairy

Vegetables

Nuts

Fruit

Coffee, Tea, Spices, Sweeteners & Cocoa

Arable Crops

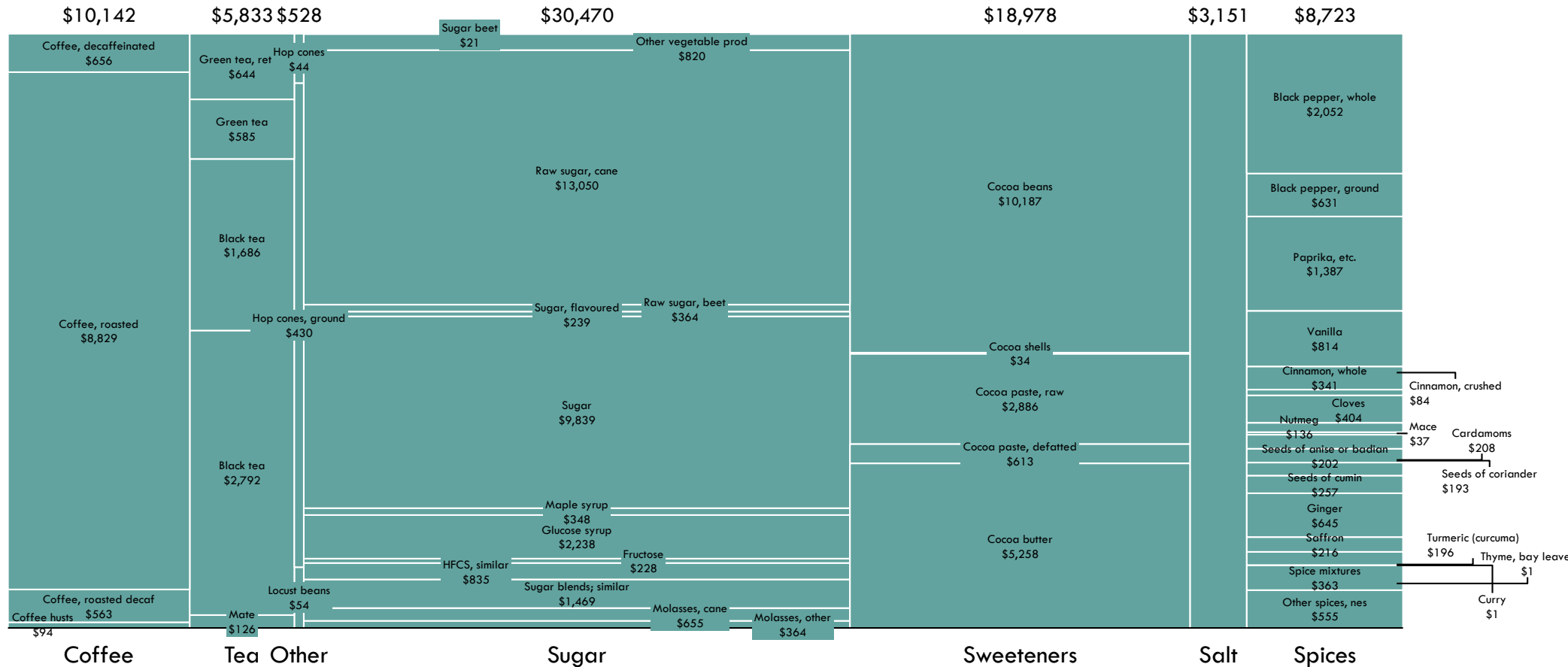
Oilseeds & Vegetable Oils

Fibre

Essential Oils, Pharmaceutical & Other

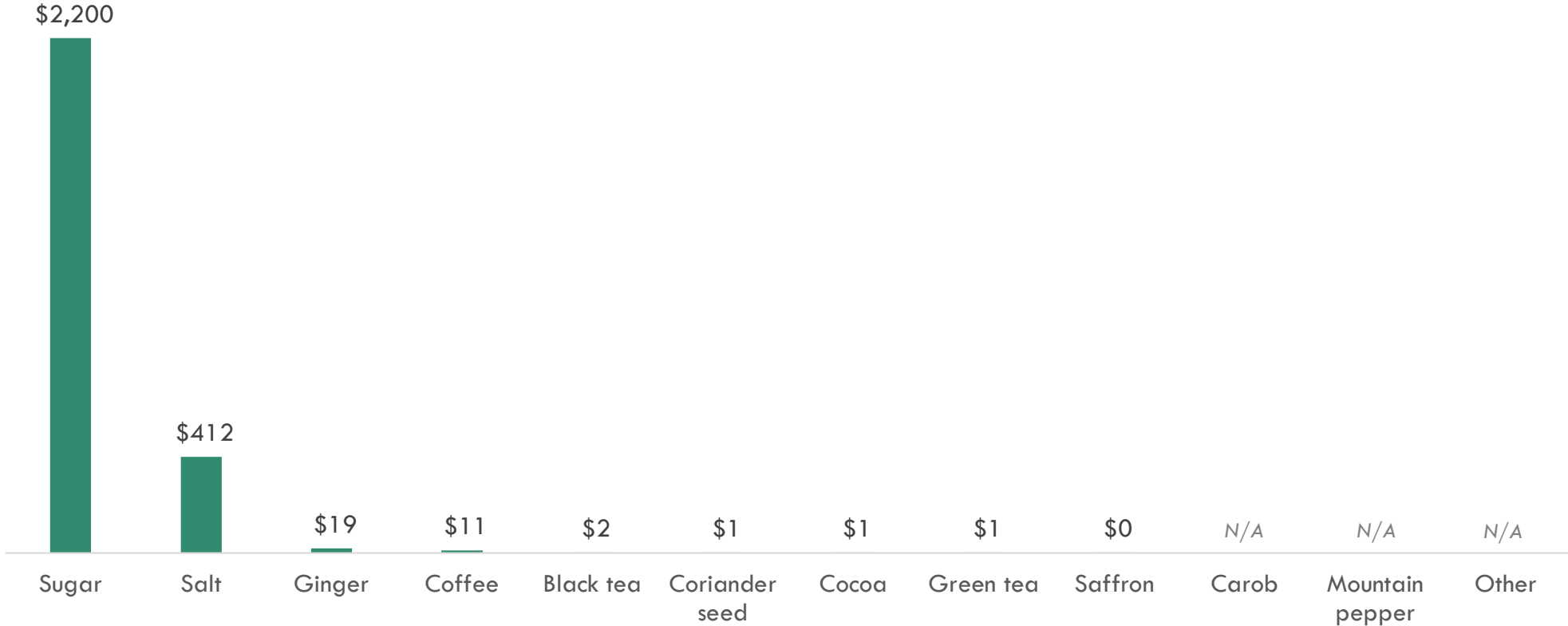
A wide range of coffee, tea, spices, sweeteners and cocoa are traded globally

GLOBAL COFFEE, TEA, SPICES, SWEETENERS & COCOA TRADE BY TYPE US\$; M; 2016



Australia produces a handful of Coffee, Tea, Spices, Sweeteners & Cocoa products at any scale

VALUE OF PRODUCTION: SELECT COFFEE, TEA, SPICES, SWEETENERS & COCOA
A\$; M; 2016 OR AS AVAILABLE

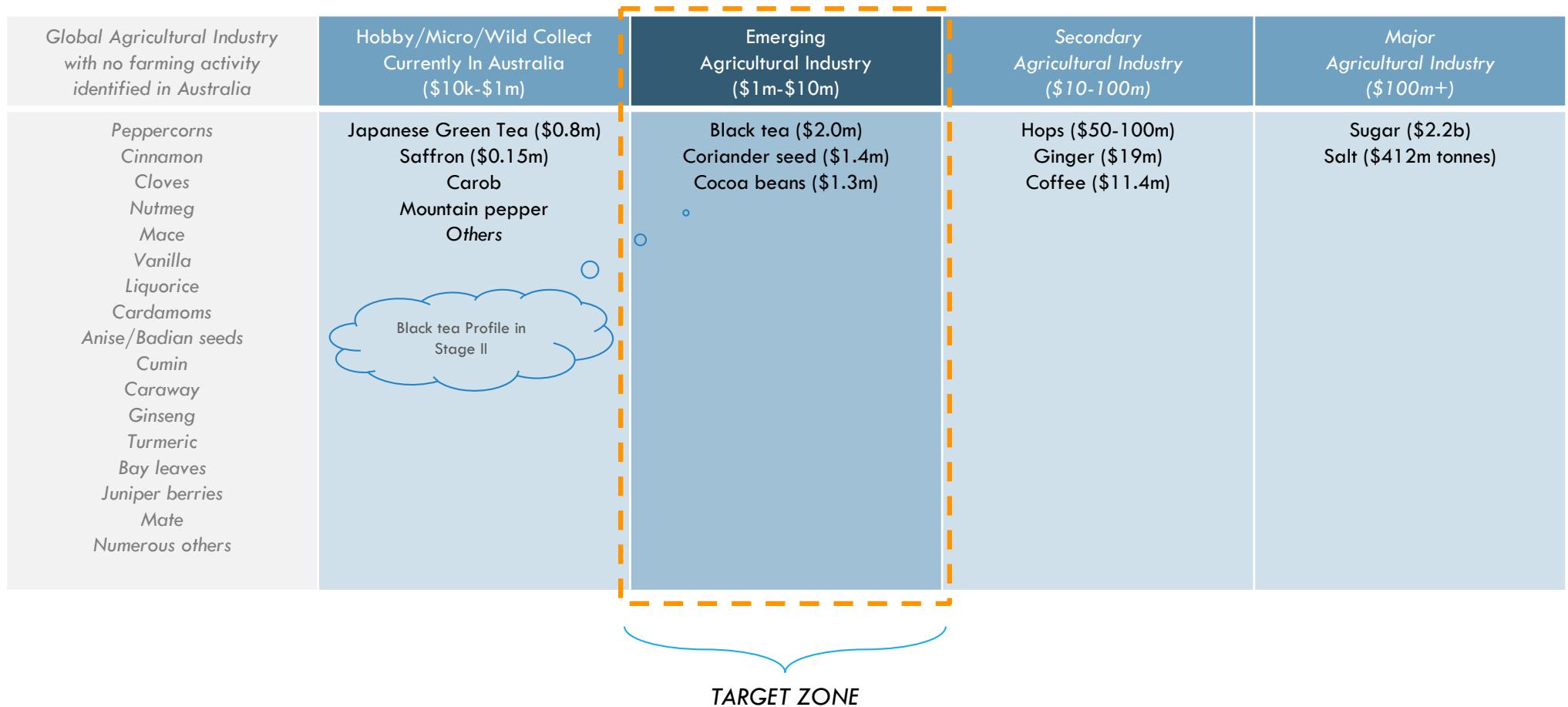


Source: Agrifutures; ASMC; ABS; other

Three emerging coffee, tea & spice species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →



1. Gross value unless stated otherwise; Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING COFFEE, TEA & SPICES OPPORTUNITIES EVALUATION MATRIX

Model; 2017

QUALITATIVE
ATTRACTIVENESS
SCORECARD

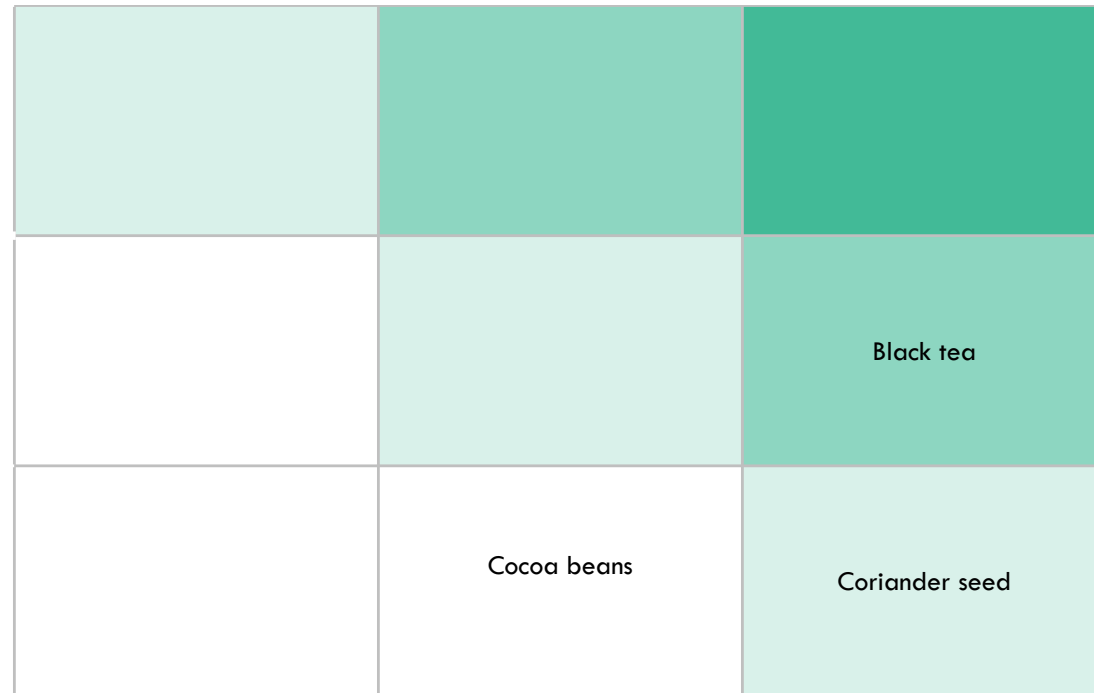
HIGH



MEDIUM



LOW



LOW



MEDIUM



HIGH



INDICATED GLOBAL MARKET DEMAND

CORIANDER SEED

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Very popular herb and spice in Australia and globally. Essential oil has cosmetic and aromatherapy applications. Appears to be well suited to Australian arable crop farming capabilities.</p>		\$1.4m (2011)	\$3-5m by 2025
Capital intensive to produce	<input type="radio"/>				
Mechanically harvested	<input checked="" type="radio"/>				
Value-added opportunities	<input type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Very commonly used spice globally - Health benefits (anti-inflammatory, antibacterial properties) 		<ul style="list-style-type: none"> - Disease issues that cause yield fluctuations, especially in early 2000s - Tropical/sub tropical variety grown in Australia contain lower volatile oil content than temperate varieties - Premium position not apparent 	
Wide spread of markets/buyers	<input checked="" type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Roasted seeds (eaten as a snack in India) - Coriander powder - Coriander oil - Cosmetics (body wash, shampoo) 		<ul style="list-style-type: none"> - Australia can grow the smaller fruit variety that grows in temperate regions for the valuable essential oil product - Australia can compete with low cost, established producers 	
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers	<input type="radio"/>	DOMESTIC	EXPORTERS		
Can we get to the world price?	<input type="radio"/>	<ul style="list-style-type: none"> - Imported coriander seeds - Imported coriander products - Other spices - Other essential oils 	<ul style="list-style-type: none"> - India - Bulgaria - Iran - Canada - Morocco 		
Attractive competitive set	<input type="radio"/>				
AUSTRALIA					
High performance genetics available	<input type="radio"/>				
Required skills for success	<input type="radio"/>				
Leverage country reputation	<input type="radio"/>				
OVERALL	<input type="radio"/>				

COCOA BEAN

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>Australians consume a lot of chocolate. Australia also imports a lot of cocoa beans. Australia can produce cocoa beans in parts of Queensland. A segment of consumers will be willing to pay a sufficient premium for chocolate made from Australian beans.</p>		\$1.3m (2012)	\$3-5m by 2025
Capital intensive to produce					
Mechanically harvested					
Value-added opportunities		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Identification of "superfood" health properties of cocoa - Emergence of "single origin" and wine-like characteristics - Increased interest & awareness in source of beans - Growth of premium chocolate - Well developed and understood market; wide range of uses 		<ul style="list-style-type: none"> - Current \$/t (A\$12,500) not sustainable; Ivory Coast/Ghana are 50% of global production and get US\$3,240/t - Cash hole as it takes 5+ years for trees to bear fruit (challenge but also creates a barrier to entry) 	
Wide spread of markets/buyers		VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices		<ul style="list-style-type: none"> - Cocoa powder, chocolate bars, drinking chocolate, cocoa butter, cocoa nibs - Premium "bean-to-bar" chocolate products - On-site store or café; hot chocolate chains (e.g. San Churro) - Farm based tourist attraction 		<ul style="list-style-type: none"> - Chocolate manufacturers will pay a sufficient premium for Australian grown cocoa beans - Consumers will pay a premium for chocolate made from Australian beans (as opposed to just chocolate made in Australia) - Australia can compete (albeit at premium prices) with Ghana and the Ivory Coast once the industry gets to scale - Labour intensive nature of harvesting and processing can be overcome through mechanisation and productivity - Producers can rapidly and constantly climb down the cost curve as volume grows 	
Origin important or called out at POS		KEY COMPETITORS			
COMPETITORS		DOMESTIC	EXPORTERS		
Biosecurity or other domestic barriers		<ul style="list-style-type: none"> - Imported beans - Imported processed cocoa products 	<ul style="list-style-type: none"> - Ivory Coast - Ghana - Indonesia - Belgium (processed into chocolate) 		
Can we get to the world price?					
Attractive competitive set					
AUSTRALIA					
High performance genetics available					
Required skills for success					
Leverage country reputation					
OVERALL					

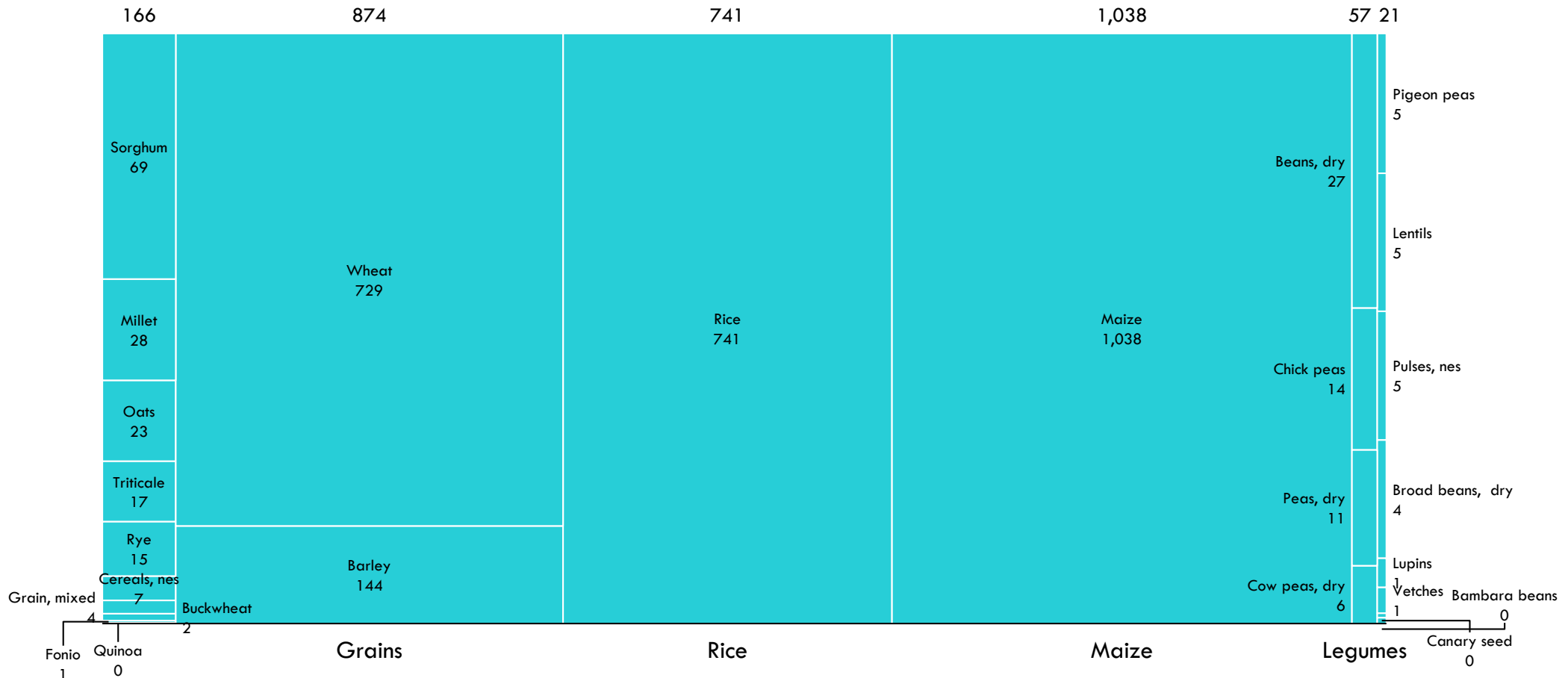
Meat
Aquaculture
Dairy
Vegetables
Nuts
Fruit
Coffee, Tea, Spices, Sweeteners & Cocoa
Arable Crops
Oilseeds & Vegetable Oils
Fibre
Essential Oils, Pharmaceutical & Other

A handful of major grains - primarily maize, rice and wheat - and pulses account for the bulk of global production

GLOBAL ARABLE GRAIN/PULSE CROP PRODUCTION BY TYPE

TONNES; M; 2014

TOTAL = 2,896m tonnes

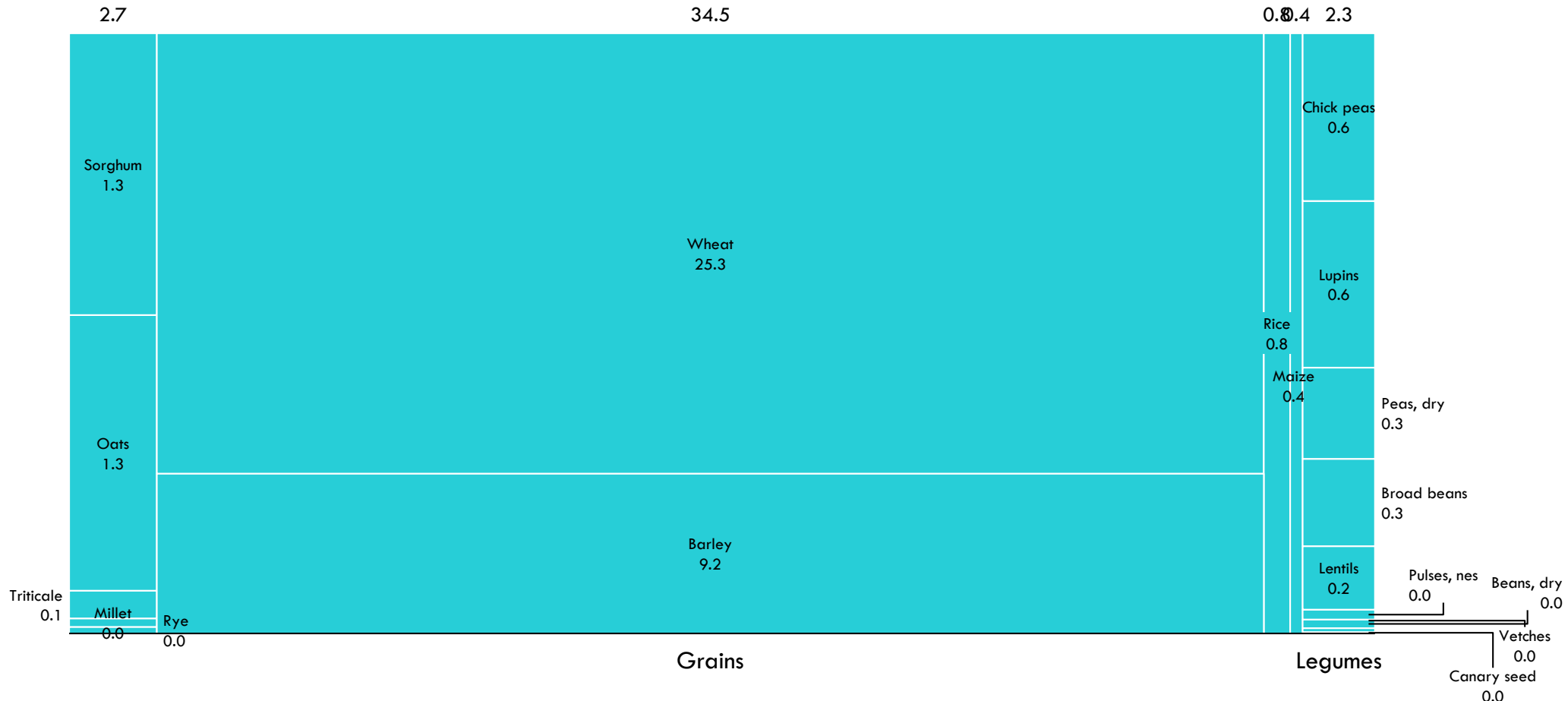


Australia produces a very limited range of arable grains and pulses in any quantity

AUSTRALIAN ARABLE GRAIN/PULSE CROP PRODUCTION BY TYPE

TONNES; M; 2014

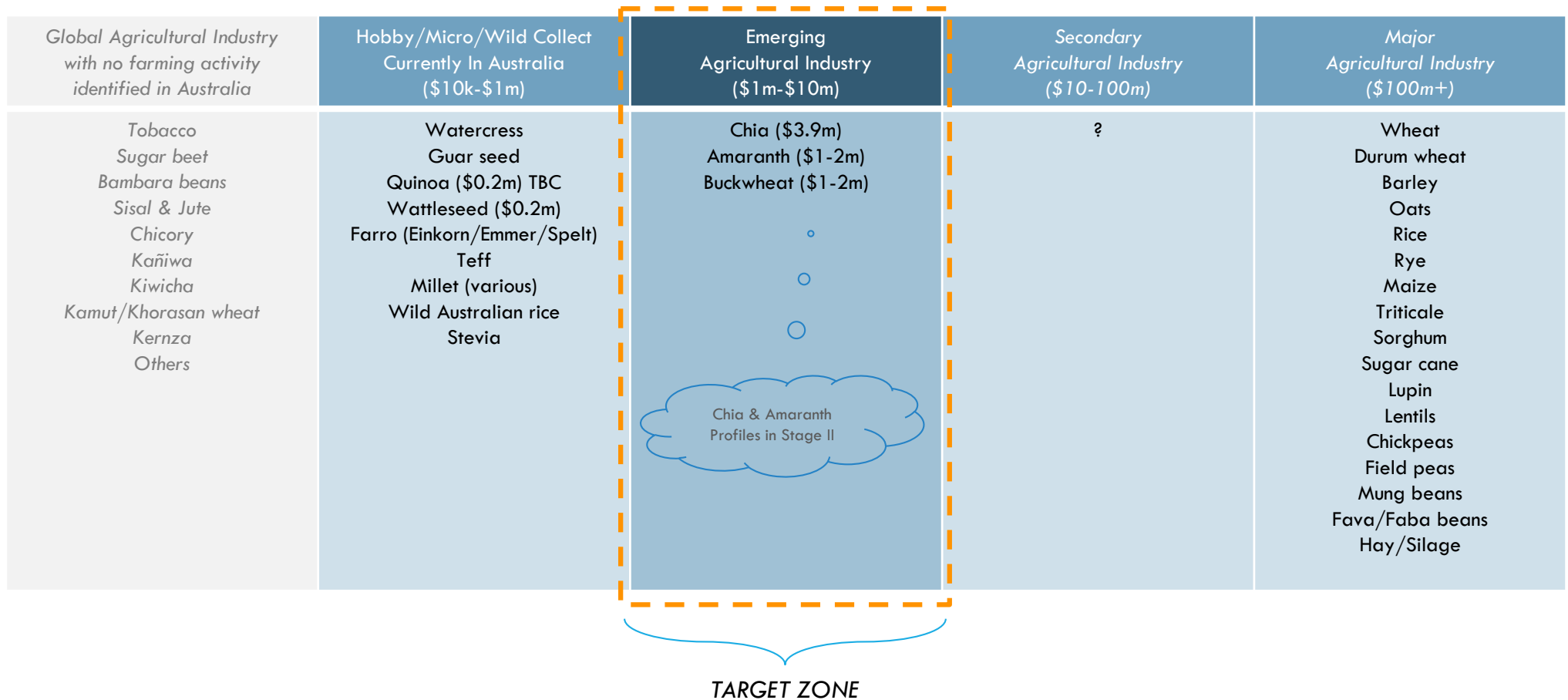
TOTAL = 40.7m tonnes



Three emerging arable crops species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

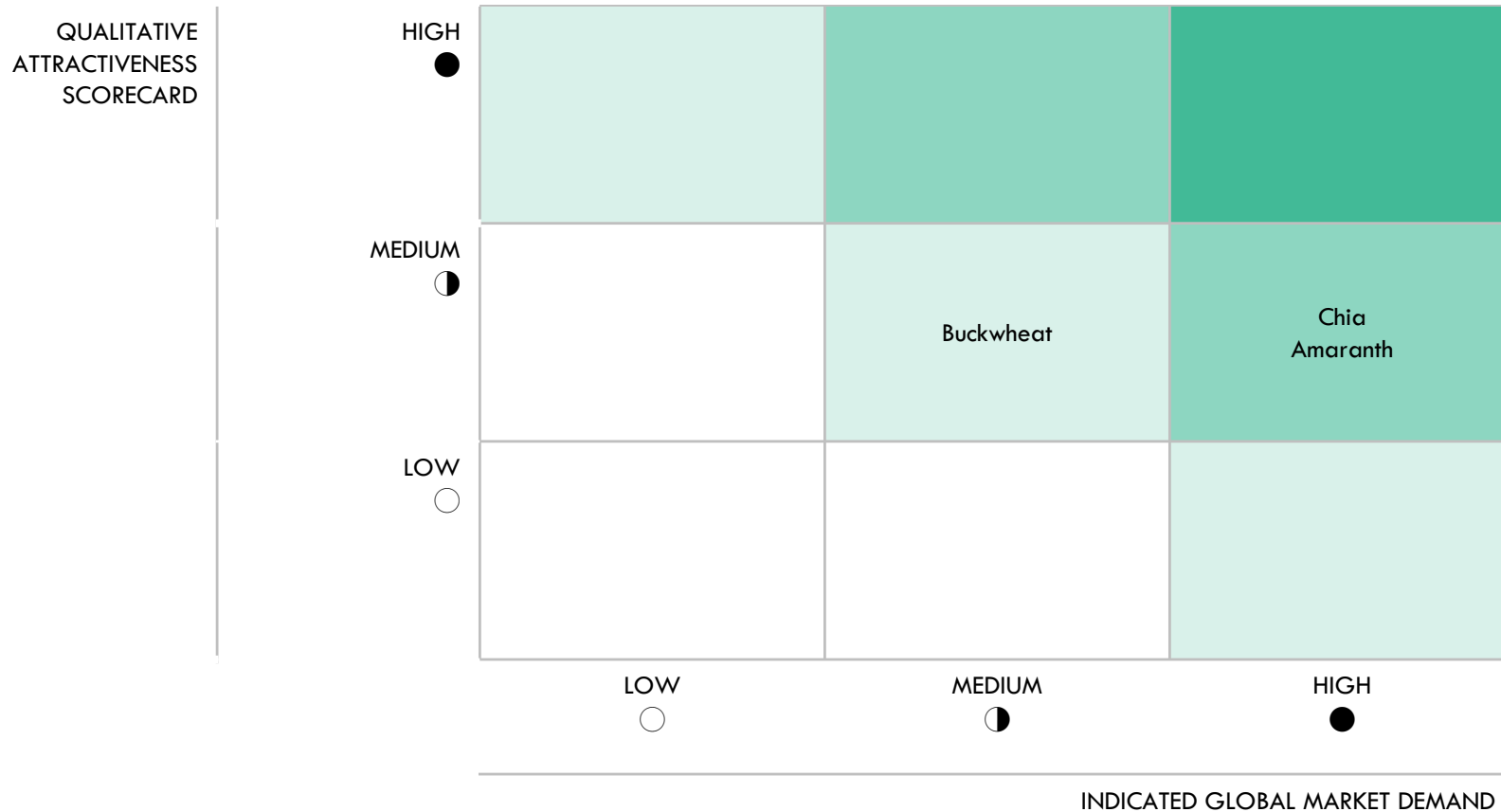


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The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING ARABLE CROP OPPORTUNITIES EVALUATION MATRIX

Model; 2017





QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		Buckwheat is a ancient grain used by the niche health food industry and in buckwheat noodles. Opportunities exist to expand production beyond its current niche. With the right marketing, buckwheat is the next superfood.		\$1-2m (est)	\$3-5m by 2025
Capital intensive to produce					
Mechanically harvested					
Value-added opportunities		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Health and wellness drivers seeing growth in ancient grains and healthy grain options - Gluten-free ingredient option for foodservice and manufacturing 		<ul style="list-style-type: none"> - Very dependent on reliable growing conditions (temperature and rainfall); limited areas suitable - High cost vs. competitive starches - Lack of unique attributes beyond (gluten-free) - Overcome flavour variability compared with other flours 	
Wide spread of markets/buyers		VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices		<ul style="list-style-type: none"> - Flour - Ingredient in baking, cereals, pasta (noodles), pancakes and small goods - Buckwheat organic noodles (e.g. Kokumotsu Company, Hakubaku) 		<ul style="list-style-type: none"> - Suitable land at cool temperatures and altitude available for growing in VIC and NSW - Able to move beyond niche health ingredient - Able to develop a unique marketable USP for buckwheat - Able to increase scale to reduce price and increase usage - On-going breeding program to improve yield 	
Origin important or called out at POS		KEY COMPETITORS			
COMPETITORS					
Biosecurity or other domestic barriers					
Can we get to the world price?					
Attractive competitive set					
AUSTRALIA					
High performance genetics available					
Required skills for success					
Leverage country reputation					
OVERALL					
		DOMESTIC		EXPORTERS	
		<ul style="list-style-type: none"> - Other ancient grains production and imports - Other grains for use as starch 		<ul style="list-style-type: none"> - China - Russia - Ukraine (other Eastern EU) - India - Canada 	

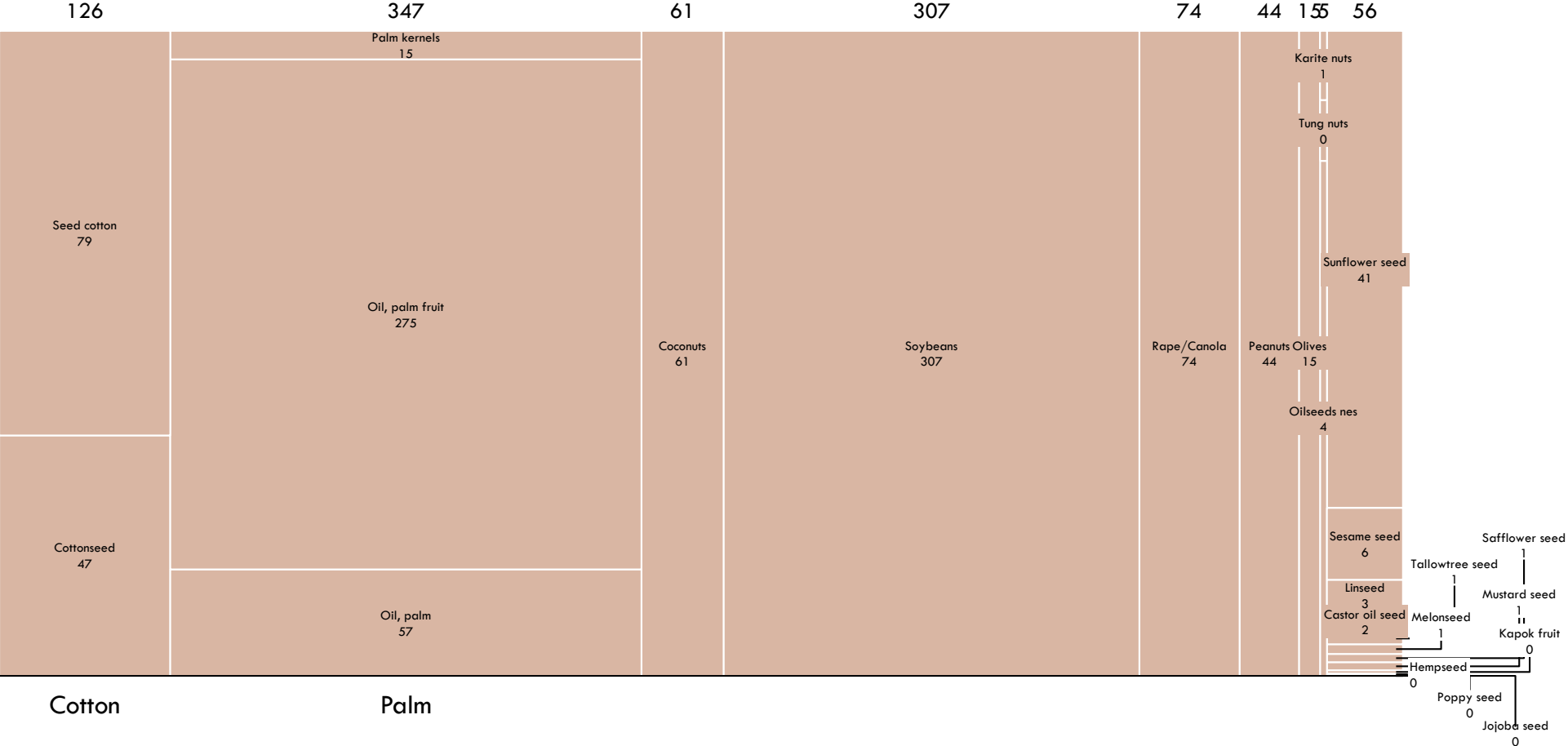
Meat
Aquaculture
Dairy
Vegetables
Nuts
Fruit
Coffee, Tea, Spices, Sweeteners & Cocoa
Arable Crops
Oilseeds & Vegetable Oils
Fibre
Essential Oils, Pharmaceutical & Other

Global production of vegetable oilseeds/oilcrops is highly consolidated into a handful of major crops

GLOBAL OILSEED/OILCROP CROP PRODUCTION BY TYPE

TONNES; M; 2014

TOTAL = 1,034.6m tonnes

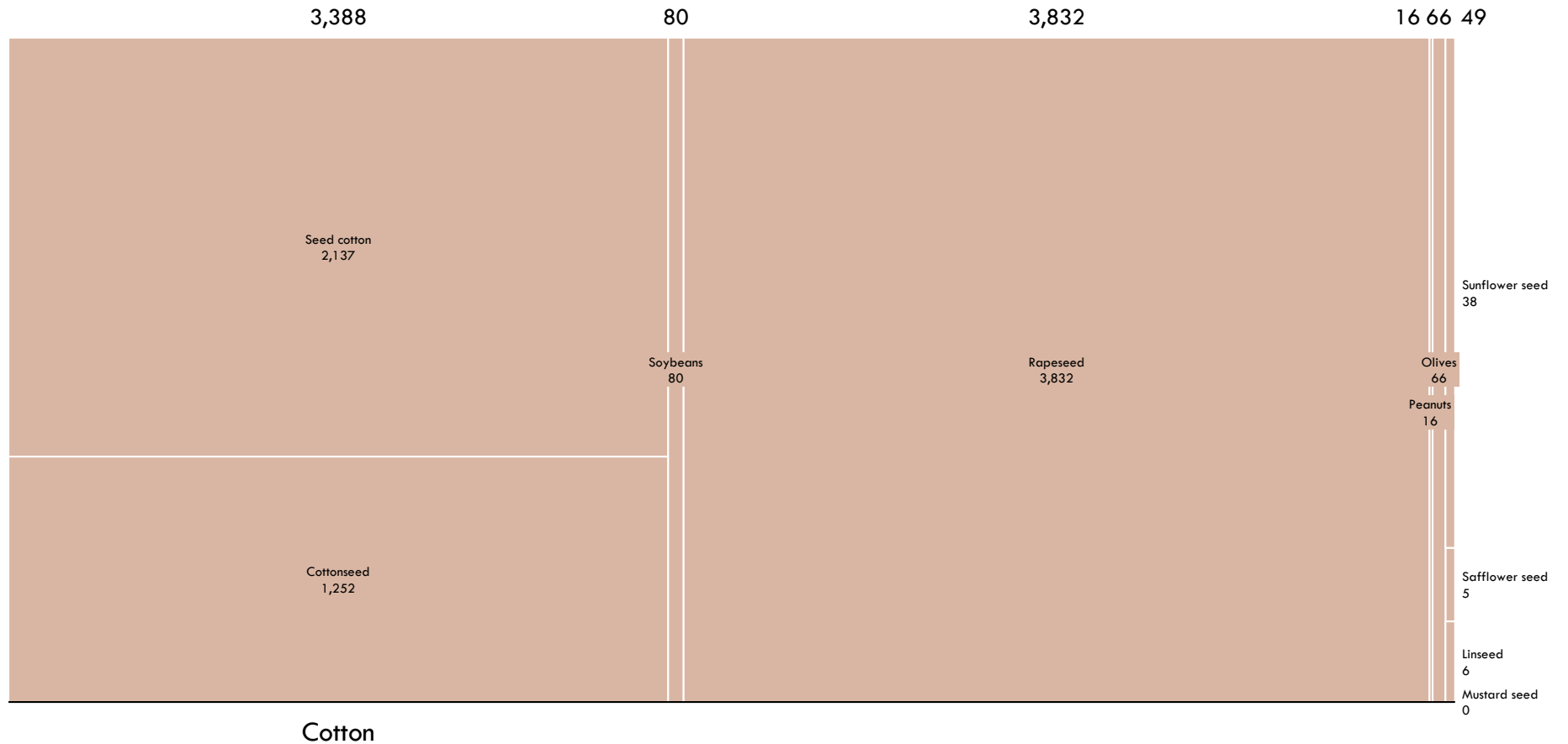


NES= Not Elsewhere Specified; Source: UN FAOSTAT; Coriolis analysis and estimates

Australia produces only three oilseeds/oilcrops in any quantity

AUSTRALIAN OILSEED/OILCROP CROP PRODUCTION BY TYPE TONNES; 000; 2014

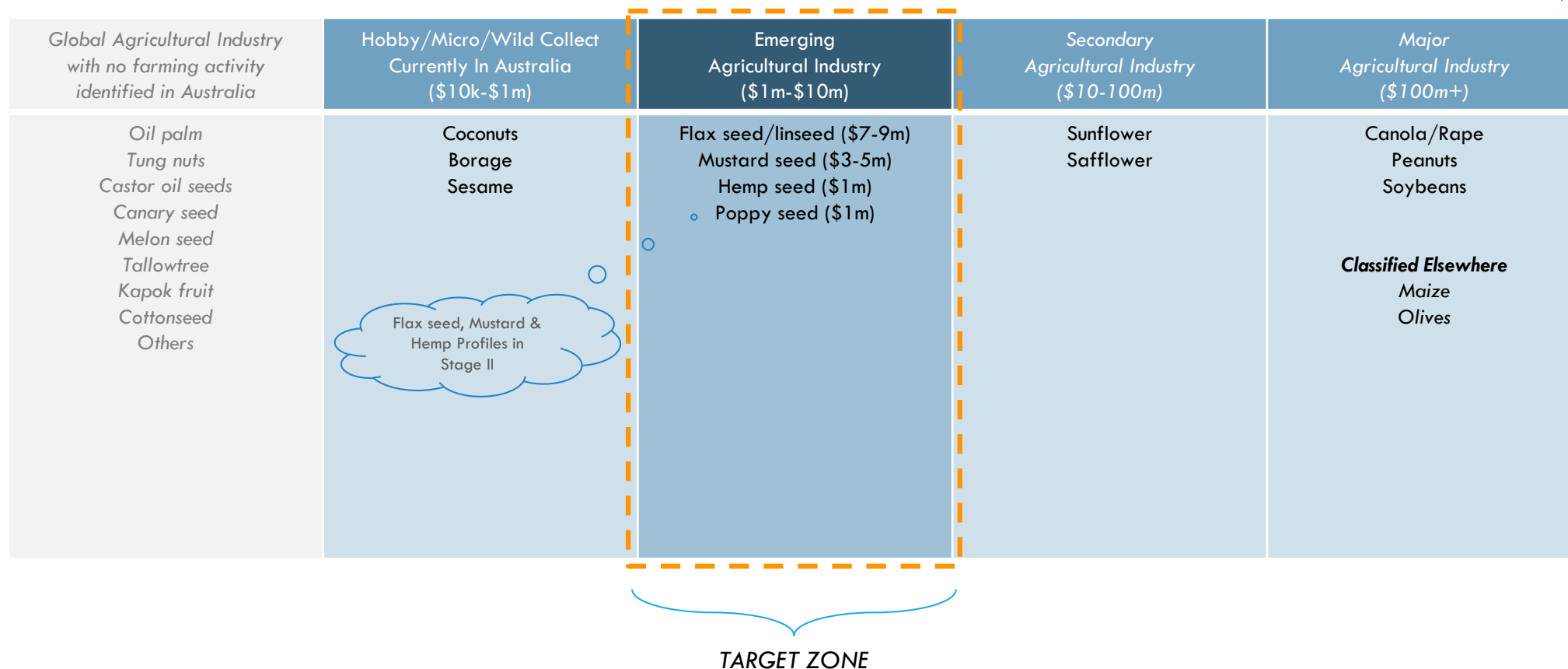
TOTAL = 1,034.6m tonnes



Four emerging oil crops were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

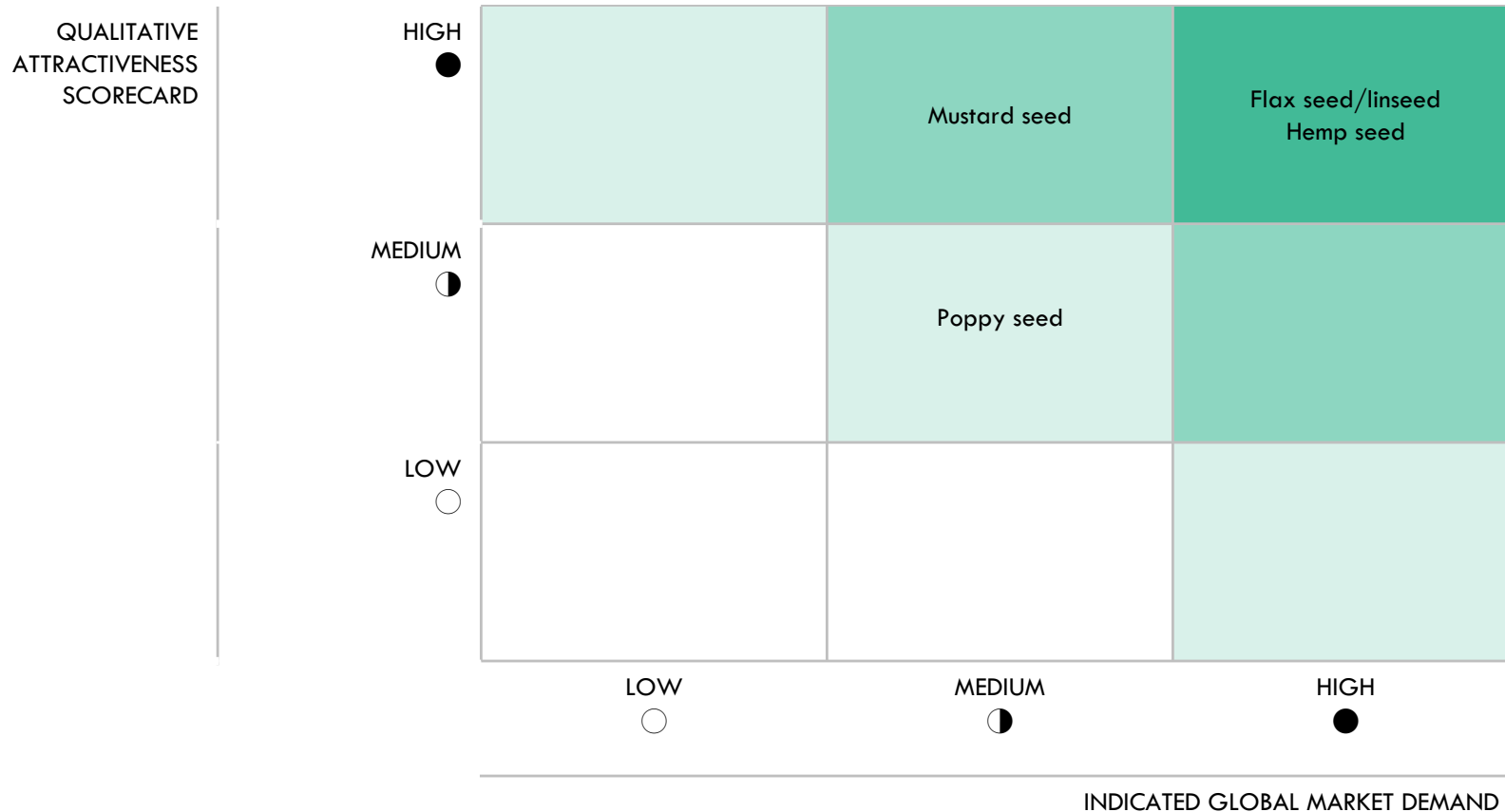


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EMERGING OILSEED OPPORTUNITIES EVALUATION MATRIX

Model; 2017





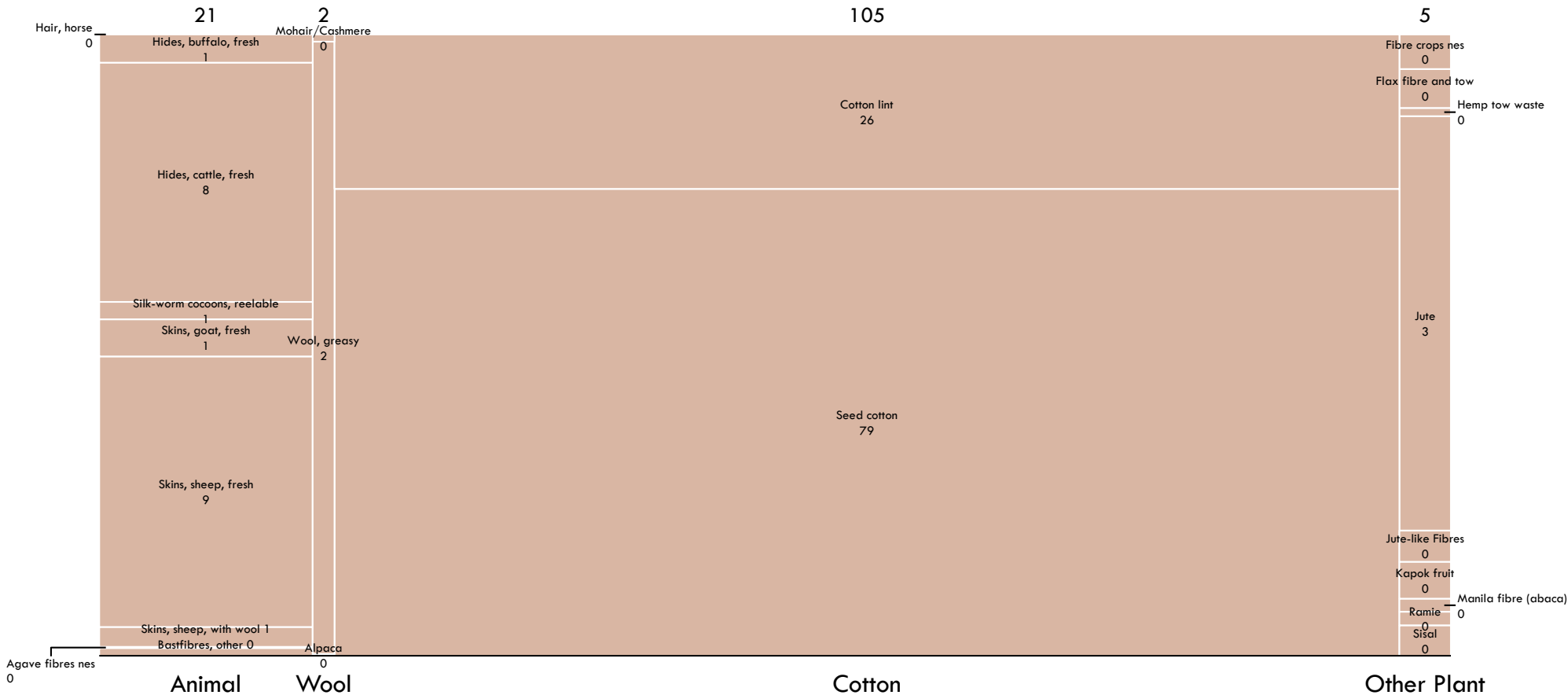
QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"
PRODUCT		<p>The poppy is an interesting juxtaposition of everyday and exotic or mysterious. Poppy seeds and poppy seed oil have real potential for reinvention and reintroduction Australia should be able to cold press poppy seed oil in significant quantities.</p>		\$1.0m (2017)	\$3-5m by 2025
Capital intensive to produce	●				
Mechanically harvested	●				
Value-added opportunities	●	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES	
MARKETS		<ul style="list-style-type: none"> - Health benefits, high in Tocopherols (e.g. Vitamin E), high in Linoleic acid and oleic acid - Healthy seed 21% protein, 42% fat, 28% carbohydrates 		<ul style="list-style-type: none"> - Regulatory burden due to restricted nature of crop (strict regulatory framework) - Poppy seeds banned in many countries - Given restrictive growing conditions poppy more likely to be grown for higher value medical applications as opposed to seed or oil 	
Wide spread of markets/buyers	◐	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices	◐	<ul style="list-style-type: none"> - Culinary uses (salad dressing) - Cosmetics industry as carrier oil with aromatherapy and massage oils and conditioning agent in hair care products - Medical use as carrier for iodine etc.. - Seed used in many foods (pastry, bread, healthy snack) 		<ul style="list-style-type: none"> - Able to market and produce poppy seed oil beyond industrial uses (varnish, oil painting) - Research and development around poppy agronomy in opium poppy production transferable to poppy seed oil production - Harvesting for seed is not in conflict with harvesting for opium; seed can be a by-product of opium poppy cultivation 	
Origin important or called out at POS	◐	KEY COMPETITORS			
COMPETITORS		DOMESTIC		EXPORTERS	
Biosecurity or other domestic barriers	◐	<ul style="list-style-type: none"> - Imported poppy seeds - Poppy seed oil - Other oils 		<ul style="list-style-type: none"> - Czech - Turkey - Spain - France (oil) - Germany (oil) 	
Can we get to the world price?	○				
Attractive competitive set	◐				
AUSTRALIA					
High performance genetics available	●				
Required skills for success	●				
Leverage country reputation	◐				
OVERALL	◐				

Meat
Aquaculture
Dairy
Vegetables
Nuts
Fruit
Coffee, Tea, Spices, Sweeteners & Cocoa
Arable Crops
Oilseeds & Vegetable Oils
Fibre
Essential Oils, Pharmaceutical & Other

Global production of fibre/hides is dominated by cotton (and synthetics not shown)

GLOBAL FIBRE/HIDE PRODUCTION BY TYPE TONNES; M; 2014

TOTAL = 1,034.6m tonnes

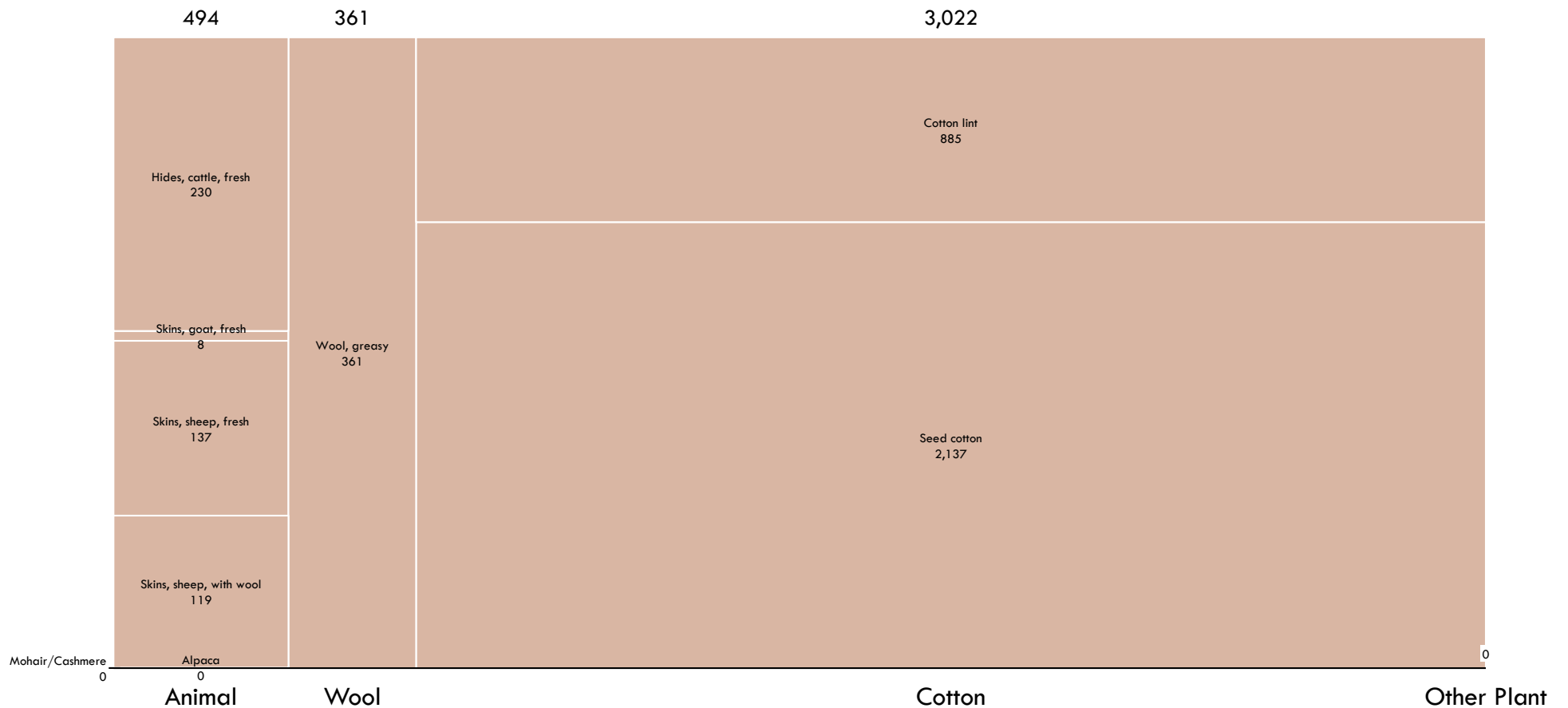


NES= Not Elsewhere Specified; Source: UN FAOSTAT; Coriolis analysis and estimates

Australia fibre and hide production is primarily cotton, wool and cattle/sheep skins

AUSTRALIAN FIBRE/HIDE PRODUCTION BY TYPE
 TONNES; 000; 2014

TOTAL = 1,034.6m tonnes

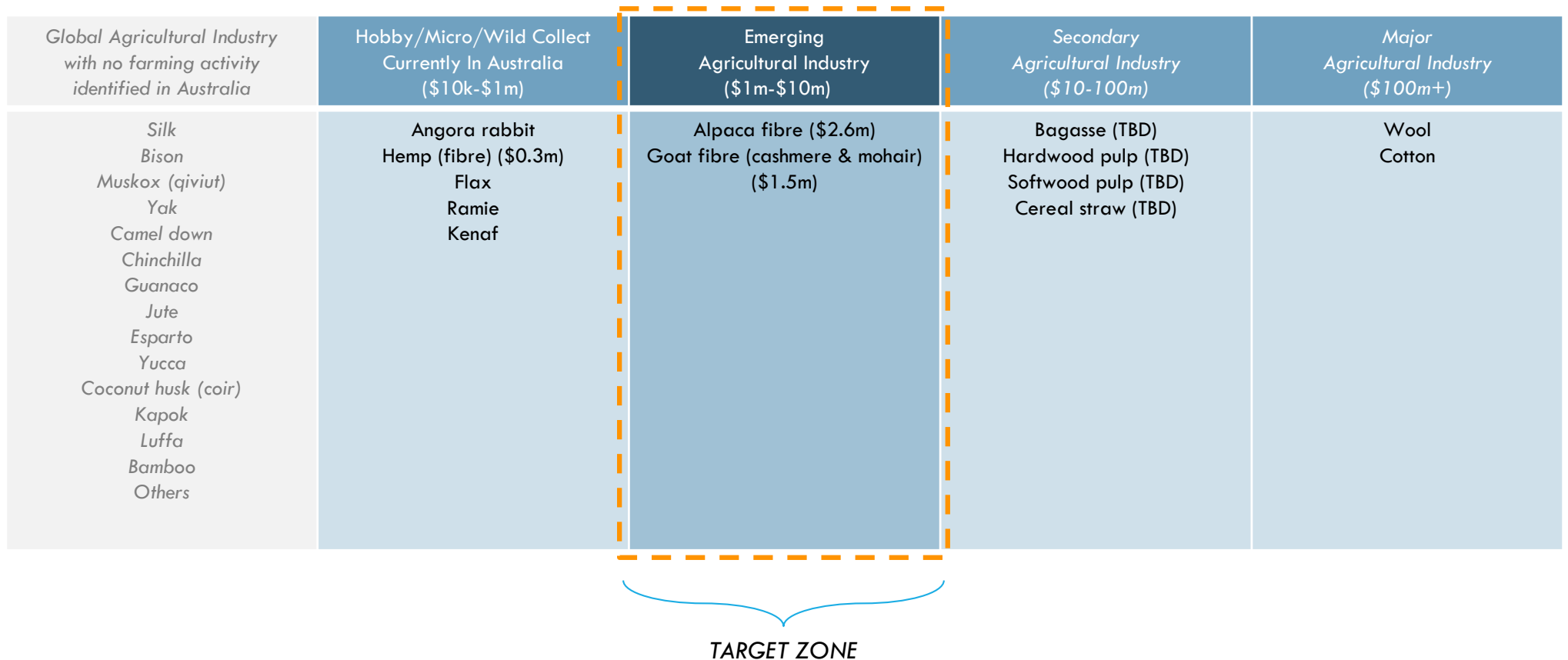


NES= Not Elsewhere Specified; Source: UN FAOSTAT; Coriolis analysis and estimates

Two emerging fibre species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

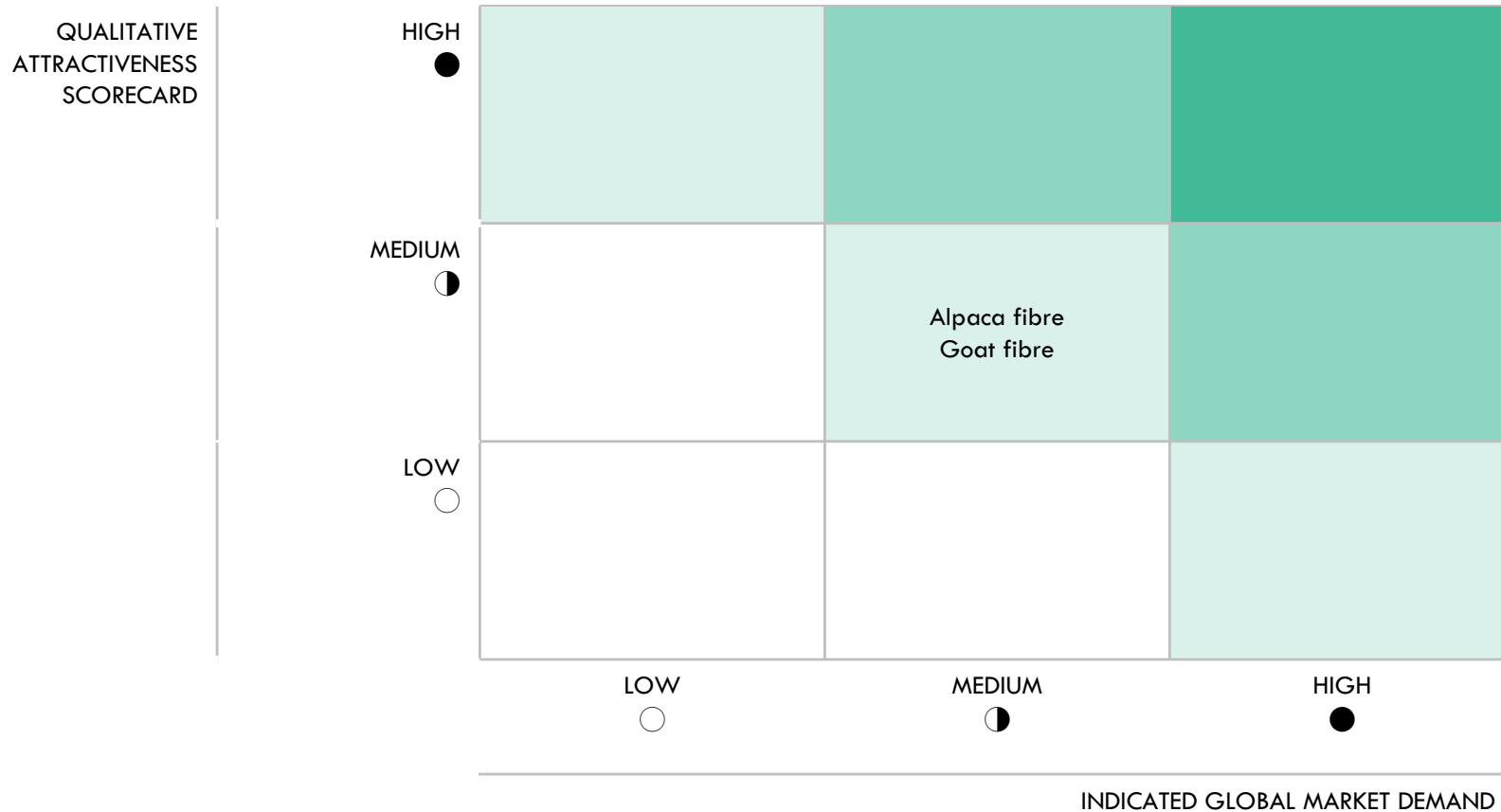


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The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING FIBRE OPPORTUNITIES EVALUATION MATRIX

Model; 2017





QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"				
PRODUCT		<p>Alpacas are considered more ecologically friendly to the land than other livestock. Alpaca fibre is a luxury fibre suitable for high quality clothing and homewares.</p>		\$2.6m (2012)	\$3-5m by 2025				
Capital intensive to produce	<input type="radio"/>								
Mechanically harvested	<input type="radio"/>								
Value-added opportunities	<input checked="" type="radio"/>	DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES					
MARKETS		<ul style="list-style-type: none"> - Increasing demand for luxury goods - Increasing demand for natural fibre products 		<ul style="list-style-type: none"> - Tight restrictions on exports from South America means limited good breeding stock - Australia is still in herd building phase with little meat production and inflated prices for breeding stock 					
Wide spread of markets/buyers	<input checked="" type="radio"/>	VALUE-ADDED OPPORTUNITIES		WHAT YOU WOULD NEED TO BELIEVE					
Wide spread of prices	<input type="radio"/>	<ul style="list-style-type: none"> - Fibre (clothing and homewares) - Leather - Meat - Breeding stock/stud sales 							
Origin important or called out at POS	<input type="radio"/>	KEY COMPETITORS							
COMPETITORS		<table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Mohair, cashmere, angora fibres - Wool - Possum fibre - Synthetic fabrics </td> <td> <ul style="list-style-type: none"> - South America (origin of species) - North America - Europe - New Zealand - South Africa </td> </tr> </tbody> </table>		DOMESTIC	EXPORTERS	<ul style="list-style-type: none"> - Mohair, cashmere, angora fibres - Wool - Possum fibre - Synthetic fabrics 	<ul style="list-style-type: none"> - South America (origin of species) - North America - Europe - New Zealand - South Africa 	<ul style="list-style-type: none"> - The market for alpaca meat will increase, giving second revenue stream - Australia can produce premium fibre to compete with low cost producers 	
DOMESTIC	EXPORTERS								
<ul style="list-style-type: none"> - Mohair, cashmere, angora fibres - Wool - Possum fibre - Synthetic fabrics 	<ul style="list-style-type: none"> - South America (origin of species) - North America - Europe - New Zealand - South Africa 								
Biosecurity or other domestic barriers	<input checked="" type="radio"/>	AUSTRALIA							
Can we get to the world price?	<input type="radio"/>	High performance genetics available							
Attractive competitive set	<input type="radio"/>	Required skills for success							
		Leverage country reputation							
OVERALL		<input type="radio"/>							



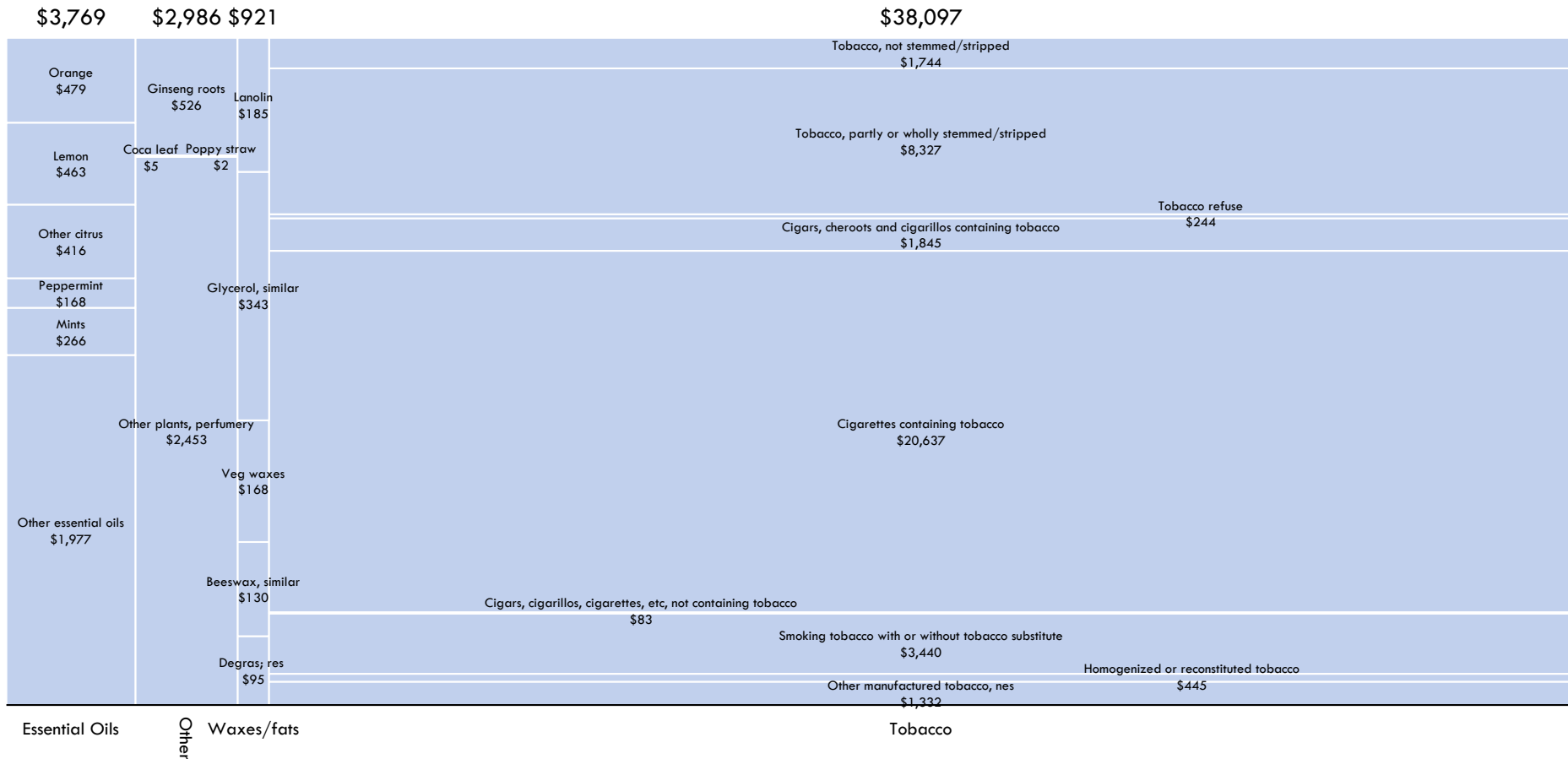
QUALITATIVE SCORECARD		"ELEVATOR PITCH"		SECTOR TURNOVER ESTIMATE	STRAW MAN "SIZE-OF- THE-PRIZE"		
PRODUCT		<p>Goats suits Australian conditions. Goats are easily integrated into wheat, sheep, or grazing operations. Cashmere and mohair are considered luxury fibres.</p>		\$1.5m (2012)	\$3-5m by 2025		
Capital intensive to produce							
Mechanically harvested							
Value-added opportunities		DRIVERS OF GROWTH		KEY RISKS & SENSITIVITIES			
MARKETS		<ul style="list-style-type: none"> - Increasing demand for luxury goods - Increasing demand for natural fibre products 		<ul style="list-style-type: none"> - Herds are at risk from wild predators - Most of world production of cashmere comes from low cost "peasant style" production systems 			
Wide spread of markets/buyers		VALUE-ADDED OPPORTUNITIES		<th colspan="2">WHAT YOU WOULD NEED TO BELIEVE</th>		WHAT YOU WOULD NEED TO BELIEVE	
Wide spread of prices		<ul style="list-style-type: none"> - Dairy - Meat - Skins - Manufacture into garments (rather than sell as fibre) 				<ul style="list-style-type: none"> - Can continue to access global best genetics to improve herd - Australian goat fibre is superior to cheaper produced Chinese, etc. cashmere and mohair 	
Origin important or called out at POS		KEY COMPETITORS					
COMPETITORS		DOMESTIC		EXPORTERS			
Biosecurity or other domestic barriers		<ul style="list-style-type: none"> - Angora rabbits fibre - Alpaca fibre - Wool - Possum fibre - Synthetic fabrics 		<ul style="list-style-type: none"> - China - Mongolia - Iran - South Africa - Lesotho - Argentina - United States 			
Can we get to the world price?		<th colspan="2">AUSTRALIA</th>				AUSTRALIA	
Attractive competitive set							
High performance genetics available							
Required skills for success		<th colspan="2">OVERALL</th>				OVERALL	
Leverage country reputation							

Meat
Aquaculture
Dairy
Vegetables
Nuts
Fruit
Coffee, Tea, Spices, Sweeteners & Cocoa
Arable Crops
Oilseeds & Vegetable Oils
Fibre
Essential Oils, Pharmaceutical & Other

A wide range of coffee, tea, spices, sweeteners and cocoa are traded globally

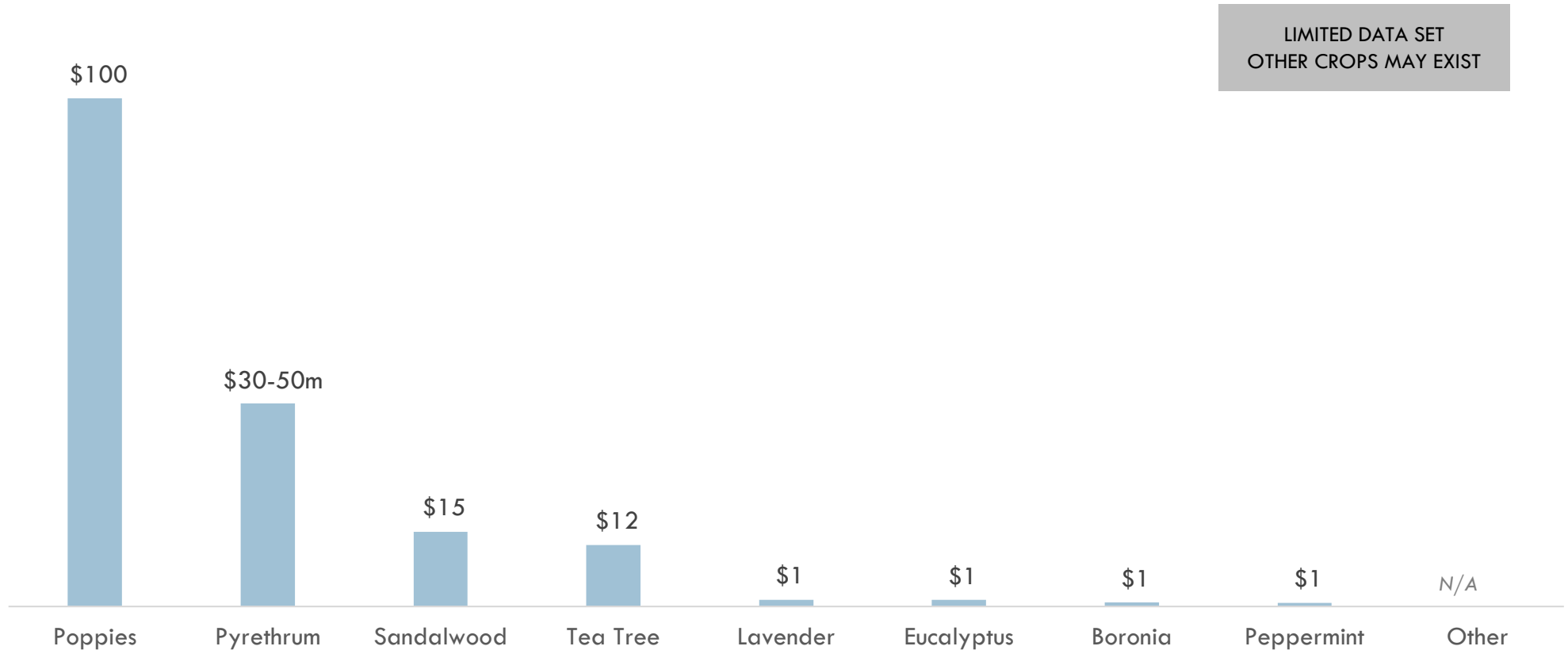
GLOBAL ESSENTIAL OILS, PHARMA INGRED., TOBACCO & OTHER TRADE BY TYPE

US\$; M; 2016



Australia produces a handful of pharmaceutical crops and essential oils at any scale

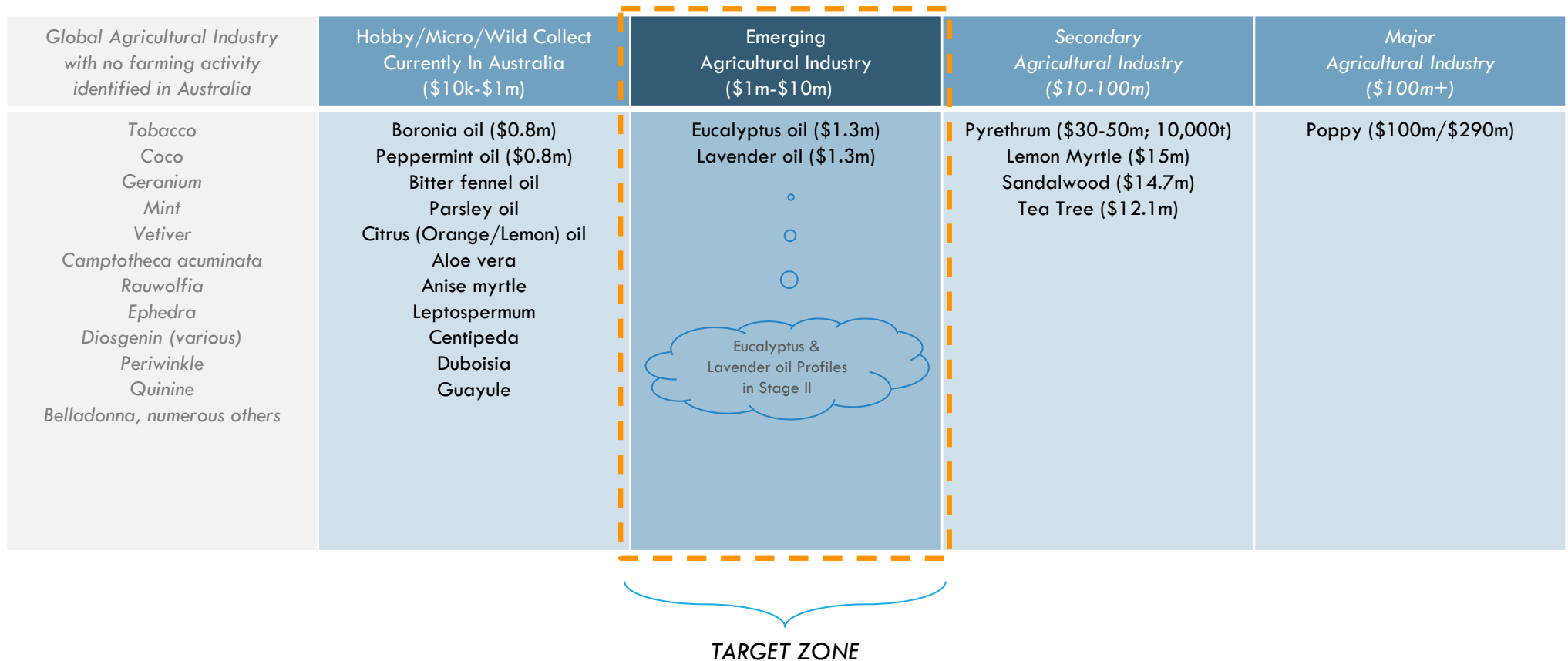
VALUE OF AU PHARMA. CROP & ESSENTIAL OILS PRODUCTION: SELECT CROPS
A\$; M; 2016 OR AS AVAILABLE



Two emerging essential oil/pharmaceutical species were identified for evaluation

SCALE IN AUSTRALIA¹

LARGE →

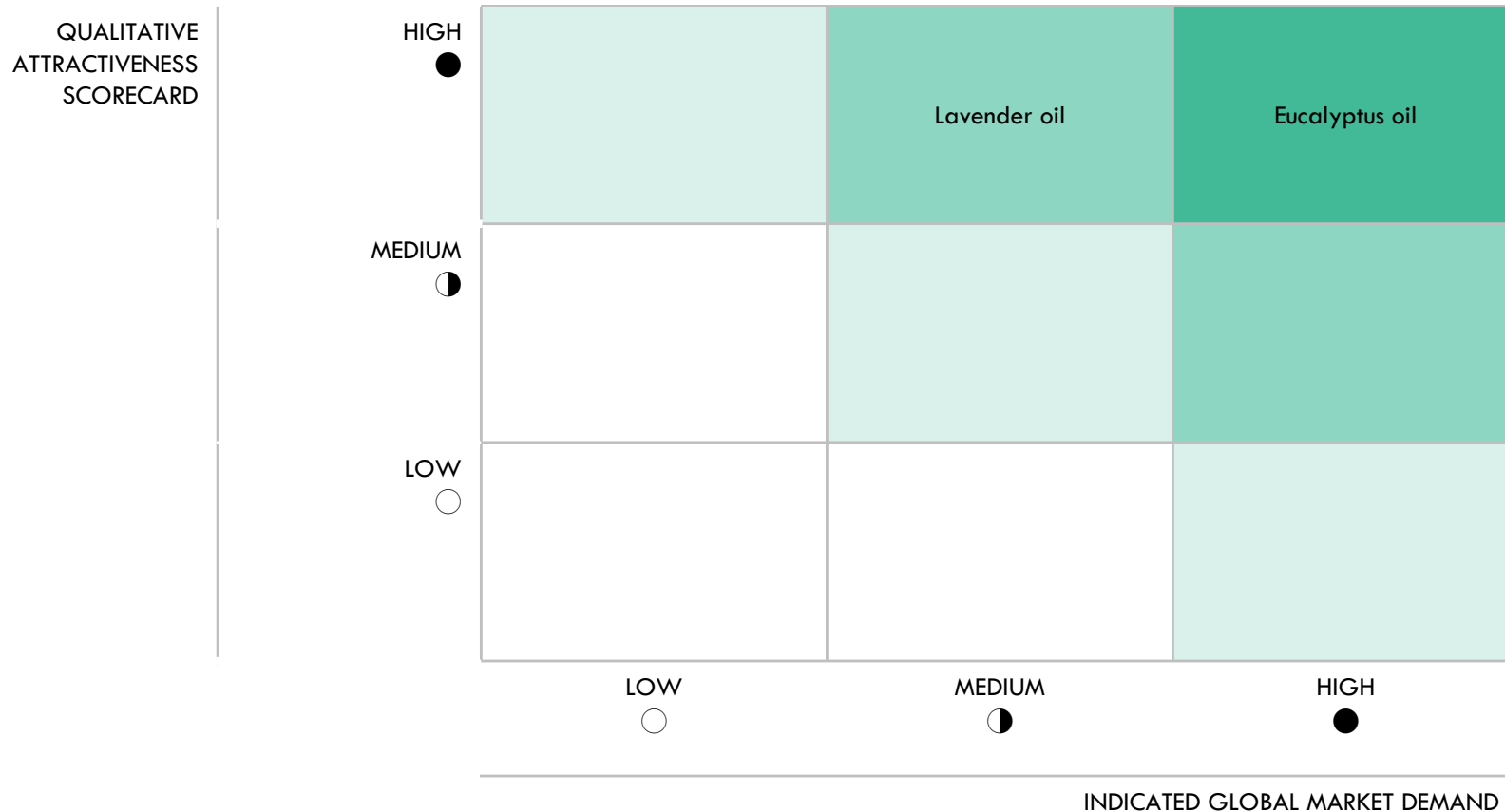


1. Gross value unless stated otherwise; Note: see individual profiles for more details. Source: RIRDC Publication No 14/069; various published articles; industry peak bodies; Coriolis analysis and estimates

The qualitative attractiveness score was crossed with the indicated market demand score in order to rank the emerging opportunities

EMERGING ESSENTIAL OILS OPPORTUNITIES EVALUATION MATRIX

Model; 2017



CONTENTS

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Appendix III: Results of Global Trade Data Analysis

Stage I of the screening process identified, sized and ranked the high potential emerging industries

STAGE I
(Appendix II)

STAGE II
(Appendix I)

IDENTIFY, MEASURE AND SCREEN

STAGE I.I

- Identification of all existing agriculture & aquaculture industries
- Divide into categories by size of industry in Australia

No Farming Activity Identified

Hobby (\$10k-\$1m)

Emerging (\$1m-\$10m)

Secondary (\$10-\$100m)

Major (\$100m+)

TOTAL
53

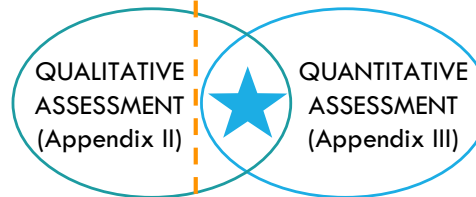
Meat (8 emerging)
Aquaculture (6 emerging)
Dairy (3 emerging)
Vegetables (12 emerging)
Nuts (2 emerging)
Fruit (8 emerging)
Coffee, Tea, Spices etc. (3 emerging)
Arable Crops (3 emerging)
Oilseeds & Vegetable Oils (4 emerging)
Fibre (2 emerging)
Essential Oils & Pharma. (2 emerging)

ASSESS AND RANK

TOTAL
26

STAGE I.II

STAGE I.III



- 1 page profile
- Qualitative score card
- Global and domestic qualitative assessment

- Evaluated global trade data against growth metrics
- Screened for size and growth

STAGE I.IV

Good
Better
Best

PROFILE INDUSTRY

- Better and Best Industries Profiled*
- Answers 10 key questions for each industry
 - What is it?
 - What is driving success?
 - Where is it produced in Australia?
 - What are the industry metrics?
 - Who are the pioneering Australian firms?
 - Who are the key stakeholders?
 - Who are the competition for export markets?
 - How can you add value?
 - Who are the potential commercial partners?
 - What does Dr Food think?

It is important to note that global trade data is not perfect and that there are limitations

DETAILS OF GLOBAL TRADE DATA ANALYSED IN THE PROJECT

WHAT IS IT?	Statistical data on reported cross-border movements of merchandise goods
WHO COLLECTS IT?	Data is collected by national statistical agencies in every country from their own customs department Data is submitted to the United Nations as part of membership
WHERE DOES IT COME FROM?	Raw data is derived from import/export paperwork as submitted to national customs agencies by millions of individual firms globally
WHAT ARE THE UNITS?	Volume data is in kilograms or litres Value data is in local currency converted into US\$ to enable global comparisons Export value is free-on-board (FOB); import data is cost-insurance-and-freight (CIF)
WHAT ARE THE LIMITATIONS?	<ul style="list-style-type: none">- Some products do not have specific trade codes, typically smaller categories or newer products developed since the latest revision to the global trade codes; these are captured in “not elsewhere specified” (nes) categories; these cannot be disaggregated or analysed further (discussed following page)- Errors can and do occur in the data (imagine entering data on an airfreight container into a handheld computer in a frozen food warehouse at 2am)- Data is as declared to customs for tariff/tax purposes- Imports reported by one country do not directly /exactly match exports as reported by another country (for a range of reasons); this is why NZ export data (FOB) does not always match the import data (CIF) (e.g. NZ reports exporting US\$17m in maize seed, however countries report receiving US\$29m)- Global trade codes can only be analysed at the six digit level as these codes are common globally- Global trade data cannot be analysed at the more detailed ten digit level as these codes vary by country- Sending country and receiving country product classification may vary- Some countries do not submit data (e.g. North Korea) or are not members of the UN (e.g. Taiwan/Chinese Taipei)- Some countries occasionally or periodically submit data, or did and have stopped (e.g. UAE)- Trade flows to non-reporting/unavailable countries can only be analysed through looking at what all available exporting countries report sending to them
WHY USE IT?	<ul style="list-style-type: none">- It is the only comprehensive available source of global cross-border merchandise flows- Comprehensive, detailed and highly accurate overall when evaluated judiciously- Unlike various types of in-market data, it captures all uses (retail, foodservice, industrial, military, etc.)

In particular, some products do not have specific global trade codes which limits our ability to analyse these with extreme clarity

EXAMPLES OF PRODUCTS WITHOUT SPECIFIC AGREED UPON GLOBAL TRADE CODES

As of last Harmonised Standard revision (HS12) in 2012



RAMBUTAN

HS081090
Edible fruit and nuts;
other fruit, fresh, nes

- Category also includes jackfruit, dragon fruit; Primarily produced in Thailand, Malaysia, Indonesia and Honduras; no separate global trade code



CHIA SEED

HS100890
Other cereal nes

- Other cereal includes chia, amaranth and other cereals; no common six digit global trade code assigned



SHEEP MILK INFANT FORMULA

HS350220, HS190110
Milk albumins, infant formula retail

- Milk not segregated by animal; no species-specific global trade code exists

CORRELATION OF STAGE I EMERGING PRODUCT WITH TRADE CODE 01

Product	UN Comtrade Code	Description	Comment	Trade Score
Wild pigs	020329	Pork, frozen nes	No distinction between wild and farmed; largest amount traded is under this code	●
Rabbit meat	020810	Rabbit	Has own code	○
Guinea fowl	020735, 020736	Poultry, fresh & frozen, nes	No separate game bird category; chicken, turkey, ducks, livers have own codes	●
Camel meat	020890	Other meat nes, fresh & frozen	No separate code; beef, pork, sheep, goat, horse, poultry, rabbit, primate, whale, reptiles have own codes	●
Deer meat	020890	Other meat nes, fresh & frozen	No separate code; beef, pork, sheep, goat, horse, poultry, rabbit, primate, whale, reptiles have own codes	●
Buffalo meat	020890	Other meat nes, fresh & frozen	No separate code; beef, pork, sheep, goat, horse, poultry, rabbit, primate, whale, reptiles have own codes	●
Emu meat	020890	Other meat nes, fresh & frozen	No separate code; beef, pork, sheep, goat, horse, poultry, rabbit, primate, whale, reptiles have own codes	●
Ostrich meat	020890	Other meat nes, fresh & frozen	No separate code; beef, pork, sheep, goat, horse, poultry, rabbit, primate, whale, reptiles have own codes	●
Silver Perch	030379, 030420	Frozen fish, nes; Frozen fish fillets	No separate code; main traded fish breeds have own codes; unlikely to be valuable enough to trade chilled or live	●
Seaweed	121220	Seaweed/other algae	Has own code	●
Marron crayfish	030621, 030622	Rock lobster, fresh; Lobsters, not frozen	No separate code for freshwater crayfish; live export is most valuable form	●
Redclaw crayfish	030621, 030622	Rock lobster, fresh; Lobsters, not frozen	No separate code for freshwater crayfish; live export is most valuable form	●
Yabby crayfish	030621, 030622	Rock lobster, fresh; Lobsters, not frozen	No separate code for freshwater crayfish; live export is most valuable form	●
Mulloway	030379, 030420	Frozen fish, nes; Frozen fish fillets	No separate code; main traded fish breeds have own codes; unlikely to be valuable enough to trade chilled or live	●
Sheep milk	350220, 190110	Milk albumins, infant formula retail	Dairy codes not segregated by animal; sheep milk has existing global trade in more valuable infant formula	●
Buffalo milk	040110-040690	Dairy products	Dairy codes not segregated by animal; buffalo milk most likely made into milk, yoghurt, cheese, powder	●
Camel milk	040110-040690	Dairy products	Dairy codes not segregated by animal; camel milk most likely made into milk, yoghurt, cheese, powder	●
Parsnip	070690	Beetroot, radishes, etc	Category will be dominated by beetroot	●
Chillies	070960	Capsicum, chillies	Shared category with capsicum	●
Garlic	070320	Garlic, fresh	Should be noted that global trade is dominated by China	●
Turnip	070610	Carrots, turnips	Category will be dominated by carrots	●

CORRELATION OF STAGE I EMERGING PRODUCT WITH TRADE CODE 02

Product	UN Comtrade Code	Description	Comment	Trade Score
Taro	071410	Manioc, fresh or dried	Category will be dominated by cassava (manioc) and sweet potato	●
Fennel	070990	Vegetables nes, fresh or chilled	No separate category	●
Okra	070990	Vegetables nes, fresh or chilled	No separate category	●
Bitter melon	070990	Vegetables nes, fresh or chilled	No separate category	●
Snake bean	070990	Vegetables nes, fresh or chilled	No separate category	●
Globe artichoke	070910	Globe artichokes, fresh	Has own code	●
Cassava	071410	Manioc, fresh or dried	Shared category with sweet potato, taro, etc	●
Wasabi	070990	Vegetables nes, fresh or chilled	No separate category	●
Chestnuts	080240	Chestnuts	Has own code	●
Hazelnuts	080222	Hazelnuts, shelled	Hazelnuts in shell (080221) much less valuable category	●
Prunes	081320	Dried prunes	Has own code	●
Custard apple	081090	Other fruit, fresh, nes	No separate category; unclear what is driving growth	●
Rambutan	081090	Other fruit, fresh, nes	No separate category; unclear what is driving growth	●
Jackfruit	081090	Other fruit, fresh, nes	No separate category; unclear what is driving growth	●
Pitaya (dragon fruit)	081090	Other fruit, fresh, nes	No separate category; unclear what is driving growth	●
Mangosteens	080450	Guavas, mangos, mangosteens	Category will be dominated by more valuable mangos	●
Pomegranate	081090	Other fruit, fresh, nes	No separate category; unclear what is driving growth	●
Guava	080450	Guavas, mangos, mangosteens	Category will be dominated by more valuable mangos	●
Black tea	090230	Black tea, packages under 3 kg	Bulk tea (090240) not showing same growth	●
Coriander seed	090920	Seeds of coriander	Has own code	●

CORRELATION OF STAGE I EMERGING PRODUCT WITH TRADE CODE 03

Product	UN Comtrade Code	Description	Comment	Trade Score
Cocoa bean	180100	Cocoa beans	Has own code	●
Chia	100890	Other cereal, nes	No separate category; unclear what is driving growth	●
Amaranth	100890	Other cereal, nes	No separate category; unclear what is driving growth	●
Buckwheat	100810	Buckwheat	Has own code	●
Flax seed/ linseed	120400	Linseed	Has own code; crude linseed oil (151511) and linseed oil (151519) not showing such strong growth	●
Mustard Seed	120750	Mustard seed	Has own code	●
Hemp seed	120799	Other oil seeds/oleaginous fruits, nes	No separate category; unclear what is driving growth	●
Poppy seed	120791	Poppy seeds	Has own code	●
Alpaca fibre	510539	Fine animal hair, carded or combed	No separate category	●
Goat fibre	510539	Fine animal hair, carded or combed	No separate category for mohair which makes up bulk of fibre production in Australia	●
Eucalyptus oil	330129	Other essential oils (incl. concretes and absolutes)	No separate category; unclear what is driving growth	●
Lavender oil	330123	Essential oils of lavender	Has own code	●

Global demand was analysed using the following growth criteria

EXPLANATION OF QUANTITATIVE SCREENING CRITERIA

Variable	Time periods	Criteria	Details/discussion
Compound Annual Growth Rate (CAGR) export value	10 year	More than 10%	<ul style="list-style-type: none"> - Is the category growing its absolute export value over the medium /long term? - Categories growing their export dollars over a long period are creating wealth and employment - However we need to approach high CAGRs on small starting values with some caution
	5 year	5 to 10%	
Absolute value growth	10 year	US\$100m or more	<ul style="list-style-type: none"> - Is the category growing its absolute export value over the medium /long term? - Categories growing their export dollars over a long period are creating wealth and employment - Need to be cautious with absolute growth as inflation can carry a large category along in absolute dollars
	5 year	Not negative	
\$/unit (kg or l)	2010	More than US\$5	<ul style="list-style-type: none"> - Does the product possess a high value or high value added per unit of absolute weight (or volume) relative to all other Agri categories? - All other things being equal, Agri categories with higher value per unit weight are more value added (e.g. infant formula vs. milk powder)
		More than US\$2	
CAGR \$/unit	10 year 5 year	3% or more Not negative	<ul style="list-style-type: none"> - Is the category achieving positive price gains? - Categories growing their price per unit weight are an indication of consumers being prepared to pay more for the product over time - Much better to be in a category with increasing prices than falling ones
Overall attractiveness SCORE		● High	<ul style="list-style-type: none"> - A forced ranking of all categories relative to each other - Uses combination of above factors
		◐ Medium	
		○ Low	

MEAT 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
020110	Beef, chilled carcass	\$1,733	0%	-6%	-\$1	-\$640	\$3.78	-1%	-4%	○
020120	Beef, chilled bone-in	\$3,935	1%	-6%	\$485	-\$1,491	\$4.04	0%	-5%	◐
020130	Beef, chilled boneless	\$14,767	5%	1%	\$5,282	\$1,010	\$6.68	3%	-1%	●
020210	Beef, frozen carcass	\$108	-6%	-10%	-\$97	-\$80	\$2.97	1%	-5%	○
020220	Beef, frozen bone-in	\$1,373	14%	10%	\$1,000	\$526	\$3.77	4%	1%	●
020230	Beef, frozen boneless	\$18,135	7%	2%	\$9,285	\$1,661	\$3.89	5%	-1%	●
020311	Pork, chilled carcass	\$2,048	0%	-5%	\$60	-\$666	\$1.81	-1%	-5%	○
020312	Pork, chilled cuts	\$3,582	0%	-4%	\$142	-\$768	\$1.93	-2%	-5%	○
020319	Pork, chilled nes	\$8,686	4%	-2%	\$2,702	-\$731	\$2.79	-1%	-4%	◐
020321	Pork, frozen carcass	\$120	-12%	-24%	-\$318	-\$348	\$1.93	0%	-5%	○
020322	Pork, frozen cuts	\$1,100	7%	3%	\$520	\$156	\$1.88	0%	-4%	●
020329	Pork, frozen nes	\$11,487	5%	-1%	\$4,508	-\$677	\$2.42	0%	-4%	◐
020410	Sheep, chilled carcass	\$781	1%	-2%	\$79	-\$103	\$5.41	1%	-2%	◐
020421	Sheep, chilled carcass	\$274	11%	1%	\$177	\$12	\$5.03	5%	-1%	●
020422	Sheep, chilled bone-in	\$1,024	3%	-1%	\$248	-\$43	\$6.88	2%	-6%	◐
020423	Sheep, chilled boneless	\$493	6%	-1%	\$225	-\$14	\$9.15	3%	-5%	●
020430	Lamb, frozen carcass	\$72	-4%	-10%	-\$37	-\$51	\$4.49	4%	-2%	◐
020441	Sheep, frozen carcass	\$85	0%	-5%	-\$4	-\$24	\$2.94	4%	-6%	◐
020442	Sheep, frozen bone-in	\$1,874	3%	-2%	\$524	-\$227	\$3.75	3%	-7%	◐
020443	Sheep, frozen boneless	\$799	3%	-4%	\$177	-\$190	\$5.37	3%	-5%	●
020450	Goat, chilled or frozen	\$335	9%	2%	\$189	\$38	\$5.76	5%	3%	●
020500	Horse	\$368	-3%	-8%	-\$113	-\$188	\$3.64	2%	-3%	○
020610	Beef, chilled offal	\$856	7%	1%	\$421	\$23	\$3.84	0%	-1%	●
020621	Beef, frozen tongues	\$323	6%	2%	\$143	\$35	\$4.82	2%	-3%	●
020622	Beef, frozen livers	\$214	0%	-8%	\$7	-\$106	\$1.01	0%	-6%	○
020629	Beef, frozen offal	\$1,918	11%	5%	\$1,245	\$446	\$2.07	4%	0%	●
020630	Pork, offal chilled	\$315	5%	-5%	\$121	-\$93	\$0.61	0%	-7%	◐
020641	Pork, frozen livers	\$56	-1%	-8%	-\$3	-\$29	\$0.57	-2%	-4%	○
020649	Pork, offal frozen	\$4,222	15%	6%	\$3,220	\$1,110	\$1.54	6%	2%	●
020680	Sheep, chilled offal	\$25	3%	-6%	\$6	-\$8	\$1.60	0%	-5%	○

Source: UN Comtrade database; Coriolis definitions, classifications and analysis

MEAT 02

	Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE	
020690	Sheep, frozen offal	\$153	4%	-6%	\$53	-\$61	\$1.79	4%	-7%	●
020711	Chicken, whole chilled	\$924	8%	-3%	\$486	-\$129	\$1.81	3%	-3%	●
020712	Chicken, whole frozen	\$3,019	8%	-7%	\$1,614	-\$1,235	\$1.40	3%	-5%	●
020713	Chicken, cuts chilled	\$4,319	8%	2%	\$2,366	\$451	\$1.88	-1%	-4%	●
020714	Chicken, frozen	\$11,255	7%	-3%	\$5,457	-\$1,872	\$1.30	3%	-4%	●
020724	Turkey, whole chilled	\$93	1%	5%	\$12	\$19	\$2.49	1%	-4%	●
020725	Turkey, whole frozen	\$91	3%	-4%	\$26	-\$19	\$2.78	10%	1%	●
020726	Turkey, cuts chilled	\$1,207	3%	-3%	\$349	-\$195	\$3.01	2%	-4%	●
020727	Turkey, cuts frozen	\$1,007	5%	-1%	\$364	-\$37	\$1.75	3%	-1%	●
020732	Ducks, whole chilled	\$126	4%	-3%	\$39	-\$24	\$2.75	4%	-1%	●
020733	Ducks, whole frozen	\$271	3%	-4%	\$75	-\$66	\$2.44	0%	-7%	○
020734	Goose/duck liver chilled	\$61	-4%	-11%	-\$34	-\$46	\$15.96	-4%	-8%	○
020735	Poultry, cuts fresh	\$173	2%	-6%	\$24	-\$57	\$6.59	-1%	-6%	●
020736	Poultry, cuts frozen	\$620	5%	1%	\$254	\$35	\$3.54	-2%	-6%	●
020810	Rabbit	\$160	-2%	-6%	-\$39	-\$61	\$4.42	1%	-4%	○
020830	Primate meat	\$0	-5%	-6%	\$0	\$0	\$4.41	-1%	-2%	○
020840	Whale, dolphin, etc.	\$15	31%	6%	\$14	\$4	\$7.98	5%	-6%	●
020850	Reptiles, incl. snakes	\$5	12%	17%	\$4	\$3	\$7.66	-1%	8%	●
020890	Other meat nes, fresh & frozen	\$552	0%	-5%	-\$26	-\$153	\$7.02	2%	-4%	●
020900	Fat, pig & poultry	\$560	1%	-12%	\$36	-\$494	\$0.79	0%	-9%	○
021011	Pork, bone-in hams	\$270	3%	-5%	\$74	-\$87	\$6.01	2%	13%	●
021012	Pork bellies	\$519	4%	-2%	\$183	-\$53	\$4.59	2%	0%	●
021019	Pork, smoked	\$2,177	0%	-3%	\$4	-\$395	\$5.21	1%	-1%	●
021020	Beef, salted/smoked	\$245	6%	-4%	\$102	-\$59	\$8.07	2%	2%	●
021091	Smoked primate	\$0	-22%	-12%	-\$3	\$0	\$9.66	8%	11%	●
021092	Dolphin & whale, smoked	\$21	110%	293%	\$21	\$21	\$1.55	-20%	-15%	●
021093	Reptiles, smoked, etc.	\$4	21%	11%	\$3	\$2	\$4.71	-5%	2%	●
021099	Other meat nes, salted/dried	\$1,145	23%	0%	\$1,002	\$13	\$2.39	1%	-6%	●

SEAFOOD 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
30110	Live ornamental fish	\$334	2%	-3%	\$71	-\$46	\$7.04	6%	-9%	●
30191	Live trout (Salmon, Oncorhynchus, etc.)	\$107	6%	3%	\$47	\$16	\$3.94	1%	-6%	●
30192	Live eels	\$419	0%	-3%	\$15	-\$73	\$10.47	-2%	-14%	●
30193	Live carp	\$169	16%	26%	\$132	\$116	\$2.87	6%	1%	●
30199	Live fish, n.e.s.	\$827	5%	-3%	\$320	-\$140	\$6.92	5%	2%	●
30211	Trout, chilled	\$591	15%	11%	\$439	\$245	\$5.95	3%	1%	●
30212	Salmon, chilled whole	\$11,826	11%	10%	\$7,775	\$4,454	\$7.22	3%	4%	●
30219	Salmonidae, chilled	\$125	-1%	-6%	-\$13	-\$45	\$2.22	-2%	-4%	○
30221	Halibut, chilled	\$173	1%	3%	\$19	\$20	\$12.62	4%	0%	●
30222	Plaice, chilled	\$77	-2%	-4%	-\$13	-\$19	\$2.14	-3%	-6%	○
30223	Sole, chilled	\$182	-4%	-6%	-\$80	-\$68	\$12.77	0%	-2%	○
30229	Flat fish, chilled	\$397	5%	3%	\$147	\$52	\$2.97	-5%	-9%	●
30231	Albacore/longfinned tunas, chilled	\$49	-4%	-11%	-\$28	-\$36	\$4.65	0%	-1%	○
30232	Yellowfin tunas, chilled	\$256	6%	-2%	\$117	-\$29	\$5.93	7%	-1%	●
30233	Skipjack/striped-bellied bonito, chilled	\$11	11%	-10%	\$7	-\$7	\$4.34	9%	6%	●
30234	Bigeye tuna	\$110	11%	-7%	\$72	-\$47	\$7.88	3%	-2%	●
30235	Tuna, bluefin chilled	\$334	0%	0%	\$1	\$2	\$13.89	1%	-9%	●
30236	Bluefin tuna, chilled whole	\$24	-5%	2%	-\$17	\$2	\$8.19	-3%	-12%	●
30239	Tunas, skipjack & bonito, chilled	\$71	-7%	-14%	-\$72	-\$77	\$4.45	-1%	-7%	○
30240	Herrings, chilled	\$122	1%	-1%	\$8	-\$6	\$0.66	3%	-2%	●
30250	Cod, chilled	\$582	5%	5%	\$214	\$125	\$3.89	0%	-1%	●
30261	Sardines, chilled	\$85	0%	-9%	\$2	-\$49	\$0.76	4%	-2%	●
30262	Haddock, chilled	\$99	-3%	-2%	-\$39	-\$10	\$2.31	-1%	-1%	○
30263	Coalfish, chilled	\$98	4%	4%	\$31	\$17	\$2.10	5%	-3%	●
30264	Mackerel, chilled	\$120	3%	-6%	\$27	-\$45	\$1.48	1%	-5%	○
30265	Sharks, whole chilled	\$32	-3%	-8%	-\$9	-\$18	\$3.96	3%	-4%	●
30266	Eels, chilled	\$16	2%	10%	\$2	\$6	\$8.67	2%	0%	●
30269	Chilled fish, nes.	\$3,393	2%	-1%	\$673	-\$253	\$3.13	0%	-3%	●
30270	Fish livers & roes, chilled	\$63	5%	4%	\$23	\$12	\$12.51	7%	10%	●
30311	Sockeye salmon, frozen	\$396	7%	4%	\$189	\$75	\$5.47	4%	3%	●
30319	Salmon, frozen whole	\$1,026	3%	-6%	\$243	-\$408	\$3.34	2%	-1%	●
30321	Trout, frozen	\$396	-2%	-11%	-\$84	-\$316	\$5.02	2%	-1%	●
30322	Atlantic salmon, frozen	\$862	7%	10%	\$432	\$315	\$4.88	0%	-2%	●
30329	Salmonidae, frozen	\$302	19%	25%	\$250	\$204	\$0.73	-4%	-12%	●
30331	Halibut, frozen	\$758	8%	3%	\$391	\$108	\$5.50	2%	0%	●
30332	Plaice, frozen	\$46	0%	-11%	-\$1	-\$37	\$1.93	2%	-4%	○
30333	Sole, frozen	\$103	-1%	-2%	-\$16	-\$9	\$3.90	-2%	-1%	○
30339	Flat fish, frozen whole	\$493	7%	9%	\$251	\$173	\$1.81	3%	-1%	●

Source: UN Comtrade database; Coriolis definitions, classifications and analysis

SEAFOOD 02

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
30341	Longfin tuna, frozen whole	\$340	3%	4%	\$87	\$62	\$2.79	3%	2%	●
30342	Yellowfin tunas, frozen	\$867	6%	1%	\$388	\$34	\$2.28	1%	-2%	●
30343	Skipjack tuna, frozen whole	\$811	6%	-2%	\$357	-\$96	\$1.30	5%	-1%	●
30344	Bigeye tunas, frozen	\$406	0%	-6%	\$2	-\$153	\$4.74	1%	-6%	●
30345	Bluefin tunas, frozen	\$67	-3%	7%	-\$26	\$20	\$13.31	0%	-6%	●
30346	Bluefin tuna, frozen whole	\$100	0%	-9%	\$4	-\$62	\$11.27	-1%	-11%	●
30349	Frozen tunas, nes	\$176	4%	-2%	\$54	-\$16	\$2.41	3%	-3%	●
30350	Herrings, frozen	\$512	-1%	-8%	-\$47	-\$259	\$0.85	1%	-3%	○
30360	Cod, frozen	\$1,158	8%	4%	\$605	\$217	\$2.95	0%	-2%	●
30371	Sardines, frozen	\$506	8%	-2%	\$271	-\$62	\$0.86	5%	2%	●
30372	Haddock, frozen	\$135	3%	-7%	\$33	-\$57	\$2.12	-3%	-3%	○
30373	Coalfish, frozen	\$53	-4%	-16%	-\$26	-\$73	\$2.00	4%	-2%	○
30374	Mackerel, frozen	\$1,985	8%	-1%	\$1,074	-\$111	\$1.29	2%	-5%	●
30375	Sharks, whole frozen	\$146	4%	-8%	\$48	-\$73	\$2.27	2%	-6%	●
30376	Frozen eels	\$50	3%	-6%	\$12	-\$16	\$3.17	-1%	-8%	○
30377	Sea bass, frozen	\$46	7%	7%	\$22	\$13	\$5.72	2%	5%	●
30378	Hake, frozen	\$444	-3%	-5%	-\$167	-\$118	\$1.95	-1%	-4%	○
30379	Frozen fish, nes	\$6,951	7%	-1%	\$3,361	-\$368	\$1.77	3%	2%	●
30380	Frozen fish livers and roes	\$742	1%	-4%	\$77	-\$164	\$6.96	0%	0%	●
30410	Chilled fish fillets	\$4,932	5%	5%	\$1,865	\$1,097	\$8.97	3%	1%	●
30420	Frozen fish fillets	\$11,388	3%	-4%	\$2,879	-\$2,568	\$5.05	3%	1%	●
30490	Frozen fish meat	\$2,366	2%	-1%	\$506	-\$126	\$3.21	3%	0%	●
30510	Fish flours, meals & pellets	\$56	1%	-3%	\$7	-\$10	\$2.84	8%	4%	●
30520	Livers & roes of fish, dried/etc.	\$177	1%	-3%	\$24	-\$32	\$7.89	1%	-3%	●
30530	Fish fillets, dried/etc.	\$584	2%	0%	\$127	\$14	\$5.25	0%	-1%	●
30541	Salmon, smoked	\$1,791	9%	5%	\$1,053	\$373	\$15.25	1%	-2%	●
30542	Herrings, smoked	\$45	3%	-2%	\$11	-\$5	\$2.79	2%	2%	●
30549	Smoked fish other	\$372	1%	-3%	\$40	-\$64	\$8.62	9%	7%	●
30551	Cod, dried	\$741	0%	-7%	\$14	-\$306	\$8.32	0%	-2%	●
30559	Dried fish	\$701	2%	-6%	\$101	-\$239	\$3.83	0%	-2%	●
30561	Herrings, salted	\$23	-4%	-5%	-\$12	-\$6	\$2.47	3%	-4%	○
30562	Cod, salted	\$413	-2%	-4%	-\$87	-\$81	\$5.30	-1%	-4%	○
30563	Anchovies, salted	\$84	1%	-2%	\$9	-\$11	\$3.35	5%	6%	●
30569	Other fish salted	\$400	8%	22%	\$211	\$252	\$3.83	1%	-3%	●
30611	Rock lobster	\$322	-6%	-8%	-\$276	-\$162	\$18.78	-2%	-5%	○
30612	Lobsters, frozen	\$819	6%	6%	\$357	\$209	\$21.60	0%	0%	●
30613	Prawns, frozen	\$14,365	6%	2%	\$5,986	\$1,157	\$7.62	3%	2%	●

SEAFOOD 03

	Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE	
30614	Crabs, frozen	\$2,238	9%	6%	\$1,275	\$569	\$10.13	5%	1%	●
30619	Crustaceans nes, frozen	\$376	0%	0%	-\$15	\$1	\$9.59	1%	1%	●
30621	Rock Lobster, fresh	\$837	8%	5%	\$438	\$167	\$45.39	5%	1%	●
30622	Lobsters, not frozen	\$1,534	7%	8%	\$730	\$504	\$13.32	0%	1%	●
30623	Shrimps & prawns, not frozen	\$859	4%	1%	\$285	\$48	\$6.87	5%	5%	●
30624	Crabs, not frozen	\$823	13%	10%	\$574	\$314	\$8.37	7%	4%	●
30629	Crustaceans, not frozen	\$267	-1%	1%	-\$27	\$16	\$3.53	-9%	-22%	○
30710	Oysters	\$314	6%	0%	\$134	\$7	\$6.19	4%	-1%	●
30721	Scallops, chilled	\$251	3%	-7%	\$58	-\$110	\$12.34	5%	7%	●
30729	Scallops, frozen/etc.	\$1,152	5%	1%	\$415	\$53	\$15.04	5%	5%	●
30731	Mussels, live	\$323	0%	-1%	\$15	-\$22	\$1.62	0%	-5%	○
30739	Mussels (not-live)	\$265	2%	1%	\$39	\$14	\$4.43	4%	3%	●
30741	Cuttle fish, similar	\$396	3%	-3%	\$115	-\$74	\$4.10	3%	-2%	●
30749	Squid (non-chilled)	\$4,802	10%	4%	\$2,980	\$867	\$4.16	7%	5%	●
30751	Octopus, live/chilled	\$184	7%	10%	\$93	\$70	\$7.96	9%	7%	●
30759	Octopus, frozen, etc.	\$1,651	8%	-2%	\$851	-\$186	\$6.36	4%	-2%	●
30760	Snails	\$79	5%	1%	\$33	\$4	\$3.21	5%	2%	●
30791	Invertebrates nes., fresh	\$940	5%	3%	\$351	\$120	\$4.30	1%	0%	●
30799	Invertebrates nes	\$2,276	10%	8%	\$1,410	\$759	\$4.50	6%	0%	●
121220	Seaweed/other algae	\$682	6%	-3%	\$300	-\$124	\$1.59	-3%	-4%	●
150410	Fish-liver oils	\$124	5%	0%	\$46	\$3	\$6.23	4%	3%	●
150420	Fish fats	\$1,600	8%	1%	\$881	\$49	\$2.06	8%	3%	●
150430	Whale oil, similar	\$4	4%	-9%	\$1	-\$2	\$4.64	11%	8%	●
160300	Fish extracts	\$250	7%	4%	\$118	\$44	\$4.10	3%	7%	●
160411	Salmon, prep/pres	\$676	5%	2%	\$248	\$69	\$7.39	5%	2%	●
160412	Herrings, prep/pres	\$501	2%	-3%	\$78	-\$79	\$2.97	1%	-2%	●
160413	Sardines, prep/pres	\$1,062	4%	0%	\$324	-\$6	\$2.75	3%	1%	●
160414	Tuna, prep/pres	\$5,399	7%	-1%	\$2,640	-\$175	\$3.81	2%	-2%	●
160415	Mackerel, prep/pres	\$602	6%	-2%	\$270	-\$61	\$3.35	1%	0%	●
160416	Anchovies, prep/pres	\$220	3%	0%	\$55	-\$3	\$8.31	2%	1%	●
160419	Other fish, prep/pres	\$2,853	2%	0%	\$594	-\$69	\$5.15	3%	-2%	●
160420	Other prep fish	\$2,147	2%	-1%	\$338	-\$164	\$3.32	2%	3%	●
160430	Caviar	\$366	-1%	-1%	-\$29	-\$10	\$13.77	2%	-3%	●
160510	Crab, prep/pres	\$1,277	9%	1%	\$724	\$76	\$16.14	7%	4%	●
160520	Shrimp, prep/pres	\$3,917	0%	-6%	\$128	-\$1,536	\$10.91	6%	4%	●
160530	Lobster, prep/pres	\$397	7%	12%	\$201	\$174	\$26.26	2%	5%	●
160540	Mollusc, prep/pres	\$404	2%	5%	\$60	\$88	\$10.89	6%	2%	●
160590	Mussels, prepared	\$3,186	4%	-2%	\$989	-\$314	\$6.67	4%	-1%	●

Source: UN Comtrade database; Coriolis definitions, classifications and analysis

DAIRY

	Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
040110 Low fat fluid milk	\$528	1%	-6%	\$64	-\$211	\$0.48	3%	-1%	●
040120 Regular fluid milk	\$3,879	3%	-6%	\$852	-\$1,399	\$0.45	0%	-5%	●
040130 High fat fluid milk	\$2,203	5%	-5%	\$789	-\$649	\$1.69	1%	-5%	●
040210 SMP	\$5,741	4%	-6%	\$1,998	-\$1,902	\$2.06	-1%	-9%	●
040221 WMP	\$7,213	4%	-6%	\$2,363	-\$2,421	\$2.75	1%	-7%	●
040229 Bulk IF; other sweet WMP	\$459	5%	-1%	\$172	-\$20	\$2.99	5%	-2%	●
040291 Unsweetened condensed	\$1,069	0%	-7%	\$30	-\$505	\$1.11	-1%	-7%	○
040299 Sweetened condensed	\$847	4%	-1%	\$269	-\$22	\$1.75	1%	-3%	●
040310 Yogurt	\$1,945	2%	-3%	\$276	-\$331	\$1.44	1%	-1%	●
040390 Buttermilk powder, other fermented	\$1,596	2%	-6%	\$304	-\$616	\$1.29	0%	-5%	○
040410 Whey & modified whey	\$2,507	2%	-7%	\$528	-\$1,081	\$0.82	-1%	-7%	○
040490 Natural milk constituent nes	\$1,117	4%	-2%	\$328	-\$130	\$1.93	2%	-6%	●
040510 Butter	\$4,955	6%	-3%	\$2,080	-\$738	\$3.48	3%	-7%	●
040520 Dairy spreads	\$162	1%	-11%	\$13	-\$125	\$3.47	4%	-5%	●
040590 Other milk fats and oils	\$1,871	7%	-3%	\$902	-\$294	\$3.89	4%	-6%	●
040610 Fresh cheese	\$5,610	7%	1%	\$2,771	\$378	\$3.06	0%	-5%	●
040620 Grated or powdered cheese	\$1,798	8%	3%	\$1,001	\$212	\$4.61	0%	-4%	●
040630 Processed cheese	\$2,080	1%	-6%	\$264	-\$717	\$4.05	1%	-4%	●
040640 Blue-veined cheese	\$576	1%	-2%	\$62	-\$61	\$7.16	0%	-4%	●
040690 Cheese, cheddar, etc.	\$15,508	2%	-4%	\$3,142	-\$3,841	\$4.42	1%	-4%	●
170211 Lactose 99%	\$660	6%	-3%	\$304	-\$117	\$1.00	1%	-7%	●
170219 Lactose, other	\$97	-3%	-15%	-\$33	-\$121	\$0.72	-2%	-11%	○
350110 Casein	\$976	0%	-6%	-\$43	-\$389	\$5.14	-1%	-11%	○
350190 Caseinates/other derivatives	\$535	-3%	-11%	-\$226	-\$410	\$4.03	-4%	-13%	○
350220 Milk albumins, 80%+ whey, two proteins	\$909	16%	6%	\$696	\$234	\$6.17	3%	-6%	●
350290 Milk albumins, 80%+ whey, other	\$104	3%	2%	\$28	\$8	\$4.95	-3%	-18%	●
190110 Infant formula retail	\$8,743	13%	10%	\$6,142	\$3,229	\$5.64	3%	-3%	●

Source: UN Comtrade database; Coriolis definitions, classifications and analysis

VEGETABLES 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
70110	Seed potatoes	\$829	4%	-6%	\$248	-\$280	\$0.50	1%	-4%	●
70190	Potatoes	\$3,024	4%	-3%	\$945	-\$492	\$0.29	2%	-2%	●
70200	Tomatoes	\$8,471	4%	0%	\$2,828	-\$38	\$1.10	2%	-1%	●
70310	Onions	\$3,180	6%	0%	\$1,389	\$30	\$0.42	3%	0%	●
70320	Garlic, fresh	\$3,615	12%	5%	\$2,425	\$811	\$1.84	9%	5%	●
70390	Leeks, etc.	\$289	1%	-1%	\$21	-\$22	\$1.02	0%	-1%	○
70410	Cauli/broccoli, fresh	\$1,237	4%	2%	\$420	\$103	\$1.00	2%	0%	●
70420	Brussels sprouts, fresh	\$178	6%	10%	\$81	\$67	\$1.12	5%	7%	●
70490	Cabbages, kohlrabi, kale...etc,	\$1,351	9%	3%	\$778	\$204	\$0.68	3%	2%	●
70511	Cabbage lettuce, fresh	\$890	2%	2%	\$140	\$78	\$0.95	0%	-1%	●
70519	Lettuce, fresh	\$1,212	4%	2%	\$430	\$138	\$1.28	3%	-1%	●
70521	Witloof chicory, fresh	\$106	-1%	-1%	-\$12	-\$4	\$1.48	-1%	1%	○
70529	Chicory, fresh	\$175	0%	1%	-\$8	\$9	\$1.15	0%	-3%	○
70610	Carrots, turnips	\$1,277	5%	2%	\$519	\$126	\$0.46	1%	2%	●
70690	Beetroot, radishes, etc.	\$483	5%	-1%	\$195	-\$33	\$0.68	2%	-3%	●
70700	Cucumbers, fresh	\$2,298	3%	3%	\$586	\$271	\$0.88	0%	1%	●
70810	Peas, fresh	\$307	6%	2%	\$134	\$28	\$1.33	4%	0%	●
70820	Beans, fresh	\$677	4%	3%	\$231	\$91	\$1.26	0%	1%	●
70890	Leguminous veg. nes, fresh	\$102	5%	2%	\$39	\$9	\$0.62	1%	-6%	●
70910	Globe artichokes, fresh	\$55	-2%	164%	-\$11	\$54	\$1.51	0%	17%	●
70920	Asparagus	\$1,309	7%	6%	\$654	\$347	\$3.41	2%	3%	●
70930	Aubergines, fresh	\$429	4%	-1%	\$143	-\$31	\$0.98	2%	-1%	●
70940	Celery, fresh	\$235	2%	1%	\$36	\$15	\$0.69	1%	-1%	●
70951	Mushrooms, fresh	\$965	2%	-2%	\$182	-\$95	\$2.09	-1%	-3%	●
70959	Mushrooms not Agaricus, fresh	\$651	4%	1%	\$210	\$37	\$4.05	0%	-4%	●

VEGETABLES 02

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
70960	Capsicum, chillies	\$4,851	6%	2%	\$2,012	\$507	\$1.48	0%	-1%	●
70970	Spinach, fresh	\$292	12%	11%	\$194	\$121	\$2.07	5%	8%	●
70990	Other Vegetables	\$3,547	3%	1%	\$946	\$124	\$1.02	-1%	-1%	●
71010	Potatoes, frozen	\$162	7%	-5%	\$82	-\$49	\$0.82	8%	28%	●
71021	Frozen peas	\$463	4%	0%	\$151	-\$1	\$0.98	1%	-3%	●
71022	Frozen beans	\$339	2%	0%	\$68	-\$4	\$0.93	0%	-3%	○
71029	Leguminous veg. froz	\$270	3%	0%	\$74	\$0	\$1.77	5%	3%	●
71030	Spinach, frozen	\$268	6%	1%	\$119	\$16	\$0.90	1%	-3%	●
71040	Frozen sweet corn	\$383	5%	2%	\$154	\$43	\$0.98	1%	-2%	●
71080	Frozen vegetables nes	\$3,345	4%	1%	\$1,151	\$175	\$1.06	1%	-1%	●
71090	Frozen mixed veg	\$732	2%	-2%	\$112	-\$74	\$1.11	3%	1%	●
71120	Olives pres	\$79	3%	3%	\$19	\$12	\$1.35	-2%	-3%	○
71140	Cucumbers pres	\$114	4%	3%	\$34	\$15	\$0.79	4%	5%	●
71151	Agaricus Mushrooms pres	\$44	-5%	-13%	-\$32	-\$45	\$1.95	2%	-3%	○
71159	Other mushrooms pres	\$53	-1%	-5%	-\$5	-\$15	\$2.98	6%	-2%	●
71190	Other veg mix	\$310	5%	2%	\$128	\$27	\$1.12	5%	3%	●
71220	Dried onions	\$396	7%	1%	\$202	\$27	\$1.54	-2%	2%	●
71231	Agaricus mushrooms dry	\$75	5%	3%	\$27	\$9	\$5.10	-12%	-18%	●
71232	Wood ears dry	\$637	29%	24%	\$588	\$424	\$15.61	10%	2%	●
71233	Jelly fungi dry	\$73	18%	4%	\$60	\$12	\$15.46	11%	1%	●
71239	Truffles, dry	\$1,719	19%	5%	\$1,419	\$348	\$15.47	3%	-1%	●
71290	Dried veg nes	\$1,881	6%	1%	\$796	\$67	\$3.54	3%	0%	●
71410	Manioc, fresh or dried	\$1,305	7%	-3%	\$660	-\$222	\$0.19	3%	-12%	●
71420	Sweet potatoes	\$416	17%	-2%	\$332	-\$46	\$0.80	1%	-15%	●
71490	Roots and tubers dry	\$416	6%	-4%	\$186	-\$89	\$1.16	6%	-2%	●

NUTS

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
80111	Coconuts, desiccated, shelled	\$647	11%	-2%	\$420	-\$67	\$1.69	7%	-4%	●
80119	Coconuts, fresh, shelled	\$404	15%	8%	\$308	\$131	\$0.46	4%	-2%	●
80121	Brazil nuts, in shell	\$19	2%	0%	\$3	\$0	\$1.89	1%	-9%	○
80122	Brazil nuts, shelled	\$347	11%	8%	\$228	\$111	\$3.31	-3%	-16%	●
80131	Cashew nuts, in shell	\$1,225	10%	-8%	\$731	-\$602	\$1.64	7%	-3%	●
80132	Cashew nuts, shelled	\$3,618	11%	8%	\$2,338	\$1,179	\$7.92	6%	0%	●
80211	Almonds in shell	\$1,060	18%	9%	\$852	\$382	\$4.79	3%	6%	●
80212	Almonds shelled	\$4,818	7%	12%	\$2,439	\$2,083	\$7.12	1%	8%	●
80221	Hazlenuts in shell	\$74	2%	-6%	\$15	-\$25	\$4.45	5%	6%	●
80222	Hazlenuts shelled	\$1,914	5%	6%	\$785	\$451	\$8.91	3%	6%	●
80231	Walnuts in shell	\$685	10%	2%	\$412	\$57	\$3.06	2%	-3%	●
80232	Walnuts shelled	\$1,315	8%	3%	\$691	\$182	\$6.61	2%	-3%	●
80240	Chestnuts	\$324	4%	5%	\$114	\$71	\$2.82	4%	1%	●
80250	Pistachio	\$2,320	7%	3%	\$1,190	\$356	\$8.29	6%	3%	●
80290	Other nuts	\$2,690	11%	7%	\$1,706	\$733	\$5.01	7%	10%	●

FRUIT 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
80300	Bananas	\$13,553	4%	0%	\$4,541	-\$50	\$0.67	2%	-1%	●
80410	Dates	\$1,195	10%	9%	\$750	\$411	\$1.12	4%	0%	●
80420	Figs	\$473	6%	5%	\$209	\$95	\$3.70	4%	1%	●
80430	Pineapples	\$2,423	3%	0%	\$556	\$45	\$0.80	0%	-1%	●
80440	Avocados	\$4,753	17%	17%	\$3,790	\$2,582	\$2.49	4%	1%	●
80450	Guavas, mangoes etc.	\$2,364	9%	7%	\$1,378	\$714	\$1.55	3%	4%	●
80510	Oranges	\$4,580	3%	-1%	\$1,280	-\$160	\$0.76	2%	0%	●
80520	Mandarins, etc.	\$4,081	5%	-1%	\$1,531	-\$113	\$0.99	2%	-1%	●
80540	Grapefruit	\$873	1%	-3%	\$103	-\$133	\$0.93	1%	-1%	●
80550	Lemons/Limes	\$3,534	10%	12%	\$2,205	\$1,493	\$1.29	6%	7%	●
80590	Citrus fruit nes	\$44	3%	-6%	\$11	-\$14	\$1.35	7%	5%	●
80610	Fresh grapes	\$8,213	5%	2%	\$3,059	\$659	\$2.07	3%	1%	●
80620	Dried grapes	\$1,582	5%	-2%	\$616	-\$167	\$1.94	4%	-3%	●
80711	Watermelons, fresh	\$1,441	6%	6%	\$612	\$362	\$0.44	1%	0%	●
80719	Melons, fresh	\$1,743	2%	1%	\$363	\$96	\$0.82	2%	0%	●
80720	Papaws (papayas)	\$319	4%	5%	\$97	\$72	\$0.93	1%	-1%	●
80810	Apples	\$6,901	4%	0%	\$2,418	\$118	\$0.89	2%	0%	●
80820	Pears	\$2,353	3%	-3%	\$555	-\$391	\$0.93	1%	-2%	●
80910	Apricots	\$380	1%	-2%	\$44	-\$33	\$1.44	1%	-2%	○
80920	Cherries	\$2,497	12%	10%	\$1,685	\$944	\$4.34	5%	2%	●
80930	Peaches/nectarines	\$2,183	2%	0%	\$458	\$3	\$1.13	0%	-2%	●
80940	Plums	\$891	3%	0%	\$259	\$15	\$1.44	1%	0%	●

FRUIT 02

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
81010	Strawberries	\$2,518	6%	2%	\$1,061	\$221	\$2.91	3%	0%	●
81020	Raspberries, etc.	\$2,033	17%	16%	\$1,602	\$1,053	\$6.63	4%	3%	●
81030	Currants etc.	\$0	-64%	-44%	-\$33	\$0	\$5.93	14%	9%	●
81040	Blueberries, etc.	\$2,492	17%	16%	\$1,986	\$1,298	\$5.80	5%	4%	●
81050	Kiwifruit	\$2,547	6%	4%	\$1,098	\$432	\$1.61	2%	0%	●
81060	Durians, fresh	\$1,143	23%	22%	\$999	\$724	\$1.74	11%	17%	●
81090	Other fruit nes	\$2,822	11%	4%	\$1,824	\$483	\$1.11	2%	1%	●
81110	Strawberries, frozen	\$908	6%	0%	\$385	-\$20	\$1.53	3%	-2%	●
81120	Blackberries, etc.	\$1,037	8%	5%	\$561	\$208	\$2.48	5%	2%	●
81190	Other fruit, frozen	\$2,387	5%	2%	\$943	\$190	\$1.96	1%	-4%	●
81210	Cherries, pres	\$76	3%	2%	\$21	\$8	\$1.68	1%	0%	●
81290	Fruit and nuts, pres	\$96	-1%	-2%	-\$11	-\$11	\$1.51	4%	5%	●
81310	Dried apricots	\$378	4%	-4%	\$130	-\$86	\$3.23	6%	-1%	●
81320	Dried prunes	\$504	2%	2%	\$108	\$45	\$2.77	2%	5%	●
81330	Dried apples	\$186	5%	0%	\$75	\$1	\$2.06	0%	-4%	●
81340	Other dried fruit, nes	\$627	7%	2%	\$318	\$68	\$2.91	7%	6%	●
81350	Dried fruit mix	\$318	5%	5%	\$121	\$63	\$5.03	9%	12%	●
81400	Peel, citrus	\$59	4%	-1%	\$20	-\$2	\$1.78	7%	3%	●

COFFEE, TEA, SPICES, SWEETENERS & COCOA 01

	Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
90112 Coffee, decaffeinated	\$656	3%	-8%	\$173	-\$318	\$3.29	1%	-10%	●
90121 Coffee, roasted	\$8,829	12%	3%	\$5,962	\$1,357	\$8.79	6%	-2%	●
90122 Coffee, roasted decaf	\$563	9%	0%	\$331	-\$3	\$11.25	6%	0%	●
90190 Coffee husts	\$94	10%	-4%	\$57	-\$21	\$2.58	-1%	-10%	●
90210 Green tea, retail	\$644	8%	1%	\$339	\$46	\$4.49	3%	4%	●
90220 Green tea	\$585	9%	8%	\$342	\$186	\$3.33	4%	4%	●
90230 Black tea	\$1,686	6%	0%	\$734	\$39	\$6.84	2%	1%	●
90240 Black tea	\$2,792	5%	-3%	\$1,106	-\$377	\$2.77	4%	-1%	●
90300 Mate	\$126	8%	7%	\$68	\$37	\$2.73	10%	9%	●
90411 Black pepper, whole	\$2,052	15%	9%	\$1,543	\$709	\$7.81	15%	9%	●
90412 Black pepper, ground	\$631	18%	11%	\$505	\$257	\$7.97	10%	8%	●
90420 Paprika, etc.	\$1,387	8%	2%	\$729	\$107	\$2.37	4%	-1%	●
90500 Vanilla	\$814	21%	46%	\$692	\$691	\$114.89	20%	43%	●
90610 Cinnamon, whole	\$341	9%	7%	\$201	\$97	\$3.41	7%	9%	●
90620 Cinnamon, crushed	\$84	11%	9%	\$53	\$31	\$2.86	5%	6%	●
90700 Cloves	\$404	14%	-10%	\$293	-\$280	\$7.49	9%	-8%	●
90810 Nutmeg	\$136	5%	-11%	\$51	-\$110	\$8.54	5%	-5%	●
90820 Mace	\$37	4%	-12%	\$13	-\$31	\$9.94	5%	-8%	●
90830 Cardamoms	\$208	8%	-12%	\$108	-\$178	\$7.42	9%	-12%	●
90910 Seeds of anise or badian	\$202	21%	23%	\$171	\$130	\$2.35	3%	-6%	●
90920 Seeds of coriander	\$193	14%	11%	\$141	\$79	\$0.99	4%	0%	●
90930 Seeds of cumin	\$257	7%	-1%	\$126	-\$15	\$2.34	4%	-3%	●
90940 Seeds of caraway	\$0	-48%	-77%	-\$18	-\$41	\$0.83	-3%	-15%	○
90950 Seeds of fennel; juniper berries	\$0	-43%	-71%	-\$35	-\$66	\$1.00	-2%	-13%	○
91010 Ginger	\$645	10%	0%	\$388	\$14	\$1.08	4%	-2%	●
91020 Saffron	\$216	13%	6%	\$150	\$56	\$64.62	0%	-12%	●
91030 Turmeric (curcuma)	\$196	15%	-2%	\$146	-\$23	\$2.01	8%	-5%	●

Source: UN Comtrade database; Coriolis definitions, classifications and analysis

COFFEE, TEA, SPICES, SWEETENERS & COCOA 02

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
91040	Thyme, bay leaves	\$1	-37%	-12%	-\$55	-\$1	\$1.51	-6%	-11%	○
91050	Curry	\$1	-36%	-7%	-\$58	\$0	\$1.74	-3%	58%	○
91091	Spice mixtures	\$363	7%	1%	\$175	\$22	\$4.07	0%	-2%	◐
91099	Other spices, nes	\$555	9%	0%	\$321	-\$7	\$2.93	0%	-1%	◐
121010	Hop cones	\$44	5%	5%	\$17	\$9	\$6.92	3%	6%	●
121020	Hop cones, ground	\$430	7%	7%	\$207	\$128	\$10.90	4%	2%	●
121210	Locust beans	\$54	-7%	14%	-\$59	\$26	\$0.96	-4%	-14%	◐
121291	Sugar beet	\$21	-4%	-27%	-\$12	-\$78	\$0.06	0%	-4%	○
121299	Other vegetable prod	\$820	11%	4%	\$524	\$147	\$1.86	6%	-3%	●
170111	Raw sugar, cane	\$13,050	5%	-11%	\$4,881	-\$10,171	\$0.45	1%	-8%	◐
170112	Raw sugar, beet	\$364	4%	0%	\$108	\$7	\$0.55	-1%	-6%	◐
170191	Sugar, flavoured	\$239	2%	-4%	\$43	-\$59	\$0.80	3%	5%	◐
170199	Sugar	\$9,839	2%	-6%	\$1,992	-\$3,249	\$0.57	1%	-7%	◐
170220	Maple syrup	\$348	6%	4%	\$144	\$61	\$5.71	3%	6%	●
170230	Glucose syrup, low fruct.	\$1,941	4%	-3%	\$577	-\$334	\$0.47	2%	-4%	◐
170240	Glucose syrup, high fruct.	\$297	2%	-10%	\$64	-\$206	\$0.39	0%	-4%	○
170250	Fructose	\$228	1%	-4%	\$14	-\$46	\$1.02	2%	-2%	○
170260	HFCS, similar	\$835	11%	-2%	\$535	-\$111	\$0.43	2%	-1%	◐
170290	Sugar blends; similar	\$1,469	8%	2%	\$785	\$137	\$0.84	5%	-2%	◐
170310	Molasses, cane	\$655	1%	-3%	\$58	-\$116	\$0.18	2%	0%	○
170390	Molasses, other	\$364	6%	2%	\$154	\$29	\$0.17	2%	-1%	◐
180100	Cocoa beans	\$10,187	7%	-4%	\$5,136	-\$2,148	\$3.18	7%	-3%	◐
180200	Cocoa shells	\$34	0%	-9%	\$0	-\$20	\$0.36	-1%	-8%	○
180310	Cocoa paste, raw	\$2,886	11%	1%	\$1,878	\$176	\$4.24	6%	-1%	●
180320	Cocoa paste, defatted	\$613	15%	-8%	\$463	-\$312	\$2.34	9%	-11%	◐
180400	Cocoa butter	\$5,258	7%	7%	\$2,500	\$1,472	\$6.31	4%	4%	●

ARABLE

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
100110	Durum wheat	\$3,047	5%	-7%	\$1,198	-\$1,378	\$0.25	4%	-8%	●
100190	Wheat	\$30,057	5%	-7%	\$11,870	-\$12,858	\$0.19	2%	-9%	●
100200	Rye	\$181	-3%	-9%	-\$67	-\$113	\$0.20	4%	-8%	○
100300	Barley	\$5,457	6%	-6%	\$2,497	-\$1,823	\$0.18	2%	-8%	●
100400	Oats	\$625	3%	-5%	\$149	-\$189	\$0.22	3%	-4%	●
100510	Maize seed	\$2,359	8%	-2%	\$1,247	-\$219	\$1.78	4%	-1%	●
100590	Maize (x seed)	\$23,871	7%	-5%	\$11,987	-\$7,372	\$0.18	3%	-9%	●
100610	Paddy rice	\$878	7%	2%	\$446	\$70	\$0.33	3%	11%	●
100620	Husked rice	\$1,344	10%	3%	\$834	\$157	\$0.69	7%	3%	●
100630	Milled rice	\$14,842	6%	-6%	\$6,321	-\$5,425	\$0.54	4%	-4%	●
100640	Broken rice	\$1,506	9%	0%	\$892	\$20	\$0.36	3%	-5%	●
100700	Grain sorghum	\$1,754	10%	2%	\$1,080	\$178	\$0.20	5%	-5%	●
100810	Buckwheat	\$83	5%	-6%	\$34	-\$27	\$0.61	5%	-7%	●
100820	Millet	\$84	1%	-11%	\$9	-\$66	\$0.30	1%	-4%	○
100830	Canary seed	\$106	4%	-9%	\$36	-\$68	\$0.57	6%	-5%	●
100890	Other cereal, nes	\$556	13%	9%	\$388	\$202	\$0.49	5%	-5%	●

DRY LEGUMES & ANIMAL FODDER

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
DRY LEGUMES										
71310	Dried peas	\$2,156	10%	2%	\$1,336	\$204	\$0.37	6%	-2%	●
71320	Dried chickpeas	\$1,975	14%	14%	\$1,438	\$935	\$0.82	3%	-1%	●
71331	Dried beans	\$1,676	26%	7%	\$1,512	\$456	\$1.77	9%	6%	●
71332	Dried adzuki beans	\$123	8%	4%	\$69	\$22	\$1.18	8%	2%	◐
71333	Dried kidney beans	\$1,546	8%	-1%	\$845	-\$112	\$0.86	4%	1%	◐
71339	Dried beans nes	\$483	4%	2%	\$158	\$56	\$0.65	1%	-5%	◐
71340	Dried lentils, shelled	\$2,646	15%	12%	\$1,971	\$1,123	\$0.83	7%	1%	●
71350	Dried broad beans	\$350	7%	-3%	\$173	-\$60	\$0.39	4%	-4%	◐
71390	Dried leguminous nes	\$558	16%	14%	\$435	\$267	\$1.19	10%	5%	●
ANIMAL FODDER										
121300	Cereal straw	\$186	5%	-7%	\$75	-\$77	\$0.13	1%	-3%	◐
121410	Lucerne meal/pellets	\$302	6%	-4%	\$141	-\$66	\$0.25	5%	-1%	◐
121490	Lucerne hay, etc.	\$2,254	8%	2%	\$1,252	\$212	\$0.28	4%	-1%	◐

All products grown in
Australia are above \$10m

SEEDS FOR SOWING

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
120910	Sugar beet seed	\$719	3%	-4%	\$182	-\$161	\$17.50	2%	1%	●
120921	Lucerne seed	\$365	10%	8%	\$225	\$122	\$4.72	6%	10%	●
120922	Clover seed	\$140	7%	7%	\$66	\$40	\$2.84	0%	0%	●
120923	Fescue seed	\$156	1%	0%	\$17	\$3	\$1.96	4%	5%	●
120924	Kentucky blue grass seeds	\$57	1%	-2%	\$6	-\$7	\$3.43	4%	9%	●
120925	Rye grass seed	\$322	5%	-4%	\$117	-\$66	\$1.50	2%	-1%	●
120929	Other forage seeds	\$493	5%	-1%	\$185	-\$22	\$2.33	2%	-1%	●
120930	Seeds of herbaceous plants	\$282	2%	-3%	\$52	-\$41	\$38.87	-1%	11%	●
120991	Vegetable seed	\$3,999	8%	4%	\$2,184	\$643	\$34.61	7%	5%	●
120999	Other seeds, fruit and spores	\$336	2%	-8%	\$65	-\$167	\$7.77	0%	1%	●

All products grown in
Australia are above \$10m

OILSEEDS & VEGETABLE OILS 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
120100	Soya beans	\$53,125	12%	1%	\$36,199	\$1,930	\$0.41	4%	-6%	●
120210	Ground-nuts in shell, unroasted	\$473	11%	5%	\$311	\$94	\$0.88	0%	-5%	●
120220	Shelled ground-nuts, unroasted	\$2,357	10%	2%	\$1,461	\$202	\$1.20	4%	-2%	●
120300	Copra	\$103	12%	-3%	\$71	-\$19	\$0.78	10%	2%	●
120400	Linseed	\$881	10%	3%	\$544	\$113	\$0.48	3%	-8%	●
120510	Low erucic acid rape seeds	\$9,052	11%	-3%	\$5,899	-\$1,551	\$0.44	4%	-8%	●
120590	Rape/colza seeds	\$267	11%	-17%	\$170	-\$426	\$0.42	3%	-9%	●
120600	Sunflower seeds	\$2,951	9%	-5%	\$1,660	-\$797	\$0.68	4%	-3%	●
120710	Palm nuts and kernels	\$33	-6%	86%	-\$26	\$31	\$0.63	8%	37%	●
120720	Cotton seeds	\$302	2%	-7%	\$51	-\$129	\$0.32	4%	-3%	●
120730	Castor oil seeds	\$11	12%	214%	\$7	\$11	\$0.70	13%	-32%	●
120740	Sesamum seeds	\$2,337	9%	-2%	\$1,392	-\$293	\$1.20	3%	-10%	●
120750	Mustard seeds	\$203	6%	-2%	\$89	-\$23	\$0.78	6%	0%	●
120760	Safflower seeds	\$66	16%	126%	\$52	\$65	\$0.35	-4%	-11%	●
120791	Poppy seeds	\$137	2%	-3%	\$20	-\$19	\$1.87	3%	1%	●
120799	Other oil seeds/fruits nes	\$1,111	15%	11%	\$848	\$461	\$2.38	11%	13%	●
120810	Soya bean flour/meal	\$358	-2%	-9%	-\$77	-\$218	\$0.55	6%	-5%	○
120890	Other oil seed flours	\$195	13%	13%	\$136	\$89	\$0.40	6%	-2%	●
150710	Crude soya-bean oil	\$6,982	5%	-8%	\$2,614	-\$3,710	\$0.79	4%	-8%	●
150790	Soya-bean oil	\$1,112	0%	-12%	-\$17	-\$999	\$0.87	2%	-7%	○
150810	Crude ground-nut oil	\$320	5%	2%	\$117	\$29	\$1.42	4%	-4%	●
150890	Ground-nut oil	\$94	5%	-2%	\$34	-\$8	\$1.77	4%	-2%	●
150910	Virgin olive oil	\$6,119	3%	5%	\$1,366	\$1,287	\$3.95	-1%	3%	●
150990	Olive oil	\$1,309	0%	4%	-\$25	\$220	\$3.60	-1%	3%	●
151000	Other oils	\$328	5%	9%	\$125	\$118	\$1.62	-2%	-2%	●
151110	Crude palm oil	\$8,548	6%	-13%	\$3,701	-\$8,781	\$0.68	4%	-9%	●
151190	Palm oil	\$16,172	9%	-7%	\$9,231	-\$6,851	\$0.72	4%	-9%	●

Source: UN Comtrade database; Coriolis definitions, classifications and analysis

OILSEEDS & VEGETABLE OILS 02

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
151211	Crude sunflower-seed/safflower oil	\$6,220	12%	1%	\$4,138	\$243	\$0.93	4%	-8%	●
151219	Sunflower-seed/safflower oil	\$2,205	5%	-3%	\$880	-\$332	\$0.86	-2%	-11%	◐
151221	Cotton-seed oil crude	\$5	-11%	-26%	-\$11	-\$18	\$0.96	5%	-7%	○
151229	Cotton-seed oil	\$65	0%	-9%	\$1	-\$41	\$1.01	3%	-5%	○
151311	Crude coconut oil	\$1,341	5%	-9%	\$490	-\$777	\$1.44	9%	-3%	◐
151319	Coconut oil	\$1,597	12%	0%	\$1,072	-\$28	\$1.65	11%	-3%	◐
151321	Palm kernel oil, crude	\$1,128	4%	-16%	\$355	-\$1,591	\$1.15	7%	-7%	◐
151329	Palm kernel oil	\$2,217	16%	3%	\$1,709	\$278	\$1.18	6%	-7%	●
151411	Low erucic acid rape oil, crude	\$3,215	6%	-8%	\$1,489	-\$1,659	\$0.80	1%	-10%	◐
151419	Low erucic acid rape oil	\$2,317	7%	-2%	\$1,155	-\$219	\$0.92	1%	-8%	◐
151491	Rape oil, crude	\$158	6%	-4%	\$71	-\$32	\$1.05	3%	-6%	◐
151499	Rape oil	\$213	2%	-10%	\$37	-\$157	\$1.05	1%	-8%	○
151511	Crude linseed oil	\$86	2%	-9%	\$14	-\$49	\$1.08	4%	-6%	◐
151519	Linseed oil	\$159	2%	-7%	\$30	-\$74	\$1.01	1%	-6%	○
151521	Crude maize oil	\$393	2%	-10%	\$75	-\$283	\$1.15	5%	-5%	◐
151529	Maize oil	\$374	2%	-5%	\$65	-\$113	\$1.28	3%	-5%	◐
151530	Castor oil	\$723	9%	-8%	\$420	-\$346	\$1.19	3%	-12%	◐
151540	Tung oil	\$0	-42%	-19%	-\$25	\$0	\$1.55	2%	-11%	○
151550	Sesame oil	\$235	8%	5%	\$122	\$49	\$3.83	5%	2%	●
151590	Other fixed veg fats	\$1,653	7%	4%	\$842	\$281	\$2.60	5%	4%	●
151620	Hydrogenised vegetable oils	\$3,186	4%	-4%	\$960	-\$790	\$1.18	5%	-7%	◐

FIBRE 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
410120	Whole bovine (incl. buffalo)/equine hides & skins, wt. per skin not >8kg (s ...	\$378	-5%	-9%	-\$265	-\$244	\$2.86	2%	1%	●
410150	Whole bovine (incl. buffalo)/equine hides & skins, wt. >16kg(fresh/salted/d ...	\$3,896	1%	-4%	\$333	-\$1,006	\$2.00	1%	-3%	●
410190	Bovine (incl. buffalo)/equine hides & skins (excl. of 4101.20 & 4101.50), i ...	\$206	-3%	-9%	-\$69	-\$121	\$1.08	1%	-1%	○
410210	Raw skins of sheep/lambs (fresh/salted /dried/limed/pickled/othw. presvd. bu ...	\$476	-2%	-17%	-\$96	-\$727	\$1.30	-1%	-15%	○
410221	Raw skins of sheep/lambs, pickled but not tanned/parchment-dressed/furth. p ...	\$118	-6%	-16%	-\$90	-\$157	\$3.59	0%	-10%	○
410229	Sheep or lamb skins, raw, except pickled, no wool, other	\$13	4%	-10%	\$5	-\$9	\$4.14	6%	-3%	●
410310	Goat or kid hides and skins, raw, nes	\$0	-54%	-12%	-\$43	\$0	\$13.16	26%	25%	●
410320	Raw hides & skins of reptiles, (fresh/salted/dried/limed/pickled/othw. pres ...	\$296	5%	8%	\$112	\$91	\$158.09	4%	10%	●
410330	Raw hides & skins of swine (fresh/salted /dried/limed/pickled/othw. presvd.	\$100	-2%	-8%	-\$24	-\$52	\$0.98	1%	-1%	○
410390	Raw hides & skins, n.e.s. in Ch.41 (fresh/salted/dried/limed/pickled/othw. ...	\$210	4%	3%	\$67	\$27	\$3.00	2%	2%	●
500100	Silk-worm cocoons suit. for reeling	\$2	-5%	-10%	-\$2	-\$2	\$4.46	5%	-5%	●
500200	Raw silk (not thrown)	\$363	-1%	-5%	-\$45	-\$110	\$44.90	5%	3%	●
510111	Wool, not carded/combed, greasy, incl. fleece-washed wool, shorn	\$2,755	4%	-5%	\$865	-\$797	\$6.78	6%	-3%	●
510119	Wool, not carded/combed, greasy, incl. fleece-washed wool, other than shorn ...	\$222	5%	-5%	\$82	-\$72	\$4.73	7%	-2%	●
510121	Wool, not carded/combed, degreased, not carbonised, shorn	\$536	-1%	-6%	-\$75	-\$187	\$3.46	1%	-5%	○
510129	Wool, not carded/combed, degreased, not carbonised, other than shorn	\$162	-1%	-1%	-\$23	-\$13	\$2.35	2%	-7%	○
510130	Wool, not carded/combed, carbonised	\$184	2%	0%	\$37	-\$4	\$9.13	7%	0%	●
510211	Fine animal hair, not carded/combed, of Kashmir (cashmere) goats	\$262	-3%	-7%	-\$112	-\$124	\$74.22	3%	1%	●
510219	Fine animal hair, not carded/combed, other than of Kashmir (cashmere) goats ...	\$185	1%	0%	\$26	-\$1	\$14.53	0%	2%	●
510220	Coarse animal hair, not carded/combed	\$12	-4%	-5%	-\$6	-\$4	\$1.70	1%	-3%	○

FIBRE 02

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
510510	Wool & fine/coarse animal hair, carded	\$44	10%	11%	\$27	\$18	\$4.37	-1%	-7%	●
510521	Combed wool in fragments	\$24	-8%	-8%	-\$34	-\$13	\$8.19	2%	0%	●
510529	Wool tops & oth. combed wool other than combed wool in fragments	\$1,354	1%	-7%	\$71	-\$553	\$10.82	5%	-3%	●
510531	Fine animal hair, carded/combed, of Kashmir (cashmere) goats	\$111	8%	9%	\$59	\$38	\$65.59	-1%	6%	●
510539	Fine animal hair, carded/combed, other than of Kashmire (cashmere) goats	\$107	-2%	-9%	-\$18	-\$67	\$16.35	1%	-4%	●
510540	Coarse animal hair, carded/combed	\$2	-1%	-19%	\$0	-\$3	\$11.48	12%	24%	●

ESSENTIAL OILS, PHARMACEUTICAL & OTHER 01

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
330111	Essential oils of bergamot	\$0	-57%	-52%	-\$45	\$0	\$9.30	-16%	25%	●
330112	Essential oils of orange	\$479	11%	8%	\$315	\$153	\$8.29	9%	3%	●
330113	Essential oils of lemon	\$463	8%	3%	\$240	\$70	\$29.32	6%	1%	●
330119	Essential oils of other citrus	\$416	14%	9%	\$306	\$146	\$27.21	3%	9%	●
330121	Essential oils of geranium	\$0	-54%	-49%	-\$17	\$0	\$41.32	0%	2%	●
330123	Essential oils of lavender	\$0	-53%	-37%	-\$49	\$0	\$10.21	-8%	0%	●
330124	Essential oils of peppermint	\$168	2%	-4%	\$24	-\$36	\$32.39	4%	2%	●
330125	Essential oils of mints	\$266	5%	0%	\$105	-\$1	\$20.74	3%	-4%	●
330126	Essential oils of vetiver	\$0	-70%	-49%	-\$20	\$0	\$8.36	-19%	-37%	○
330129	Other essential oils (incl. concretes & absolutes)	\$1,977	10%	6%	\$1,241	\$474	\$36.90	7%	3%	●
121110	Liquorice roots, perfumery	\$0	-42%	-57%	-\$20	-\$6	\$4.50	13%	16%	●
121120	Ginseng roots	\$526	8%	6%	\$293	\$132	\$59.23	7%	3%	●
121130	Coca leaf	\$5	17%	18%	\$4	\$3	\$3.06	-3%	-4%	●
121140	Poppy straw	\$2	1%	25%	\$0	\$1	\$1.80	9%	29%	●
121190	Other plants, perfumery	\$2,453	8%	3%	\$1,367	\$354	\$4.32	7%	6%	●
150500	Lanolin	\$185	4%	-4%	\$63	-\$44	\$5.69	7%	-1%	●
152000	Glycerol, crude; glycerol waters, glycerol lyes	\$343	17%	2%	\$270	\$38	\$0.20	2%	-2%	●
152110	Vegetable waxes (excl. triglycerides)	\$168	8%	-5%	\$93	-\$49	\$5.75	6%	14%	●
152190	Beeswax, other insect waxes and spermaceti	\$130	7%	2%	\$66	\$14	\$6.39	6%	9%	●
152200	Degras; res of fatty subs./ waxes	\$95	2%	-8%	\$20	-\$53	\$0.32	4%	1%	●

ESSENTIAL OILS, PHARMACEUTICAL & OTHER 02

		Global Trade Value (US\$; m; 16)	10y CAGR \$ (%; 06-16)	5y CAGR Value (%; 11-16)	10y ABS Value (US\$; 06-16)	5y ABS Value (US\$; 06-16)	\$/kg (US\$; 16)	10y CAGR \$/kg (US\$; 06-16)	5y CAGR \$/kg (US\$; 11-16)	SCORE
240110	Tobacco, not stemmed/stripped	\$1,744	-1%	-6%	-\$280	-\$618	\$5.24	5%	1%	○
240120	Tobacco, partly or wholly stemmed/stripped	\$8,327	5%	-1%	\$3,291	-\$282	\$5.51	4%	1%	●
240130	Tobacco refuse	\$244	2%	-2%	\$46	-\$30	\$0.69	2%	-2%	◐
240210	Cigars, cheroots and cigarillos containing tobacco	\$1,845	2%	2%	\$326	\$170	\$32.51	4%	2%	●
240220	Cigarettes containing tobacco	\$20,637	4%	-1%	\$6,110	-\$1,164	\$15.67	0%	-2%	◐
240290	Cigars, cigarillos, cigarettes, etc, not containing tobacco	\$83	-5%	10%	-\$55	\$30	\$6.94	0%	-8%	◐
240310	Smoking tobacco with or without tobacco substitute	\$3,440	8%	3%	\$1,791	\$437	\$11.11	3%	1%	●
240391	Homogenized or reconstituted tobacco	\$445	6%	3%	\$197	\$58	\$3.57	3%	-1%	●
240399	Other manufactured tobacco, nes	\$1,332	13%	6%	\$922	\$348	\$10.76	6%	5%	●