

TWENTY OPPORTUNITIES IDENTIFYING DIVERSIFICATION OPPORTUNITIES IN NORTH WEST QUEENSLAND

FINAL REPORT; v1.00; December 2018

TWENTY OPPORTUNITIES

Identifying diversification opportunities in North West Queensland

FINAL REPORT

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V1.00

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BACKGROUND & SCOPE

BACKGROUND

The Strategic Blueprint for Queensland's North West Minerals Province (NWMP) recognises the need for regional resource based economies to diversify their economic base and pursue opportunities to facilitate more diversified drivers of economic growth.

Under the auspices of Strategic Priority Two, a "Regional Economic Diversification Strategy for North West Queensland" is to be developed. DAF has been tasked with developing a strategy to expand commercially viable agriculture opportunities in the North West over the long term, inclusive of a plan to implement key recommended actions.

DEFINED: SCOPE

- Developing a strategy to expand commercially viable agriculture related opportunities in the North West over the long term.
- Prepare a implementation plan for key recommendations.
- Stakeholder engagement and communication.

PURPOSE

The Queensland Department of Agriculture and Fisheries (DAF) are seeking a long-term strategy and associated implementation plan for enhanced agricultural production and employment in North Western Queensland. The strategy to be developed in collaboration with key stakeholders across the supply chain and link with allied components of the broader regional economic diversification strategy. This body of work will form an integral component of an overarching long-term regional economic diversification strategy for the North West led by Queensland Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP)

CORIOLIS PROPOSAL

Coriolis proposed a three stage screening process as described in this report, to identify and prioritise opportunities for North West Queensland. Three separate additional reports have been delivered on three potentially transformative opportunities.

Executive Summary

THE NORTH WEST QUEENSLAND OPPORTUNITY

North West Queensland is a massive region with huge untapped potential for agricultural growth. It is the size of Japan or Germany, with the population of the City State of Monaco. African climatic peers currently produce 10 times as much food per hectare.

This report forms part of a wider body of research designed to identify opportunities for increasing and diversifying agricultural production in the North West Queensland region. This will, in turn, create significant new employment, prompting population and economic growth.

The research identifies high potential products that both fit regional conditions and have large and attractive global markets. NW Queensland has the ingredients for success in diversified agriculture, it is "the right place to grow", close to key markets in Asia and is a safe and trusted supplier of food to the global market. Only NW Queensland can deliver a region that combines a modern, developed economy with African climatic conditions.

HOW WERE OPPORTUNITIES IDENTIFIED? THE SCREENING PROCESS

The project used a multi-stage screening process to identify products with high growth potential. First, the project sought the widest possible pool of IDEAS for potential opportunities. Product IDEAS came from two sources: regional stakeholders and climatic peer regions. One hundred products emerged from stakeholders and peers. Stakeholders identified a range of crops and animals that were either successfully produced in the region, trialed or proposed.

The project then looked for climatic peers; NW Queensland has both warm semi arid and tropical savanna climates. Fourteen countries with a strongly similar climate to

North West Queensland were identified as climatic peers. All "strong fit" climatic peers (except Iraq) are located in Africa, primarily in the Sub-Saharan "Sahel" ecoclimatic zone. Climatic peers produce a wide range of crops and animal based products.

One hundred IDEAS emerged and were then fed into STAGE I to give the widest possible pool of potential opportunities. Stage I detailed the characteristics of the product and developed a quantitative and qualitative score. Products were ranked to give an overall 'fit with regional conditions' score, while 'Indicated Market Demand' was calculated from global trade data for the products.

Twenty products with both (1) a large attractive market and (2) a good fit with regional conditions were passed into STAGE II, where they were developed and profiled. Each product was profiled from a whole of value-chain perspective across a set of common questions. The twenty products all target attractive markets and are distributed across all four major product platforms; animals, broadacre, horticulture and tree crops. All identified products represent real opportunities for the region.

Finally, STAGE III identified a short list of products with the potential to be transformative for regional agriculture.

Three specific potentially transformative products – sesame, mungbean and shea – were identified for further analysis targeting new investment. These three products are developed in three related reports.

This research emerged from the North West Minerals Province Taskforce and the Strategic Blueprint for North West Queensland



NOV 2015



JUL 2017

This research seeks to identify agricultural diversification opportunities for the province



Key actions to be delivered in developing the strategy include:

DEVELOP A REGIONAL ECONOMIC DIVERSIFICATION STRATEGY FOR NORTH WEST QUEENSLAND

The Queensland Government will develop a long-term regional economic diversification strategy to leverage and identify development opportunities in key sectors including resources, agriculture, enabling infrastructure, tourism, and business and industry...

SCOPE OPPORTUNITIES FOR INCREASING AGRICULTURAL PRODUCTION

The state's North West presents unique prospects for further agricultural development. In recognising these opportunities across the Province, the Queensland Government will be developing an integrated North West Queensland agriculture plan. The plan will focus on continuing to grow a sustainable and diversified agricultural sector, and will be developed in collaboration with key stakeholders across the supply chain and linked with the broader regional economic

diversification strategy.

...

SUPPORT OPPORTUNITIES TO LEVERAGE AGRICULTURE RESEARCH PROJECTS

The Queensland Government has already committed \$1.5 million over three years to stimulate research activity to progress the development of new agriculture opportunities across North Queensland.

This funding will support opportunities to leverage industry-led research and development being undertaken through the Cooperative Research Centre for Developing Northern Australia for increased agriculture production across the Province and other parts of North Queensland.

The Cooperative Research Centre for Developing Northern Australia, currently being established in Townsville, is intended to provide a collaborative research platform to address challenges that have constrained agricultural and broader development in the north and includes a \$75 million commitment over 10 years from the federal government.

p17-19

The province covers ten local government authorities in North West Queensland and associated linkages and supply chains



Source: "A Strategic Blueprint for Queensland's North West Minerals Province", Queensland Government; adapted by Coriolis

North West Queensland is “The Right Place to Grow,” with the land, water and resources required for success



- Large total area 375,486 km²
- Over 28m hectares of agricultural holdings in the region
- Diverse climatic conditions
- Low cost land currently underutilised
- Fertile soils suitable for agriculture

- Plentiful seasonal rainfall
- Multiple existing dams in the region
- Numerous additional dams proposed or in progress
- Proposed dams will be transformative to regional agriculture

- World class supply chains
- Easy access to Port of Townsville and Cairns Airhub
- Ongoing investment in infrastructure
- Skilled and educated regional population
- Readily available equipment, genetics, systems and support services

Only NW Queensland can deliver a region that combines a modern, developed economy with African climatic conditions



Efficient, world class, modern production system

Crops suited to regional conditions and climate

On the doorstep of East and South East Asia

Modern, efficient economy with strong rule of law

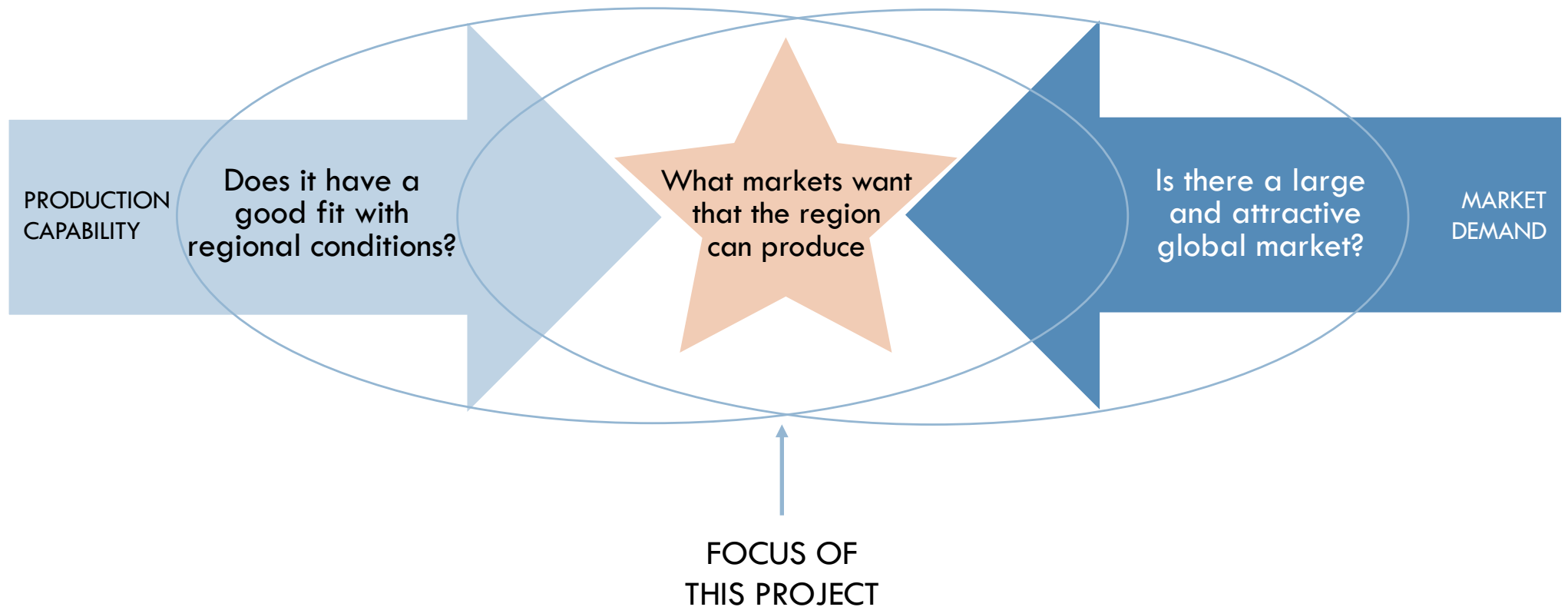
- Very large, highly efficient farms
- World class agriculture production systems and proven capability
- Modern distribution infrastructure
- Well funded science and research
- Highly skilled at producing arable crops at scale in an arid climate
- Skilled and educated farmers
- Long history of agriculture and global trade in QLD

- Warm semi arid (BSh) and tropical savanna (Aw) climates with some warm desert (BWh)
- Long sunshine hours
- Wet and dry production possible
- Counter seasonal production
- Potential of triple cropping
- Supplied to world market by climatic peers and produced successfully in the region

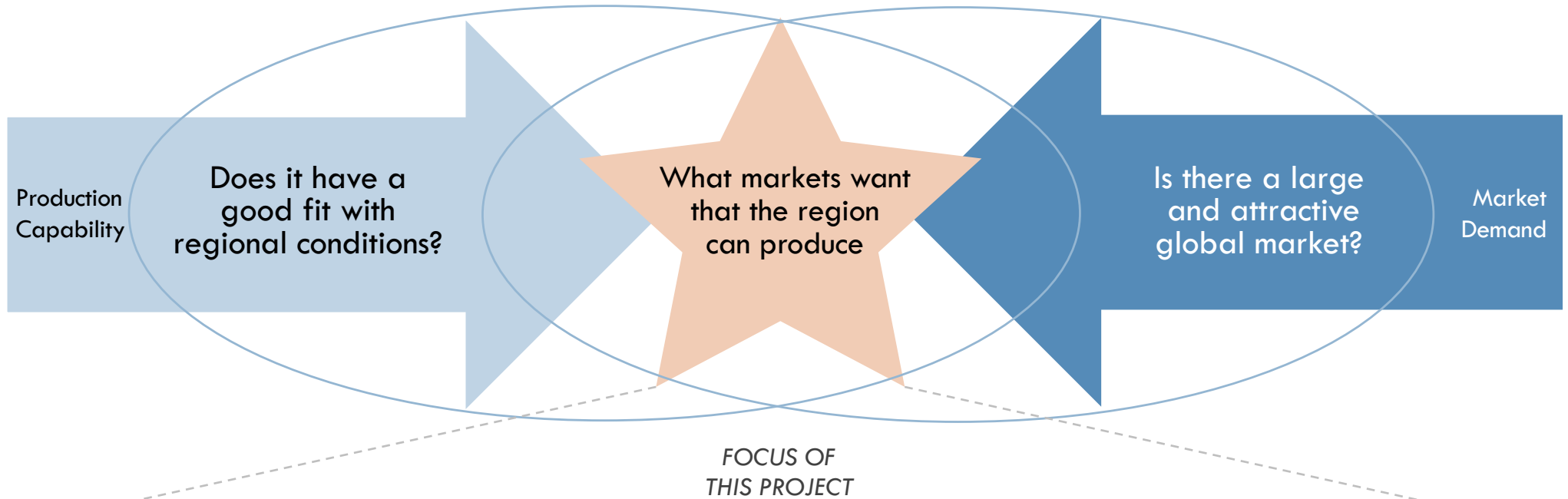
- Strong demand from high value markets
- Excellent proximity to high demand markets in East & South-East Asia
- Short transport times and distances
- In the same (or similar) time zones
- FTA agreements with most key trading partners

- Protected by Australia's island location and strong biosecurity
- Strong reputation with consumers as a safe and secure food producer
- Strong investor protection, highly ranked in "ease of doing business" and rule-of-law
- AAA sovereign risk rating

To assist with diversification, this research identified high potential products that both fit regional conditions and have large and attractive global markets



Four reports – including this one – emerged from the project



THE SCREENING PROCESS

01

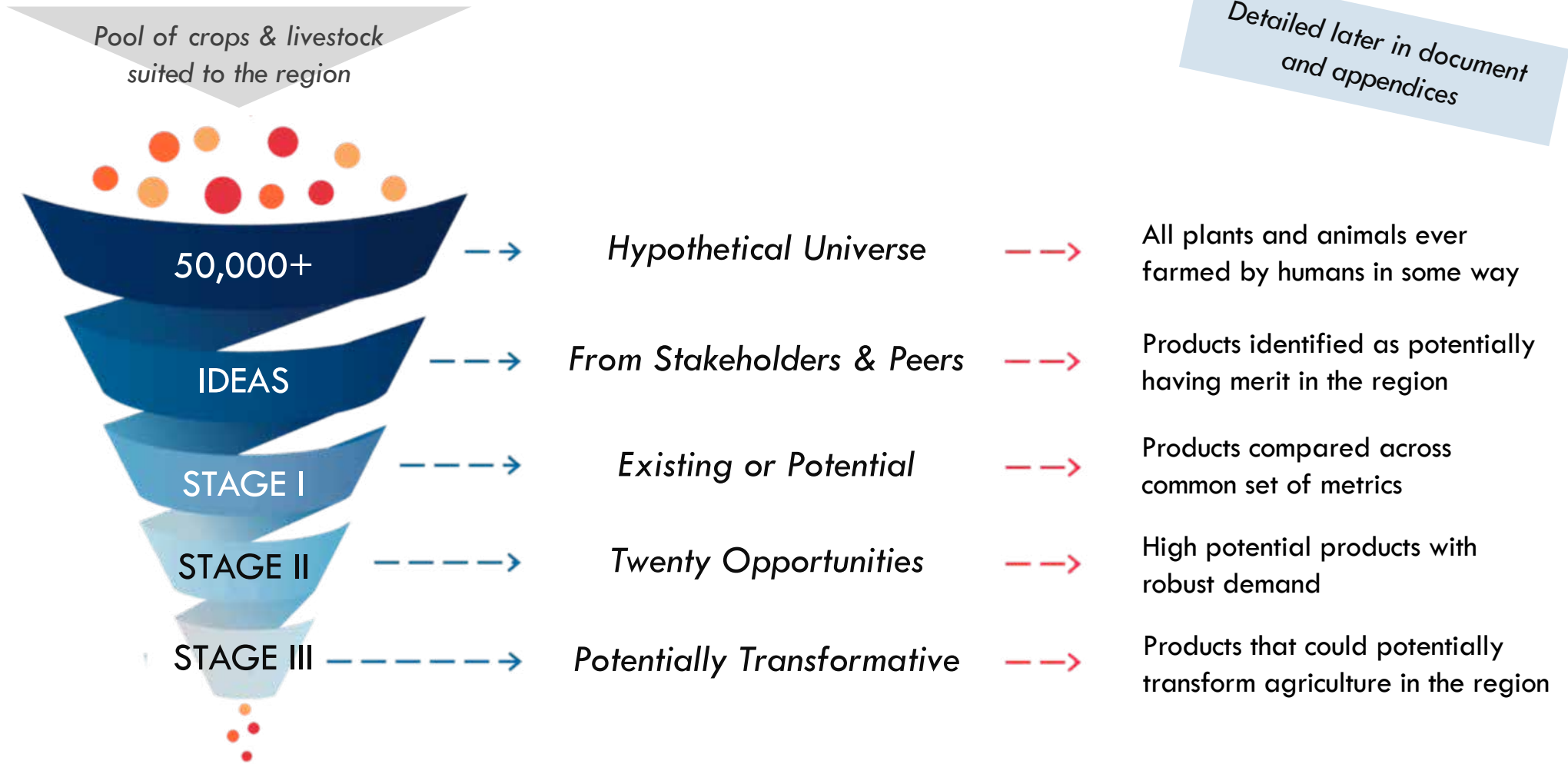
+ Ideas

+ Stage I

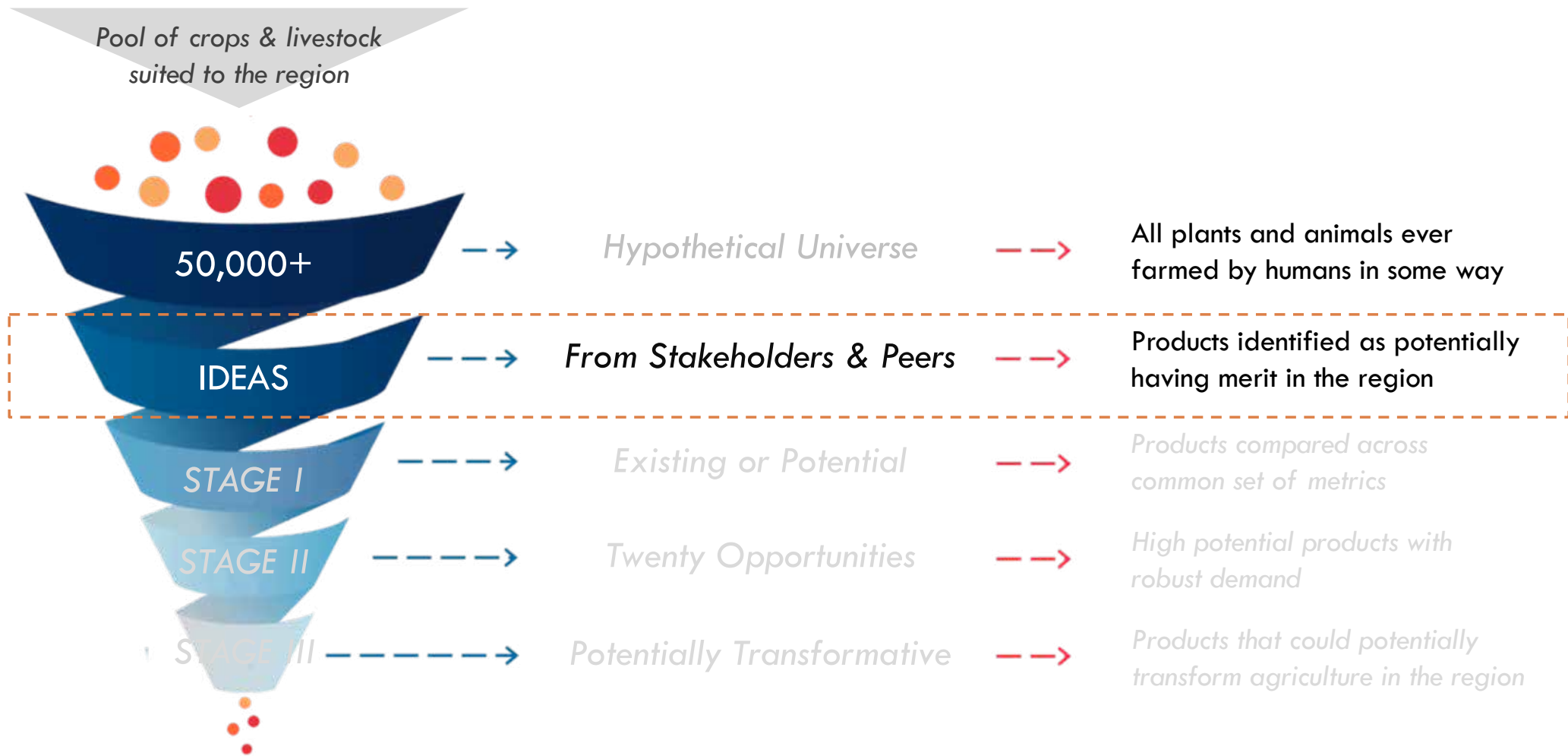
+ Stage II

+ Stage III

The project used a multi-stage screening process to identify products with high growth potential















First, the project sought the widest possible pool of IDEAS for potential opportunities



Product IDEAS came from two sources: regional stakeholders and climatic peer regions



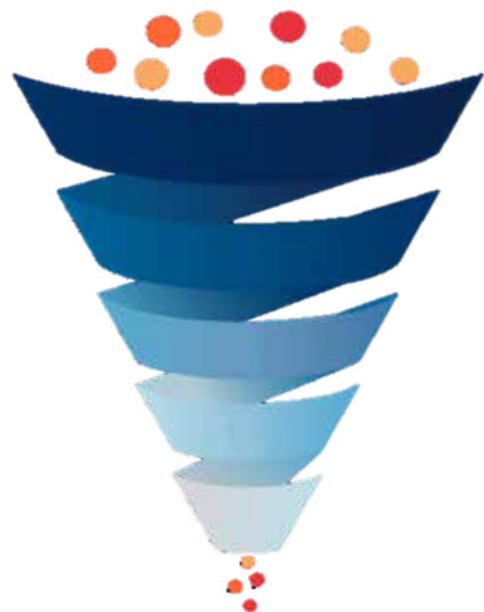
One hundred products emerged from stakeholders and peers

ANIMALS	BROADACRE/FIELD CROPS	HORTICULTURE	TREE CROPS
AQUACULTURE Barramundi Prawn Redclaw Crayfish Silver Perch 	ANIMAL FEED Amaranth Bambatsi Canary Grass Grain Sorghum Lablab Leucaena Lucerne Maize 	Bitter Melon Cassava Chilli Cucumber Horned Melon Melon Okra Onion Pumpkin/Squash Snake Bean Sweet Corn Sweet Potato Taro Yam 	NUTS Cashew Coconut Jojoba Pistachio Shea Tung 
MEAT Buffalo Meat Camel Meat Emu Meat Goatmeat Kangaroo Meat Ostrich Meat Rabbit Meat Wild Pig 	INDUSTRIAL Blue Agave Castor Cotton Flaxseed Guar Hemp Jute Kenaf Mustard Safflower Stevia Sugarcane Sunn Hemp Triodia ("Spinifex") 		FRUIT Baobab Custard Apple Date Desert Date Jackfruit Lemon/Lime Mango Marula Pitaya Pomegranate Table Grape Tamarind 
DAIRY Buffalo Milk Camel Milk Goat Milk Sheep Milk 	FOOD Bambara Canola Chia Chickpea Coriander Fenugreek Fonio Lentil Mate Mungbean Native Rice Peanut Pearl Millet Peppercorn Quinoa Rice Sesame Soybean Sunflower Teff 		NATIVE FOODS Native Foods (Desert limes, Davidson plum, Kakadu plum, wattleseed, caperbush, wild orange, wild passionfruit, conkerberry, ruby saltbush, desert fig, doubah, emu apple, quandong, bush tomato, parakeelya, bush potato, pencil yam, peppercrosses, large pigweed, mulga seeds, dogwood seeds, witchetty bush seeds) 
FIBRE/LEATHER Alpaca Fibre Crocodile Goat Fibre 			PLANTATION African Mahogany Eucalyptus Oil Indian Sandalwood Oil Palm Pongamia Mallee 

Stakeholders identified a range of crops and animals that were either successfully produced in the region, trialed or proposed

WHAT DO REGIONAL
STAKEHOLDERS
THINK ARE GOOD
IDEAS?

1



EXISTING FARMERS	AGRICULTURAL CONSULTANTS	LOCAL GOVERNMENT	STATE GOVERNMENT	PAST INDUSTRY RESEARCH/ REPORTS
------------------	--------------------------	------------------	------------------	---------------------------------

- Cattle	- Lentil	- Wild Pig	- Chia
- Hay	- Sugarcane	- Camel Meat	- Chilli
- Sorghum	- Soybean	- Canola	- Cucumber
- Mango	- Sesame	- Triodia	- Sweet Corn
- Sheep	- Brassicas	- Millet	- Cassava
- Cotton	- Maize	- Rice	- Peanut
- Redclaw Crayfish	- Guar	- Citrus	- Indian Sandalwood
- Mungbean	- African Mahogany	- Bambatsi	- Custard Apple
- Safflower	- Buffalo	- Lablab	- Cashew
- Chickpea	- Wild Goat	- Lucerne	

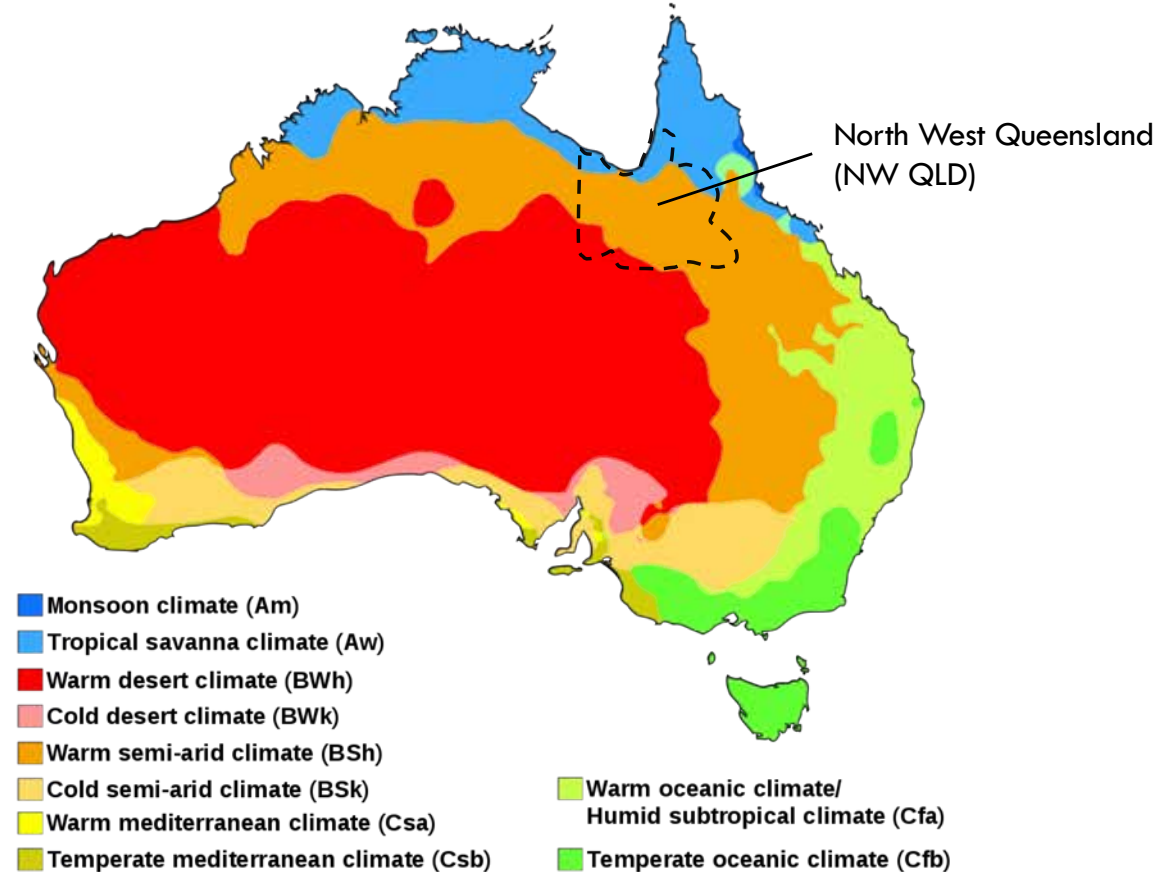
The project then looked for climatic peers; NW Queensland has both warm semi arid and tropical savanna climates

WHAT IS BEING PRODUCED AT SCALE IN CLIMATIC PEER REGIONS?

2



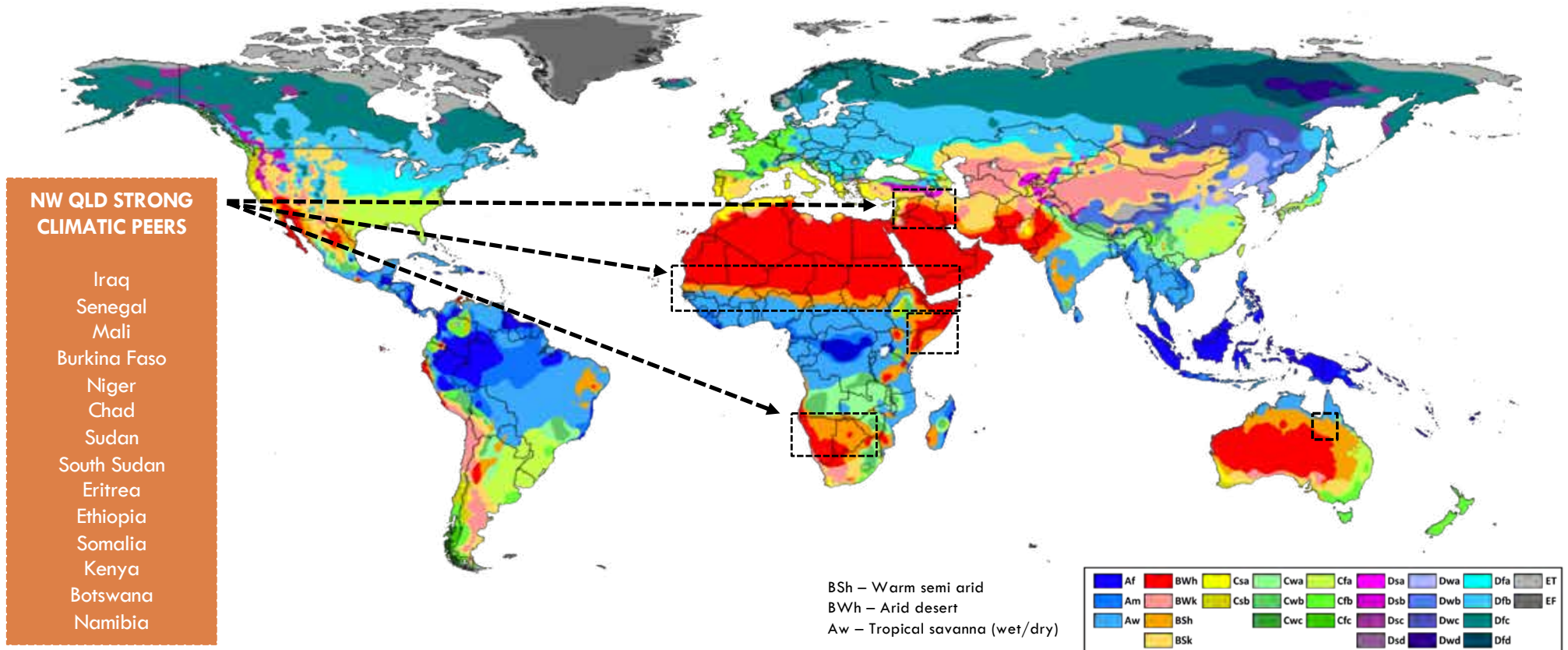
CLIMATE CLASSIFICATION MAP OF AUSTRALIA



Fourteen countries with a strongly similar climate to North West Queensland were identified as climatic peers

CLIMATIC ZONES OF THE WORLD – NW QLD CLIMATIC PEERS

Köppen-Geiger Classification

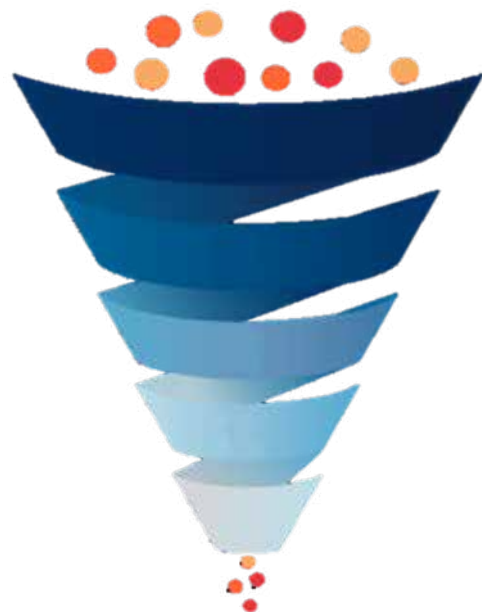


Source: WikiCommons CC BY-SA 4.0 (By Peel, M. C., Finlayson, B. L., and McMahon, T. A.(University of Melbourne); Vectorized by Ali Zifan. - Hydrology and Earth System Sciences: "Updated world map of the Köppen-Geiger climate classification"; CC BY-SA 4.0); adapted by Coriolis; Coriolis analysis

The fourteen peers are all developing nations

WHAT IS BEING PRODUCED AT SCALE IN CLIMATIC PEER REGIONS?

2



IDENTIFIED CLIMATIC PEERS

Various; 2015 or as available

	Area km ² ; 2015	Population 2017	Value of agriculture US\$m; 2015	Ag value/km ² US\$; 2015
Sudan	1,861,484 [#]	40,533,330	I\$5,973m*	I\$3,209*
Niger	1,266,700	21,477,348	\$6,465m	\$5,104
Chad	1,259,200	14,899,994	\$6,142m	\$4,878
Mali	1,220,190	18,541,980	\$8,045m	\$6,593
Ethiopia	1,000,000	104,957,438	\$19,584m	\$19,584
Namibia	823,290	2,533,794	\$379m	\$460
Somalia	627,340	14,742,523	I\$1,721m*	I\$2,743*
South Sudan	619,745	12,575,714	I\$1,871m*	I\$3,019*
Kenya	569,140	49,699,862	\$14,565m	\$25,592
Botswana	566,730	2,291,661	\$62m	\$110
Iraq	434,320	38,274,618	\$5,911m	\$13,609
Burkina Faso	273,600	19,193,382	\$3,093m	\$11,303
Senegal	192,530	15,850,567	\$1,279m	\$6,642
Eritrea	101,000	5,068,831	\$2,026m	\$20,061

* International dollars; [#]land area from Wikipedia. Source: UN FAO (various databases); Coriolis analysis

All “strong fit” climatic peers (except Iraq) are located in Africa, primarily in the Sub-Saharan “Sahel” ecoclimatic zone

WHAT IS BEING PRODUCED AT SCALE IN CLIMATIC PEER REGIONS?

2

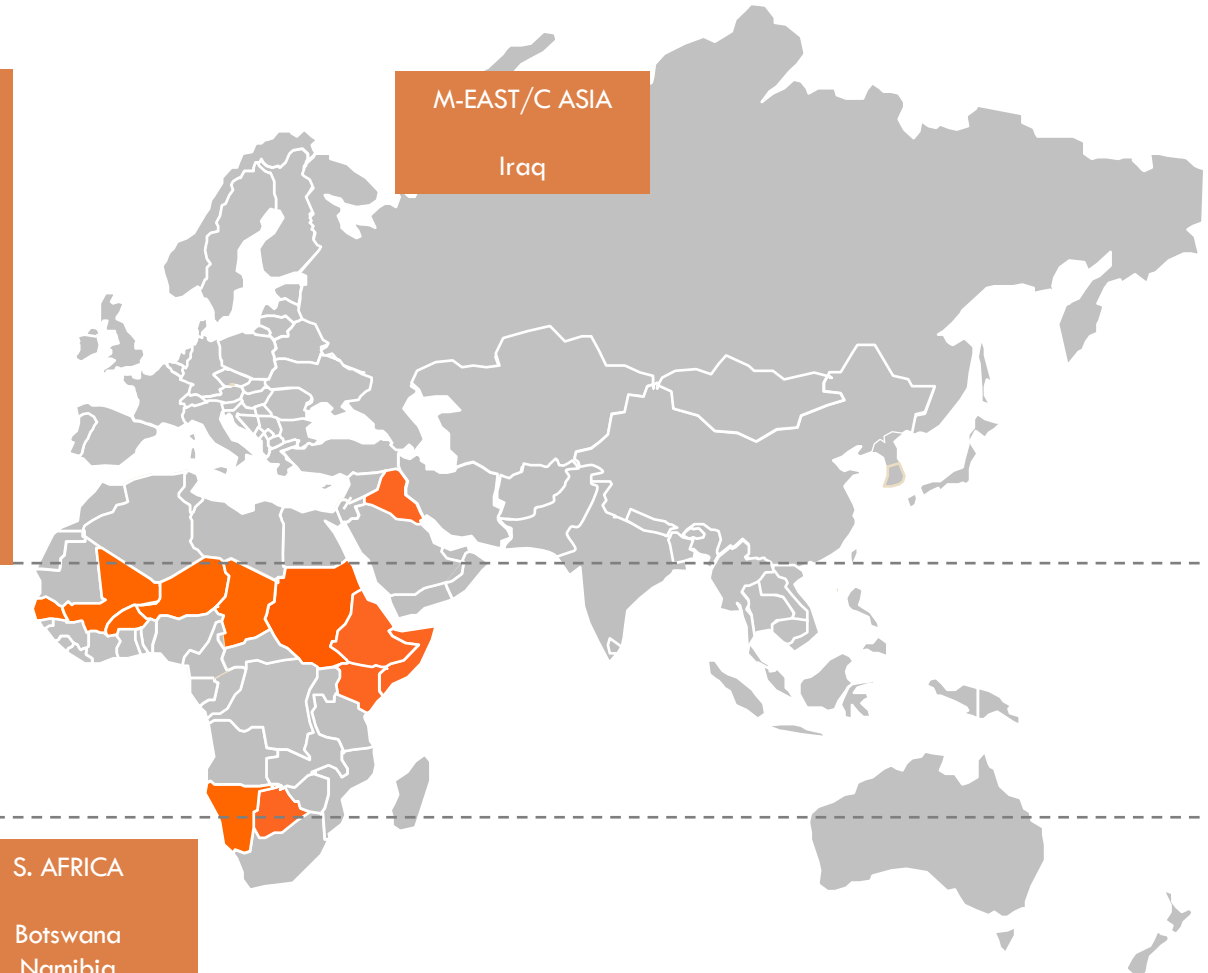


SUB-SAHARAN AFRICA

Senegal
Mali
Burkina Faso
Niger
Chad
Sudan
S. Sudan
Eritrea
Ethiopia
Somalia
Kenya

M-EAST/C ASIA

Iraq



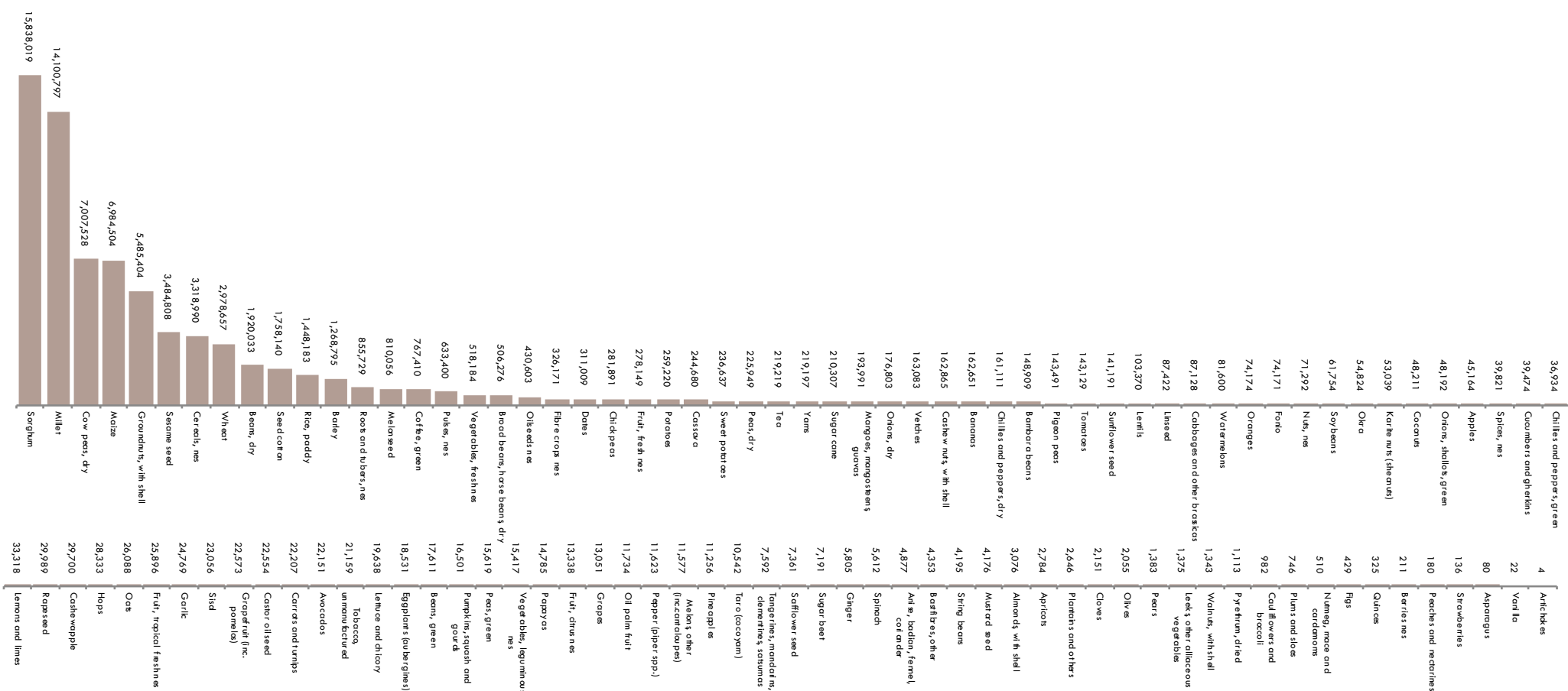
S. AFRICA

Botswana
Namibia

Climatic peers produce a wide range of crops

AGGREGATE AREA HARVESTED BY CROP FOR CLIMATIC PEER COUNTRIES

Total hectares; 14 countries; 2015

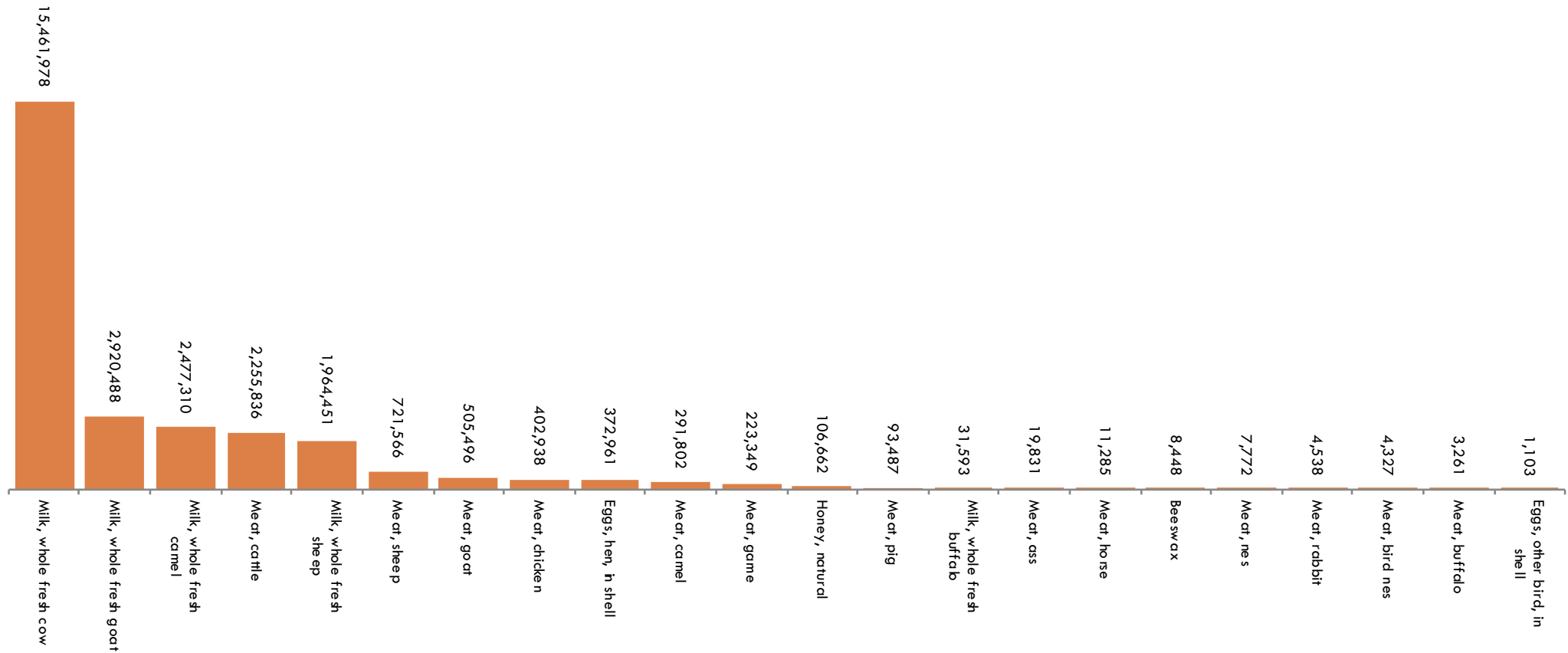


Source: UN FAOSTAT; Coriolis analysis

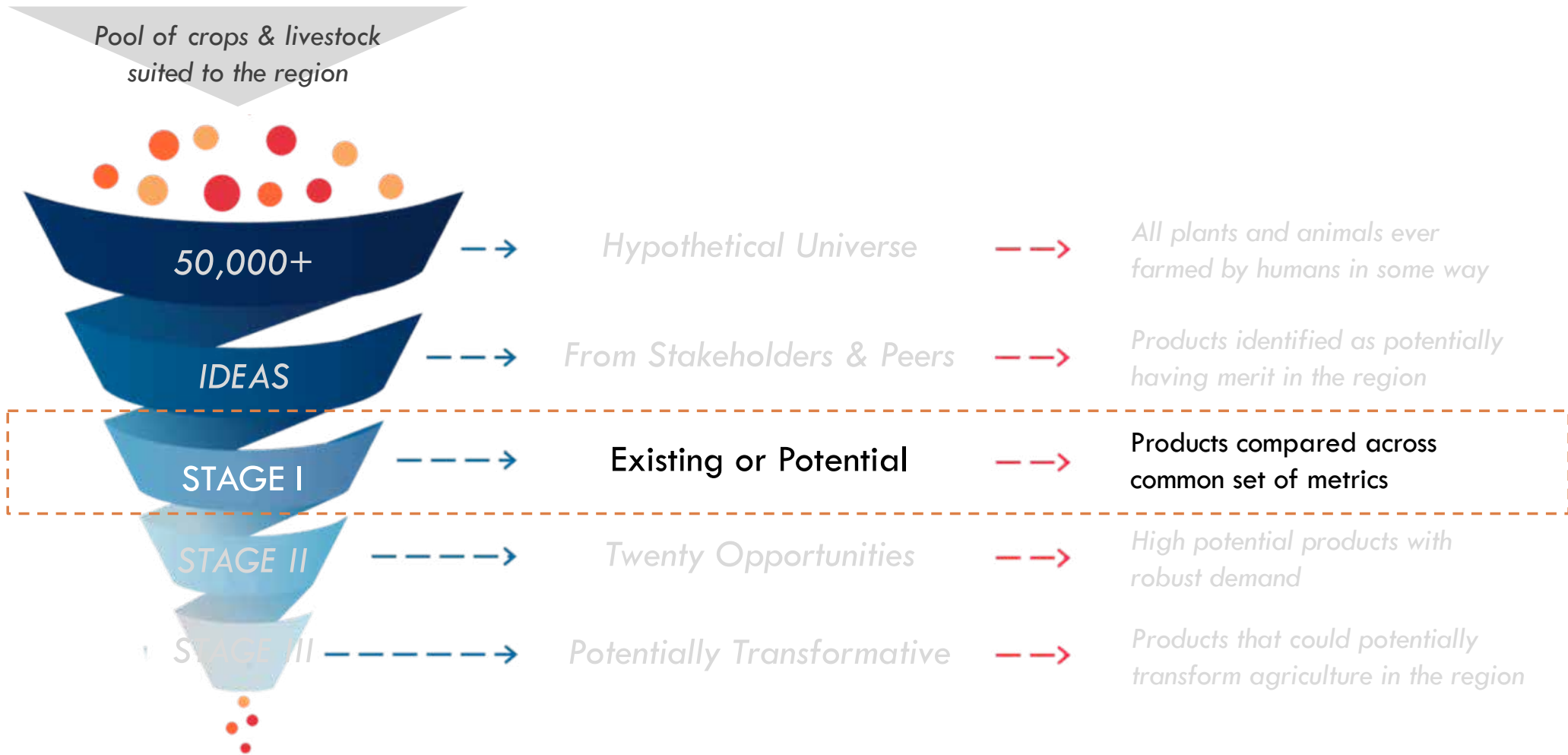
Climatic peers also produce a range of animal based products, though with a sharp drop off after fresh milk

AGGREGATE PRODUCTION BY LIVESTOCK PRODUCT FOR CLIMATIC PEER COUNTRIES

Total tonnes; 14 countries; 2015



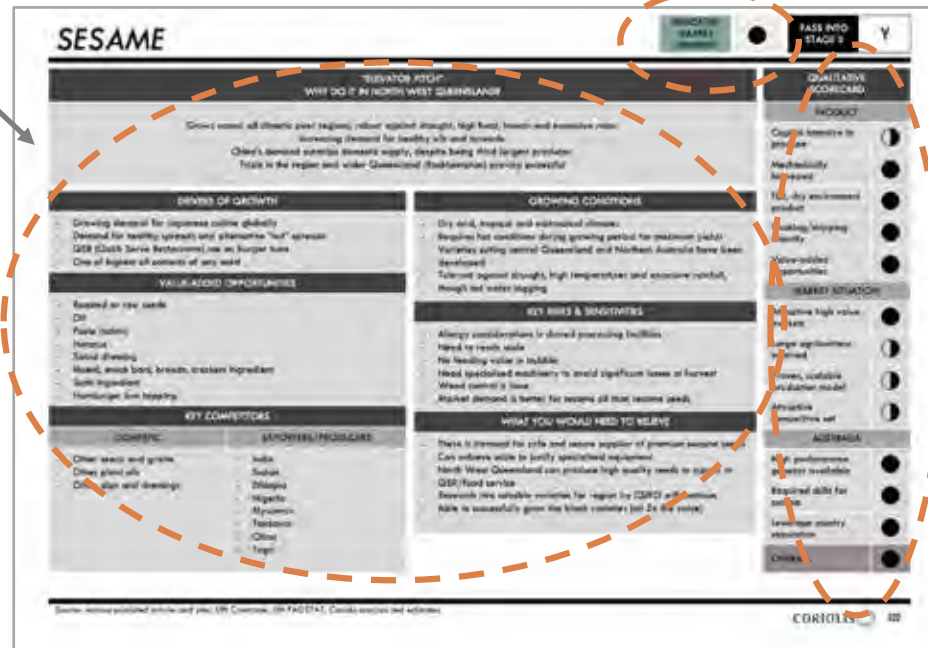
All IDEAS were then fed into STAGE I to give the widest possible pool of potential opportunities



Stage I detailed the characteristics of the product along with a quantitative and qualitative score

CHARACTERISTICS OF PRODUCT

- What you need to know to assess the product
- 'Elevator Pitch' for investors
- Drivers of growth and potential value added opportunities
- What you would need to believe in order for success



QUANTITATIVE SCORE

- Market demand based on global trade data
- Looking for products with large market showing growing demand over time
- \$/unit received on global market

QUALITATIVE SCORE

- Does the product fit with the unique regional conditions
- Ranked across product, market and country categories
- Overall fit with regional conditions score

The characteristics of the product are detailed in order to assess its potential fit with regional conditions

"ELEVATOR PITCH" WHY DO IT IN NORTH WEST QUEENSLAND?					
<p>Grows across all climatic peer regions; robust against drought, high heat, insects and excessive rains. Increasing demand for healthy oils and spreads. China's demand outstrips domestic supply, despite being third largest producer. Trials in the region and wider Queensland (Rockhampton) proving successful</p>					
DRIVERS OF GROWTH <ul style="list-style-type: none"> - Growing demand for Japanese cuisine globally - Demand for healthy spreads and alternative "nut" spreads - QSR (Quick Serve Restaurants) use on burger buns - One of highest oil contents of any seed 	GROWING CONDITIONS <ul style="list-style-type: none"> - Dry arid, tropical and subtropical climates - Requires hot conditions during growing period for maximum yield - Varieties suiting central Queensland and Northern Australia have been developed - Tolerant against drought, high temperatures and excessive rainfall, though not water logging 				
VALUE-ADDED OPPORTUNITIES <ul style="list-style-type: none"> - Roasted or raw seeds - Oil - Paste (tahini) - Hummus - Salad dressing - Muesli, snack bars, breads, crackers ingredient - Sushi ingredient - Hamburger bun topping 	KEY RISKS & SENSITIVITIES <ul style="list-style-type: none"> - Allergy considerations in shared processing facilities - Need to reach scale - No feeding value in stubble - Need specialised machinery to avoid significant losses at harvest - Weed control is issue - Market demand is better for sesame oil than sesame seeds 				
KEY COMPETITORS <table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS/PRODUCERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Other seeds and grains - Other plant oils - Other dips and dressings </td> <td> <ul style="list-style-type: none"> - India - Sudan - Ethiopia - Nigeria - Myanmar - Tanzania - China - Togo </td> </tr> </tbody> </table>	DOMESTIC	EXPORTERS/PRODUCERS	<ul style="list-style-type: none"> - Other seeds and grains - Other plant oils - Other dips and dressings 	<ul style="list-style-type: none"> - India - Sudan - Ethiopia - Nigeria - Myanmar - Tanzania - China - Togo 	WHAT YOU WOULD NEED TO BELIEVE <ul style="list-style-type: none"> - There is demand for safe and secure supplier of premium sesame seeds - Can achieve scale to justify specialised equipment - North West Queensland can produce high quality seeds to supply to QSR/food service - Research into suitable varieties for region by CSIRO will continue - Able to successfully grow the black varieties (oil 5x the value)
DOMESTIC	EXPORTERS/PRODUCERS				
<ul style="list-style-type: none"> - Other seeds and grains - Other plant oils - Other dips and dressings 	<ul style="list-style-type: none"> - India - Sudan - Ethiopia - Nigeria - Myanmar - Tanzania - China - Togo 				

- 1 Elevator Pitch
- 2 Drivers of Growth
- 3 Value-added Opportunities
- 4 Key Competitors - Domestic Products
- 5 Key Competitors - Major Exporters/Producers
- 6 Growing Conditions
- 7 Key Risks and Sensitivities
- 8 What You Would Need to Believe

Products were ranked qualitatively to give an overall ‘fit with regional conditions’ score



Identified characteristics that act as markers for potential success	
<ul style="list-style-type: none"> - Is there a high initial capital outlay required? - Can competitors easily follow suit and flood the market? 	Capital intensive to produce
<ul style="list-style-type: none"> - Can the product be harvested by “one man and a big machine”? 	Mechanically harvested
<ul style="list-style-type: none"> - Does the product thrive in a hot, dry climate? - If the irrigation broke for, say, a week, would the product die? 	Hot, dry environment product
<ul style="list-style-type: none"> - Is the product robust and non-perishable? - Does the product require refrigeration or immediate processing 	Trucking/shipping friendly
<ul style="list-style-type: none"> - Do straightforward opportunities exist to add value to the product? - Is there a multi-stage value chain with clear steps and opportunities? 	Value-added opportunities
<ul style="list-style-type: none"> - Are the top importers key, high value markets for Australia? 	Attractive high value markets
<ul style="list-style-type: none"> - Have the top agribusiness firms invested in this product? 	Large agribusiness involved
<ul style="list-style-type: none"> - Do robust, well-developed mechanical harvesting systems exist? 	Proven, scalable production model
<ul style="list-style-type: none"> - Are the top producers or exporters countries that QLD can compete with? - Are there challenges with current suppliers? 	Attractive competitive set
<ul style="list-style-type: none"> - Are the right varieties already in the country? - Has there been investment in breeding/genetics for commercial production? 	High performance genetics available
<ul style="list-style-type: none"> - Are the production systems and technologies available in QLD/Australia? - Alternatively can new entrants leverage similar production systems where QLD has strength? 	Required skills for success
<ul style="list-style-type: none"> - Is the country of origin an integral part of product marketing? - Would major buyers (e.g. multinationals) have supply concerns? 	Leverage country reputation



'Indicated Market Demand' was calculated from global trade data for the 100 products

EXAMPLE PAGE

SEE APPENDIX FOR COMPLETE DATA SET

MEAT 01



	Global Trade Value (US\$, m. 16)	10y CAGR % (16-18)	3y CAGR Value (%) (11-18)	20y ABS Value (US\$, 06-18)	3y ABS Value (US\$, 06-18)	\$/kg (US\$, 18)	10y CAGR \$/kg (US\$, 06-18)	3y CAGR \$/kg (US\$, 11-18)	SCORE
020120 Beef, chilled carcass	\$1,751	0%	0%	-11	840	\$1.78	-1%	-4%	○
020220 Beef, chilled bone in	\$2,995	0%	0%	3480	-11,491	\$4.08	0%	3%	●
020130 Beef, chilled boneless	\$14,567	0%	2%	\$1,281	\$1,036	\$6.68	0%	-2%	●
020230 Beef, frozen carcass	\$108	-6%	-10%	-97	-90	\$1.97	1%	-5%	○
020220 Beef, frozen bone in	\$1,373	14%	-10%	\$1,001	3926	\$3.77	4%	2%	●
020230 Beef, frozen boneless	\$8,120	7%	2%	\$8,265	\$1,661	\$1.80	1%	-1%	●
020111 Pork, chilled carcass	\$2,040	0%	-5%	340	5466	\$1.81	-1%	3%	○
020112 Pork, chilled cuts	\$1,542	0%	-4%	1842	5,098	\$1.83	-2%	-5%	○
020119 Pork, chilled ribs	\$8,680	0%	-2%	\$1,702	3711	\$1.79	-1%	-4%	●
020121 Pork, frozen carcass	\$120	-12%	-24%	-318	-348	\$1.89	0%	-5%	○
020122 Pork, frozen ribs	\$1,330	7%	0%	2525	3706	\$1.88	0%	-4%	●
020129 Pork, frozen ribs	\$11,487	0%	-1%	\$4,308	6477	\$2.42	0%	-4%	●
020430 Sheep, chilled carcass	\$761	1%	-2%	379	810	\$3.41	1%	-2%	○
020421 Sheep, chilled carcass	\$274	11%	2%	\$177	112	\$2.01	0%	-1%	●
020422 Sheep, chilled bone-in	\$1,024	0%	-1%	\$248	-541	\$8.88	2%	-4%	●
020423 Sheep, chilled boneless	\$493	0%	-1%	\$225	-514	\$8.15	0%	-2%	●
020430 Lamb, frozen carcass	\$72	-4%	0%	-37	-31	\$4.48	0%	0%	●
020441 Sheep, frozen carcass	\$85	0%	-1%	-54	-124	\$2.94	4%	0%	●
020442 Sheep, frozen bone-in	\$1,874	0%	-2%	324	227	\$1.71	0%	-2%	●
020443 Sheep, frozen boneless	\$793	1%	-4%	\$177	-190	\$3.37	0%	-5%	●
020450 Goat, chilled or frozen	\$115	0%	2%	183	348	\$5.76	1%	0%	●
020500 Horse	\$38	0%	0%	-113	-188	\$3.66	2%	-5%	○
020610 Beef, chilled offal	\$854	7%	1%	-501	578	\$3.84	0%	-1%	○
020621 Beef, frozen tongue	\$523	0%	2%	\$143	325	\$4.82	2%	-6%	●
020622 Beef, frozen liver	\$214	0%	0%	57	108	\$1.91	0%	-4%	○
020629 Beef, frozen offal	\$1,818	11%	0%	\$1,241	-346	\$2.07	4%	0%	●
020630 Pork, offal chilled	\$155	1%	0%	\$111	-391	\$3.61	0%	-7%	●
020641 Pork, frozen liver	\$54	-1%	0%	-53	-129	\$5.57	-2%	-4%	○
020649 Pork, offal frozen	\$4,221	10%	0%	\$1,221	\$1,120	\$1.94	0%	2%	●
020680 Sheep, chilled offal	\$25	0%	0%	54	58	\$1.89	0%	-5%	○

Source: UN Comtrade databases, Coriolis definitions, classification and analysis

CORIOLIS 01

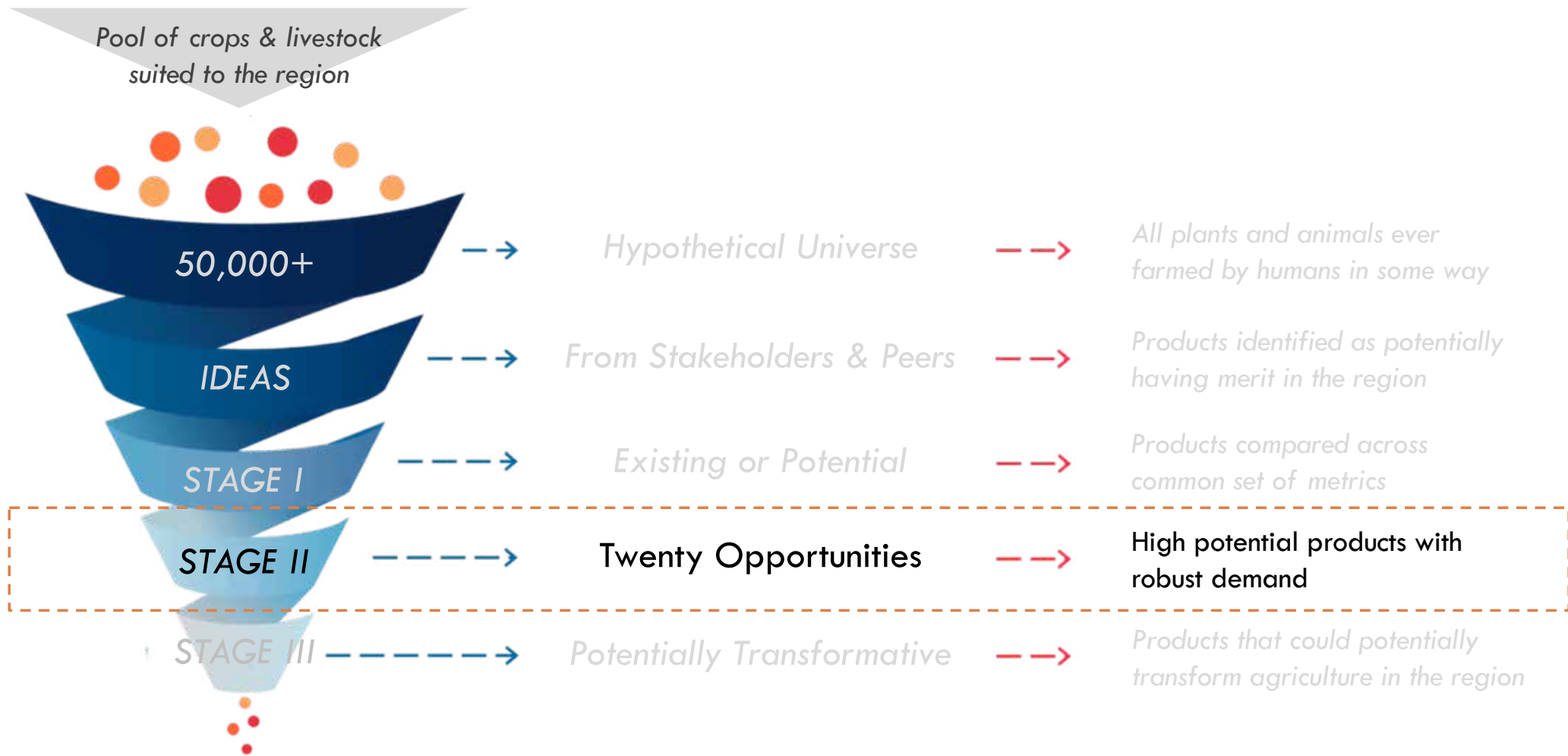
INDICATED MARKET DEMAND ●

Twenty products with (A) a large attractive market and (B) a good fit with regional conditions were passed into Stage II

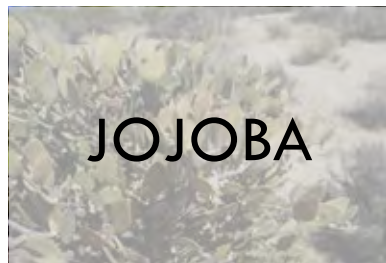
<p>(A)</p> <p>Is there a large and attractive global market?</p> 	<p>GRAPES</p> <p>MANGO</p> <p>Flaxseed</p> <p>Prawn</p> <p>Chia#</p> <p>Chickpea</p> <p>Soybean</p> <p>Date</p> <p>Pomegranate#</p> <p>Tamarind#</p> <p>Rice</p>	<p>Baobab#</p> <p>Eucalyptus#</p> <p>Amaranth#</p> <p>Marula#</p> <p>Crocodile#</p> <p>Hemp#</p> <p>Stevia#</p> <p>Coriander</p> <p>Quinoa#</p> <p>Desert Date#</p>	<p>Teff#</p> <p>Custard Apple#</p> <p>Jackfruit#</p> <p>Native Rice#</p> <p>Coconut</p> <p>Pitaya#</p> <p>Fonio#</p> <p>Mate</p> <p>Peppercorn</p> <p>Native Foods#</p>	<p>GOATMEAT</p> <p>GRAIN SORGHUM</p> <p>GOAT MILK#</p> <p>PEANUT</p> <p>PISTACHIO</p> <p>SAFFLOWER</p> <p>LENTIL</p> <p>MUNGBEAN</p>	<p>SESAME</p> <p>LEMON/LIME</p> <p>JOJOBA#</p> <p>SHEEP MILK#</p> <p>CASTOR</p> <p>REDCLAW#</p> <p>SHEA#</p> <p>COTTON</p>
	<p>Okra#</p> <p>Horned Melon#</p> <p>Snake Bean#</p> <p>Yam</p>	<p>Barramundi#</p> <p>Buffalo Milk#</p> <p>Lucerne</p> <p>Maize</p> <p>Onion</p> <p>Sweet Corn</p> <p>Sweet Potato</p> <p>Goat Fibre#</p> <p>Bambatsi#</p> <p>Lablab#</p>	<p>Pump/Squash</p> <p>Silver Perch#</p> <p>Chilli</p> <p>Melon</p> <p>Cashew</p> <p>Camel Meat#</p> <p>Blue Agave</p> <p>Ostrich Meat#</p> <p>Canary Grass</p> <p>Oil Palm</p>	<p>Buffalo Meat#</p> <p>Emu Meat#</p> <p>Alpaca Fibre#</p> <p>Taro</p> <p>Bambara#</p> <p>Fenugreek#</p> <p>Wild Pig</p> <p>Bitter Melon#</p>	<p>CASSAVA</p> <p>MUSTARD</p> <p>Canola</p> <p>Sugarcane</p> <p>Kangaroo Meat#</p> <p>Camel Milk#</p> <p>Guar#</p> <p>Sunflower</p> <p>Cucumber</p>
			<p>Pearl Millet</p> <p>Rabbit Meat</p> <p>African Mahogany*</p> <p>Indian Sandalwood*</p> <p>Kenaf*</p> <p>Leucaena*</p> <p>Sunn Hemp*</p> <p>Triodia*</p> <p>Jute*</p> <p>Mallee*</p> <p>Pongamia*</p>		<p>Tung</p>
	<p>(B) Does it have a good fit with regional conditions?</p> 				

*No individual trade code exists, market demand not calculated; #No individual trade code exists, similar product code used for indicative market demand, see profile for more detail. Source: Coriolis analysis

These twenty products were developed and profiled in *STAGE II*



The 20 opportunities are spread across a wide range of products



Stage II profiles each product individually from a whole of value-chain perspective by answering a set of common questions

EXAMPLE: SHEA

ALL 20 PROFILES PROVIDED LATER IN DOCUMENT

WHAT IS IT?	WHAT IS THE MARKET SITUATION?	WHAT CAN YOU DO WITH IT?	WHAT IS DRIVING ITS SUCCESS?	WHAT DOES DR. FOOD THINK?
 <p>What is sheaf? What is shea butter?</p>	 <p>What is the market situation?</p>	 <p>What can you do with it?</p>	 <p>What is driving its success?</p>	 <p>What does Dr. Food think?</p>
WHERE IS IT CURRENTLY PRODUCED?	HOW IS THE SUPPLY CHAIN ORGANISED?	WHY DO IT IN NW QLD? WHY WOULD IT WORK?	HOW COULD WE DO IT?	WHO ARE THE POTENTIAL COMMERCIAL PARTNERS?
 <p>Where is it currently produced?</p>	 <p>How is the supply chain organised?</p>	 <p>Why do it in the NW QLD? Why would it work in the NW QLD?</p>	 <p>How could we do it?</p>	 <p>Who are the potential commercial partners?</p>

Attractive market metrics are necessary for success; key metrics are (1) large, (2) growing, (3) pay high prices and (4) have challenging existing suppliers



LARGE MARKET

- Global Trade Value; US\$m
- Is the product heavily traded globally?
- Demonstrated, proven market demand for product
- High global trade value reduces market risk



GROWING TRADE

- Global Trade Value Growth; 10y CAGR[^]
- Is the product growing its absolute export value over the medium /long term?
- Products growing their export dollars over a long period are creating wealth and employment



HIGH RELATIVE PRICES

- High average Export Price; US\$/kg
- Does the product possess a high value per unit relative to all other agricultural products?
- All other things being equal, higher value products will be more attractive to investors



CHALLENGING SUPPLIERS

- 5 Key Producers/Exporters
- Is the world supply dominated by challenging or inconsistent regions?
- Markets value consistent quality and reliable supply
- Australia is the only developed country with Aw, BSh, BWh climates*

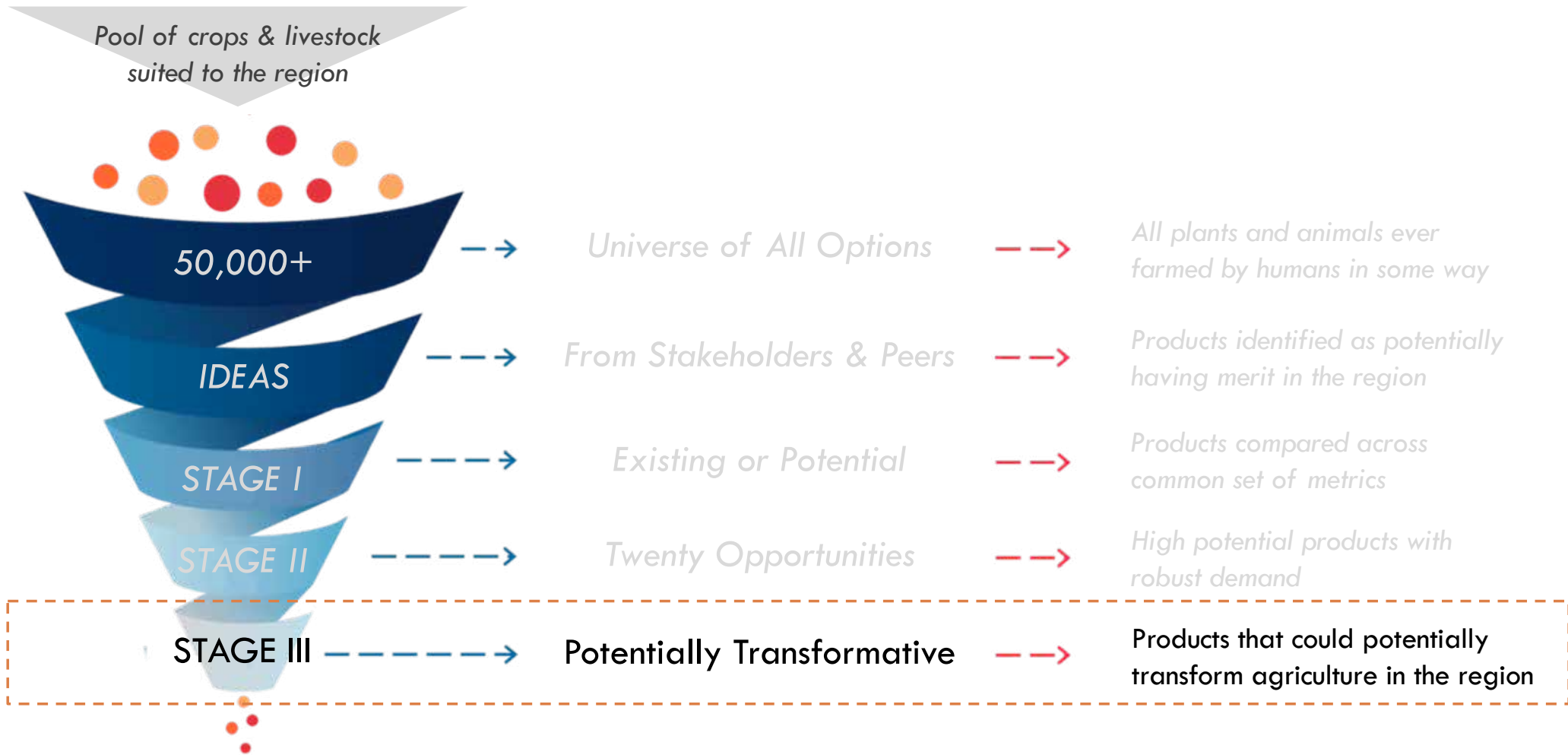
[^]CAGR = Compound Annual Growth Rate; *See page 18 for details. Source: Coriolis analysis. Photo Credit: Coriolis purchased; Pixabay CC0

The twenty products all target attractive markets

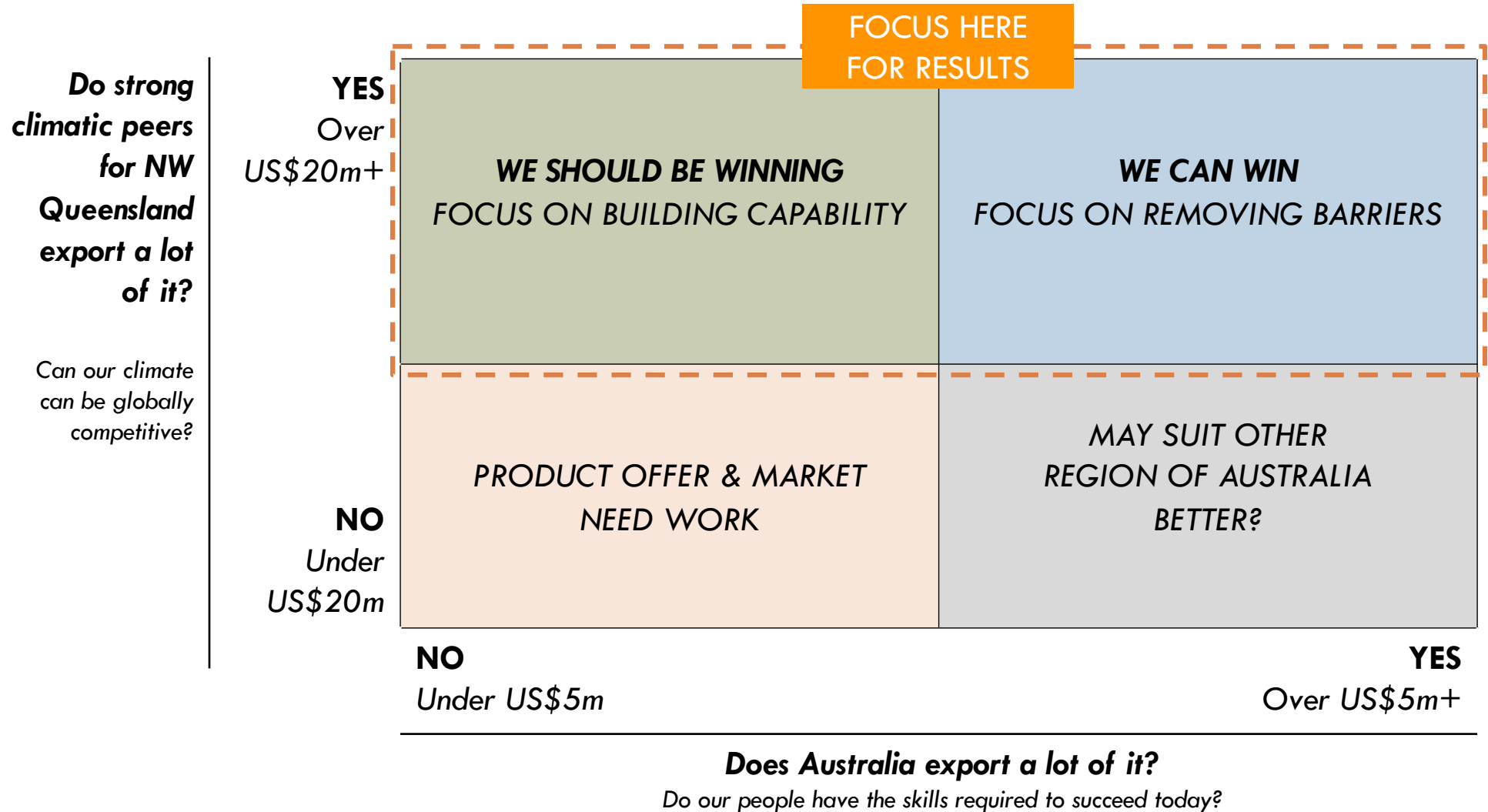
OPPORTUNITY	HS CODE (S) USED	LARGE MARKET	GROWING TRADE	HIGH RELATIVE PRICES	CHALLENGING SUPPLIERS
		Global Trade Value US\$; m; 2016	Trade Value Growth 10y CAGR; 2006-16	Average Export Price US\$/kg; 2016	Top Five Producers/Exporters; 2016
Shea*	151590	\$1,653	7%	\$2.60	Nigeria, Mali, Burkina Faso, Ghana, Cote d'Ivoire
Sesame	120740 / 151550	seed \$2,337 / oil \$235	9% / 8%	\$1.20 / \$3.83	India, Sudan, Ethiopia, Nigeria, Myanmar
Mungbean	071331	\$1,676	26%	\$1.77	Myanmar, China, Tanzania, Indonesia, Egypt
Redclaw Crayfish*	030622	All lobster \$1,534*	7%	\$13.32	China, United States, Bangladesh, Thailand
Pistachio	080250	\$2,320	7%	\$8.29	United States, Iran, Syria, China, Turkey
Goatmeat	020450	\$335	9%	\$5.76	Australia, Ethiopia, China, France, Pakistan
Sheep Milk*	040690	All milk \$15,508*	2%	\$4.42	Europe, China, Middle East, New Zealand
Goat Milk*	040610	All cheese \$5,610*	7%	\$3.06	Europe, New Zealand, China, India
Table Grape	080610	\$8,213	5%	\$2.07	Chile, United States, Italy, Peru, China
Mango	080450	\$2,364	9%	\$1.55	India, China, Kenya, Thailand, Indonesia, United States
Lemon/Lime	080550	\$3,534	10%	\$1.29	Argentina, Spain, Mexico, Turkey, South Africa
Castor	120730 / 151530	\$11 / \$723	12% / 9%	\$0.70 / \$1.19	India, Myanmar, Israel, Paraguay, Pakistan
Safflower*	120760 / 151211 / 151219	seed \$66/ crude oil \$6,220/ refined \$2,205	16% / 12% / 5%	\$0.35 / \$0.93 / \$0.86	Kazakhstan, India, United States, Mexico, Argentina
Peanut	120210 / 120220	\$473 / \$2,357	11% / 10%	\$0.88 / \$1.20	India, China, United States, Israel, Argentina
Lentil	071340	\$2,646	15%	\$0.83	Canada, United States, Turkey, UAE
Mustard	120750	\$203	6%	\$0.78	Canada, Germany, Ukraine, Russia, India
Grain Sorghum	100700	\$1,754	10%	\$0.20	United States, Sudan, Argentina, Uganda, France, Ukraine
Cassava	071410	\$1,305	7%	\$0.19	Nigeria, Thailand, Indonesia, Brazil, Ghana
Cotton	HS52 (All)	\$38,407	-1%	\$3.09	China, United States, India, Pakistan, Brazil
Jajoba*	151590	oil \$1,653	7%	\$2.60	Argentina, Israel, Mexico, Peru, United States

* Non specific trade code used. Note: Shea and Jajoba use same trade code (Shea known to be larger). Source: UN Comtrade; UN FAOSTAT; Coriolis analysis

STAGE III identified a short list of products with the potential to be transformative for regional agriculture



A simple model suggests where NW Queensland should focus efforts



Applying this model delivers clear guidance for where North West Queensland should focus

<p>Do strong climatic peers for NW Queensland export a lot of it?</p> <p><i>Can our climate can be globally competitive?</i></p>	<p>YES Over US\$20m+</p>	<p>Cassava Castor Jojoba Sesame Shea</p> <ul style="list-style-type: none"> - "Low hanging fruit" - Ready markets looking for new sources - Low/no irrigation - Implementation the key challenge 	<p>FOCUS HERE FOR RESULTS</p> <ul style="list-style-type: none"> - "Do it where it makes sense commercially" - Strong existing Australian capabilities - May require reliable water and/or irrigation 	<p>Cotton Chickpea Goatmeat Mango Mungbean Peanut Grain Sorghum</p>
	<p>NO Under US\$20m</p>	<p>Goat Milk Redclaw Crayfish Sheep Milk</p> <p><i>Appears to need significant product & market development work</i></p>	<p><i>May suit other regions of Australia better</i></p>	<p>Lemon/Lime Lentil Mustard Safflower</p>
	<p>NO Under US\$5m</p>			<p>YES Over US\$5m+</p>
	<p>Does Australia export a lot of it? <i>Do our people have the skills required to succeed today?</i></p>			

Three products – sesame, mungbean and shea – were identified for further analysis targeting new investment

WE SHOULD BE WINNING FOCUS ON BUILDING CAPABILITY	WE CAN WIN FOCUS ON REMOVING BARRIERS
Cassava	Cotton
Castor	Chickpea
Jojoba	Goatmeat
Sesame	Mango
Shea	Mungbean
	Peanut
	Sorghum

Coriolis analysis and consultation with client



THE TWENTY OPPORTUNITIES

02

- + Overview
- + What is it?
- + What is the situation?
- + What can you do with it?
- + What is driving its success?
- + Where is it produced?
- + Why would it work?

The twenty opportunities are profiled across ten pages each

	Page
Cassava	43
Castor	54
Cotton	65
Goatmeat	76
Goat Milk	87
Grain Sorghum	98
Jjoba	109
Lemon/Lime	120
Lentil	131
Mango	142
Mungbean	153
Mustard	164
Peanut	175
Pistachio	186
Redclaw Crayfish	197
Safflower	208
Sesame	219
Shea	230
Sheep Milk	241
Table Grape	252



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Extremely drought resistant crop, successfully grown on marginal soils such as found in North West Queensland.
Demand in Asia for the product in multiple forms (e.g. starch).
Can leverage learnings from large joint venture project underway in Burdekin.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- 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)

VALUE-ADDED OPPORTUNITIES

- 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

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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

GROWING CONDITIONS

- Tropical and subtropical regions
- Extremely drought resistant
- Perennial but cultivated as an annual

KEY RISKS & SENSITIVITIES

- 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)

WHAT YOU WOULD NEED TO BELIEVE

- Queensland’s CassTech’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
- North West Queensland can compete with lower cost producers

What is cassava?



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 subtropical climates
Uses	Root
Origin	Western Brazil
Established in AU	1979 first commercial enterprise

What is the market situation?



Gross production value was US\$39,480m globally in 2016



23.8m hectares were harvested globally in 2016



China is the largest market, importing 7.7m tonnes in 2016



Average yield globally was 11.9 tonnes per hectare in 2016



282m tonnes were produced globally in 2016



Global trade value was US\$1,305m in 2016 for fresh and dried cassava

What can you do with it?



OVEN FRIES



FLOURS & STARCH



SWEETENER



ALCOHOLIC SPIRITS



SNACK FOODS



GLUTEN FREE PRODUCTS

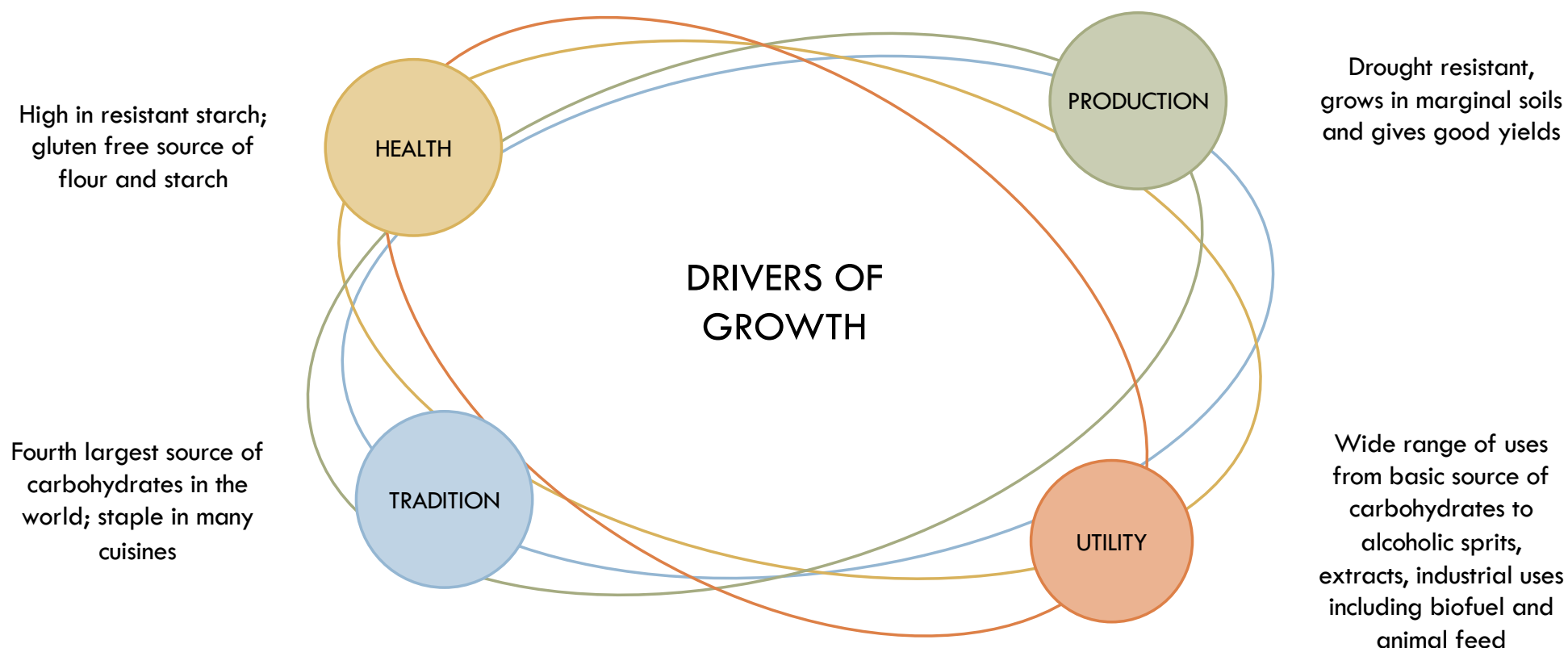


TAPIOCA



BIOFUELS

What is driving its success?



What does Dr. Food think?



“Like sorghum, cassava ticks a lot of the boxes required by those with special dietary concerns, not least that it is gluten-free, deemed to be a decent replacement for wheat flour in baking (albeit with caveats), and it’s paleo!

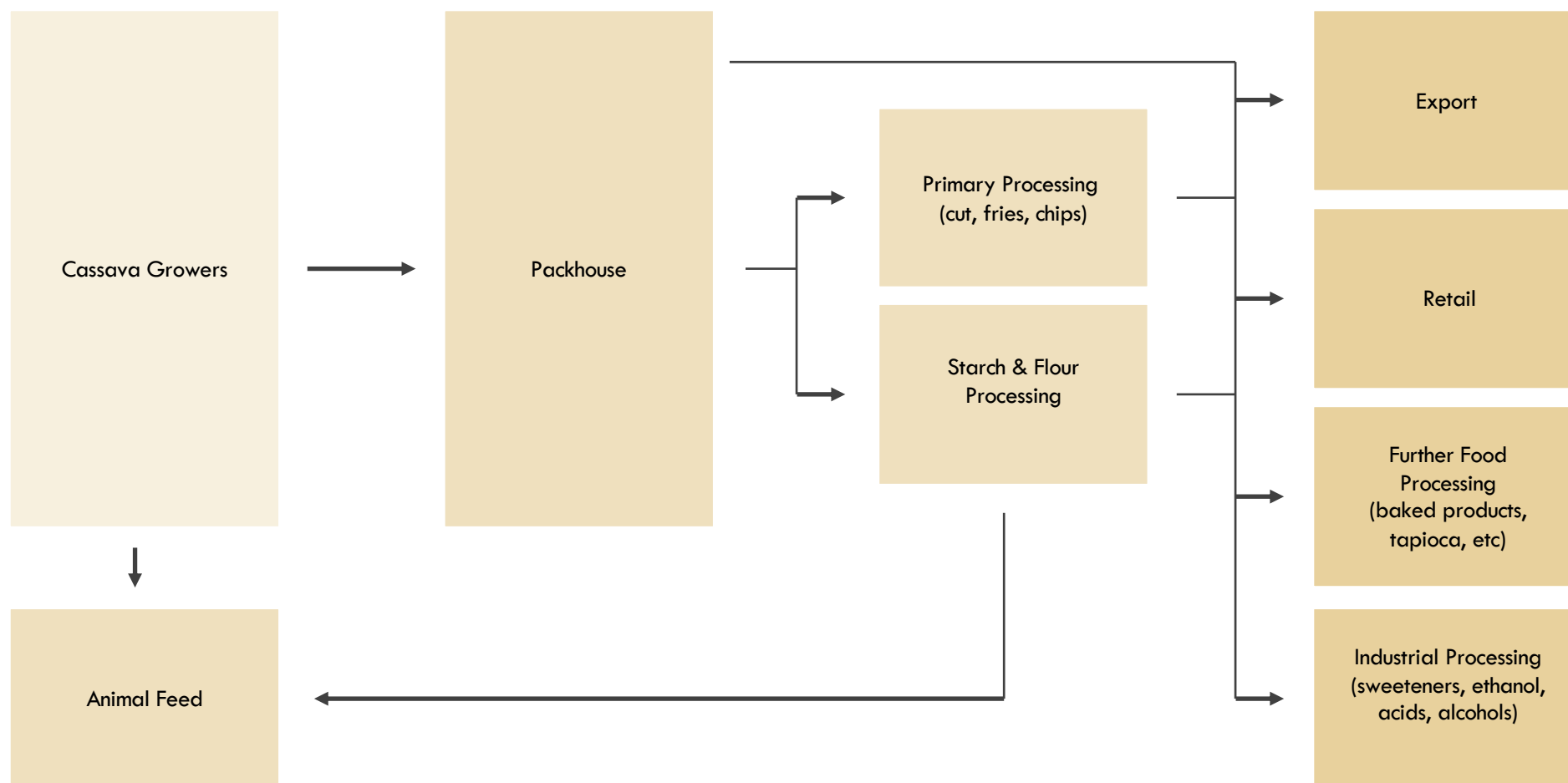
New Australians from Africa and Asia are familiar with cassava and cassava chips fit well, albeit as niche, in the rapidly growing natural snack category.

Internationally, cassava has an important place as a livestock feed and this would suit the crop in North West Queensland as a very storable and nutritious cattle feed. Domestic markets offer the best value propositions for North West Queensland cassava producers.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD climate

- Successfully produced by dry, climatic peers
- Long history of intensive horticulture in state
- Leverage learnings from Burdekin project

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Increasing demand for biofuels globally
- China demands outstrips domestic supply
- Extremely versatile source of starch

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant cassava growing sector, leading to at-scale starch processing industry supplying Australian & export markets

1

Undertake research trials in region using latest in agronomy and agtech resources

Select suitable site for commercial operation

Invest in variety and yield research (ideally in partnership with China)

2






Invest in first stage of commercial scale cassava growing operation

Develop local primary processing operations (drying and chipping for export)

3

Investigate potential partners for joint venture in starch processing facility

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
	1993	Haikou, China Public SHA:600238	1,000	Health wines, beverages, food	China	http://www.yedao.com Health wine, liquor, food and beverage, real estate development and trade, and investment company; invested in US\$71m cassava based ethanol plant in 2014 in partnership with Sinopec
	1998	Chaoyang, China Public SSE:600028; NYSE:SNP	RMB2,400b (2017)	Fuel, lubricants, oil refining, chemicals, retail	China Global	http://www.sinopecgroup.com Largest oil and petrochemical supplier; second largest oil and gas producer in China; largest refining company and second largest chemical company in world
	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; recent investment in using by-products in animal feed; 90% export
	1969	Bangkok, Thailand	N/A	Tapioca, jute, starch, rice	Thailand	http://www.kengsenggroup.com/en/about_us.php Cassava derivatives manufacturer



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Can withstand long periods of drought. “Grows like a weed” throughout the State.
Wide range of uses across numerous industries.
China largest importer globally.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- High demand from China for its manufacturing industry
- Demand for natural pharmaceutical ingredients
- Demand for food processing ingredients
- Wide range of uses across many industries

VALUE-ADDED OPPORTUNITIES

- Oil pressed from seed
- Food additives, flavourings, preservatives
- Pharmaceutical uses
- Chocolate and confectionery ingredient
- Mould inhibitor
- Packaging
- Used in manufacturing of soaps, lubricants, hydraulic fluids, paints, dyes, coating, inks, plastics, waxes, nylon, pharmaceuticals, perfumes, biodiesel
- Animal feed (meal)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other manufacturing oils 	<ul style="list-style-type: none"> - India (seed, oil) - Mozambique - China - Brazil - Myanmar - Israel (seed for sowing?) - Paraguay - Pakistan - Netherlands (oil)

GROWING CONDITIONS

- Warm and subtropical regions
- Arid and semi arid regions
- Abundant along gullies, watercourses, floodplains and roadsides, and on disturbed land or wasteland
- Yields of 350-650kg of oil per hectare can be obtained in arid and semi arid regions with no crop management
- Perennial crop in tropics, annual in temperate zones of China and India

KEY RISKS & SENSITIVITIES

- Classified as invasive species in Queensland, but not prohibited or restrictive
- Seed hull contain ricin, poisonous to humans and plants; leaves can cause neuro muscular disorders
- India dominates oil production and exports; China dominates import markets
- Need immediate scale in order to build processing plant
- Castor seeds have better market demand than castor oil; castor oil markets are more attractive (China, USA, Europe)

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers
- Scale required for oil processing can be reached in order to maximise value of crop
- Can be commercially grown despite being a non prohibited or restricted invasive species under *Biosecurity Act 2014*

What is castor oil seed?



Common names	Castor oil plant, castor bean, palm of Christ
Scientific name	<i>Ricinus communis</i>
Type of plant	Suckering perennial shrub
Cultivation cycle	140-180 days

Suited climate	Semi arid, arid, subtropical and tropical climates
Uses	Oil from seed (food, pharmaceutical, industrial), animal feed
Origin	Tropical Africa and Asia
Established in AU	Prior to 1803

What is the market situation?



Global trade value of castor oil seeds was \$11m in 2016



~1.26m hectares harvested globally in 2016



China is largest importer globally



India is the largest producer globally



~1.78m tonnes of castor oil seed produced globally in 2016



Global trade value of castor oil was US\$723m in 2016

What can you do with it?



EDIBLE OIL



SKIN CARE



PERFUME INGREDIENT



ENGINE OILS & LUBRICANTS



MEDICINAL



SOAP

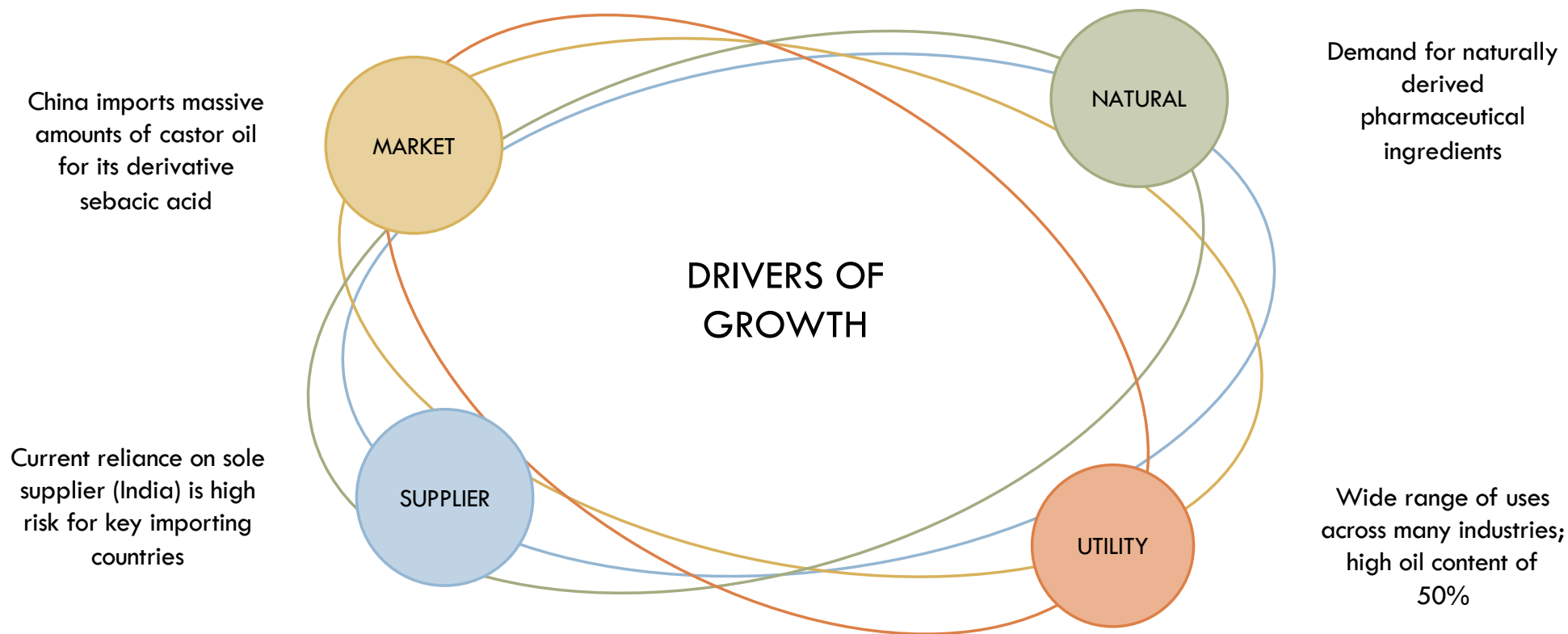


EMULSIFIER PGPR



SEBACIC ACID

What is driving its success?



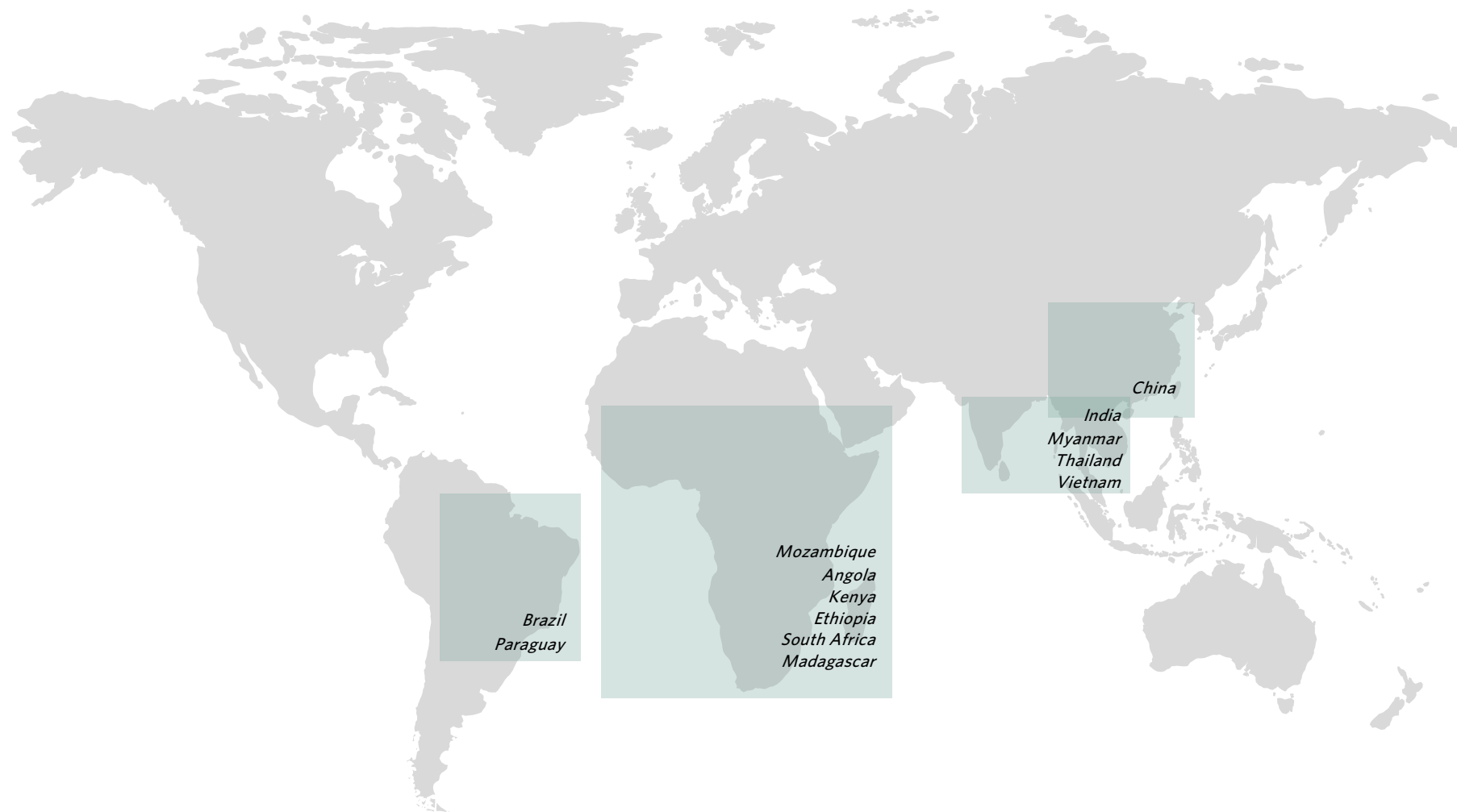
What does Dr. Food think?



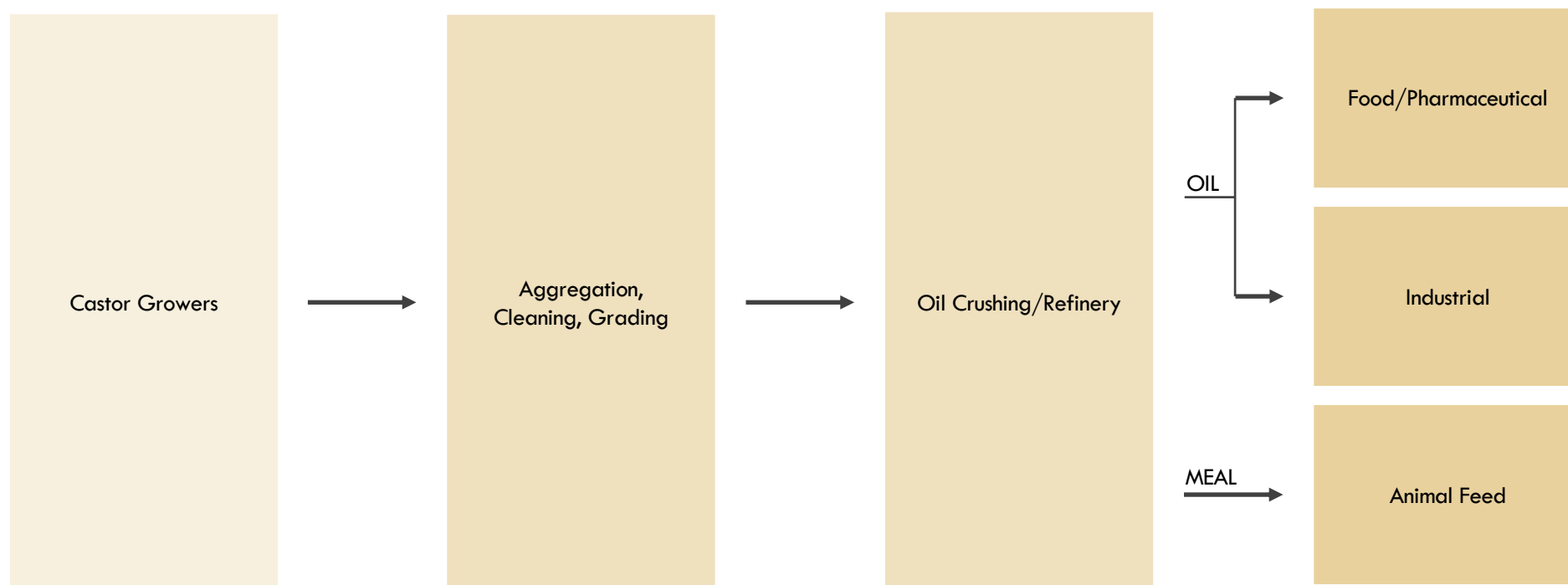
“Castor oil has a dark side to its history – once used as a form of punishment to induce diarrhoea in recalcitrant Indian servants by the British Raj and Dr. Food remembers reluctantly as a child being a recipient of teaspoons of the oil to cure constipation. Grannies were great believers in its purgative powers!

But, Hallelujah, castor oil is having a renaissance driven by burgeoning consumer interest in natural beauty products: for women, split ends are a horror that can be avoided through using an emollient combination of castor oil and shea butter – look for Australian, South Korean, Japanese cosmetic companies as “natural” business partners; for men, it’s fashionable to be hirsute about the chin and it’s no longer wussy to be concerned about looking good! A combination of castor oil and jojoba produces electrifying beard and facial skin condition – goodbye Mr. Tanned Leather Face, hello Sir Caring Baby Face!”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD climate

- Successfully produced by dry, climatic peers
- Grows successfully as invasive plant throughout region
- Long history of oilseed production in Australia; can leverage expertise

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- China demands outstrips domestic supply
- Global trade value in castor oil was US\$1b in 2017*
- Countries are looking to reduce reliance on single supplier (India)

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

* Some countries yet to report; UN Comtrade. Source: Coriolis analysis. Photo credit: Dollar Photo purchased by Coriolis

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant cropping sector based on castor oil, leading to at-scale castor oil processing industry supplying Australian & export markets

1

Investigate varieties and sources of castor plants from within Australia

Determine best practice production systems (research trip to India)

Secure sites for trial plots (council waste water and land)

Investigate supply chain and potential markets

2

Develop trial plots across North West Queensland region






Secure sites for commercial production

3

Invest in first stage of commercial scale castor growing operation

Investigate potential partners for joint venture in oil crushing facility

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 ALBERDINGK BOLEY	1828/ 1989	Krefeld, Germany Private Family	€190m (2017) 400	Castor oil, linseed oil plastic and polyurethane dispersions, resins	Europe USA China	http://www.alberdingk-boley.de Chemical manufacturer and marketer; only castor oil producer in Europe; JV castor oil processing in Thailand
 N.K. Industries Ltd.	1983	Gujarat, India Public	₹13,406 (2018)	Castor oil, derivatives, de oiled cake	India	http://www.nkindustriesltd.com Crushing capacity of 1,000-1,200 MT per day; refining and solvent extraction of 500-600 MT per day
 IHOIL CHEMICALS CO., LTD.	1872/ 1946	Yokkaichi, Japan	N/A	Castor oil, derivatives, resins, lubricants, additives	Japan China	http://www.itoh-oilchem.co.jp Manufacturing and selling of castor oil, its derivative and various specialty chemicals
 For a healthy growing India	1999	Gujarat, India JV Adani Group & Wilmar International	US\$2.88b	Edible oils, rice, sou, pulses, besan, vanaspati, specialty fats, lauric, oleo chemicals, lecithin, castor oil and derivatives	India	https://www.adaniwilmar.com 6 th largest food company in India; refineries in 17 locations across India; 8 crushing units; 18 toll packing units; refining capacity of over 12,000 tonnes per day; seed crushing of 7,500 tonnes
 LANTIAN FINECHEM	1992	Xingtai City, China Public 831625	N/A	Surfactants, pesticide auxiliarg, detergent auxiliary, and textile, printing and dyeing chemicals	China	http://www.ltchem.com Production, processing and polyether type nonionic surfactant-based products integrated enterprise



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Proven to grow in region; also grows all across climatic peer group in large quantities.
Can leverage Australia’s reputation as reliable supplier of very high quality cotton.
Cotton seed by-product (seed) can be utilised by the cattle industry.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Demand for natural fibres
- Demand for animal feed into the cattle industry

VALUE-ADDED OPPORTUNITIES

- Fibre
- Yarn
- Textiles
- Finished garments
- Fishing nets, coffee filters, tents, paper, book binding
- Explosives manufacturing
- Animal feed (cotton seed)
- Cotton seed oil (frying, margarine, soap, emulsifiers, cosmetics, pharmaceuticals, rubber, paint, water proofing agents, candles)

KEY COMPETITORS

DOMESTIC

- Other cotton growing regions in QLD and Australia

EXPORTERS/PRODUCERS

- China
- United States
- India
- Pakistan
- Brazil
- Burkina Faso

GROWING CONDITIONS

- Needs plenty of sunshine, low humidity and long frost free period
- Rainfall of 600 to 1,200 mm required, or irrigation
- Commercial dryland crop in Etheridge Shire + other smaller growers trialing in other regions
- Fairly heavy soils ideally required
- New GM varieties have overcome previous pest issues

KEY RISKS & SENSITIVITIES

- Other major global producers are subsidised by their governments (China, United States)
- Nearest cotton gin is in Emerald, 1,000km from current production
- Need immediate scale in region in order to justify cotton gin

WHAT YOU WOULD NEED TO BELIEVE

- Industry can reach scale needed to justify local cotton gin
- Dryland production will be possible in enough years for industry to be profitable
- Large enough local market for cottonseed as animal feed
- North West Queensland can compete with low cost producers

What is cotton?



Common names	Cotton
Scientific name	<i>Gossypium spp.</i>
Type of plant	Perennial shrub but grown as annual
Cultivation cycle	Maturity takes 180 days

Suited climate	Subtropical and tropical climates
Uses	Cotton fibre, cottonseed animal feed and edible oil
Origin	Americas, Africa, India
Established in AU	1788 with the First Fleet

What is the market situation?



\$2,502m gross value of Australian production in 2017*



557,000 hectares harvested in Australia in 2017



Total world production of raw cotton was 23.2m tonnes in 2017



~1,500 producers in Australia



931,000 tonnes of raw cotton produced in Australia in 2017;
1.67t/ha



763,000 tonnes of raw cotton exported in 2017 worth \$1,787m

What can you do with it?



BALLS, SWABS, BANDAGES



TEXTILES



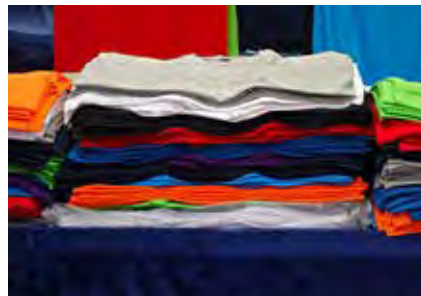
COOKING OIL



SKIN CARE



YARN & STRING



CLOTHING & HOMEWARES

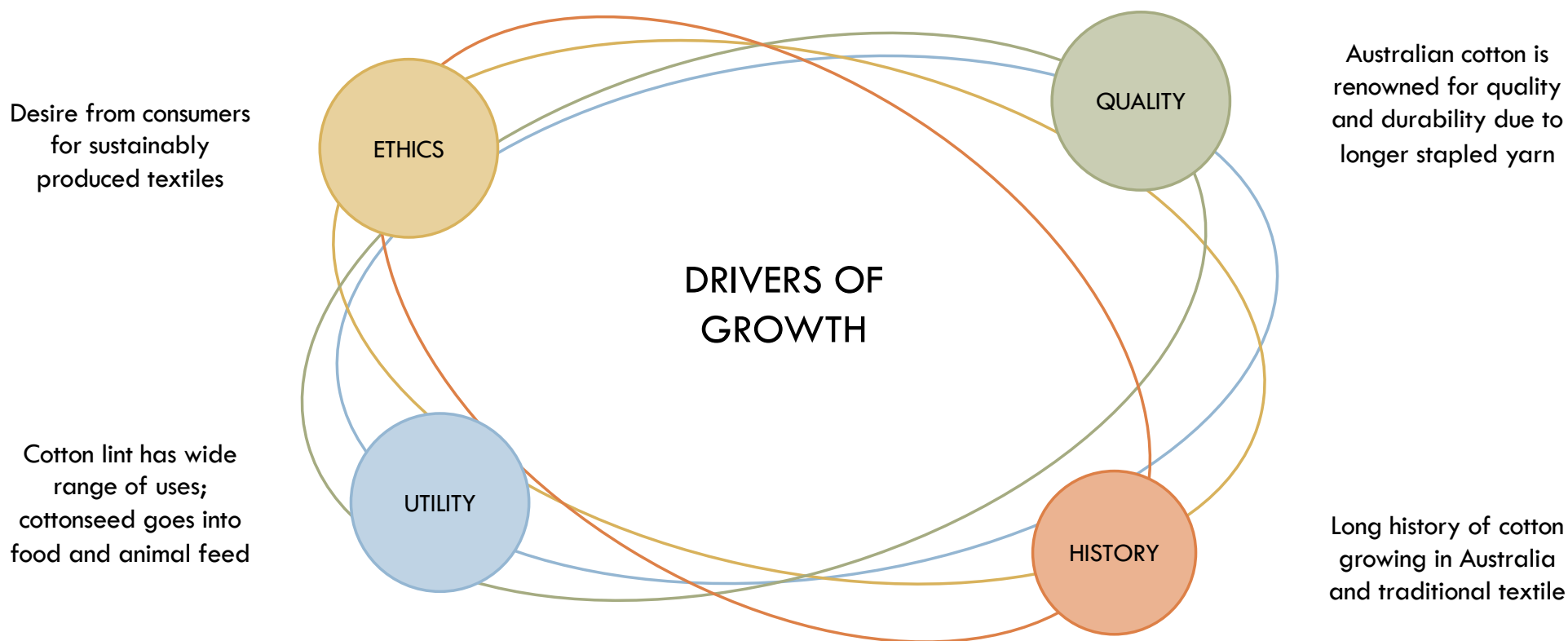


PAPER PRODUCTS



ANIMAL FEED

What is driving its success?



What does Dr. Food think?



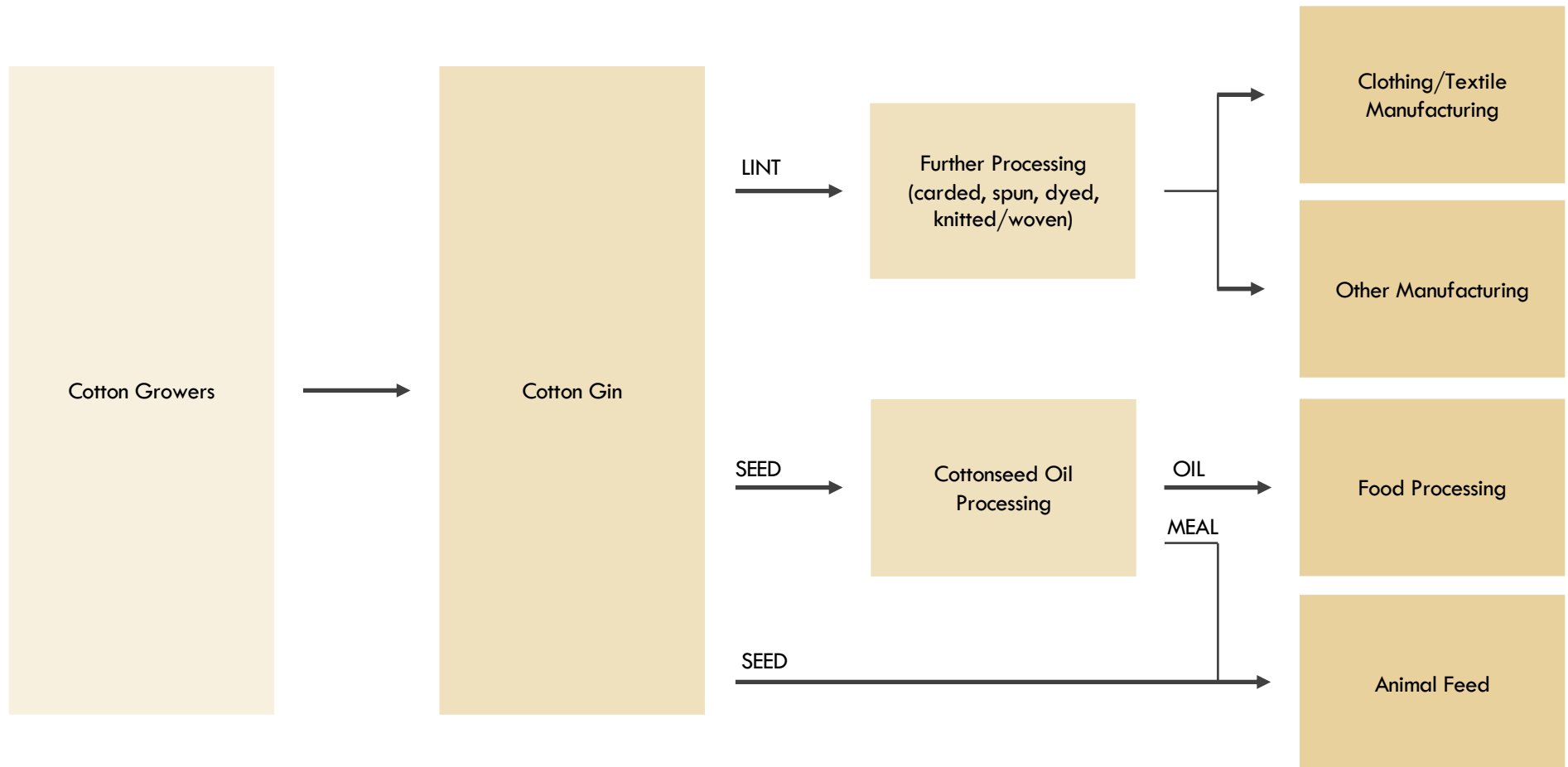
“Must cotton producers simply have to become inured to the swingeing palpitations of commodity price cycles (e.g. upland cotton prices were US\$2.14/kg. in May 2014, \$1.44 in March 2016, only to bounce back to \$2.00 by early-October 2018)? What about a “left field” initiative to escape the commodity trap through emulating the small but nonetheless impressive value-adding actions of QLD’s Tambo Teddies who take wool from local sheep stations and turn it into \$250 teddy bears? Increasingly, consumers seek to benefit themselves and the local community, farmers and the environment through making “mindful choices” when making product purchases.

There is genuine consumer interest in the provenance of ingredients – where/how and by whom is it produced? Is there an opportunity to add value to cotton grown in North West Queensland? Dr. Food envisages a North West Queensland cotton farmers’ regional brand celebrating their sustainably grown cotton, on family farms – personalised pyjamas/T-shirts/underwear designed with panache and carrying the premium-priced status of, say, New Zealand *Icebreaker* merino wool garments, or *R M Williams* boots. These could become ideal gifts that celebrate the best of Australia and close-to-nature, salt-of-the-earth North West Queensland farming families.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

WHY DO WE THINK MARKETS WANT IT?

WHY DO WE THINK WE CAN SELL IT?

Suited to NW QLD climate

Growing demand in desirable markets

Our Unique Value Proposition

- Successfully produced by dry, climatic peers
- Long history of cotton production in the state
- Successfully being grown at small scale in region; more planned enterprises
- Extensive research and development activities in Australia for cotton

- Increasing demand for sustainable textiles
- China demands outstrips domestic supply
- Strong demand from the traditional garment manufacturing countries throughout Asia
- Australia produces high quality, durable, low contamination cotton

- Leverage Australia's reputation as safe and secure producer (reliable, low contamination, high quality)
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant cotton growing sector, leading to at-scale regional cotton gin supplying key export markets

1

Promote benefits of growing cotton to landowners in region

Continue to invest in variety and yield research; especially dryland potential

2

Investigate potential partners for joint venture in cotton gin in region






Investigate potential supply chain for cottonseed oil produced domestically

3

Continue to invest in branding and marketing of "Australian Cotton" to end consumer

Investigate potential partners for joint venture in cottonseed oil production

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 中粮国际 COFCO INTL	2000	Geneva, Switzerland Private COFCO, China Investment Corporation, Hopu, Temasek, IFC, Standard Chartered	\$34b 12,000	Grains, sorghum, pulses, oilseeds, sugar, coffee, cotton, freight	Global	https://www.cofcointernational.com Overseas agriculture business platform for COFCO (China's largest food & agriculture company; operations in 35 countries; COFCO Agri Australia)
 Olam	1989	Singapore Public SGX:O32	SGD26.3b (2017) 72,000	Cotton, almonds, peanuts, pulses, cocoa, dairy, rice, coffee, nuts, spices, sesame, others	Global	http://olamgroup.com Third largest agribusiness in the world; acquired Queensland Cotton in 2007 along with Australian Pulses division
 LDC Louis Dreyfus Company	1851	Rotterdam, Netherlands Private Louis-Dreyfus family	US\$43b (2017) 19,000	Coffee, cotton, dairy, grains, juice, oilseeds, rice, sugar, freight, global markets	Global	http://www ldc.com/global/en/ One of the world's largest agritraders; transported and processed ~81 million tons of agri-commodities in 2017
 GLENCORE AGRICULTURE	2016	Rotterdam, Netherlands Private Glencore (Public: Switzerland; LSE: GLEN, SEHK: 0805, JSE: GLN), CPP Investment Board, bclMC	US\$25b (2017) 14,000	Grain, oilseeds, pulses, sugar, rice, cotton, protein meals, vegetable oils, biodiesel	Global	http://www.glencoreagriculture.com Originating, handling, processing and marketing of agricultural commodities; operations and offices in 35 countries; 6 grain port terminals in Australia; 24,000 ha of cropping land farmed and leased
 Cargill	1865	Minneapolis, United States Private Cargill family 90%	US\$114.7b (2018) 150,000	Commodities (cotton, grain, oilseeds, sugar, palm), food ingredients and applications (cocoa, corn, oils, malt, starches, sweeteners, etc.), meat, poultry and eggs, farmer services, animal feed, energy and industrial, financial	Global	www.cargill.com www.cargill.com.au www.teysaust.com.au Operations in 67 countries; 50% JV Teys Australia

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



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Goat thrive in the region; feral populations exist.
Growing demand for goatmeat pushing up prices.
Australia is world’s largest exporter of goatmeat; can leverage expertise and supply chains.
Australis’s biggest market is United States (66% of exports in 2017).

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	●
Attractive competitive set	●

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Most widely consumed meat in world
- Global demand outstripping supply
- Demand for healthy red meat protein (lean, high in iron)

VALUE-ADDED OPPORTUNITIES

- Fresh, chilled or frozen meat cuts
- Pre-prepared cuts, ready-meal ingredients
- Retail-ready packaging
- Pre-prepared cuts for foodservice
- Jerky
- Pet food industry
- Skins
- Fibre

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Sheep meat - Beef - Pork - Chicken - Other proteins 	<ul style="list-style-type: none"> - Ethiopia - China - France - Pakistan - Sudan - Spain - New Zealand

GROWING CONDITIONS

- Goats tolerate range of climatic conditions; better adapted to limited water intake than sheep or cattle
- Less adapted to cold and waterlogged conditions
- Water sources 6-10km apart; enough to supply entire mob over 4-5 hour period

KEY RISKS & SENSITIVITIES

- Majority of trade is cross border herding in Africa and Middle East
- Wild dog risk in region would necessitate fencing
- Infrastructure will be required in order to convert to producing goats in region

WHAT YOU WOULD NEED TO BELIEVE

- Farming goats is as profitable as rangeland/feral production system
- Demand will continue to grow
- Charleville abattoir has capacity and desire to accommodate increased supply
- Industry can move from whole frozen carcass exports to higher value cuts
- Consumer lack of familiarity can be overcome domestically

What is goatmeat?



Common names	Goat, kid, cabrito, capretto, mutton (Asia), chevon
Scientific name	<i>Capra aegagrus hircus</i>
Type of animal	Anglo-Nubian is dual purpose meat and dairy goat well suited to region; typically either rangeland or Boer goats are used; Kalahari Red also suitable
Cultivation cycle	Gestation of 145-155 days; can breed throughout year; multiple births common

Suited climate	Temperate to hot, arid climates (breed dependent)
Uses	Fresh, chilled, frozen, prepared, processed cuts;
Origin	England in 1880 as cross breed (Anglo-Nubian)
Established in AU	1954 with 10 mated does

What is the market situation?



31,414 tonnes cwt production in 2017



90% of Australia's goatmeat is from rangeland goats



Australia is world's largest exporter of goatmeat; ~50% of global trade



Record high of \$7.50/kg carcass weight in domestic market in 2017



28,426 tonnes swt of goatmeat exported in 2017, 90% of production



\$257m export value in 2017; 42% gain on 2016

What can you do with it?



RETAIL READY



PREPARED PACKS



PROCESSED PRODUCTS



GOAT HIDES



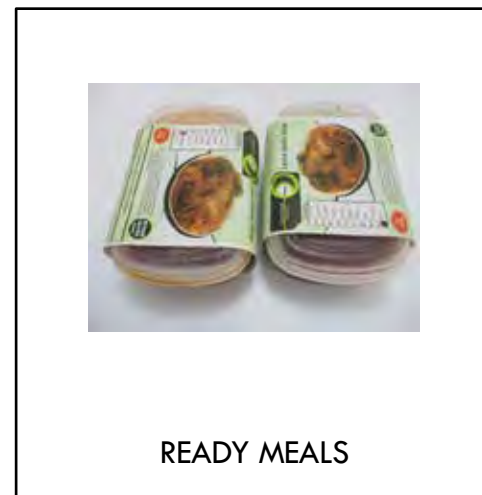
PETFOOD



GOAT JERKY

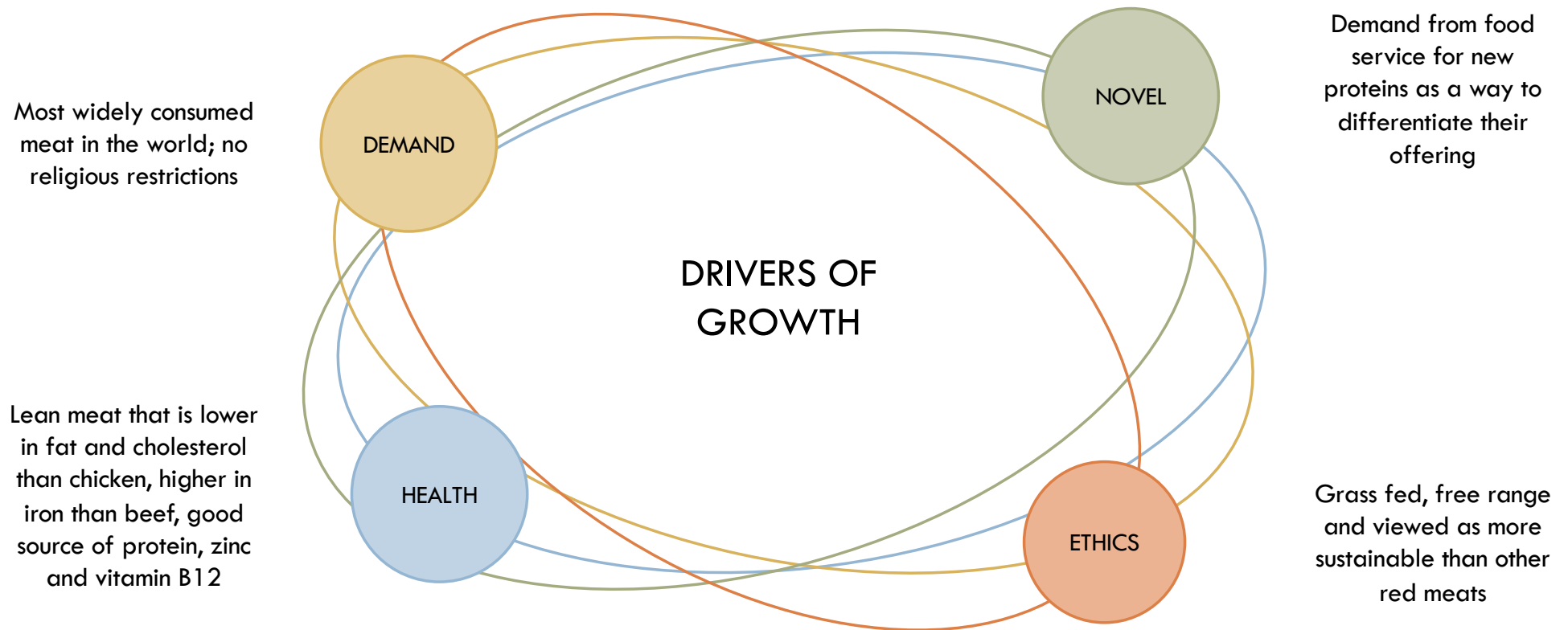


SALAMI



READY MEALS

What is driving its success?



What does Dr. Food think?



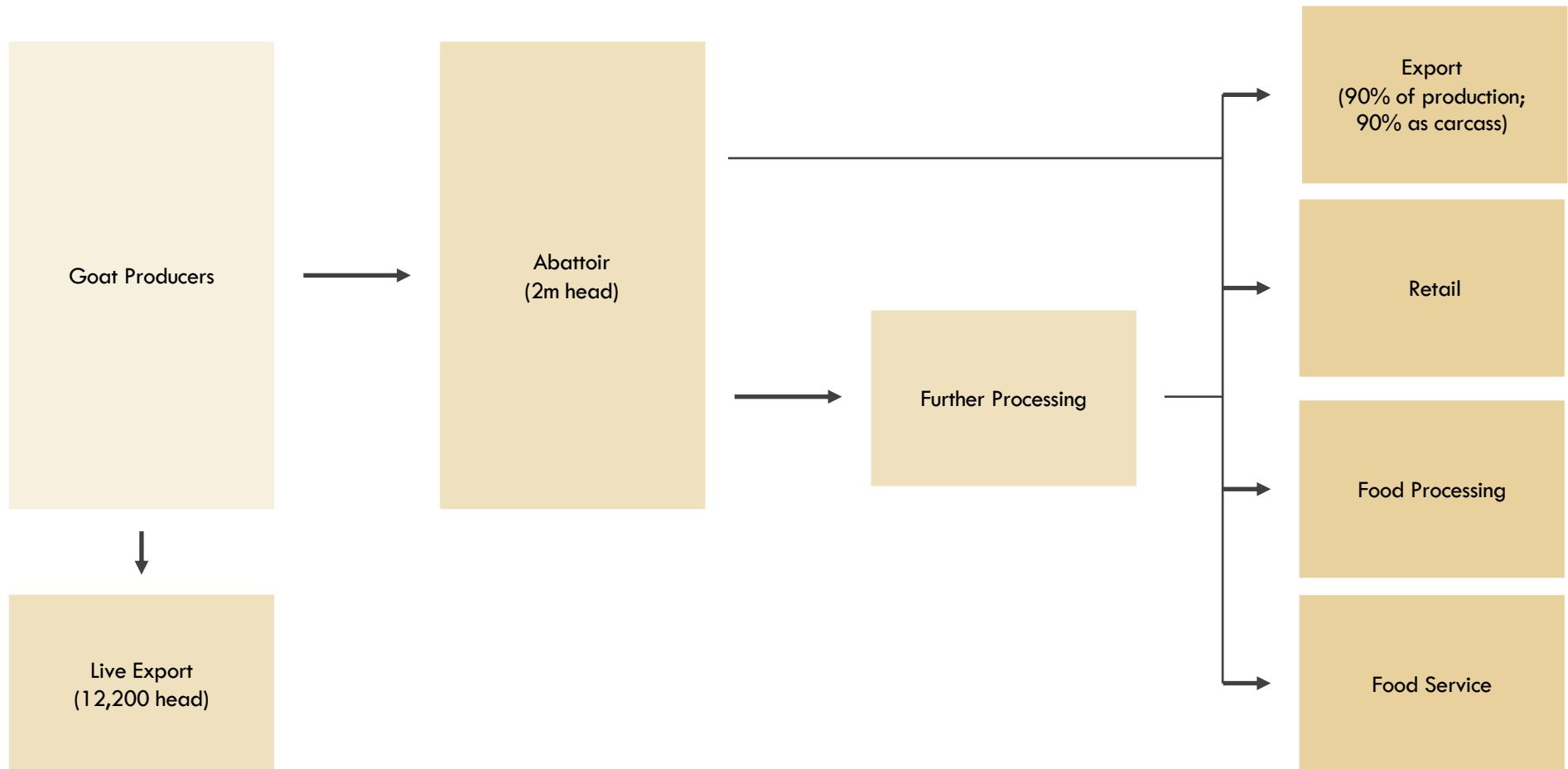
“In 2018, 2.4 million Muslim pilgrims visited Mecca (Saudi Arabia) on the Hajj and that’s a lot of goatmeat eaters!

This presents an outstanding export opportunity for North West Queensland halal slaughtered goatmeat. Pilgrims need feeding and pouched ready meals are a common solution. Look for suppliers of Hajj meals in the United Arab Emirates to build supply partnerships for North West Queensland goatmeat.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD climate

- Successfully produced by dry, climatic peers
- Long history of goat and feed production in the region
- Low intensity, long range production system
- Organic rangeland
- Low domestic demand encourages focus and supply for export

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Increasing demand for goatmeat globally
- United States demands outstrips domestic supply
- Most widely consumed meat globally with no religious restrictions
- High value markets United States, Taiwan, South Korea and Canada are Australia's top export markets for goatmeat

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant goat farming sector, targeting the untapped domestic market and expanding in our high value export markets

1

Research most cost effective fencing solutions for region

Determine the most suitable meat breed for the region, making the switch from rangeland harvest to farmed production

2

Continue to improve the genetics of Australia's meat goat herd






Develop supply chain relationships through to consumer in export markets

Invest in industry wide marketing programs to develop domestic market

3

Investigate potential partners for joint venture in processing facility in region

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	2009	Mumbai, India Private Greenfield Advisory (Singapore); Rizwan Thakur	N/A 11-25	Goatmeat cuts, processed, ready to cook, ready to eat products	India Middle East South East Asia	http://www.chevon.in Integrated frozen food company focusing on goatmeat; Chevon and KUZU brands
	1959	Hertogenbosch, Netherlands Private Paridaans, Liebrechts families	€387m (2015) 74	Calves, pigs, goats	Europe	https://www.paligroup.nl/uk/ One of the largest livestock companies and meat producers in Europe
	1973	Eldorado, Texas, United States Private Kohls family	N/A	Dorper sheep, boer goats, deer, cattle	USA	http://www.nandkranches.com Goat and other specialty game breeder; one of the earliest importers of Boer goats into USA
	1988	Dulwich, South Australia Private Thomas family	A\$1,323m (2017) 1,659	Lamb, beef, mutton, goat, value added products, co-products	Australia USA China	http://thomasfoods.com Australia's 3 rd largest meat processor; subsidiaries in USA and China; exports to over 80 countries
	1953	São Paulo, Brazil Public SPSE: JBSS3	US\$51.5b (2017) 233,797	Beef (global #1), chicken (global #1), pork (US #2), lamb (global #1), goatmeat, leather, pet food	Global	www.jbssa.com.au www.jbs.com.br www.jbssa.com Largest protein processor in the world; 300 production facilities; operates in 22 countries; sells in 150 countries



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Goats thrive in region (hot climate suitable dairy breed would have to be chosen).
Growing demand for goat milk in high value markets (powder and infant formula).
Leverage Australia’s reputation as safe, reliable, consistent supplier of quality dairy products.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	●

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Move away from bovine dairy
- Health benefits of goat milk
- Increased demand for traditional European style cheeses

VALUE-ADDED OPPORTUNITIES

- Fresh milk
- Cheese (e.g. chevre, feta)
- Yoghurt
- Milk based beverages
- Infant formula
- Specialised powders
- Cosmetics (e.g. soaps, body lotion)
- Sale of kids/cull for meat (Anglo Nubian is dual breed)
- Live export of breeding goats

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other milks (cow, sheep, camel) - Plant based milks - Imported goat milk powder - Imported goat milk cheeses - Imported goat milk baby formula 	<ul style="list-style-type: none"> - Europe - New Zealand (powder, infant formula) - China (powder, infant formula) - India - Bangladesh - Sudan

GROWING CONDITIONS

- Anglo Nubian best suited to hot conditions; other dairy breeds prefer cooler climates

KEY RISKS & SENSITIVITIES

- 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
- Drought risks (water, feed, heat) lowering production
- Well maintained fences necessary to keep goats in and wild dogs out
- Shed production required to reach required milk yields

WHAT YOU WOULD NEED TO BELIEVE

- Australian produced goat milk cheeses can command same price as traditional European products
- Australian dairy goat herd numbers can be increased
- Investment into high value infant formula production will occur
- High quality genetics can be imported to improve herd

What is goat milk?



Common names	Goat milk, chevre
Scientific name	<i>Capra aegagrus hircus</i>
Type of animal	Anglo-Nubian is dual purpose meat and dairy goat best suited to region
Cultivation cycle	Lactation period of 300 days on average; high average fat yield of 4%; lifespan of 8-15 years

Suited climate	Temperate to hot, arid climates (breed dependent)
Uses	Fluid milk, fresh dairy products, powders and infant formula, cosmetics
Origin	England in 1880 as cross breed (Anglo-Nubian)
Established in AU	1954 with 10 mated does

What is the market situation?



\$20.2-\$26.9m farmgate value in Australia in 2016



30,550 head milking herd in Australia (2016)



Growing demand for live export breeding goats



68 dairy goat farms in Australia (2016)



Australia produced 16.9 million litres of goat milk in 2016; globally 15.3 million tonnes were produced



60% milk goes into cheese, 18% as fresh milk, 4% as powder in Australia

What can you do with it?



FRESH MILK



ICE CREAM



MILK POWDER



SKIN CARE



YOGHURT



CHEESE

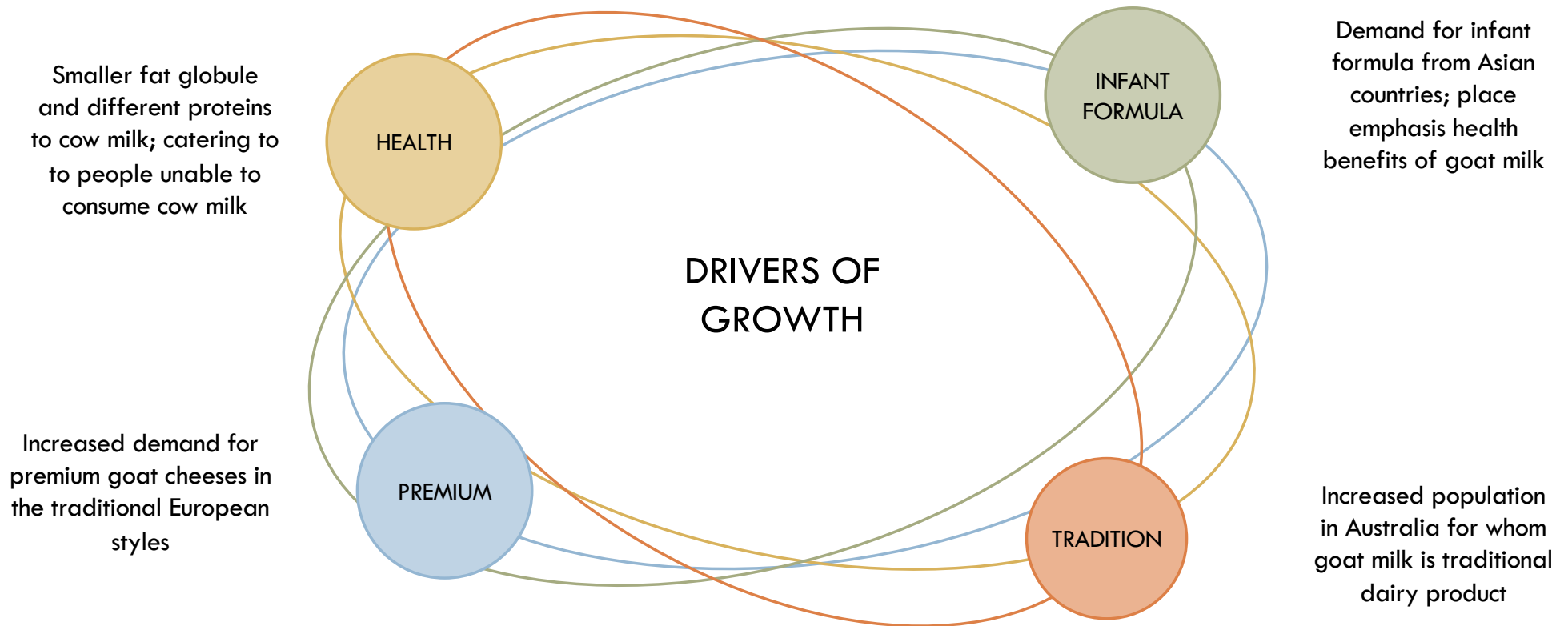


WHEY POWDER



INFANT FORMULA

What is driving its success?



What does Dr. Food think?

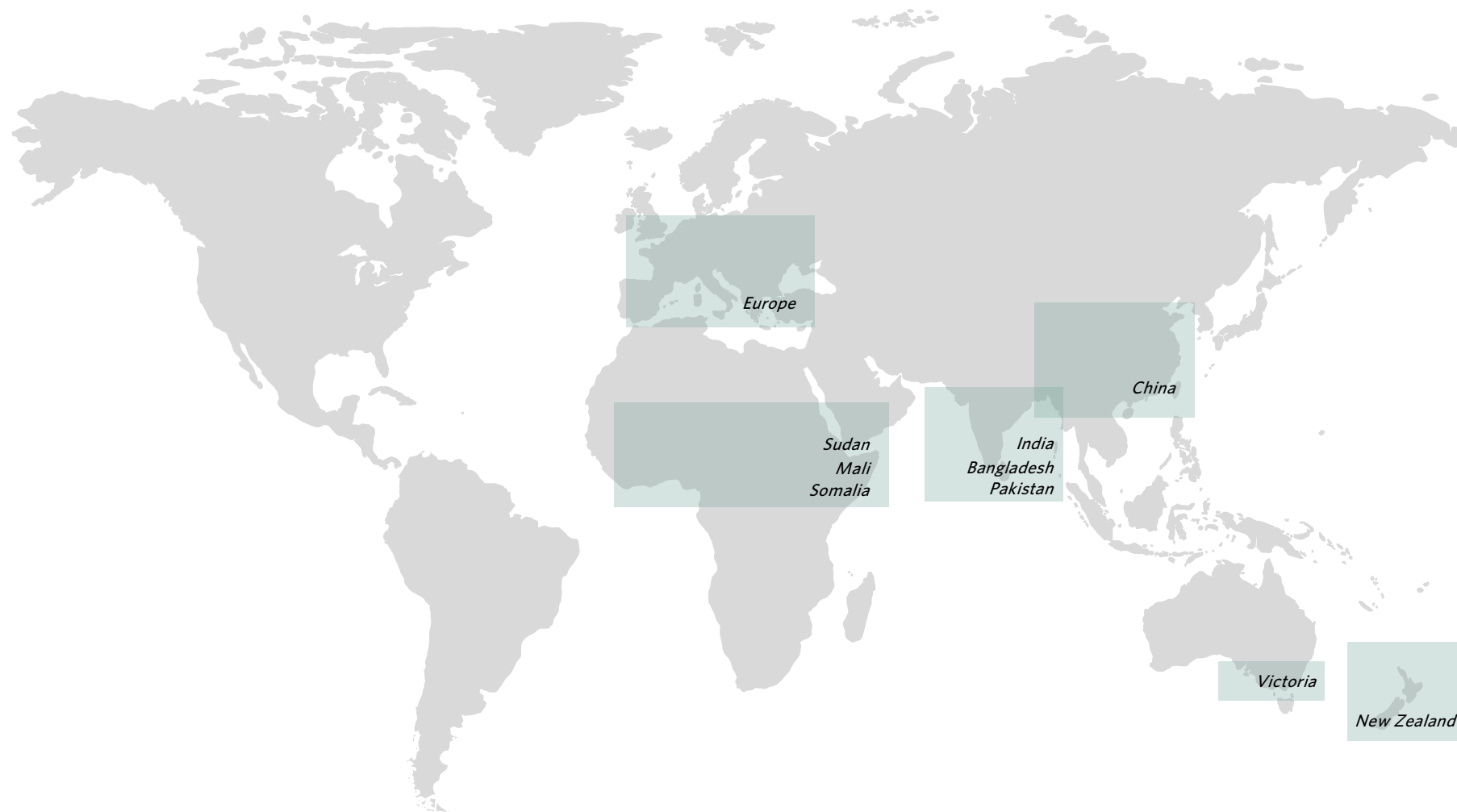


“Did you know that the success of Ancient Greek culture was based on a healthy breakfast of strained yoghurt made from cultured sheep and goat’s milk?! Two millennia later, Greek yoghurt is fashionable in the wider world and its high protein content is firmly on-trend, but, it lacks authenticity as, generally, it’s made from cows’ milk.

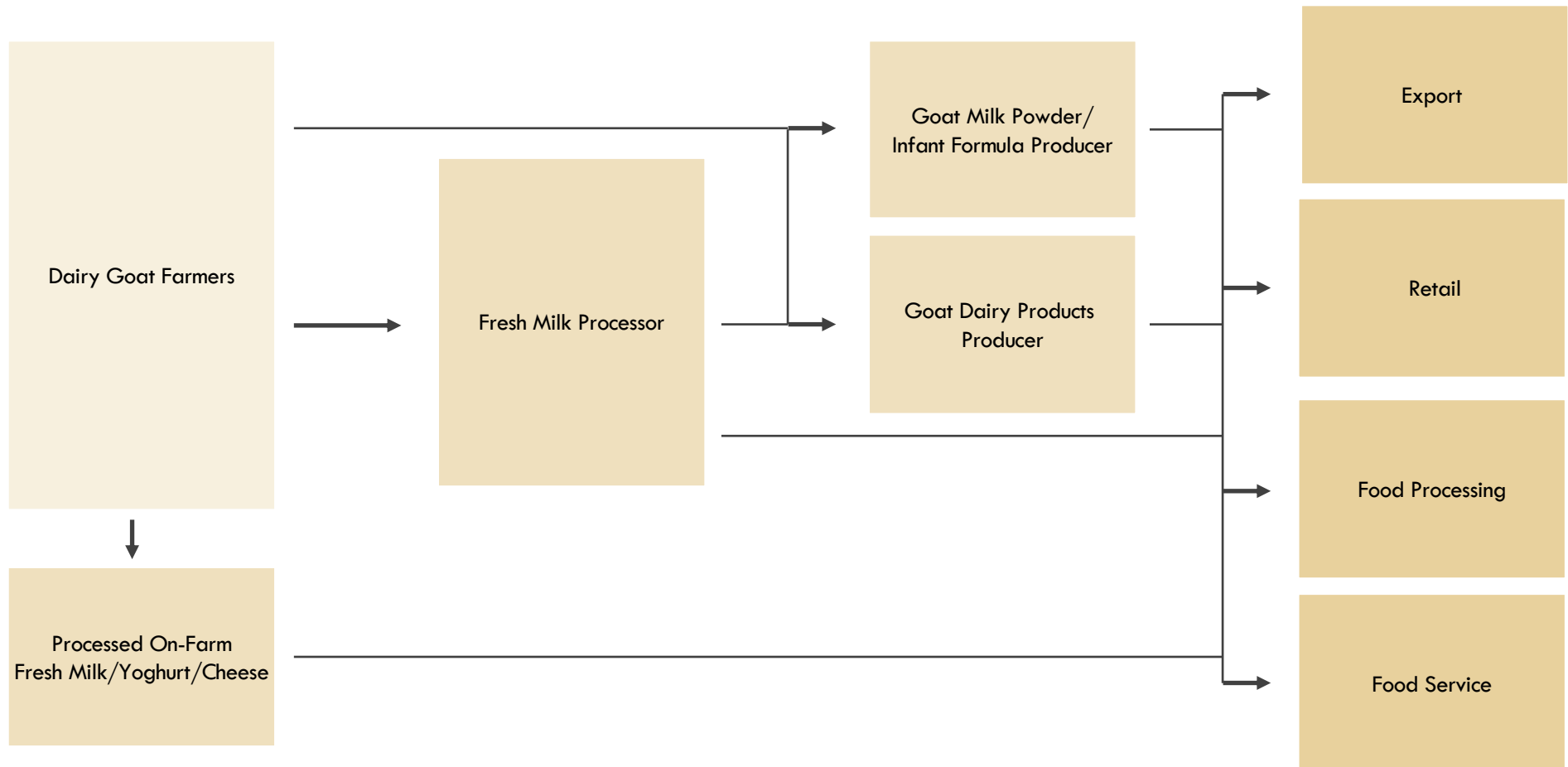
This presents an opportunity for North West Queensland goat and sheep milk producers to work together and produce a Greek yoghurt with authentic goat and sheep milk ingredients. This should appeal to consumers willing to pay a premium for “the real McCoy” and to those allergic to cows’ milk.

Similarly, North West Queensland-produced authentic feta cheese using both sheep and goat milk would fit very well in the domestic market with the popular Mediterranean diet and a reassuring “Produce of Queensland” provenance.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD climate

- Successfully produced by dry, climatic peers
- Long history of goat and feed production in the region
- Low intensity, long range production system
- Organic rangeland

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Increasing demand for non bovine dairy globally
- China demands outstrips domestic supply
- Strong demand from traditional consumers in Middle East
- Growing middle class looking for safe, nutritious, trusted products for their children

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant dairy goat farming sector, leading to at-scale goat milk products processing industry supplying Australian & export markets

1

Research production systems with educational trip to observe successful New Zealand producers

Investigate resource consent requirements (Can it be done?)

Develop supply chain relationships

2

Source and secure milking flock






Focus on genetic improvements to milking productivity

Invest in milking shed and related infrastructure

3

Investigate potential partners for joint venture in processing facility to move up the value chain

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 澳优 Ausnutria	2003	Changsha, Hunan, China Public HKSE:1717	US\$408m 2,631	Infant formula, goat milk infant formula, nutritional products	Netherlands China NZ Australia	http://www.ausnutria.com.hk/en/global/home.php Vertically integrated infant nutrition company; sells goat milk IF globally; Kabrita has 54% market share of imported goat milk IF
 DANONE THE PLANET THE MILK	1908	Paris, France Public Euronext:BN	€21.9b 99,187	Dairy: yoghurt, fermented fresh dairy, specialised dairy, infant nutrition Other: bottled water, medical nutrition, cereal, biscuits	Europe Americas Middle East Asia Australasia	https://www.danone.com Danone Nutricia in NZ produces Karicare Goat Milk Infant Formula at former Sutton Group plant
 Emmi	1993	Lucerne, Switzerland Public/Co-op ZMP 51% cornerstone	CHF3.3b 5,780	Cheese, dairy products, functional dairy beverages	Europe North America Global	https://group.emmi.com/en/ Subsidiaries specialising in goats and sheep milk products globally; Goat Milk Powder JV with Bettinehoeve in 2016
 Saputo	1954	Quebec, Canada Public TSX:SAP	C\$11.2b 12,800	Milk, yoghurt, cream, sour cream, milk powder, cheese, goat cheese, dairy ingredients	Canada USA Argentina Australia	http://www.saputo.com Acquired Woolwich Dairy in 2015; largest goat cheese manufacturer in North America; acquired Montchevre-Betin Inc in 2017, USA's biggest goat cheese processor
 飞鹤 FEIHE	1962	Beijing, China Private Platinum Infant Formula Holding (Leng, Liu, Liu)	US\$813m 21,873	Infant formula, milk powder, goat milk powder, soy powder, rice cereal, walnut products, flavoured milk	China Canada USA	http://www.feihe.com Acquired 70% Shaanxi Guanshan Dairy Industry in 2014 moving into goat milk powder; invested in goat and cow wet milk IF plant in Ontario in 2016 (C\$225m)



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Drought resistant crop that is already grown successfully in North West Queensland; Australia is one of world’s largest exporters.
Fifth most important cereal agrifood grown in the world.
Growth in demand for gluten free products shows no signs of slowing.
China has strong demand for animal feed.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	●

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Demand for alternative, healthier grains (slow digestibility, high insoluble fibre)
- Demand for sustainable crops
- Demand for gluten free products
- Demand for animal feed

GROWING CONDITIONS

- Subtropical and tropical climates
- Highly drought tolerant
- Require warm, summer growing period of 4-5 months

KEY RISKS & SENSITIVITIES

- African countries produce third of world’s production but currently consume domestically
- Volatility in prices related to Chinese policies impacting the price of corn
- Water stress during grain fill results in reduced yield

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can move from ethanol production and animal feed uses into high value food products
- Improvements can be made in yields in hotter climates
- North West Queensland growers can leverage research undertaken in other parts of Australia
- Various hybrids can be mixed and matched successfully by grower at time of planting to produce best possible yields for the current conditions
- Australia can maintain consistent, high quality supply to satisfy high value Baijiu spirit market in China

VALUE-ADDED OPPORTUNITIES

- Whole grains
- Popped grains
- Flour
- Syrup
- Starch
- Breads, cereal based products and baked goods
- Alcoholic beverages
- Fodder and animal feed
- Ethanol

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other ancient and gluten free grains - Other animal feed crops 	<ul style="list-style-type: none"> - United States - Sudan - Argentina - Uganda - France - Tanzania - Ukraine - China

What is grain sorghum?



Common names	Sorghum, durra, jowari, milo, Egyptian millet, guineas corn, gaoliang, kafir corn
Scientific name	<i>Sorghum bicolor</i>
Type of plant	Annual grass
Cultivation cycle	90-120 days growing season; summer cereal crop

Suited climate	Subtropical and tropical climates
Uses	Whole grains, flour, syrup, starch, alcoholic beverages, animal feed, biofuel
Origin	Northern Africa
Established in AU	Dwarf varieties from USA grown in 1938 in Queensland

What is the market situation?



\$492m value of production in Australia
In 2016



521,000 hectares planted in Australia
in 2016



Growing demand in attractive Asian
markets; China tariffs on USA sorghum
should benefit Australia



66% of Australian production is grown
in Queensland

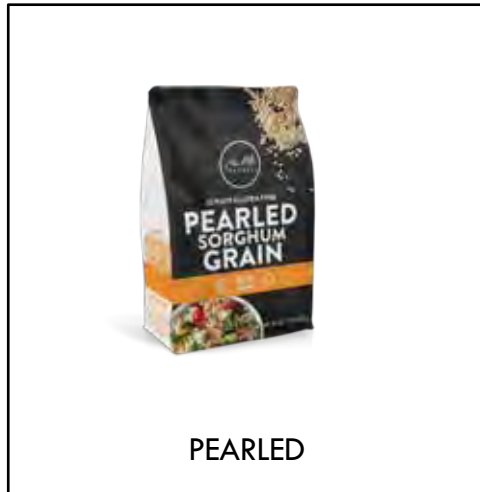


1.79m tonnes produced in Australia in
2016



1.075m tonnes exported in 2016;
\$364m value

What can you do with it?



PEARLED



FLOUR



SUGAR & SYRUPS



SPIRITS



POPPED



PASTA

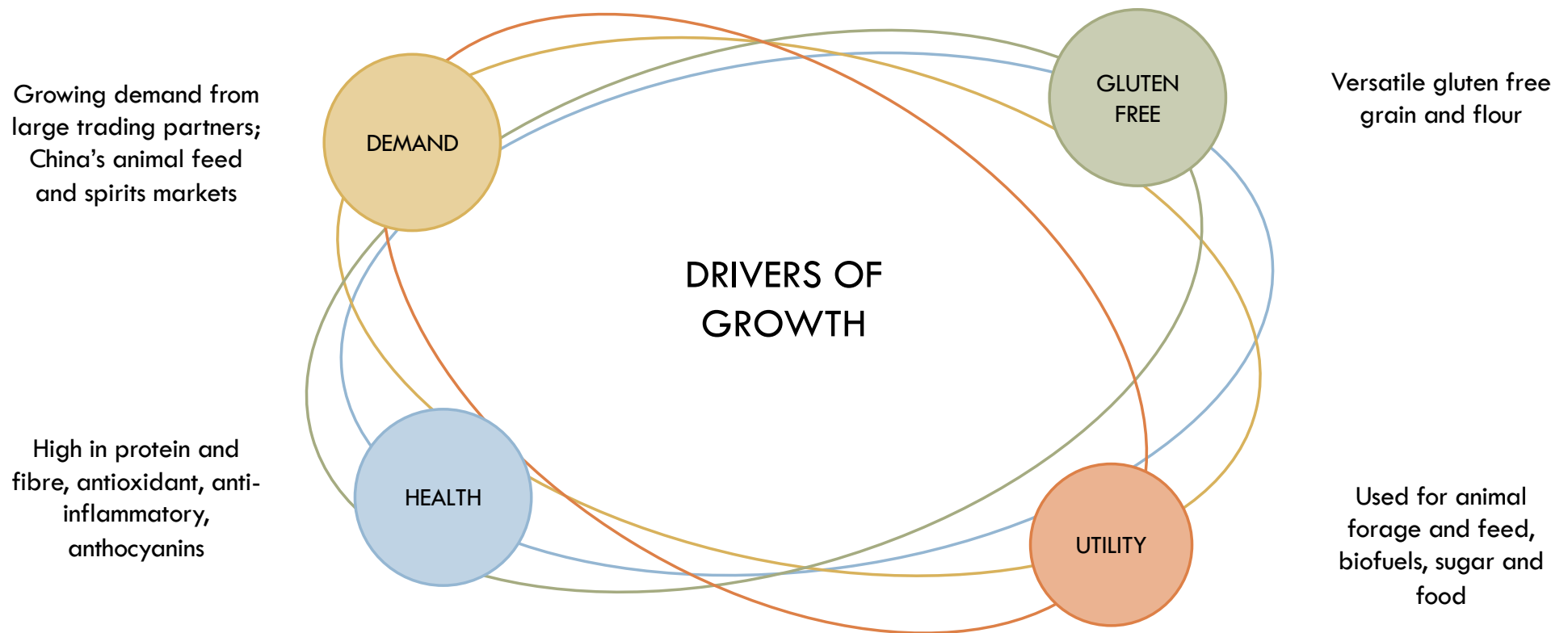


GLUTEN FREE BREADS



PET FOOD & ANIMAL FEED

What is driving its success?



What does Dr. Food think?



“Known to few in the markets of higher income countries, sorghum is the world’s fifth most important cereal crop. It hasn’t had the boost that, arguably, it should have done from the wave of demand for Ancient Grains (e.g. spelt and pseudo-grains such as chia and quinoa).

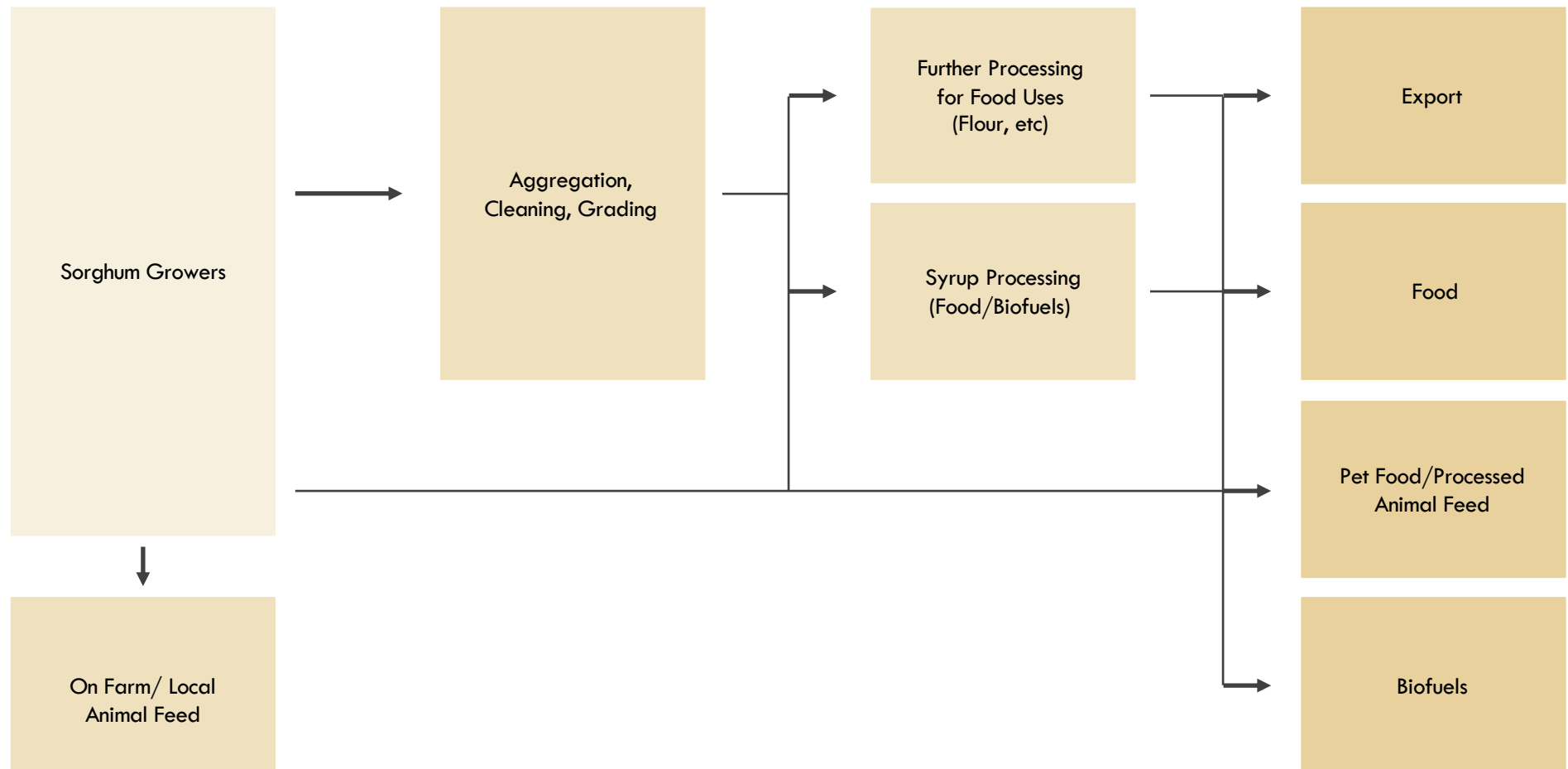
A powerful positive is that sorghum is gluten-free. Whereas less than 3% of the world’s consumers suffer from coeliac disease, 20% seek gluten-free alternatives because of digestive concerns (not least, to offset IBS*).

North West Queensland-grown sorghum would be better placed as an ingredient in the buoyant gluten-free food market of Australia and nearby higher income Asian markets. Seventeen of the twenty five species of sorghum are native to Australia – a useful authentic historical provenance hook for the food marketers.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD climate

- Successfully produced by dry, climatic peers
- Long history of sorghum production in the region
- Complementary to existing cattle production system
- Extensive research and development activities in Australia for sorghum

WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable markets

- Increasing demand for animal feed, biofuels and food grains globally
- China demand for animal feed outstrips domestic supply
- Biorefinery in Darling Downs using grain sorghum for ethanol production

WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant cropping sector, based on sorghum, leading to at-scale further processing industry supplying Australian & export markets

1

Promote benefits of growing sorghum to graziers in region

Continue to invest in variety and yield research; especially dryland potential






2

Develop supply chains across all sorghum uses (food, feed, biofuel)

3

Investigate potential partners for joint venture in food processing facility

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1929	Inver Grove Heights, MN, United States Co-Op 625,000+ producers	US\$31.9b (2017) 12,500	Grain processing and marketing; animal nutrition, inputs, fuels, lubricants, biofuels, edible oils, oilseeds, flour, dressings, sauces, meal bases	North America Asia Australia	http://www.chsinc.com https://www.chsbroadbent.com Global agribusiness cooperative based in USA; CHS Broadbent grain trading subsidiary in Australia; operations in 20 countries
	2000	Geneva, Switzerland Private COFCO, China Investment Corporation, Hopu, Temasek, IFC, Standard Chartered	\$34b 12,000	Grains, sorghum, pulses, oilseeds, sugar, coffee, cotton, freight	Global	https://www.cofcointernational.com Overseas agriculture business platform for COFCO (China's largest food & agriculture company; operations in 35 countries; COFCO Agri Australia
	2016	Rotterdam, Netherlands Private Glencore (Public: Switzerland; LSE: GLEN, SEHK: 0805, JSE: GLN), CPP Investment Board, bclMC	US\$25b (2017) 14,000	Grain, oilseeds, pulses, sugar, rice, cotton, protein meals, vegetable oils, biodiesel	Global	http://www.glencoreagriculture.com Originating, handling, processing and marketing of agricultural commodities; operations and offices in 35 countries; 6 grain port terminals in Australia; 24,000 ha of cropping land farmed and leased
	1986	Champaign, Illinois, United States Private TIAA – USA teacher superannuation	US\$8b in assets under management	Farmland involved in livestock and cropping	USA Australia Europe South America	http://www.wgimglobal.com/home Agriculture asset managers; \$1b worth of farms in QLD, NSW, VIC, WA; model of leasing back properties to owners or local farmers; wheat and other grains focus
	1865	Minneapolis, United States Private Cargill family 90%	US\$114.7b (2018) 150,000	Commodities (cotton, grain, oilseeds, sugar, palm), food ingredients and applications (cocoa, corn, oils, malt, starches, sweeteners, etc.), meat, poultry and eggs, farmer services, animal feed, energy and industrial, financial	Global	www.cargill.com www.cargill.com.au www.teysaust.com.au Operations in 67 countries; 50% JV Teys Australia



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown commercially in several climatic peer regions as well as in Australia.
Extensive research and breeding has been undertaken by CSIRO.
Important potential role in preventing desertification.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	○
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	●

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	◐
OVERALL	●

DRIVERS OF GROWTH

- High oil content (54%)
- Unique qualities of oil (liquid wax esters similar to human produced; long shelf life)
- Demand for natural pharmaceutical products (weight loss, laxative)
- Potential use as natural weight loss supplement.

GROWING CONDITIONS

- Grows in desert and semi-desert climates
- Tolerates salinity and nutrient poor soils and high temperatures
- Requires supplement irrigation for maximum production if rainfall is below 400mm
- Drought resistant, though cultivated plants can become stressed in extremes of heat, affecting yields
- Frost intolerant when in flower
- Pollination by male plants required
- 3-5 years before first harvest; 8-10 years before full production

VALUE-ADDED OPPORTUNITIES

- Jojoba oil
- Skincare products
- Pharmaceuticals
- Animal feed (leaves, meal)
- Biodegradable lubricants
- Biodiesel fuel (potential)

KEY RISKS & SENSITIVITIES

- Boom bust history of commercial production in United States (1970's - 1990) and Australia (CSIRO introduced in 1978)
- Requires consistent water for commercial production
- Oil is produced only from female plants

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other natural oils and waxes - Almond meal (skincare use) 	<ul style="list-style-type: none"> - Argentina - Israel - Mexico - Peru - United States

WHAT YOU WOULD NEED TO BELIEVE

- Ongoing breeding research results in higher wax contents and ability to harvest mechanically
- Mechanisation is possible (currently by hand as seeds have different maturing rates)
- North West Queensland can compete with low cost producers

What is jojoba?



Common names	Jojoba, deer nut, oat nut, wild hazel, coffee berry
Scientific name	<i>Simmondsia chinensis</i>
Type of plant	Woody perennial bush
Cultivation cycle	3-5 years to first harvest; 8-10 years before full production

Suited climate	Arid and semi arid desert climates
Uses	Wax ("oil") from seed for cosmetics and pharmaceutical industries
Origin	Central America
Established in AU	1978 by CSIRO

What is the market situation?



US\$160m estimated global jojoba oil market in 2016



United States is largest producer, followed by Mexico



Growing demand in attractive markets



North America jojoba oil market valued at US\$61m in 2016



Around 2,000 tonnes of jojoba is used in cosmetics and skin care globally

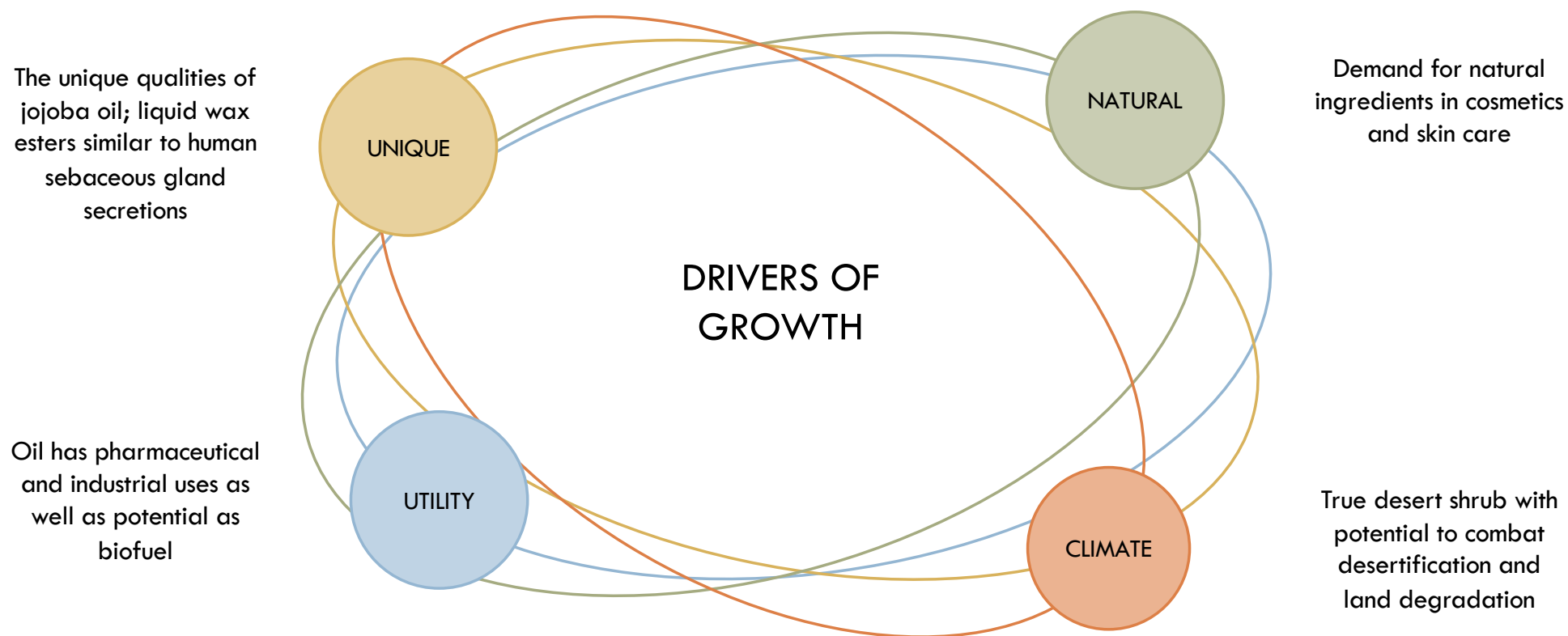


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What can you do with it?



What is driving its success?



What does Dr. Food think?



“The complementary benefits of shea butter, castor and jojoba oils are striking and so are the market opportunities that are opening up for such natural health and beauty ingredients.

Cosmetic companies are increasingly aware of the need for transparency and traceability in their ingredient supply chains. Having these three pivotal ingredients grown in one region – North West Queensland – presents an exceptional opportunity to develop a natural beauty ingredient story that is smack on target for the times.

Could a natural beauty ingredient mini-cluster be on the point of emerging in North West Queensland?”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

WHY DO WE THINK MARKETS WANT IT?

WHY DO WE THINK WE CAN SELL IT?

Suited to NW QLD climate

Growing demand in desirable markets

Our Unique Value Proposition

- Successfully produced by very dry, desert climate regions
- History of jojoba production in Australia

- Increasing demand for natural, premium cosmetic ingredients
- Unique oil not easily substituted
- Growing middle class looking for premium, luxury beauty products

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant jojoba growing sector, leading to at-scale oil processing industry supplying Australian & export markets

1

Select suitable site for commercial operation

Invest in variety and yield research

Determine best practice production systems (research trip to USA, Argentina, Israel)

2






Invest in first stage of commercial scale jojoba growing operation

Develop supply chains relationships for domestic and export markets

3

Investigate potential partners for joint venture in oil processing facility

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 Vantage	2008	Chicago, United States Private H.I.G. Capital; The Jordan Company	N/A 650	Personal care, food, performance materials, oleochemicals	USA Argentina Global	http://www.vantagespecialties.com 3 jojoba farms in USA and Argentina; new crushing facility in 2017; world's largest jojoba grower and ingredient producer; Desert Whale Jojoba brand
 L'ORÉAL	1909	Clichy, France Public; OR:PA	€26b (2017) 82,600	Hair colour, skincare, sun protection, cosmetics, perfume, haircare	5 continents; present in 150 countries	https://www.loreal.com/group Largest cosmetics group in the world
 PNJ	1980	Avila Beach, California, United States Private Purcell family	N/A	Jojoba oil, beads, esters, meal	USA	http://www.purcelljojoba.com Only exclusive jojoba oil producer in USA; 700,000 trees in Bouse, Arizona; one of the world's largest suppliers of organic jojoba
 The Jojoba company BEAUTY IS IN OUR NATURE	2008	Castle Hill, NSW, Australia Private Turner family	N/A	Jojoba oil, skincare	Australia	https://www.thejojobacompany.com.au Farm in Yenda, NSW
 POLA ORBIS HOLDINGS	2006	Japan Public TYO:4927	¥244.3b (2017)	Skincare products, retail stores	Japan Asia Australia	http://www.po-holdings.co.jp/ Health and beauty company; one of the world's largest; acquired Australian brand Jurlique in 2012 for A\$300m



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Citrus grows well in backyards across the region.
Neighbouring regions of Queensland grow limes commercially.
Lemons and limes have high market demand.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Demand for citrus in high value markets
- High end cocktail bars are on trend and pushing demand for ingredients
- Wide spread medicinal use

VALUE-ADDED OPPORTUNITIES

- Fresh fruit
- Ingredient in cocktails and dishes (wedges)
- Juice
- Jellies, jams, syrups
- Curds
- Pickles, chutney
- Flavourings
- Cleaning

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported limes and lemons - Imported juice 	<ul style="list-style-type: none"> - Argentina - Spain - Mexico - Turkey - South Africa - India - China

GROWING CONDITIONS

- Tropical, subtropical and temperate regions; humid, semi arid or arid conditions
- Careful management required for sandy or clay soils
- Can tolerate high temperatures if well supplied with soil moisture
- Sensitive to frost
- Irrigation required for regular cropping; if rainfall is <700mm, 8-9 ML/ha
- Highly sensitive to salt and wind

KEY RISKS & SENSITIVITIES

- Growing conditions may not be ideal
- Long distance to market

WHAT YOU WOULD NEED TO BELIEVE

- Commercial yields can be achieved in North West Queensland region
- North West Queensland can compete with Argentina (Tucuman region produces 70% of world's lemon products)

What are lemons/limes?



Common names	Lemon, limone, lime
Scientific name	<i>Citrus limon</i> (L.) Osbek; limes are hybrids
Type of plant	Citrus fruit tree
Cultivation cycle	Fruit after 3-5 years depending on rootstock

Suited climate	Semi arid and arid subtropical climates
Uses	Juice, peel, oil
Origin	Himalayan region of India/South East Asia
Established in AU	1787

What is the market situation?



Value of production was \$105.2m in 2017



Half of all lemons and limes are grown in Queensland (58% in 2017)



Growing demand in attractive Asian markets



Citrus is commonly grown in backyards and parks across the region



41,436 tonnes produced in Australia in 2017



Australia exported 1,724 tonnes of lemons and limes in 2017; worth \$4.8m

What can you do with it?



JUICE



BEVERAGES



SORBET



CLEANING/SKINCARE



CURD/JAMS/JELLIES



POWDERS

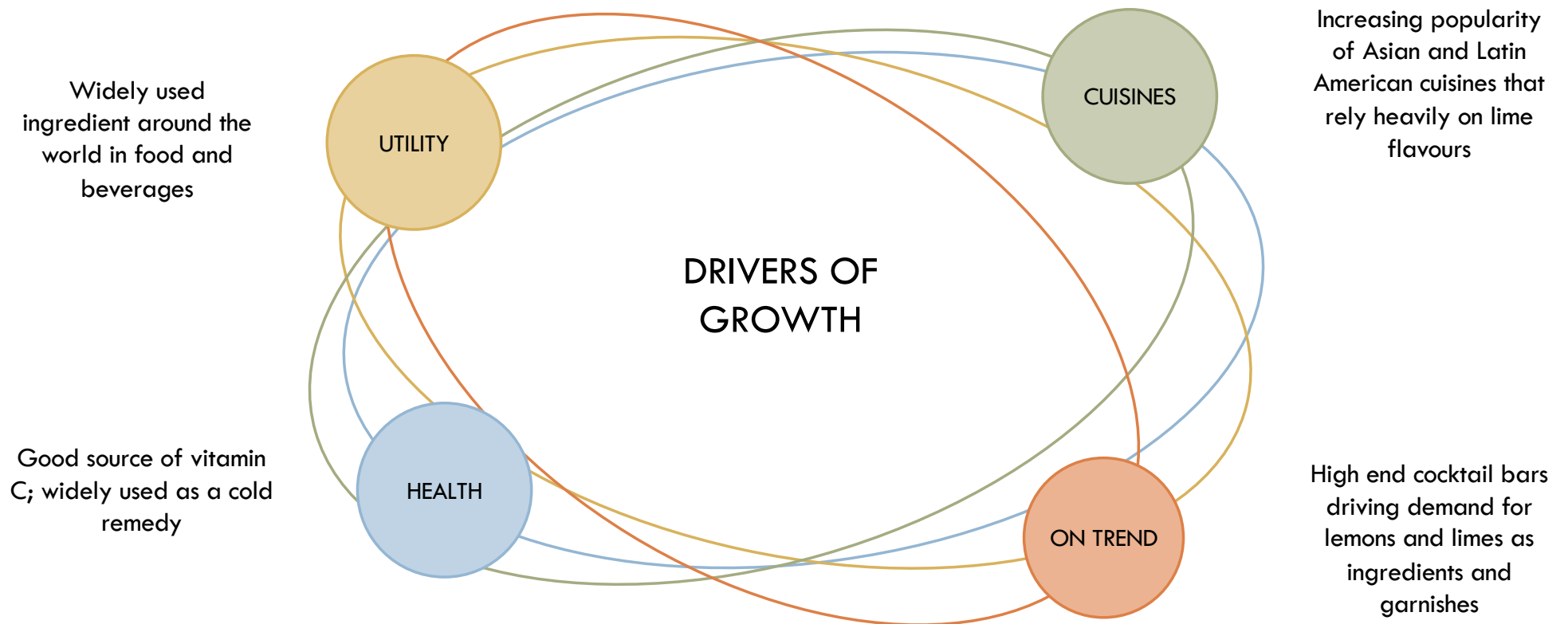


MEDICINE



ESSENTIAL OILS

What is driving its success?



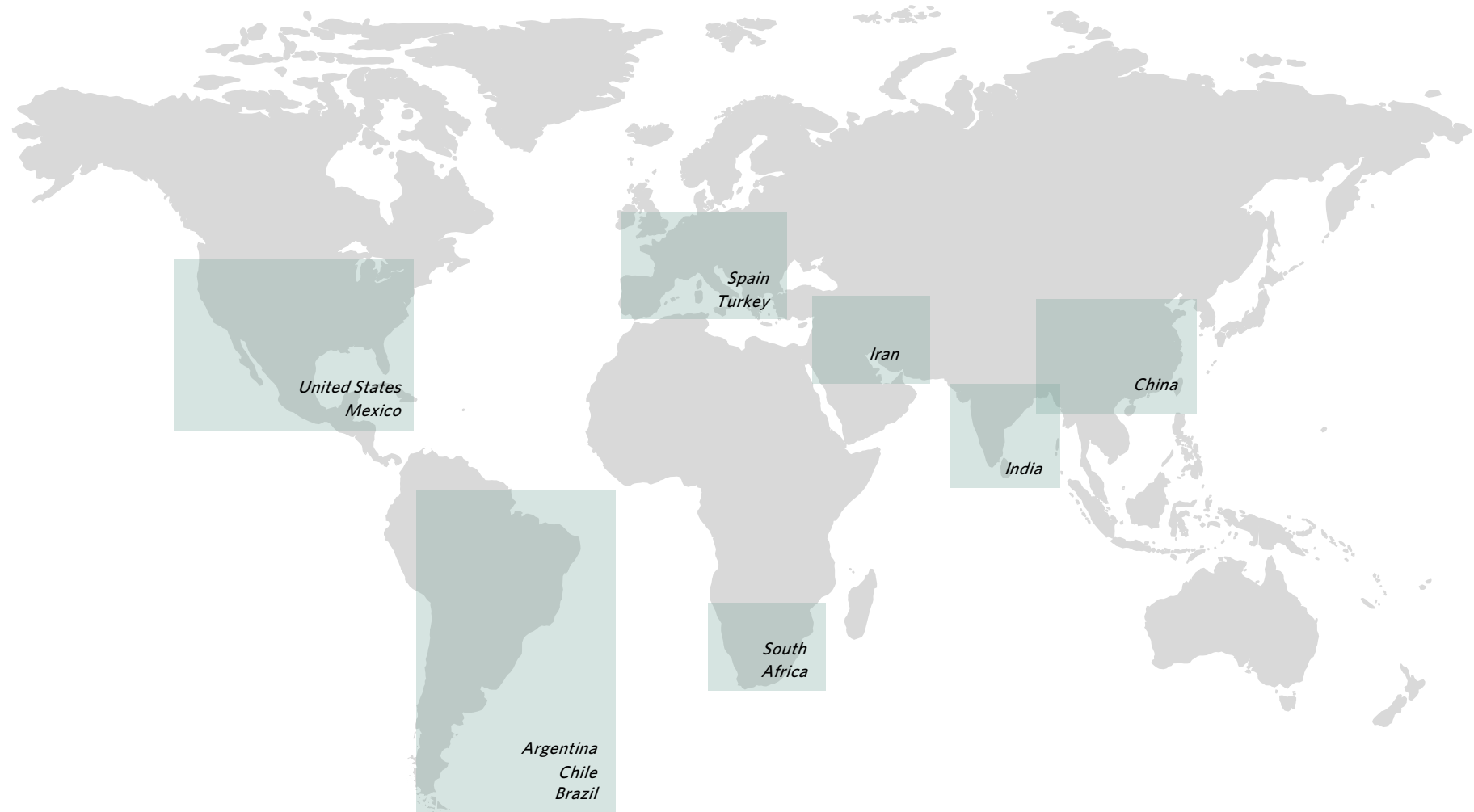
What does Dr. Food think?



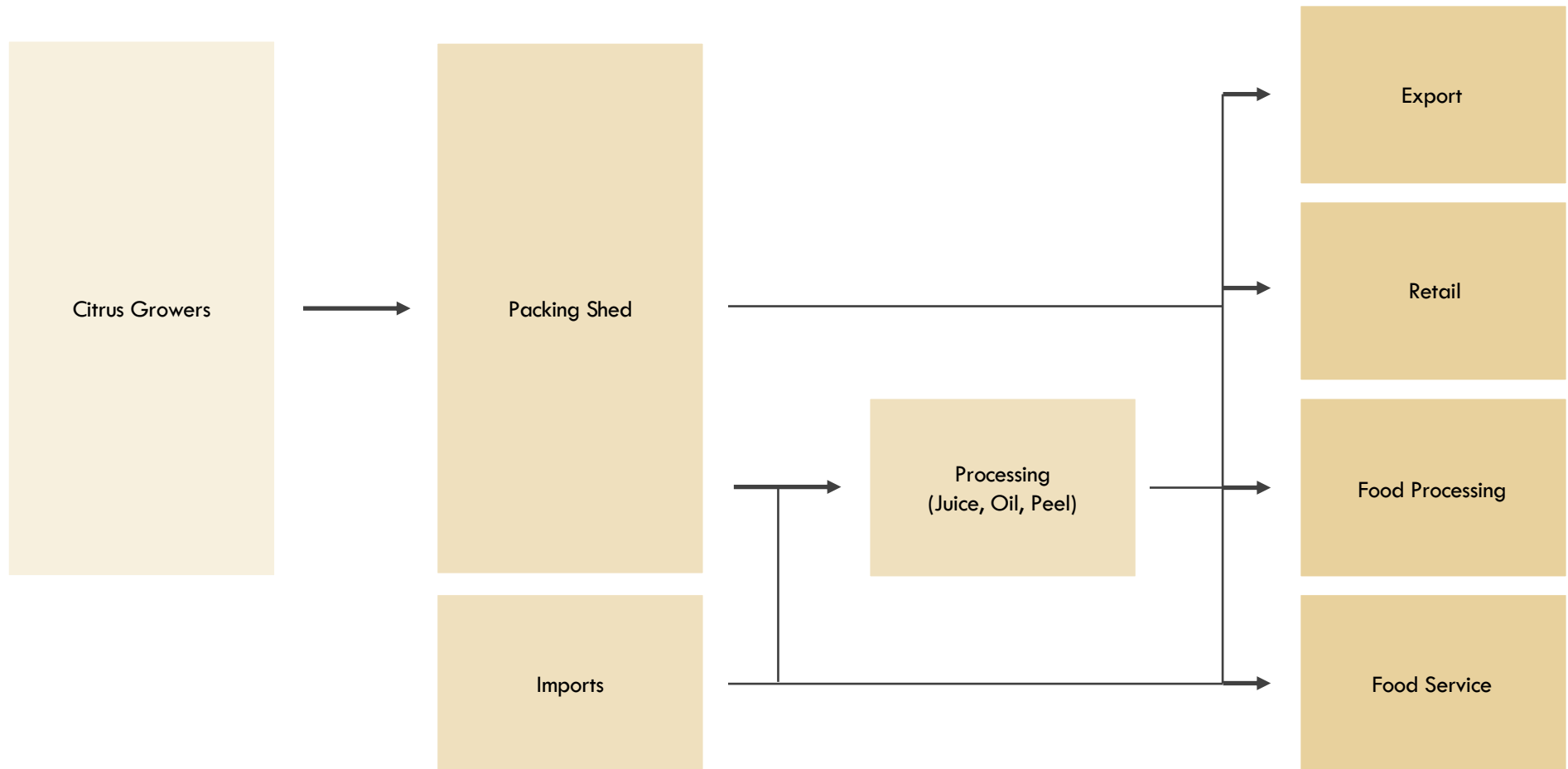
“Dr. Food ran a fresh produce business in Florida, USA for 15 years and was impressed how an inferior local lime was elevated to stardom! The very seedy Key Lime (in truth, no match for the internationally-traded Persian lime) was an integral ingredient in the Florida’s state dessert – Florida Key Lime Pie which comprised crumbled Graham crackers, cream cheese, condensed milk and a liberal dose of Key Lime juice.

The Queenslander Outback Lime Dessert beckons with, maybe, its starting point being a within-QLD competition for chefs to design the quintessential special dessert using North West Queensland limes/lemons as the defining central ingredient. Tourists love a culinary sweet treat (with a tart, vitamin C intense guilt-reducing health benefit), especially if it has a story and reassuring provenance.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced by dry, climatic peers
- Long history of citrus production in Queensland
- Grows well in backyards across the region
- Supply chain in place for other regions in state



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Increasing demand for premium citrus
- China demand growing and not currently able to be met



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

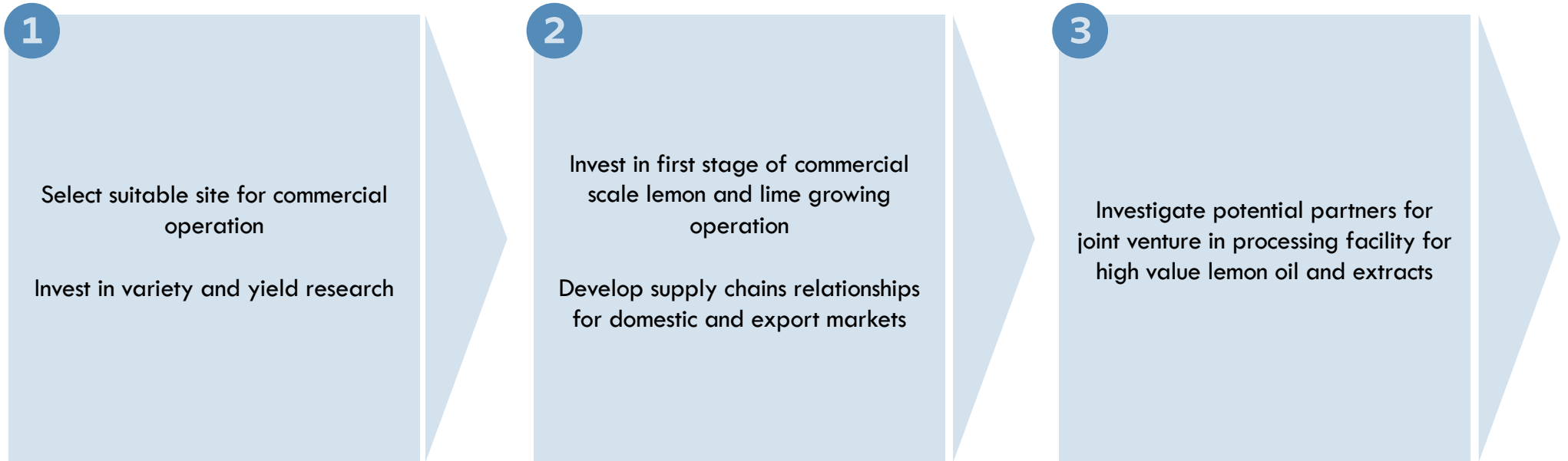
- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?






STRAWMAN

VISION:

North West Queensland builds a vibrant citrus growing sector, leading to at-scale production supplying Australian & export markets



Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 Louis Dreyfus	1851	Amsterdam, The Netherlands Private (Louis-Dreyfus)	US\$64.7b (14) Louis Dreyfus Commodities 22,000 (peak)	Commodities (coffee, cotton, dairy, fertilizers, finance, freight, juice, metals, oilseeds, rice, sugar), asset management, forestry & renewable energy	Global	www.louisdreyfus.com www.ldcom.com 30,000ha of citrus in Brazil; 14m trees; world's largest processors and marketers of citrus juices; exports to over 70 countries; LDC operates in over 100 countries
 costa fresh is our passion	1888	Ravenhall, Victoria, Australia Public ASX:CGC	A\$909m (2017) 6,000	Berries, tomatoes, mushrooms, citrus, avocados, bananas, grapes	Australia Asia	http://costagroup.com.au/citrus Largest citrus grower in Australia
 San Miguel THE GLOBAL CITRUS EXPERTS	1954	Buenos Aires, Argentina Public (BCBA:SAMI)	ARS1,680m (14) US\$115.8m 1,200 (6,500 peak)	Fresh citrus (lemons, tangerines, oranges, grapefruits), juice, concentrates, essential oils, peels	Argentina Uruguay South Africa	www.sanmiguelglobal.com/en One of world's leading fruit and vegetable companies; exports majority to EU, Russia; Asia, Canada, Middle East; operations in South Africa
 Citromax	1964	Carlstadt, New Jersey, United States Private Glueck family	N/A	Lemons, lemon oils, extracts, juices, peels, fragrances, blueberries	USA Argentina	https://www.citromax.com Vertically integrates lemon grower, processor and flavour manufacturer; 3 rd largest lemon processor in world; 4,500 ha of orchards in Tucuman, Argentina
 LIMONEIRA [®] SINCE 1893	1893	Santa Paula, California, United States Public NASDAQ:LMNR	US\$112m (2016) 276	Lemons, avocados, oranges, speciality citrus, pistachios, olives	USA Global	https://limoneira.com Agribusiness, real estate development business; one of the largest lemon producers in USA; 5,000 acres of own lemons



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grows across the climatic peer regions; tolerant to drought.
Australia is #2 exporter globally.
North West Queensland can leverage extensive Australian expertise and research.

DRIVERS OF GROWTH

- Demand for healthy foods (high level of protein, resistant starch, minerals and vitamins)
- Demand for meat substitutes
- Traditional food for Indian and Asian cultures

VALUE-ADDED OPPORTUNITIES

- Dried, cooked, canned
- Soups, stews, curry ready meals

KEY COMPETITORS

DOMESTIC

- Other pulses
- Soybeans
- Other meat substitutes

EXPORTERS/PRODUCERS

- Canada
- United States
- Turkey
- United Arab Emirates (re exporting)

GROWING CONDITIONS

- Drought tolerant; severe or prolonged hot weather can cause pod cracking
- Highly sensitive to saline, boron and sodic soils
- Require minimum of 350mm of rain, maximum of 550mm
- Dislikes waterlogging
- Grows in semi-arid regions of South Australia and Victoria

KEY RISKS & SENSITIVITIES

- Yields affected by severe or prolonged hot weather

WHAT YOU WOULD NEED TO BELIEVE

- Some supplementary irrigation is available
- Can compete with Canada in export markets
- Investment in new variety research will continue

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	●

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

What are lentils?



Common names	Lentil, daal, pulse, adas, hiramame
Scientific name	<i>Lens culinaris</i>
Type of plant	Bushy annual legume
Cultivation cycle	Harvest 110 days after sowing

Suited climate	Temperate, subtropical, semi arid climates
Uses	Cooked, dried, canned, whole or split, meat substitution products
Origin	Middle East, Central Asia
Established in AU	1990 commercially

What is the market situation?



US\$503m in exports from Australia in 2017



276,000 hectares planted in Australia in 2017



India, Bangladesh, Sri Lanka, Turkey and UAE most valuable export destinations in 2017



Australia received average of US\$588 per tonne for exported lentils in 2017



680,000 tonnes produced in Australia in 2017



Over 90% of Australia's production is exported

What can you do with it?



SOUP, CURRIES, STUFFING



FLOUR



PASTA



CRACKERS



MUESLI BARS



EXTRUDED SNACKS

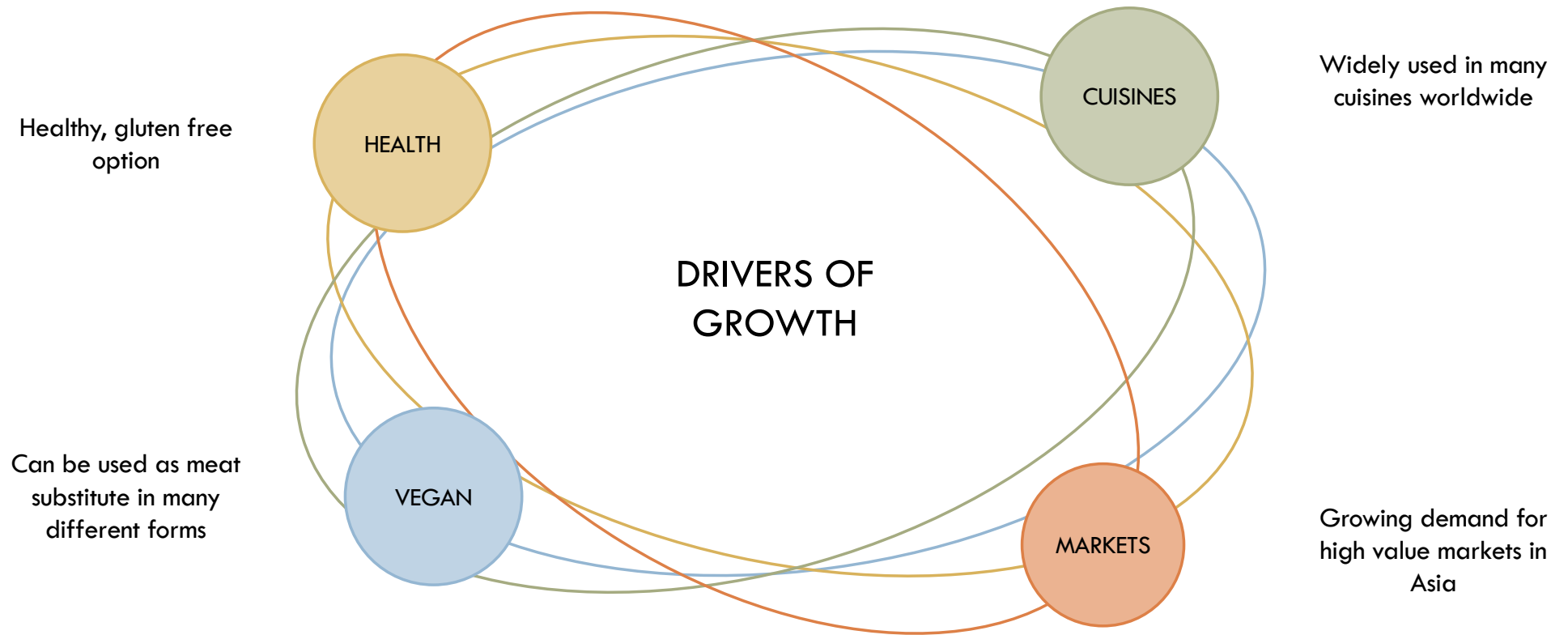


MEAT SUBSTITUTE



PET FOOD INGREDIENT

What is driving its success?



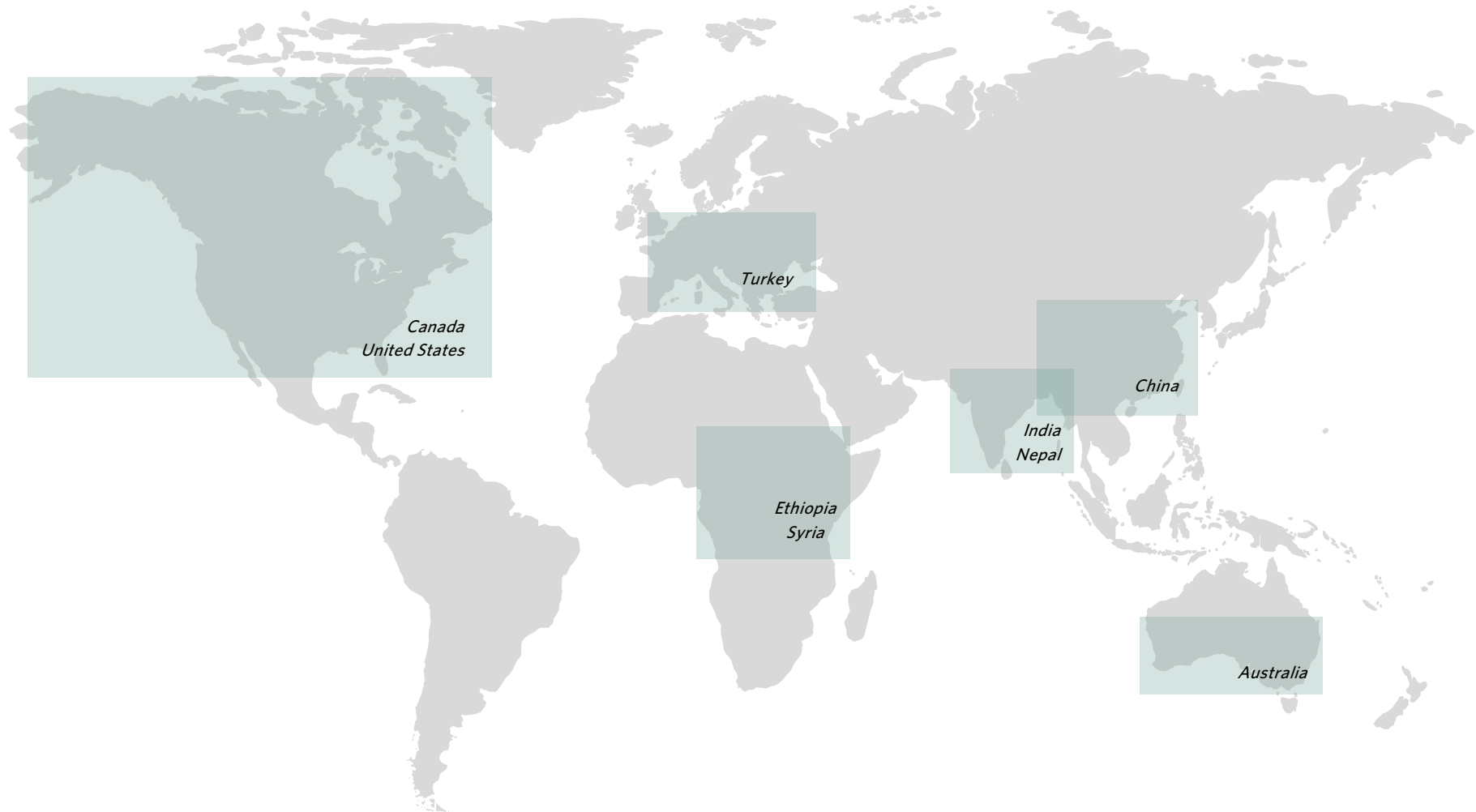
What does Dr. Food think?



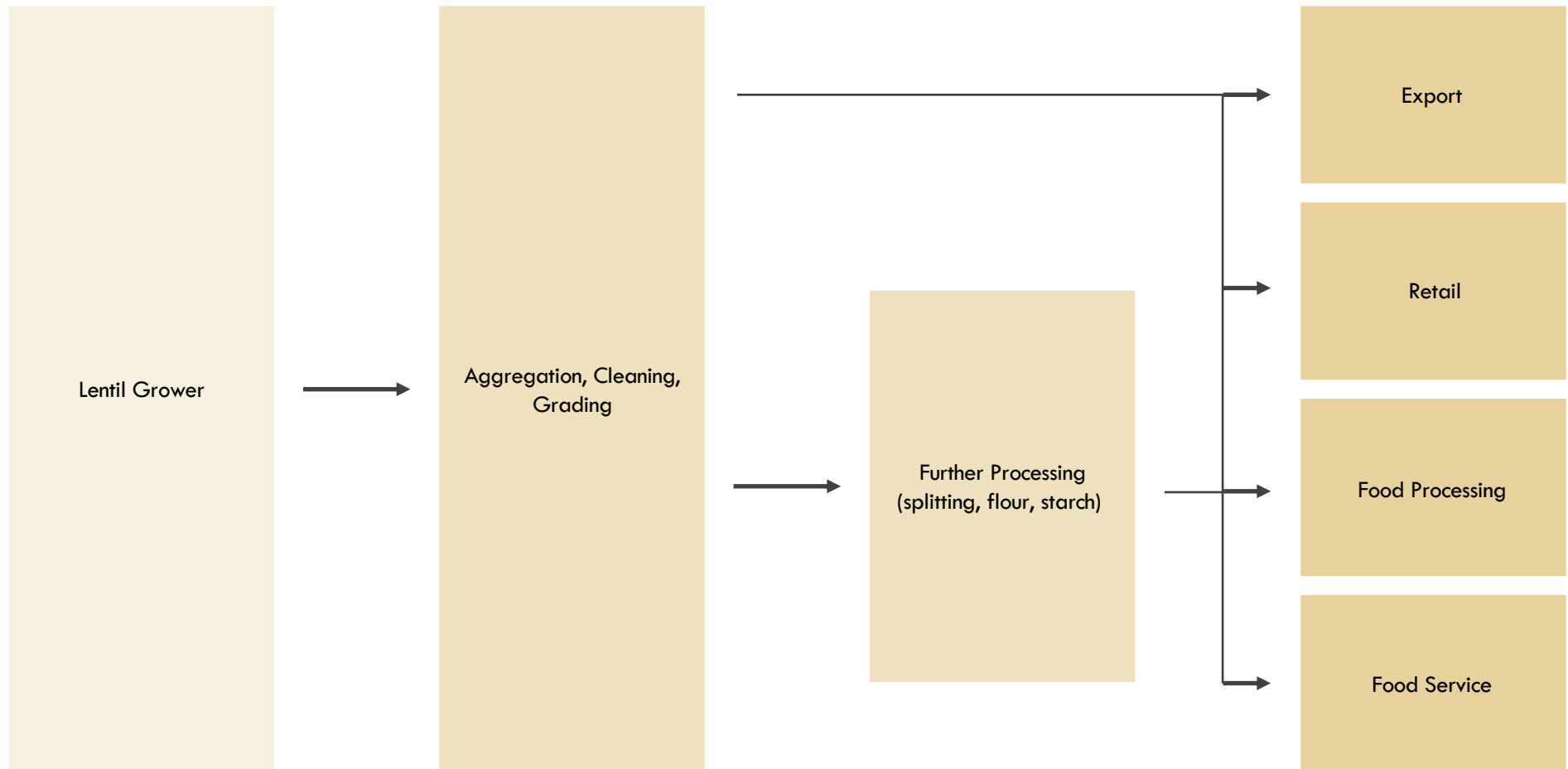
“Like mungbeans, lentils are a seriously on-trend plant-based protein source. Dal lentils have been a staple dish in Indian cuisine and are as Indian as Vishnu! In Western food markets, lentil-based dishes increasingly feature unrelated to their Indian culinary origin.

North West Queensland would do well to look at how successful premium-priced Puy Lentils have been in Europe. These green lentils, grown in the Le Puy prefecture of the Auvergne Region of France have “appellation d’origine controlee” status (like wine) and retail for five times the price of working class red lentils in many high income markets. Starting at home in the Australian market, consider the opportunity of building a premium brand green lentil provenance-based brand. “Foodies” in Australia love a good story particularly when it’s associated with a product that carries great taste, health attributes and brings status to office water cooler conversations!”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced by dry, climatic peers
- Long history of lentil growing in Australia
- Significant resources have been invested in developing new varieties in Australia



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Increasing demand from large markets where Australia has good market share



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

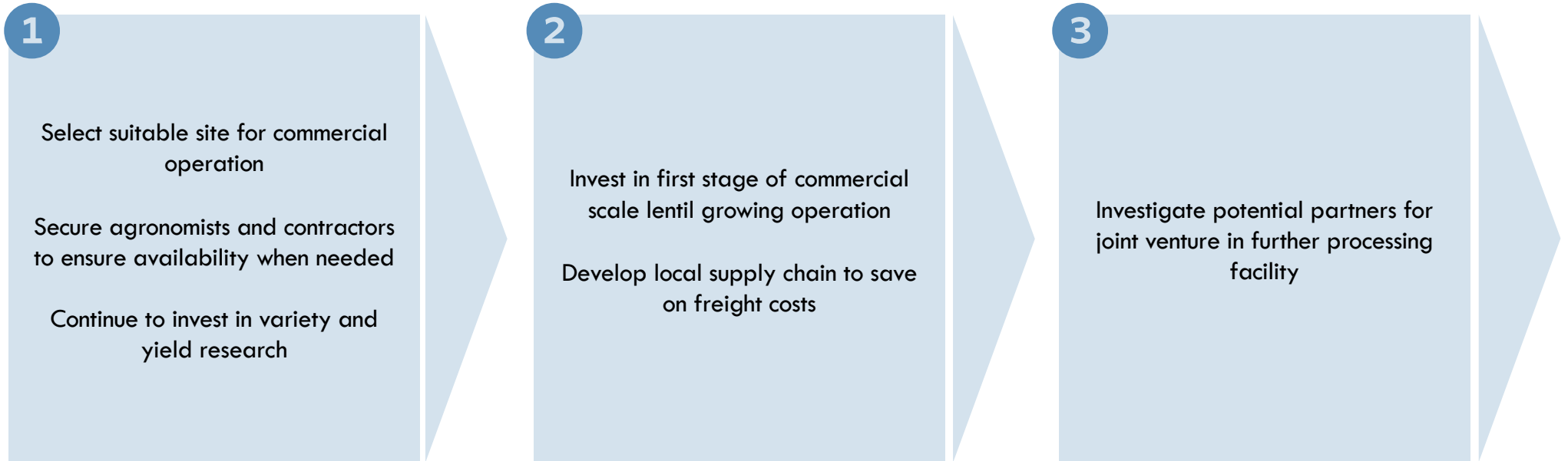
- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?






STRAWMAN

VISION:

North West Queensland builds a vibrant cropping sector based on lentils, leading to at-scale further processing industry supplying Australian & export markets



Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 Olam	1989	Singapore Public SGX:O32	SGD26.3b (2017) 72,000	Cotton, almonds, peanuts, pulses, cocoa, dairy, rice, coffee, nuts, spices, sesame, others	Global	http://olamgroup.com Third largest agribusiness in the world; acquired Queensland Cotton in 2007 along with Australian Pulses division
 GLENCORE AGRICULTURE	2016	Rotterdam, Netherlands Private Glencore (Public: Switzerland; LSE: GLEN, SEHK: 0805, JSE: GLN), CPP Investment Board, bclMC	US\$25b (2017) 14,000	Grain, oilseeds, pulses, sugar, rice, cotton, protein meals, vegetable oils, biodiesel	Global	http://www.glencoreagriculture.com Originating, handling, processing and marketing of agricultural commodities; operations and offices in 35 countries; 6 grain port terminals in Australia; 24,000 ha of cropping land farmed and leased
 Sumitomo Corporation	1919	Tokyo, Japan Public TYO:8053	US\$2.9b (2017) 73,016	Metal products, transportation, construction, infrastructure, media, ICT, lifestyle goods (food, juice, grains), mineral resources, energy, chemical, electronics	Global	https://www.sumitomocorp.com/en/jp/ One of largest Sogo shosha general trading companies worldwide; Emerald Grain subsidiary in Australia
 WESTCHESTER Agriculture Asset Management	1986	Champaign, Illinois, United States Private TIAA – USA teacher superannuation	US\$8b in assets under management	Farmland involved in livestock and cropping	USA Australia Europe South America	http://www.wgimglobal.com/home Agriculture asset managers; \$1b worth of farms in QLD, NSW, VIC, WA; model of leasing back properties to owners or local farmers; wheat and other grains focus
 中粮国际 COFCO INTL	2000	Geneva, Switzerland Private COFCO, China Investment Corporation, Hopu, Temasek, IFC, Standard Chartered	\$34b 12,000	Grains, sorghum, pulses, oilseeds, sugar, coffee, cotton, freight	Global	https://www.cofcointernational.com Overseas agriculture business platform for COFCO (China's largest food & agriculture company; operations in 35 countries; COFCO Agri Australia



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Proven it can grow in region.
Can leverage expertise of neighbouring Queensland regions.
Strong demand from attractive Asian markets.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	○
Hot, dry environment product	◐
Trucking/shipping friendly	○
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	◐

DRIVERS OF GROWTH

- Demand for luxury fruit, especially for Asian gifting market
- Popular flavour for range of products
- Demand for healthy ingredients for smoothie trend (good source of vitamins)
- Widely used as sweet or savoury ingredient across many cuisines

GROWING CONDITIONS

- Prefers deep, well drained soils, slightly acidic
- Tolerates dry, waterlogging and moderate salinity
- Intolerant of frosts and cold

KEY RISKS & SENSITIVITIES

- Labour intensive
- Requires local processing after harvest; chilling immediately to ensure shelf life
- Perishable and easily damaged in transit; long transport on rough roads is a major issue
- Low cost competitors
- Australian mangoes are very expensive on world market
- Fruit fly issues

VALUE-ADDED OPPORTUNITIES

- Fresh
- Dried, canned
- Juice, smoothies
- Puree, pastes
- Flavouring (ice cream, yoghurt, confectionery)
- Chutneys, relishes, sauces

WHAT YOU WOULD NEED TO BELIEVE

- Increase in production will be absorbed by domestic market
- Further value add processing will develop in Australia
- Export markets will be developed to absorb increased production
- North West Queensland can compete with low cost producers that currently dominate export markets

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Mangoes from other regions in AU - Imported mangoes - Other tropical fruit 	<ul style="list-style-type: none"> - India - China - Kenya - Thailand - Indonesia - United States - Mexico

What are mangoes?



Common names	Mango
Scientific name	<i>Mangifera indica</i>
Type of plant	Large long-lived tropical evergreen fruit tree
Cultivation cycle	Grafted trees fruit in 3-4 years

Suited climate	Warm temperate to tropical climates
Uses	Fresh, juice, puree, pastes, flavouring, chutney, relishes, sauces
Origin	South Asia
Established in AU	1800s

What is the market situation?



\$195.7m value of production in Australia in 2017



1.2m producing trees in 2016



Record 12 million trays were sent to market in 2018



~800 growers in Australia in 2016



61,474 tonnes produced in 2017



7,120 tonnes were exported in 2017, 12% of production; value of A\$29.7m

What can you do with it?



JUICE & SMOOTHIES



DRIED



YOGHURT



CHUTNEY & SAUCES



PULP



SORBET & ICE CREAM

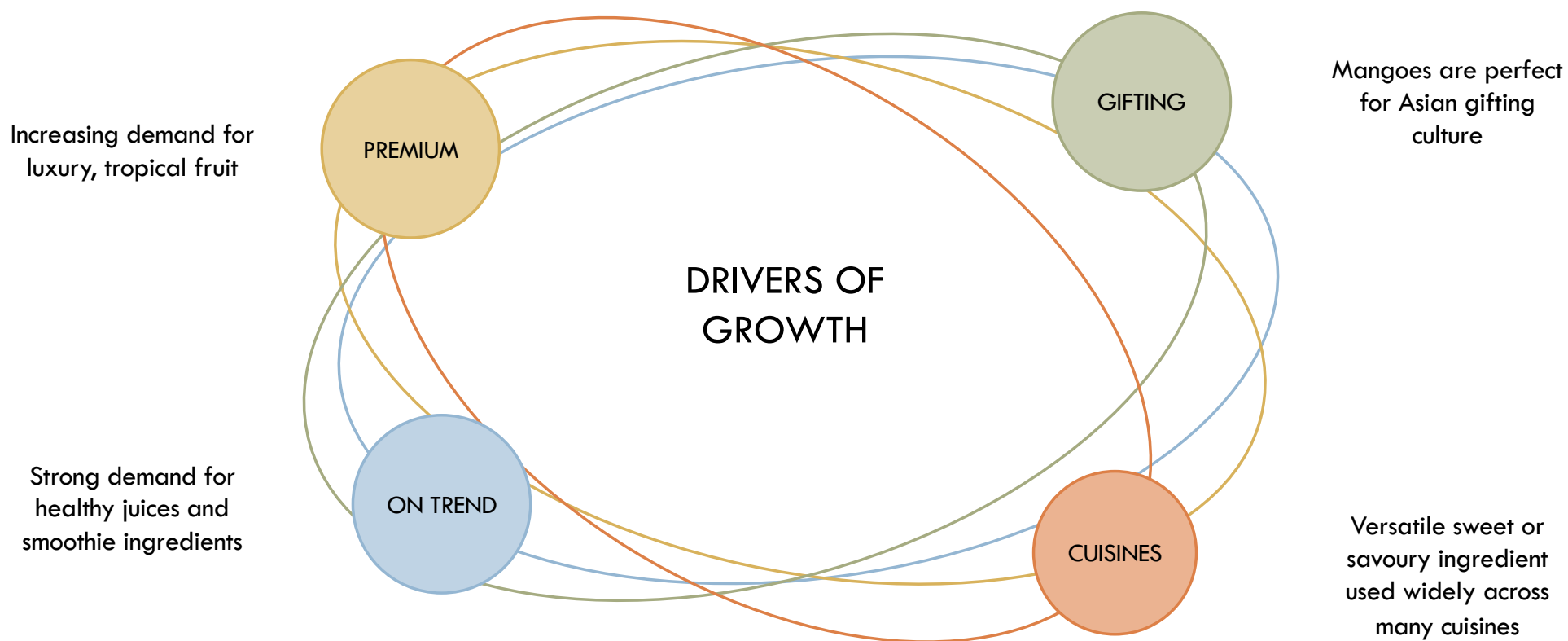


CRISPS



SKIN CARE & FRAGRANCE

What is driving its success?

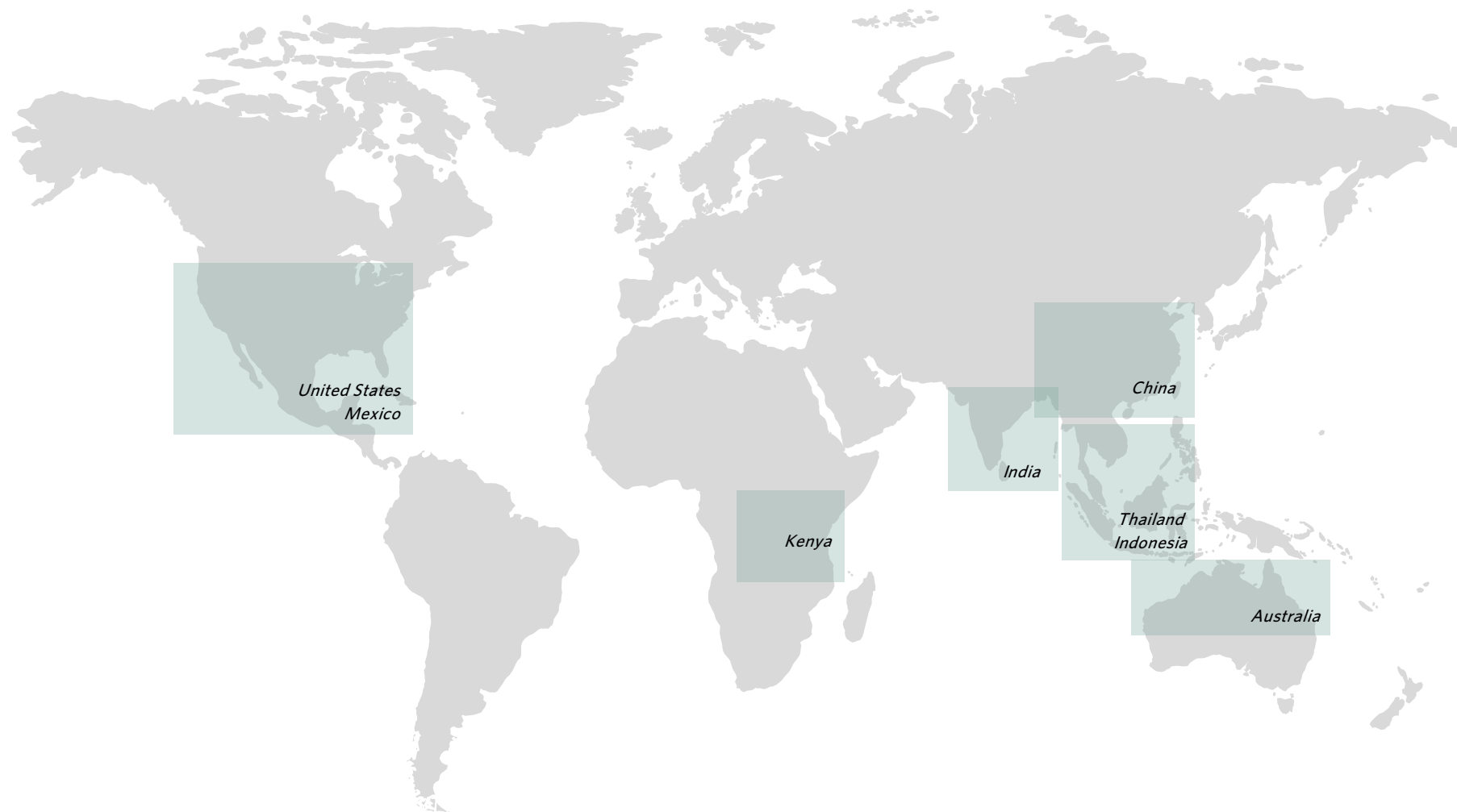


What does Dr. Food think?

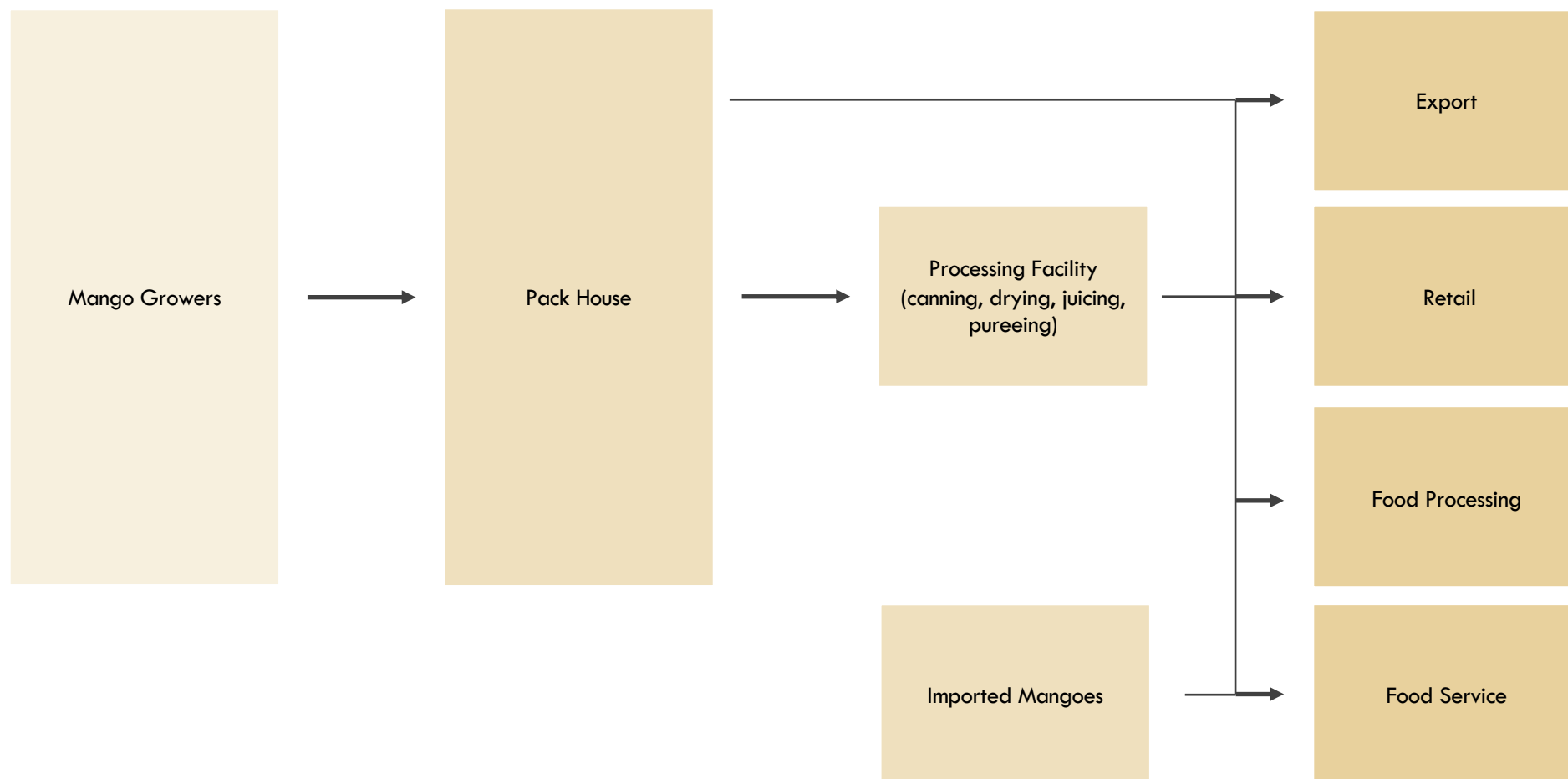


“Mango production and associated supply chains have seen an accelerated expansion in Australia in recent years. Like many other sectors of high value horticulture, increasingly growers seek the security and marketing strength of supply chains offering exclusive varieties with specific and even unique characteristics; e.g. the *Calypso* mango variety with a small stone to flesh ratio grown in Northern Queensland and marketed by Perfection Fresh, and the *Honey Gold* variety with a distinctive golden skin colour grown by Piñata Farms. Check with *Mangoes Australia* (under the *Horticulture Innovation Australia* umbrella) before investing in a mango enterprise which may take 3-5 years to bear marketable fruit. NW QLD may have special “windows” of supply that are not available to other regions in Australia which could provide a market advantage and would appeal to supply partners who have access to high value customers.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced by dry, climatic peers
- Long history of mango production in the state
- Currently grown in region commercially



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Increasing demand for premium fruit from Asian markets
- Mangoes are perfect for Asian gifting culture
- Growing middle class looking for safe, nutritious, trusted products



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant mango growing sector, leading to premium regional brand supplying Australian & export markets

1

Select suitable site for commercial operation

Continue to invest in variety and yield research

2

Invest in first stage commercial scale mango growing operation






Develop supply chains relationships for domestic and export markets

Develop regional brand for premium fruit

3

Investigate potential for further processing in Queensland to develop value added products

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1982	Brisbane, Australia Private Piccone family	N/A	Mangoes	Australia	https://www.manbulloo.com Australia's largest grower of Kensington Pride mangoes; 6 farms in NT and QLD; Mango Road export subsidiary
	2000	Sheung Wan, Hong Kong Public AIM:ACHL; HKSE:73	RMB962.7m (2015) US\$147.7m 1,960	Oranges, grapefruit, banana, pineapple and other fruit juice concentrates, mango and other fruit purees, frozen mango, frozen and dried fruit and vegetables	China	www.asian-citrus.com 3 plantations, one yet to reach maturity; 103 km ² ; 4.55m trees; 1 plantation suffering deadly disease (HLB); revenue down by 24%
	2006	Dundalk, Ireland Public ISEQ:T70; LSE: TOT	€3.45b (2015) 4,500+	Apples, pears, grapes, tropical, citrus, salad, stone fruit, vegetables	Global	www.totalproduce.com Europe's largest fresh produce provider; 100+ facilities; operates in 22 countries; 45% stake in Dole in 2018
	1851	California, United States Private Murdock, Total Produce	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
	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



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Drought resistant crop that is already grown successfully in Central Queensland.
Australia is successful exporter; 90% of production is exported, majority produced in Queensland.
Native wild mungbean variety grows across Northern Australia.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Demand for healthy foods (high levels of protein, vitamins, minerals)
- Demand for food as medicine (should to be useful for controlling cholesterol and diabetes)
- Demand for traditional foods from expat communities
- Demand for gluten free products

GROWING CONDITIONS

- Subtropical climate
- Warm season crop; optimum temperature range for growth is between 27 and 30 degrees
- Heat and drought tolerant
- Adequate moisture required for good yields; do not respond as well to irrigation as other pulses
- Does not tolerate saline soils

VALUE-ADDED OPPORTUNITIES

- Dried whole or hulled
- Sprouted
- Flour
- Starch
- Fermented
- Paste
- Desserts, baked goods, cellophane noodles

KEY RISKS & SENSITIVITIES

- Even strike and maturity of crop is essential for high returns at market
- Variety purity is essential
- Marketing of mungbeans is different to other pulses/grains crops as it is purchased as a vegetable by consumers
- Wide variety in prices between the 4 marketing grades; sprouting category commands highest prices
- Several international food poisoning incidences have involved mungbean sprouts
- Emergence of strong competition across processing grade

KEY COMPETITORS

DOMESTIC

- Imported mungbean products
- Other beans and sprouts
- Other non wheat flours

EXPORTERS/PRODUCERS

- Myanmar
- China
- Ethiopia
- Tanzania
- Indonesia
- Egypt
- India
- Argentina
- United States
- Canada

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers
- Industry could reach scale in the region
- Insect damage issue can be solved (NT production issue)
- Crop can be kept unaccumulated to avoid downgrading to low quality bulk commodity in markets
- North West Queensland can eventually produce sprouting grade mungbeans to gain price premium

What are mungbeans?



Common names	Green gram, moong bean, golden gram
Scientific name	<i>Vigna radiata</i>
Type of plant	Annual flowering legume herb
Cultivation cycle	Maturity in 90-110 days

Suited climate	Subtropical climate
Uses	Whole, hulled, dried, cooked, sprouted, flour, fermented, starch used for noodles
Origin	India
Established in AU	1930s

What is the market situation?



Australian exports worth A\$180m in 2016



Record 125,000 hectares planted in 2016 season



Growing demand in attractive markets; 95% of production is exported



\$950-\$1,350 per tonne depending on grade in 2018



~90,000 tonnes produced in Australia in 2018



Australia's biggest destinations were Vietnam, China, Sri Lanka in 2018

What can you do with it?



FRESH SPROUTED



BEAN SPROUTS



SPREAD



SKIN CARE



TEMPEH



FLOUR & STARCH

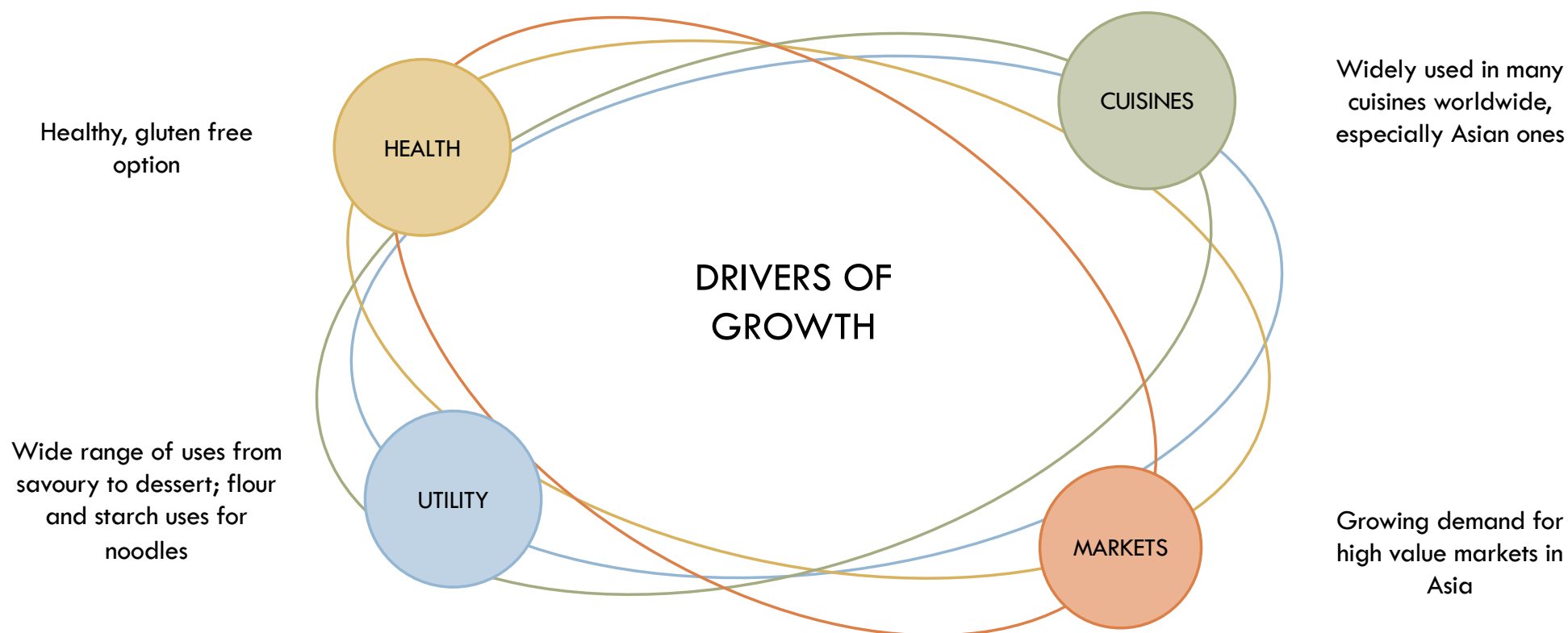


ICE CREAM



NOODLES & PASTA

What is driving its success?



What does Dr. Food think?



“Just as “Ancient Grains” have been embraced by the culinary cognoscenti of higher income countries so too will the mungbean.

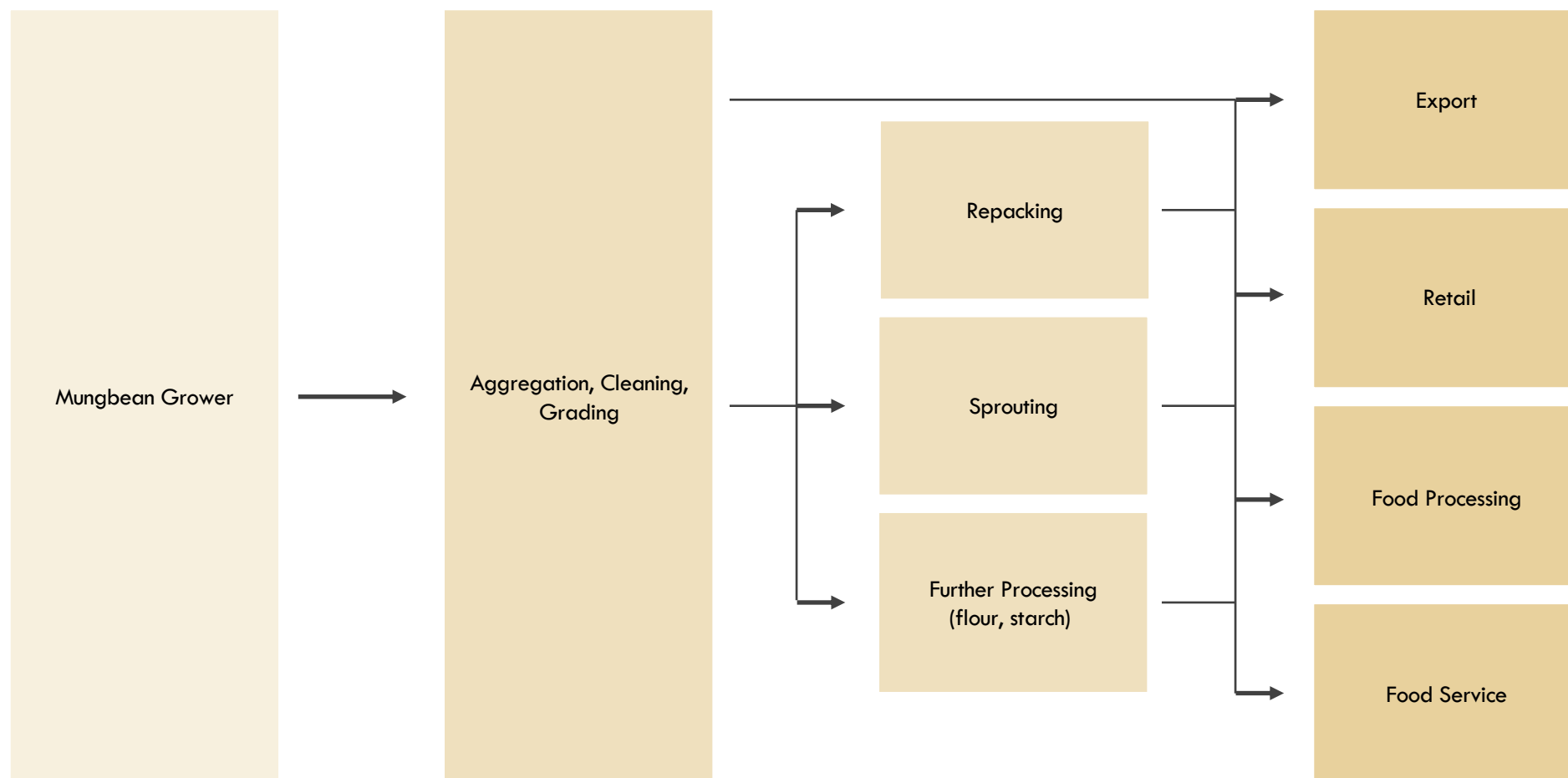
Cultivated for 4 millennia in the Indian sub-continent, the mungbean is emerging as a key ingredient in plant-based, protein-rich new foods beloved of the flexitarian consumer. The hugely successful meatless “Beyond Burger” launched initially in the USA has the mungbean as a principal component.

North West Queensland producers will need to link with plant-based food processors in Australia to ensure maximum value is added domestically and, importantly, to contribute to the “Grown & Made in Australia” story and to leverage the high food integrity status associated with its provenance.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced by dry, climatic peers
- Long history of mungbean production in the state
- Significant resources have been invested in developing new varieties in Australia
- Industry accredited agronomists specialising in mungbean



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Increasing demand from large markets where Australia has good market share



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant cropping sector based on mungbean, leading to at-scale flour & starch processing industry supplying Australian & export markets

1

Select suitable site for commercial operation

Secure agronomists and contractors to ensure availability when needed

Continue to invest in variety and yield research

2

Invest in first stage of commercial scale mungbean growing operation






Develop local supply chain to save on freight costs

Focus on as high quality varieties and grades as possible

3

Investigate potential partners for joint venture in further processing facility (starches, functional foods)

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 Olam	1989	Singapore Public SGX:O32	SGD26.3b (2017) 72,000	Cotton, almonds, peanuts, pulses, cocoa, dairy, rice, coffee, nuts, spices, sesame, others	Global	http://olamgroup.com Third largest agribusiness in the world; acquired Queensland Cotton in 2007 along with Australian Pulses division
 GLENCORE AGRICULTURE	2016	Rotterdam, Netherlands Private Glencore (Public: Switzerland; LSE: GLEN, SEHK: 0805, JSE: GLN), CPP Investment Board, bclMC	US\$25b (2017) 14,000	Grain, oilseeds, pulses, sugar, rice, cotton, protein meals, vegetable oils, biodiesel	Global	http://www.glencoreagriculture.com Originating, handling, processing and marketing of agricultural commodities; operations and offices in 35 countries; 6 grain port terminals in Australia; 24,000 ha of cropping land farmed and leased
 Sumitomo Corporation	1919	Tokyo, Japan Public TYO:8053	US\$2.9b (2017) 73,016	Metal products, transportation, construction, infrastructure, media, ICT, lifestyle goods (food, juice, grains), mineral resources, energy, chemical, electronics	Global	https://www.sumitomocorp.com/en/jp/ One of largest Sogo shosha general trading companies worldwide; Emerald Grain subsidiary in Australia
 WESTCHESTER Agriculture Asset Management	1986	Champaign, Illinois, United States Private TIAA – USA teacher superannuation	US\$8b in assets under management	Farmland involved in livestock and cropping	USA Australia Europe South America	http://www.wgimglobal.com/home Agriculture asset managers; \$1b worth of farms in QLD, NSW, VIC, WA; model of leasing back properties to owners or local farmers; wheat and other grains focus
 中粮国际 COFCO INTL	2000	Geneva, Switzerland Private COFCO, China Investment Corporation, Hopu, Temasek, IFC, Standard Chartered	\$34b 12,000	Grains, sorghum, pulses, oilseeds, sugar, coffee, cotton, freight	Global	https://www.cofcointernational.com Overseas agriculture business platform for COFCO (China's largest food & agriculture company; operations in 35 countries; COFCO Agri Australia

MUSTARD (*B. carinata*, *B. juncea*)

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

Y

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Used by Qantas for blended biofuel in flight from LA in 2018; planned bio refinery and 400,000ha in Australia with Agrisoma Biosciences.
Extensive research currently underway into all brassicas for biofuel potential.
Agronomic advantages over canola for low rainfall regions.
Trials underway in Queensland.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	●

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	◐
OVERALL	●

DRIVERS OF GROWTH

- Demand for healthy oils (low saturated fats, omegas 3 and 6)
- Potential for biofuel production (requires no engine modification)
- Demand for pharmaceutical products
- Potential demand for biofertilisers and bioplastics
- Requirement for break crops in cropping operations; will fit into existing supply chains

VALUE-ADDED OPPORTUNITIES

- Food grade oil (*B. juncea*)
- Spice
- Glucosinolate extracts
- Protein meal for animal feed
- Biofuel
- Biofertiliser (meal)
- Bioplastics

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Canola - Other oilseeds - Other sources of biomass for biofuel production 	<ul style="list-style-type: none"> - Canada - Germany - Ukraine - Russia - India

GROWING CONDITIONS

- Drought tolerant
- Semi arid, temperate, subtropical climates
- 300-400mm annual rainfall
- Trialed in region successfully
- Very tolerant of a wide range of climatic conditions

KEY RISKS & SENSITIVITIES

- Biofuels industry still in research stage; ultimately a different biomass source may emerge
- No biofuel refinery currently in region
- Competition from other suitable growing regions

WHAT YOU WOULD NEED TO BELIEVE

- New varieties will maximise oil yield in marginal growing conditions
- Biofuel industry will continue to grow, while remaining focused on these oilseed crops
- North West Queensland can be cost effective and compete with large scale, low cost global producers

What is mustard seed?



Common names	Ethiopian mustard, Ethiopian rape, Abyssinian mustard (<i>B. carinata</i>), brown mustard, Chinese mustard, Indian mustard, Oriental mustard (<i>B. juncea</i>)
Scientific name	<i>Brassica carinata</i> , <i>Brassica juncea</i>
Type of plant	Annual field crop; non food biofuel feedstock (<i>B. carinata</i>)
Cultivation cycle	Annual (often in rotation), matures 80-90 days

Suited climate	Semi arid, temperate, tropical climates
Uses	Greens, seed, oil
Origin	Himalayan origin
Established in AU	1980s commercially

What is the market situation?



Global trade value of mustard seeds was US\$203m in 2016



300 tonnes produced in NSW to supply Yandilla Mustard Enterprises



Blended *B. carinata* fuel powered 15 hour Boeing Dreamliner flight from LA to Melbourne in 2018



Australia exported 6,219 tonnes of mustard seeds in 2016



Australia exports to Bangladesh, Malaysia, India and New Zealand



1 hectare produces 400 litres of aviation fuel, 1,400 litres of renewable diesel

What can you do with it?



VEGETABLE



FOOD GRADE OIL



BIOFERTILISER



AVIATION FUEL



BROWN MUSTARD



IMITATION WASABI

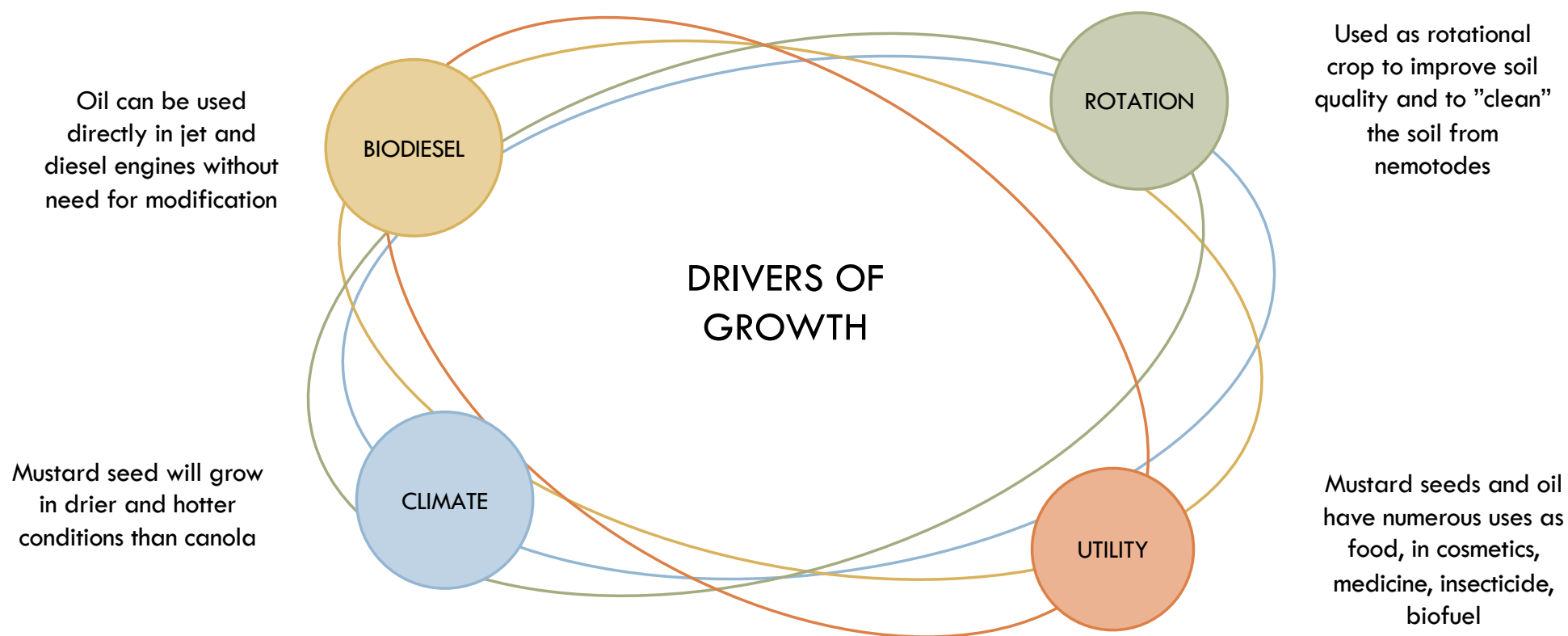


ANIMAL FEED



BIODIESEL

What is driving its success?



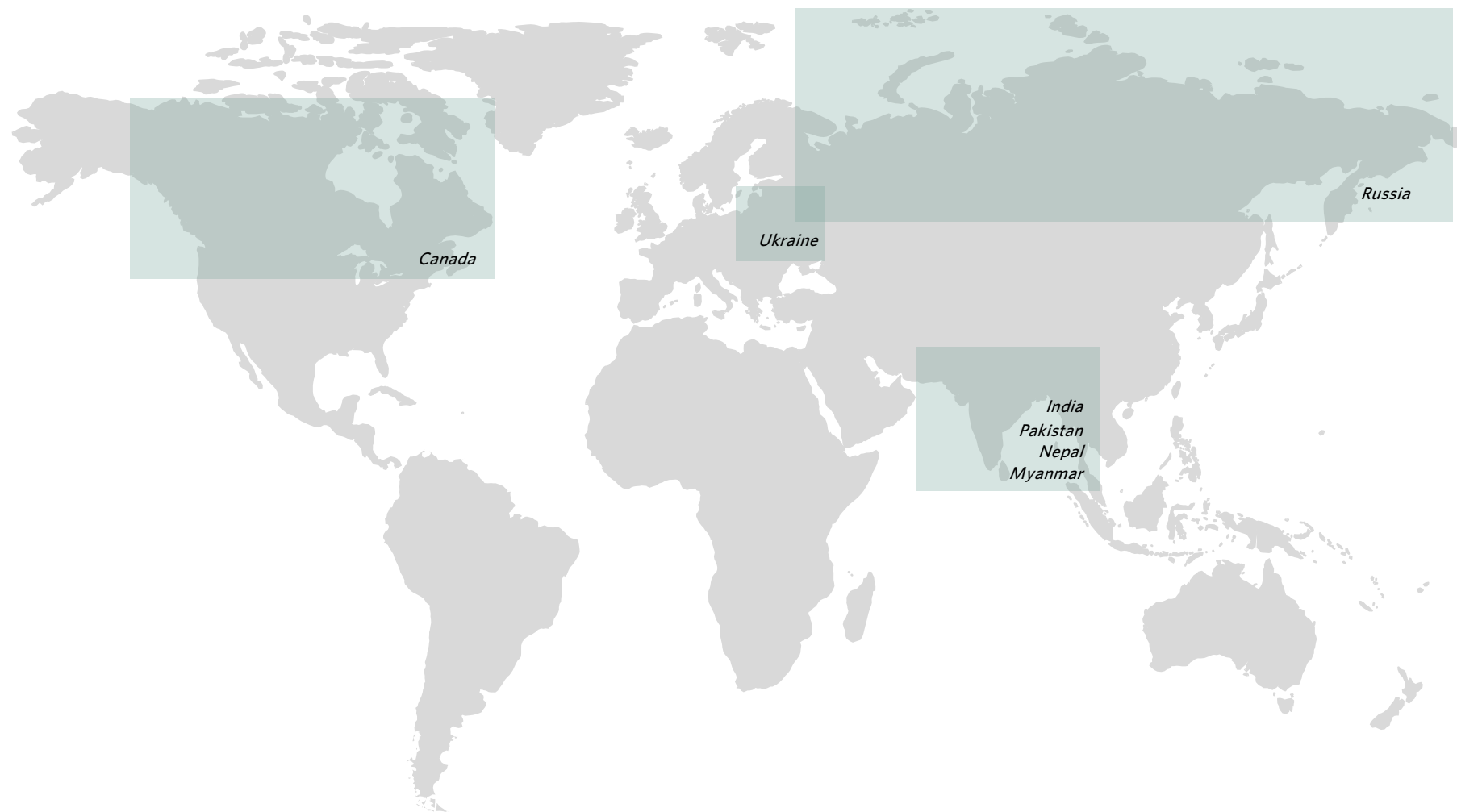
What does Dr. Food think?



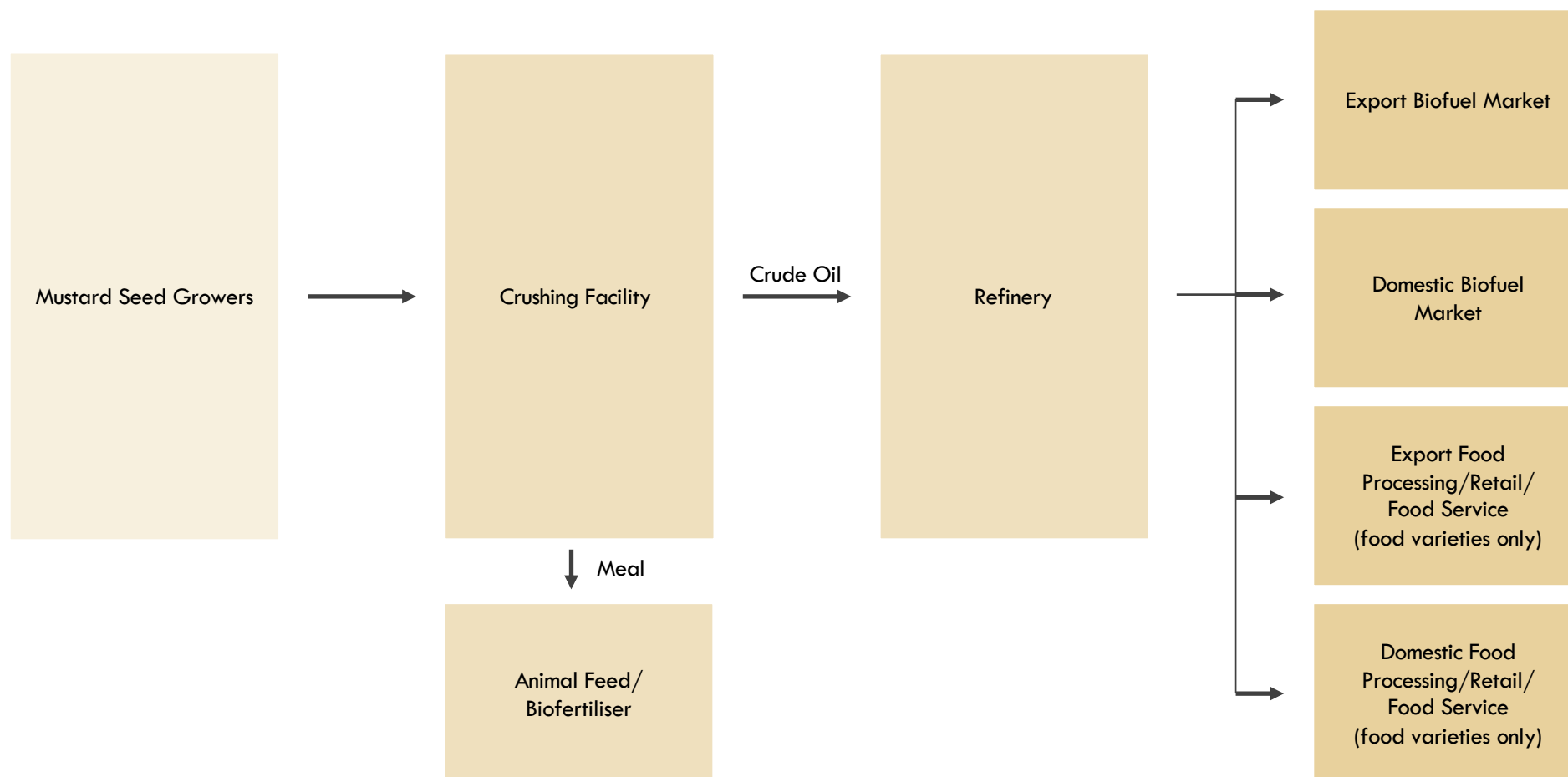
“The mustard seed *Brassica carinata* is designed to fit in with agronomic conditions in North West Queensland. Comfortable in arid conditions, the seed produces aviation quality fuel and the crushed seed by-product is an effective livestock feed for cattle.

“Green” attributes of products and services (e.g. air travel) are increasingly important to consumers and investors. As pressure mounts to increase use of renewable fuels, to minimise waste, and to utilise local, affordable feed ingredients, mustard seed could emerge as a key crop in dry land North West Queensland.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Grows in drier and hotter conditions than canola
- Current trials show promising results
- Can leverage expertise of canola growers in other regions of Australia
- Large body of research in Australia into brassica crops



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Commitment from government and business for biofuels industry
- Qantas and other major airlines have announced renewable energy targets



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as reliable and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant mustard seed cropping sector, leading to at-scale oil processing industry supplying Australian & export markets

1

Expand research trials in region using latest in agronomy and agtech resources

Leverage funding available from renewable energy projects

2






Identify suitable sites with land, water and interested land owners

Develop supply chains for domestic and export markets

3

Develop partnership with Qantas and Agrisoma Biosciences for planned processing facility

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 AGRISOMA	2001	Quebec, Canada Private Cycle Capital Management, BDC Venture Capital, Groupe Lune Rouge	N/A 35	Brassica carinata seed	Canada Australia South America	https://agrisoma.com/biofuel/home Plans to plant 400,000 ha of mustard seed in Australia within 7 years to service biodiesel requirements of Qantas; raised \$15.4m in Series B funding in 2017
 GLENCORE AGRICULTURE	2016	Rotterdam, Netherlands Private Glencore (Public: Switzerland; LSE: GLEN, SEHK: 0805, JSE: GLN), CPP Investment Board, bclMC	US\$25b (2017) 14,000	Grain, oilseeds, pulses, sugar, rice, cotton, protein meals, vegetable oils, biodiesel	Global	http://www.glencoreagriculture.com Originating, handling, processing and marketing of agricultural commodities; operations and offices in 35 countries; 6 grain port terminals in Australia; 24,000 ha of cropping land farmed and leased
 CHS	1929	Inver Grove Heights, MN, United States Co-Op 625,000+ producers	US\$31.9b (2017) 12,500	Grain processing and marketing; animal nutrition, inputs, fuels, lubricants, biofuels, edible oils, oilseeds, flour, dressings, sauces, meal bases	North America Asia Australia	http://www.chsinc.com https://www.chsbroadbent.com Global agribusiness cooperative based in USA; CHS Broadbent grain trading subsidiary in Australia; operations in 20 countries
 CALTEX	1900	Sydney, Australia Public ASX:CTX	A\$21.4m (2017) 3,610	Fuel, lubricants, biofuels, retail	Australia Singapore Philippines NZ	https://www.caltex.com.au Transport fuel supplier, convenience retailer and an integrated oil refining and marketing company; Chevron sold down 50% holdings in 2015
 MINN-DAK GROWERS LTD.	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



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grown across African climate peer regions in huge quantities.
Queensland is major producer of peanuts.
Hi Oleic variety developed by PCA commands premium price.
North West Queensland has counter seasonal window; ensuring year round supply to processing plants.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Demand for non meat proteins
- Widely used across many cuisines
- Demand for healthy oils

VALUE-ADDED OPPORTUNITIES

- Raw, roasted, boiled, fried nuts
- Oil
- Butter
- Flour
- Confectionery and baked goods
- Sauces
- Textile materials
- Cosmetics uses
- Plastics
- Dyes and paints

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Tree nuts - Other snack foods (roasted seeds, legumes) - Imported peanuts - Other non wheat flours 	<ul style="list-style-type: none"> - India - China - United States - Israel - Myanmar - Argentina - Nigeria - Sudan

GROWING CONDITIONS

- Subtropical climates
- Long growing season
- Require 500 to 600mm of well distributed rainfall, plus stored soil water for high yields
- High humidity can cause leaf diseases

KEY RISKS & SENSITIVITIES

- Requires 500-1,000mm of water
- Allergy considerations in shared processing facilities
- Indonesia wants different Spanish variety not grown in Australia
- Market demand is better for shelled rather than in shell

WHAT YOU WOULD NEED TO BELIEVE

- Allergy issues will not dampen demand long term
- North West Queensland can compete with low cost producers (India, China)
- United States increase in production will not deflate prices globally
- Bega's acquisition of PCA in 2017 will encourage further investment in the industry

What are peanuts?



Common names	Peanuts, ground nuts, goobers, pinders, guinea seed
Scientific name	<i>Arachis hypogaea</i>
Type of plant	Annual herbaceous legume
Cultivation cycle	Pods ripen 120-150 days after planting,

Suited climate	Subtropical climates
Uses	Eaten raw, roasted, fried or boiled; oil, butter, flour; ingredient in confectionary, baked goods, sauces, salads, stews; textile materials, cosmetics, plastics, dyes, paints
Origin	South America
Established in AU	1870s; Peanut Marketing Board established in 1924

What is the market situation?



\$20.7m gross value of production of peanuts in shell in Australia in 2016-17



5,495 hectares in peanuts in Australia in 2016-17



Less than 10% of world's production is traded globally



Queensland produces over 95% of Australia's peanuts



16,529 tonnes peanuts in shell produced in 2016-17



Australia produces less than 40% of peanuts we consume

What can you do with it?



ROASTED PEANUTS



PEANUT BUTTER



BAKED GOODS



PEANUT FLOUR



PROTEIN BARS



CONFECTIONERY

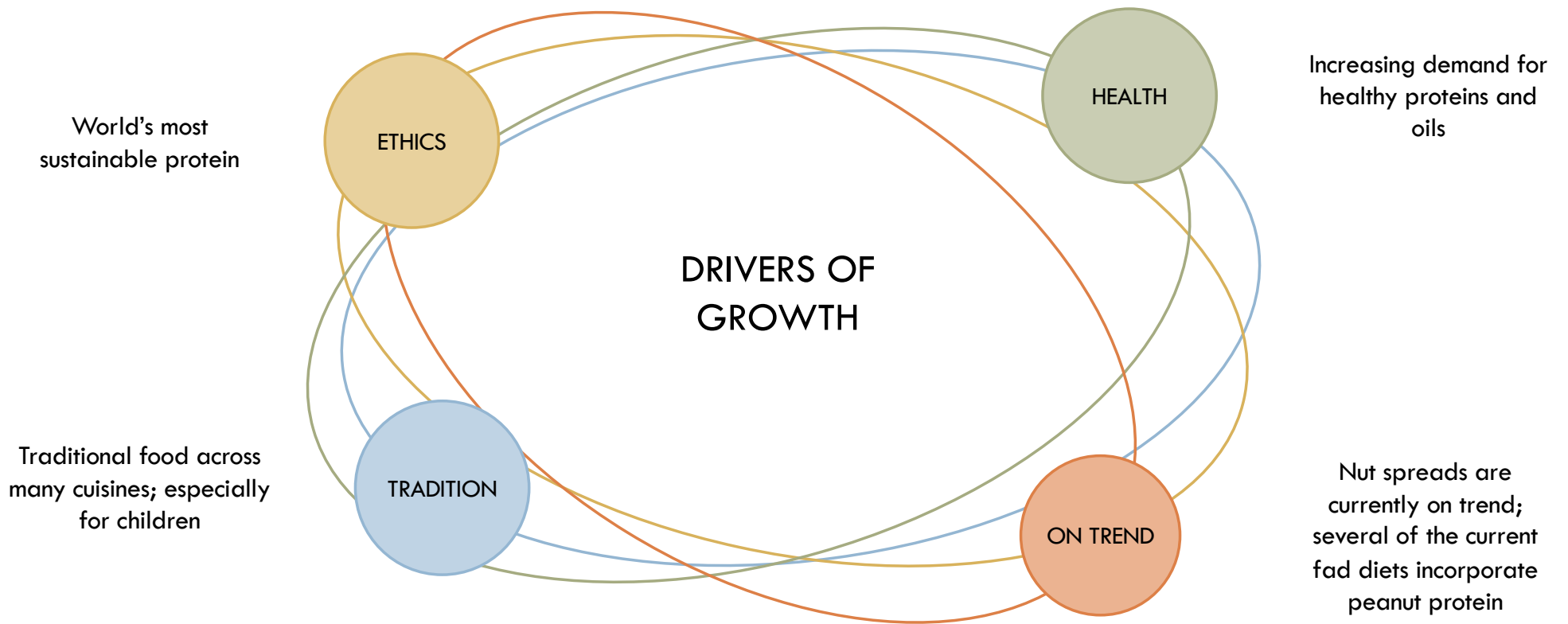


OIL



SAUCES

What is driving its success?



What does Dr. Food think?



“The outstanding market opportunity for North West Queensland peanuts is at home. Coming in at Number 43 in the world’s production league table, Australia is not a “go to” international peanut source. What’s more, home-grown peanuts garner a price premium, particularly if they are high oleic acid with purity and provenance guaranteed.

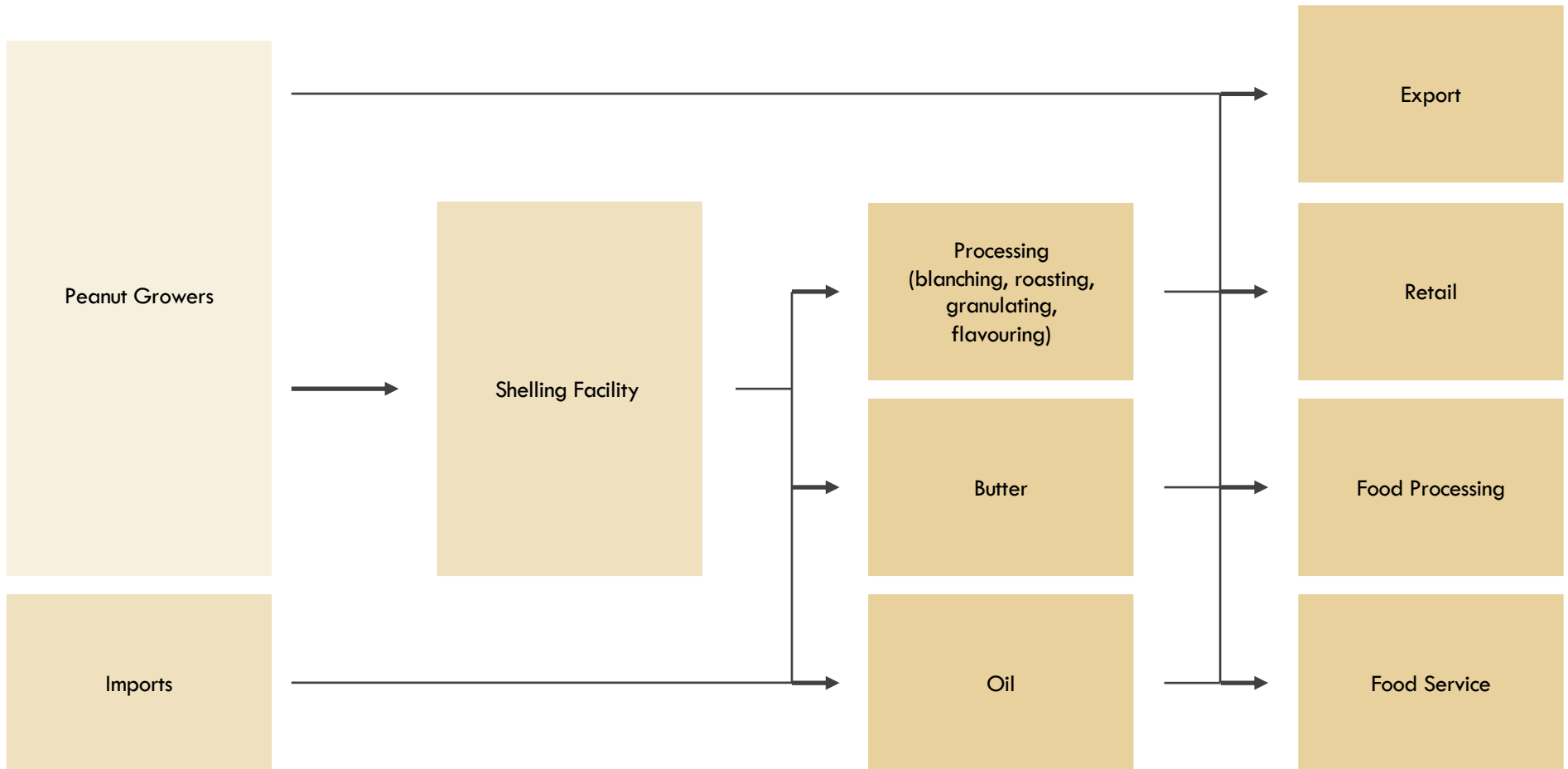
World demand for peanuts in their fresh and processed form continues to be strong. The interaction of international demand and supply determines prevailing prices but, as for so many commodities in the food industry, much depends on what happens in China – it accounts for 40% of global peanut supply but if their domestic production fails to keep up with domestic demand, upward pressure will be placed on international peanut prices – not a bad outcome for the peanut producers of Australia! Watch out for government regulation on salt (sugar and salt taxes are coming fast). Sriracha- and wasabi-flavoured peanuts may appeal more to adventurous consumers and to government health authorities.”

Where is it currently produced?



Source: UN Comtrade; UN FAOSTAT; Coriolis analysis

How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

WHY DO WE THINK MARKETS WANT IT?

WHY DO WE THINK WE CAN SELL IT?

Suited to NW QLD climate

Growing demand in desirable markets

Our Unique Value Proposition

- Successfully produced by dry, climatic peers
- Long history of peanut growing in Queensland
- Counter seasonal winter crop would ensure more efficient year round shelling and processing operations

- Strong market demand from high value markets
- Healthy and sustainable protein and oil
- Nut oils and butters are currently very on trend, with no sign of abating demand
- Growing middle class looking for safe, nutritious, trusted products for their children

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Fresh, counter seasonal supply

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant peanut farming sector, leading to increased efficiencies in existing Australian value chain

1

Research best varieties for region bearing in mind Hi Oleic varieties demand a premium

Select suitable site for commercial operation

2

Develop relationships with contractors, agronomists, and supply chain members






Invest in first stage of commercial scale peanut farming operation

3

Expand operations once production system is perfected

Investigate potential partners for joint venture in processing facility in region

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 THE J. M. SMUCKER COMPANY	1897	Orrville, Ohio, United States Public NYSE:SJM	US\$7.4b (2017) 7,000	Fruit spreads, ice cream toppings, beverages, shortening, peanut butter, oils, sweetened condensed milk, flour, baking mixes, coffee, pet food	USA Canada	http://www.jmsmucker.com Iconic American company with portfolio of leading and emerging brands; Jif (#1 market share) and Smucker's brands of peanut butter
	1891	Austin, USA Public NYSE:HRL Hormel Foundation 49%	US\$9.2b (2017) 20,700	Bacon, smallgoods, oven ready meats, turkey, grocery products, ready meals, canned meat, spreads, specialty foods	North America Australia Global	www.hormelfoods.com 40 manufacturing/distribution facilities; building new prepared meals manufacturing facility in China in 2015; Skippy and Justin's brands of peanut butter
	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
	1866	Vevvey, 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
	1989	Singapore Public SGX:O32	SGD26.3b (2017) 72,000	Cotton, almonds, peanuts, pulses, cocoa, dairy, rice, coffee, nuts, spices, sesame, others	Global	http://olamgroup.com Third largest agribusiness in the world; largest almond grower in Australia; peanut shelling and blanching facilities in Argentina, India, USA



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown by several climatic peer regions; desert plant highly tolerant of saline soil and low water requirements.
North West Queensland is safe, secure, premium producer relative to many other global suppliers.
Growing demand for premium nuts in target markets.

DRIVERS OF GROWTH

- Demand for premium nuts
- Healthy snacking trend (FDA approved health claim)
- Used widely across many cuisines

VALUE-ADDED OPPORTUNITIES

- Raw, roasted
- Confectionery, desserts, baked goods
- Cured meats ingredient
- Flavouring
- Oil (salad dressing, cosmetics)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other nuts - Imported pistachio nuts - Other snacking options - Other confectionery 	<ul style="list-style-type: none"> - United States - Iran - Syria - China - Turkey - United Arab Emirates

GROWING CONDITIONS

- Best producers in arid semi-desert climate with long, dry, hot summers, low humidity and cool but not frigid winters
- Require long, hot summers to ripen (over 600 hours above 30 degrees)
- Highly tolerant of saline soil and water
- Cracking soil regions of North West Queensland may require irrigation

KEY RISKS & SENSITIVITIES

- Significant time before commercial production reached (7-10 years)
- Biennial bearing issues
- Dependence on one species (Sirora) is risky
- High cost of shelling in Australia does not cover premium received on kernel
- Increased production is putting downward pressure on price
- Require rapid processing within 24 hours of harvesting due to high moisture content

WHAT YOU WOULD NEED TO BELIEVE

- Chill factor requirement can be met or different varieties sourced/developed
- Industry can reach viable scale
- North West Queensland can compete with Iran and United States (70-80% of production)

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	●
OVERALL	●

What is pistachio?



Common names	Pistachio, pistache, terebinth nut
Scientific name	<i>Pistacia vera</i>
Type of plant	Small tree, dioecious
Cultivation cycle	Biennial-bearing, 7-10 years to reach significant production, peak at 20 years (live for 200 years); requires hot summers and cold winters

Suited climate	Arid semi-desert climate
Uses	Eaten whole, ingredient in confectionery, baking, desserts, cured meats, flavouring, skincare
Origin	Iran, Central Asia, Middle East
Established in AU	1980s commercially

What is the market situation?



\$25m production value (LVP) in
Australia in 2015-16



1,200 hectares planted in Australia in
2017



US\$2,320m global trade value in
2016



~50 producers in Australia



1,600 tonnes average production from
the productive orchards

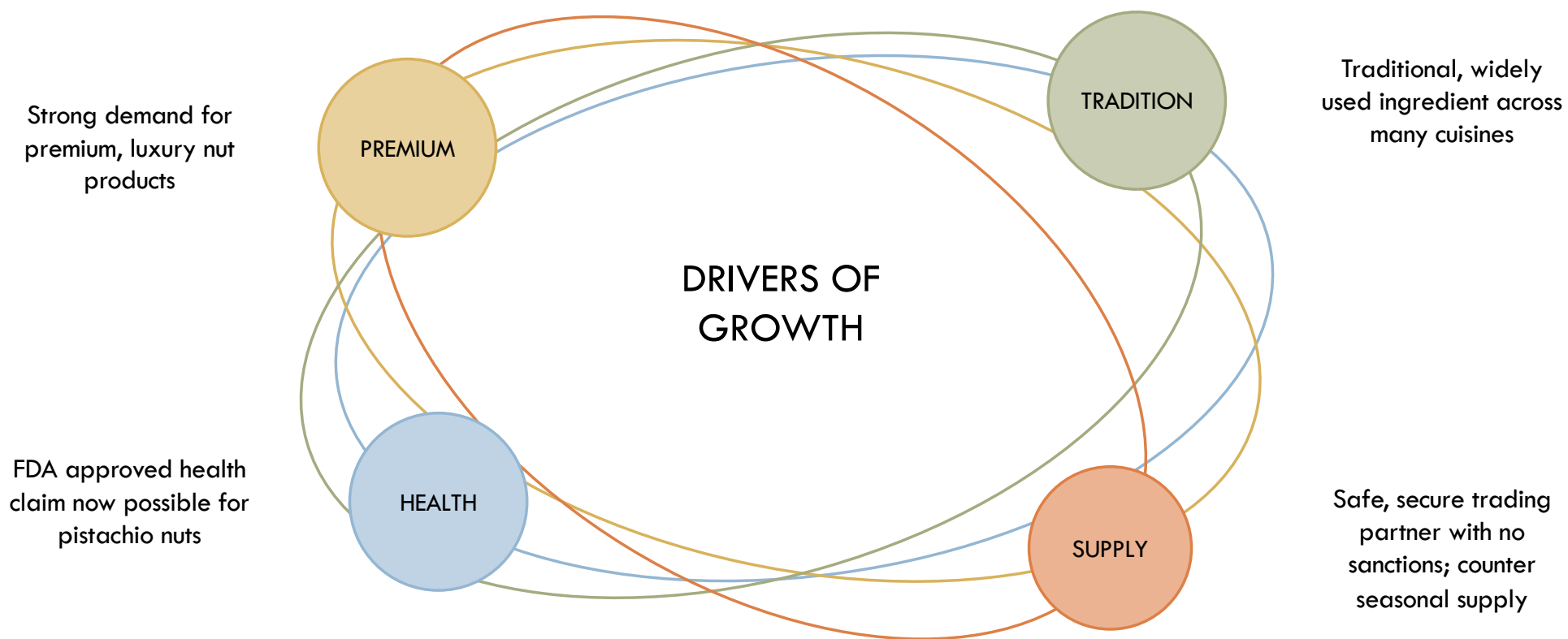


Australia exported 780 tonnes worth
US\$6m in 2016

What can you do with it?



What is driving its success?



What does Dr. Food think?



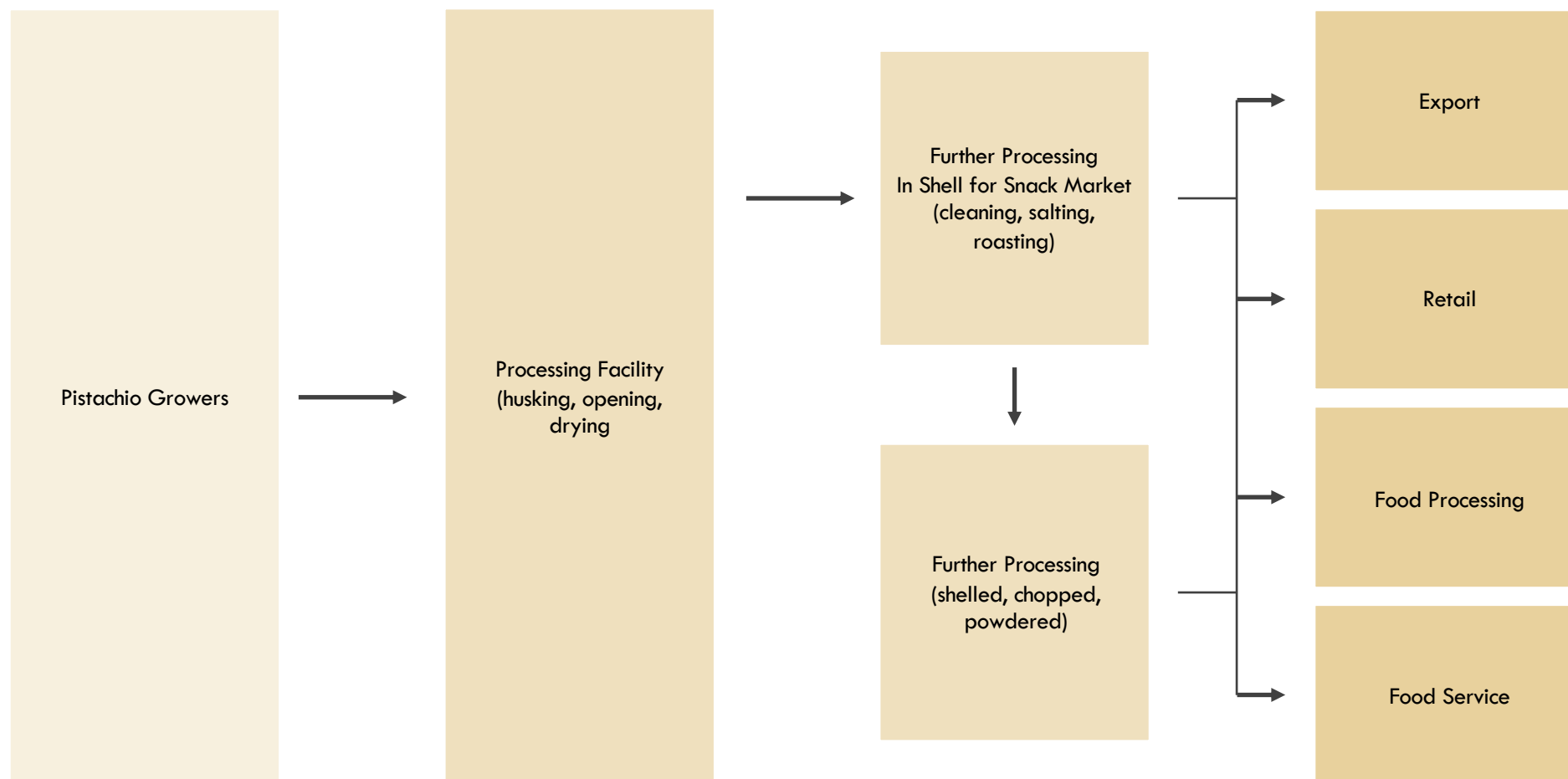
“Dr. Food is adamant that “convenience trumps health”, i.e. it doesn’t matter how healthy your product is, consumers won’t buy it unless it’s convenient to buy, prepare, consume and dispose. But, then pistachio nuts break this rule – deshelling them is an integral part of the pistachio nut eating “ceremony” and consumers feel a compulsion to continue until they have finished the pack! Pistachios have a particularly impressive health halo, yet like other “superfoods”, their health benefits are dissipated in the minds’ eyes of consumers if the claim is all-encompassing (e.g. “eating pistachios cures all ills”!).

The benefits promoted should be tailored to meet the particular interests of the target market segment – claims relating to reducing the risks of dementia don’t appeal to millennials, for example, but weight management and protein content will appeal to them.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

WHY DO WE THINK MARKETS WANT IT?

WHY DO WE THINK WE CAN SELL IT?

Suited to NW QLD climate

Growing demand in desirable markets

Our Unique Value Proposition

- Successfully produced by dry, climatic peers
- Long history of nut production in Queensland

- Increasing demand for premium nuts
- China demands outstrips domestic supply
- Strong demand from traditional consumers in Middle East and Asia
- Opportunity for import substitution in domestic market

- Leverage Australia's reputation as safe and secure producer; no trade sanctions
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant pistachio growing sector, leading to at-scale value added processing industry supplying Australian & export markets

1

Select suitable site for commercial operation

Invest in variety and yield research

2






Invest in first stage of commercial scale pistachio growing operation

Develop supply chains relationships for domestic and export markets

3

Investigate potential partners for joint venture in processing facility

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1979	Los Angeles, United States Private Stewart & Lynda Resnick	US\$4b 7,300	Citrus, pomegranates, almonds, pistachios, bottled water, wine, flower delivery	USA Mexico Fiji	www.wonderful.com www.wonderfulcitrus.com #1 citrus grower in US, #1 tree nut grower in world; exports globally
	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; Planters snack nuts brand
	1972	Avenal, California, United States Private Keenan family	N/A	In shell and shelled pistachios	USA	http://www.keenanpistachio.com One of the largest pistachio processors in USA
	1986	Terra Bella, California, United States Private Family	N/A	In shell and shelled pistachios, bites, chocolate covered	USA 50 markets	http://settonfarms.com Second largest pistachio processor in USA; processing capacity of over 130m pounds of pistachios
	1973	Sirjan, Iran Private Ghiasy family	N/A	In shell and shelled pistachios, Pistachio Green Kernel	Iran	http://www.iran-pistachio.com/about-us 50 hectares of pistachio gardens; 15,000sq m facilities; one of leading exporters of Sirjan pistachios



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

North West Queensland borders native habitat regions and can leverage expertise of coastal Queensland growers.
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.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	◐
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Premium seafood product
- High value placed on premium shellfish in China (e.g. as banquet centre pieces)
- Move towards sustainably sourced seafood

VALUE-ADDED OPPORTUNITIES

- Live exports
- Prepared products
- Live aquarium trade
- Sustainable seafood marketing
- Chitin extract
- Tourism opportunities

KEY COMPETITORS

DOMESTIC

- Other Australian freshwater crayfish species (marron, yabbies)
- Australian saltwater lobsters (rock, tropical, scampi)
- Other shellfish
- Imported cooked, frozen and prepared crayfish/lobster products

EXPORTERS/PRODUCERS

- China (91% of world production of freshwater crayfish)
- United States
- Bangladesh
- Thailand

GROWING CONDITIONS

- Native to rivers in tropical QLD and NT
- Range of habitats from shallow, clear, fast flowing creeks to the deep, still, turbid billabongs
- Aquaculture in purpose built earthen ponds
- Identified as an industry in Richmond region

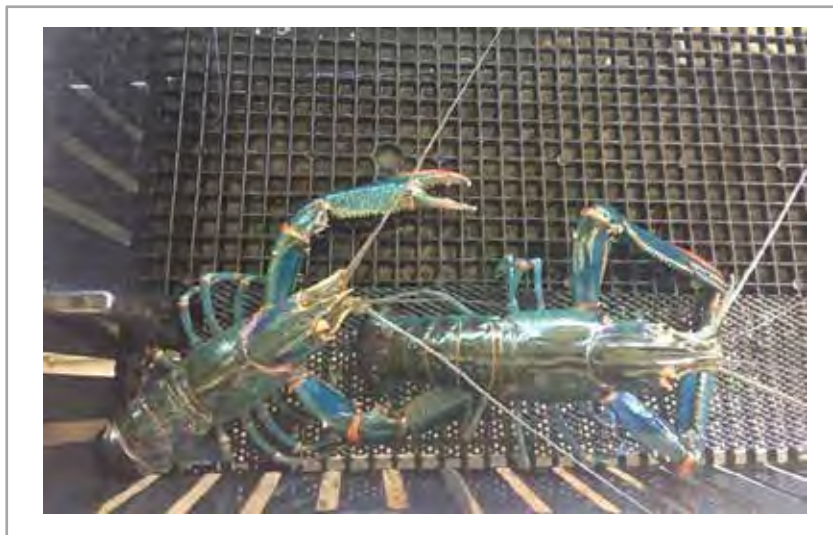
KEY RISKS & SENSITIVITIES

- 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 and few stand alone models to follow
- Water restrictions and droughts; evaporation rate for ponds very high in region
- Flooding risk in region
- Restrictions on stocking and selling outside of native range or by unlicensed producers

WHAT YOU WOULD NEED TO BELIEVE

- 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)
- Recent breakthroughs in production technology will continue
- Pond design to minimise evaporation is possible
- Suitable sites that are completely safe from risk of flooding are available
- Suitable sites that minimise environmental impacts are available
- Power and water requirements can be met

What is redclaw crayfish?



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
Uses	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

What is the market situation?



\$1.7m industry turnover in Queensland in 2017



\$25-\$35/kg wholesale in premium domestic markets



Unable to meet growing demand in attractive Asian markets



25 producers in Queensland in 2017



64.8 tonnes produced in Queensland in 2017



Limited exports currently; prawn & rock lobster industry shows how to succeed

What can you do with it?



FRESH



READY TO EAT



CHITIN EXTRACT



TOURIST ATTRACTIONS



PREPARED



WHOLE COOKED

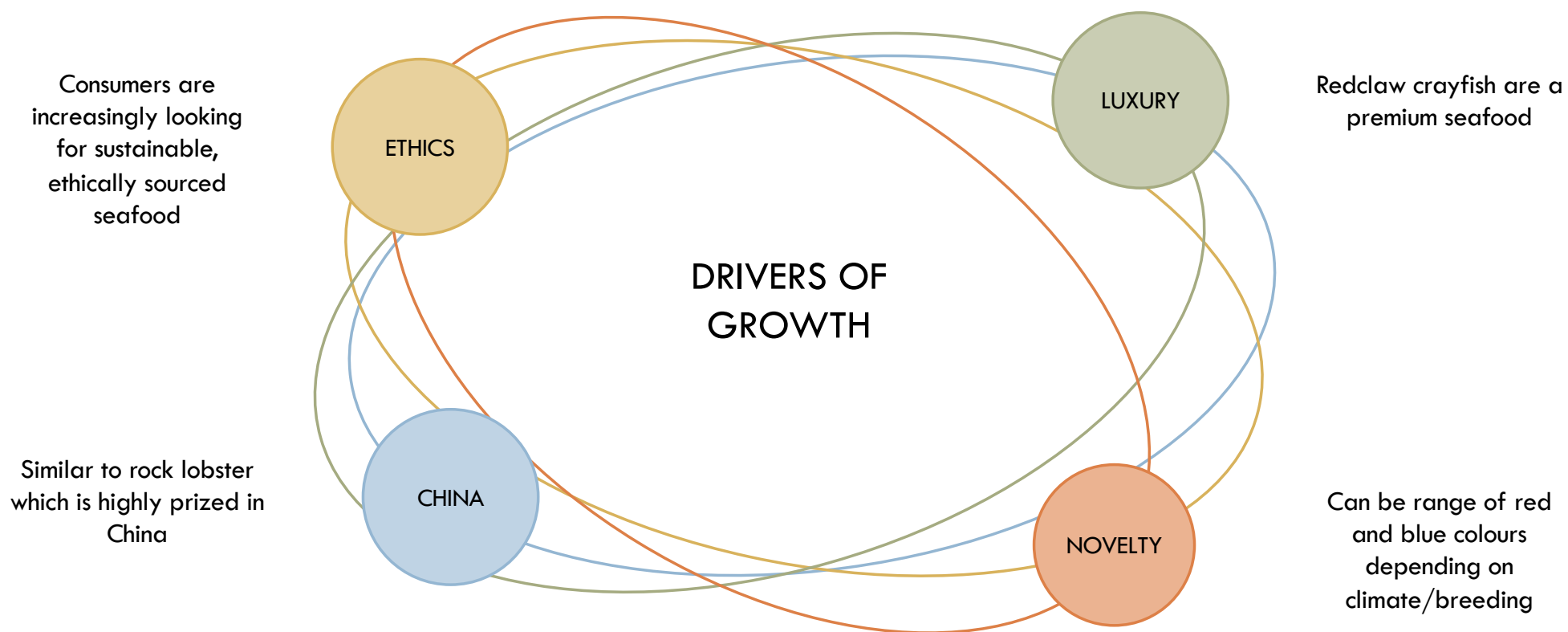


CAVIAR



SAUCES

What is driving its success?



What does Dr. Food think?



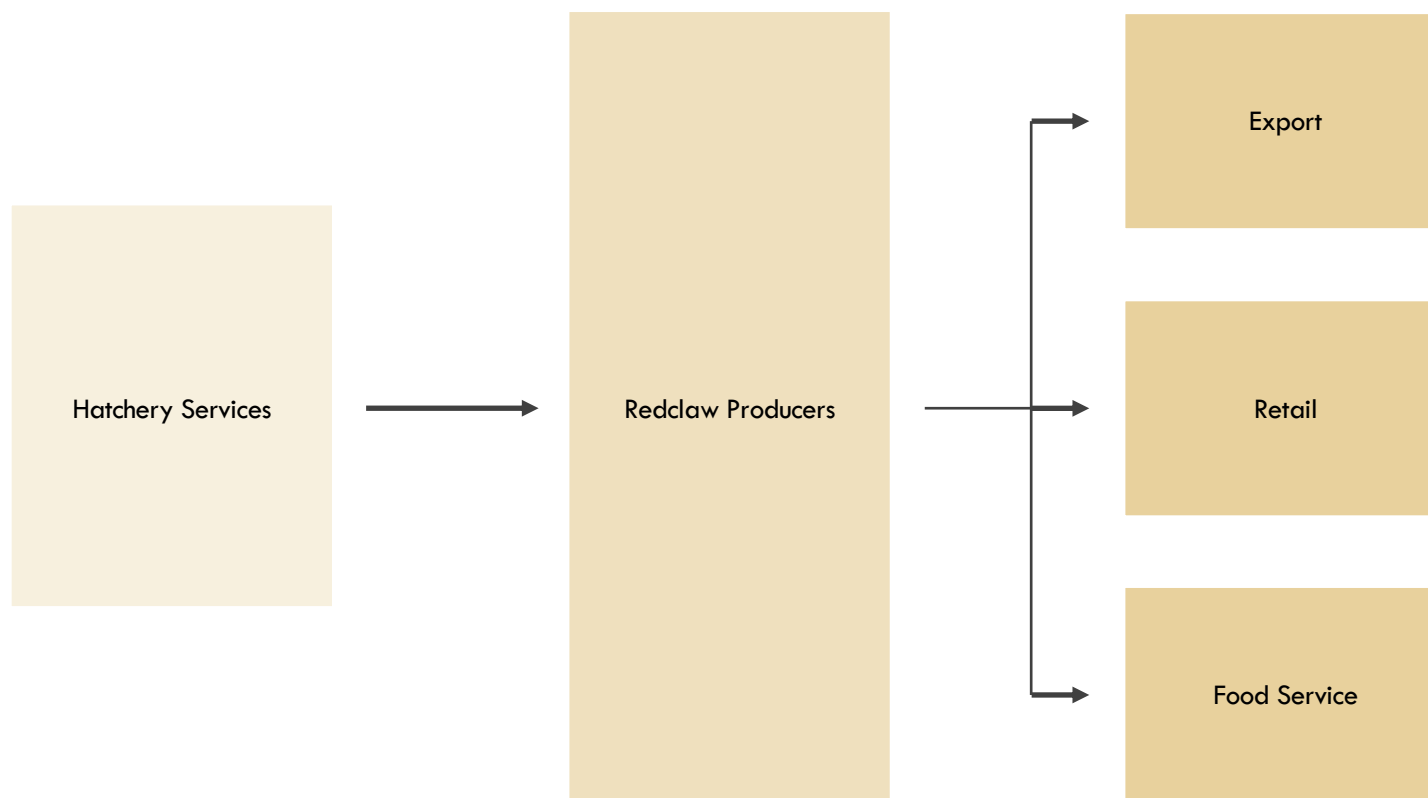
“The Redclaw Crayfish sounds interesting in English but how does it translate into Mandarin? Likely, its highest value market destinations are live to China, Hong Kong and Singapore. For the Chinese, the colour RED connotes “Happiness” and “Good Luck”. Like NZ Cervena deer meat, would an Asian-friendly export name for the Redclaw (“Good Luck Lobster” in striking vermilion) be a good way to differentiate the offer? Certainly, QLD Redclaw exporters should be communicating with their equivalents in WA to co-ordinate export programs and co-operate in market development – competing head-to-head would be a folly! The clean and pristine waters of Northern QLD would strike a chord with Asian customers concerned about the polluted waters around their coastlines.”

Where is it currently produced?



Note: other countries are producing different species of freshwater crayfish. Source: UN Comtrade; UN FAOSTAT; Coriolis analysis

How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced elsewhere in Queensland
- Long history of aquaculture in state
- Potential of aquaculture highlighted in numerous reports
- Redclaw are robust species with excellent attributes for aquaculture



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- High demand for premium seafood in target markets
- China demands outstrips domestic supply
- Demand for sustainable, unique seafood



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant redclaw aquaculture industry, supplying premium, unique seafood to high end Australian & export markets

1

Continue to invest in R&D to improve breeding technology and production systems

Investigate suitable sites in region, combining low flood risk with reliable water supply

2






Develop supply chain relationships

Invest in industry wide marketing and branding
(e.g. cervena for NZ venison)

3

Investigate potential partners for joint venture in live export supply chains
(e.g. Western Rock Lobster)

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	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
	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
	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)
	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
	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



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

History of growing safflower in Australia.
Promising results from growing trials in region.
Increasing demand for industrial oils and biofuels.
CSIRO have bred Super-High Oleic safflower, over 92% oleic acid.

DRIVERS OF GROWTH

- Demand for oil biofuel crops
- Demand for healthy oils
- Demand for natural supplements
- Demand for natural ingredients in skin care

VALUE-ADDED OPPORTUNITIES

- Food grade oil (cooking, spreads, dressings)
- Herbal tea
- Saffron substitute (flowers)
- Dyes
- Industrial oil
- Meal
- Biofuel
- Bird seed
- Animal feed (meal)

KEY COMPETITORS

DOMESTIC

- Other edible oils
- Imported bird seed
- Other potential biofuel crops

EXPORTERS/PRODUCERS

- Kazakhstan
- India
- United States
- Mexico
- Argentina

GROWING CONDITIONS

- Arid and semi arid climates
- Heat and drought resistant
- Does not like waterlogging
- Flexible rotation crop
- Tried in NW Queensland (Cloncurry)

KEY RISKS & SENSITIVITIES

- Fewer herbicides available than other crops
- Less market development than other crops in Australia (mostly edible oil use)

WHAT YOU WOULD NEED TO BELIEVE

- Biofuels market will be more profitable than traditional edible oil and birdseed uses
- North West Queensland can compete with lower cost, large scale producers for the biofuels market
- Better market demand for crude oil (which includes sunflower) than for safflower seeds
- Release of GM safflower in Australia in 2018 will invigorate the industry

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●

What is safflower?



Common names	Safflower
Scientific name	<i>Carthamus tinctorius</i>
Type of plant	Herbaceous, thistle like annual
Cultivation cycle	Matures in 110-170 days

Suited climate	Semi arid and arid climates
Uses	Edible and industrial oil, confectionery, birdseed, feed meal, cut flowers
Origin	Near East
Established in AU	1950s commercially

What is the market situation?



US\$1.89m gross production value of safflower seed in Australia in 2016



Australia harvested 4,394 hectares in 2016; has reached 10,000ha in past



Growing demand from biofuels industry



Average dryland yields of 1-1.2 tonnes per hectare



2,570 tonnes of seed was produced in Australia in 2016



Australia exported 1,600 tonnes of safflower seed in 2017

What can you do with it?



BIRD SEED



SAFFRON SUBSTITUTE



WEIGHT MANAGEMENT



SKIN CARE



EDIBLE OIL



SUPPLEMENT

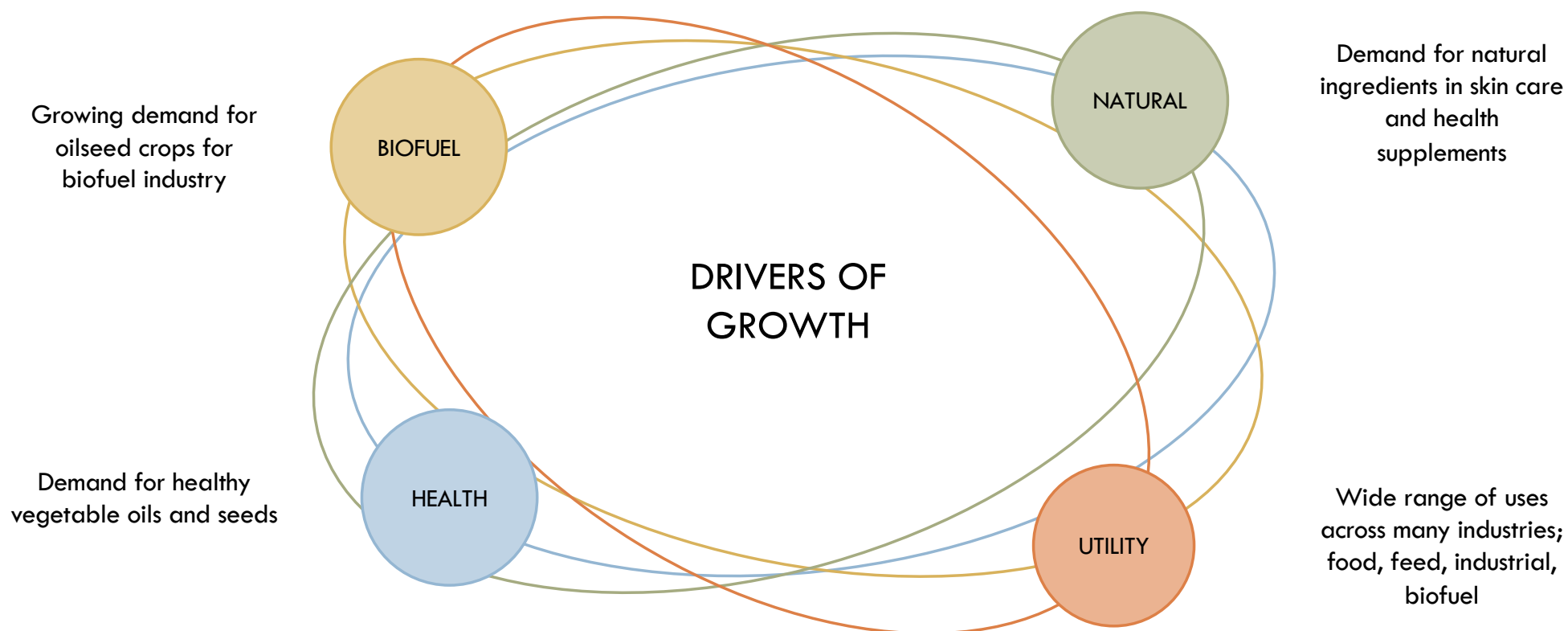


HERBAL TEA



BIODIESEL

What is driving its success?



What does Dr. Food think?

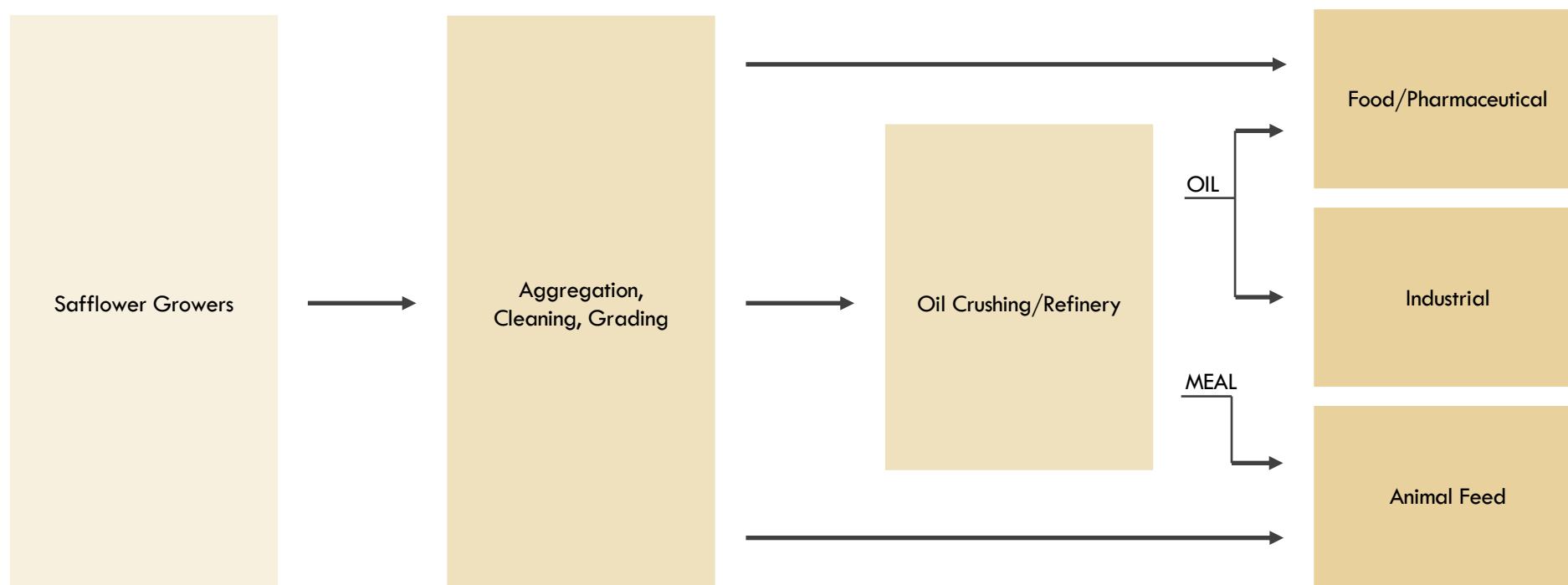


“High linoleic acid safflower oil will fit comfortably alongside shea butter and castor and jojoba oils in the North West Queensland skin and hair care beauty ingredient mini-cluster. This collection of natural ingredients with a common provenance will appeal strongly to big-branded cosmetic companies desperate to safeguard the integrity of their brands via, *inter alia*, high integrity specialty beauty ingredient supply chains. Safflower oil has particular resonance in Asian cosmetic markets where skin-lightening properties are much valued.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced in dry regions
- Successfully grown in region under irrigation
- Long history of oilseed production in Australia
- Extensive research and breeding of high oleic varieties in Australia



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Increasing demand for biofuel feedstock globally
- Europe imports large quantities of safflower seed for processing



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant cropping sector based on safflower, leading to at-scale oil processing industry supplying food and biodiesel markets

1

Promote benefits of growing safflower to landowners in region

Continue to invest in variety and yield research; especially dryland potential

2

Develop trial plots across North West Queensland region






Secure sites for commercial plantations

Investigate supply chain and potential markets

3

Investigate potential partners for joint venture in oil processing facility

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 BUNGE Loders Croklaan	1890/ 1972	Wormerveer, The Netherlands Bunge Limited Public; NYSE:BG	US\$42.7b (2016; Bunge Limited) 2,500	Palm, soybean, canola, sunflower, olive, coconut, shea oils, lecithin	5 continents; 100+ countries served	http://europe.bungeloders.com Leading producer of premium quality seed and tropical oils and fats for food and non food applications Acquired by Bunge in Mar 2018
	1871/ 2005	Malmö, Sweden Public; OMK:AAK	SEK26.4m (2017) 3,300	Canola, palm, palm kernel, olive, soybean, sunflower, shea, corn, coconut oils	Europe Americas	https://aak.com Leading global provider of shea derived ingredients 20 production facilities; sales offices in 25 countries
	1929	Inver Grove Heights, MN, United States Co-Op 625,000+ producers	US\$31.9b (2017) 12,500	Grain processing and marketing; animal nutrition, inputs, fuels, lubricants, biofuels, edible oils, oilseeds, flour, dressings, sauces, meal bases	North America Asia Australia	http://www.chsinc.com https://www.chsbroadbent.com Global agribusiness cooperative based in USA; CHS Broadbent grain trading subsidiary in Australia; operations in 20 countries
 中粮国际 COFCO INTL	2000	Geneva, Switzerland Private COFCO, China Investment Corporation, Hopu, Temasek, IFC, Standard Chartered	\$34b 12,000	Grains, sorghum, pulses, oilseeds, sugar, coffee, cotton, freight	Global	https://www.cofcointernational.com Overseas agriculture business platform for COFCO (China's largest food & agriculture company; operations in 35 countries; COFCO Agri Australia
 GLENCORE AGRICULTURE	2016	Rotterdam, Netherlands Private Glencore (Public: Switzerland; LSE: GLEN, SEHK: 0805, JSE: GLN), CPP Investment Board, bclMC	US\$25b (2017) 14,000	Grain, oilseeds, pulses, sugar, rice, cotton, protein meals, vegetable oils, biodiesel	Global	http://www.glencoreagriculture.com Originating, handling, processing and marketing of agricultural commodities; operations and offices in 35 countries; 6 grain port terminals in Australia; 24,000 ha of cropping land farmed and leased



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grows across all climatic peer regions; robust against drought, high heat, insects and excessive rains.
Increasing demand for healthy oils and spreads.
China's demand outstrips domestic supply, despite being fourth largest producer.
Trials in the region and wider Queensland proving successful.

DRIVERS OF GROWTH

- Growing demand for Japanese and other Asian cuisines globally
- Demand for healthy spreads and alternative "nut" spreads
- QSR (Quick Serve Restaurants) use on burger buns
- One of highest oil contents of any seed

VALUE-ADDED OPPORTUNITIES

- Roasted or raw seeds
- Oil
- Paste (tahini)
- Hummus
- Salad dressing
- Muesli, snack bars, breads, crackers ingredient
- Confectionery, sweet filling
- Sushi ingredient
- Hamburger bun topping

KEY COMPETITORS

DOMESTIC

- Imported sesame seeds
- Imported sesame oil
- Other seeds and grains (esp. poppy seeds)
- Other plant oils
- Other dips and dressings

EXPORTERS/PRODUCERS

- India
- Sudan
- Ethiopia
- Nigeria
- Myanmar
- Tanzania
- China
- Togo

GROWING CONDITIONS

- Dry arid, tropical and subtropical climates
- Requires hot conditions during growing period for maximum yields
- Varieties suiting central Queensland and Northern Australia have been developed
- Tolerant against drought, high temperatures and excessive rainfall, though not water logging

KEY RISKS & SENSITIVITIES

- Allergy considerations in shared processing facilities and market place
- Need to reach scale
- No feeding value in stubble
- Need expertise at harvesting to avoid significant losses
- Weed control is issue
- High value markets for sesame oil prefer domestic brands (Korea, Japan)

WHAT YOU WOULD NEED TO BELIEVE

- There is demand for safe and secure supplier of premium sesame seeds
- Can achieve scale
- North West Queensland can produce high quality seeds to supply to QSR/food service
- Research into suitable varieties for NW Queensland region will continue

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

What is sesame seed?



Common names	Sesame
Scientific name	<i>Sesamum indicum</i>
Type of plant	Annual flowering shrub
Cultivation cycle	90 to 120 frost free days

Suited climate	Dry arid, tropical and subtropical climates
Uses	Whole, raw or roasted; oil; paste (tahini); ingredient in breads, crackers, cakes, snack bars, muesli, sushi, salad dressing, hummus, confectionary
Origin	Sub-Saharan Africa
Established in AU	Trials in 1979-1982; breeding programme by CSIRO in 1989; current trials in QLD/NSW

What is the market situation?



US\$4,167m gross production value for sesame seeds globally in 2016



12 hectare trial crop of black sesame successfully grown in Rockhampton in 2018



China was largest market, importing 931,159 tonnes in 2016



11m hectares were harvested globally in 2016*



6.8m tonnes were produced globally in 2016*



Global trade value was US\$2.2b in 2017

* No data available for USA. Source: various published articles; UN FAOSTAT; Coriolis analysis and estimates. Photo Credit: Freepik from www.flaticon.com

What can you do with it?



WHOLE



SESAME OIL



CONFECTIONERY/BARS



SUSHI



SALAD DRESSING



TAHINI

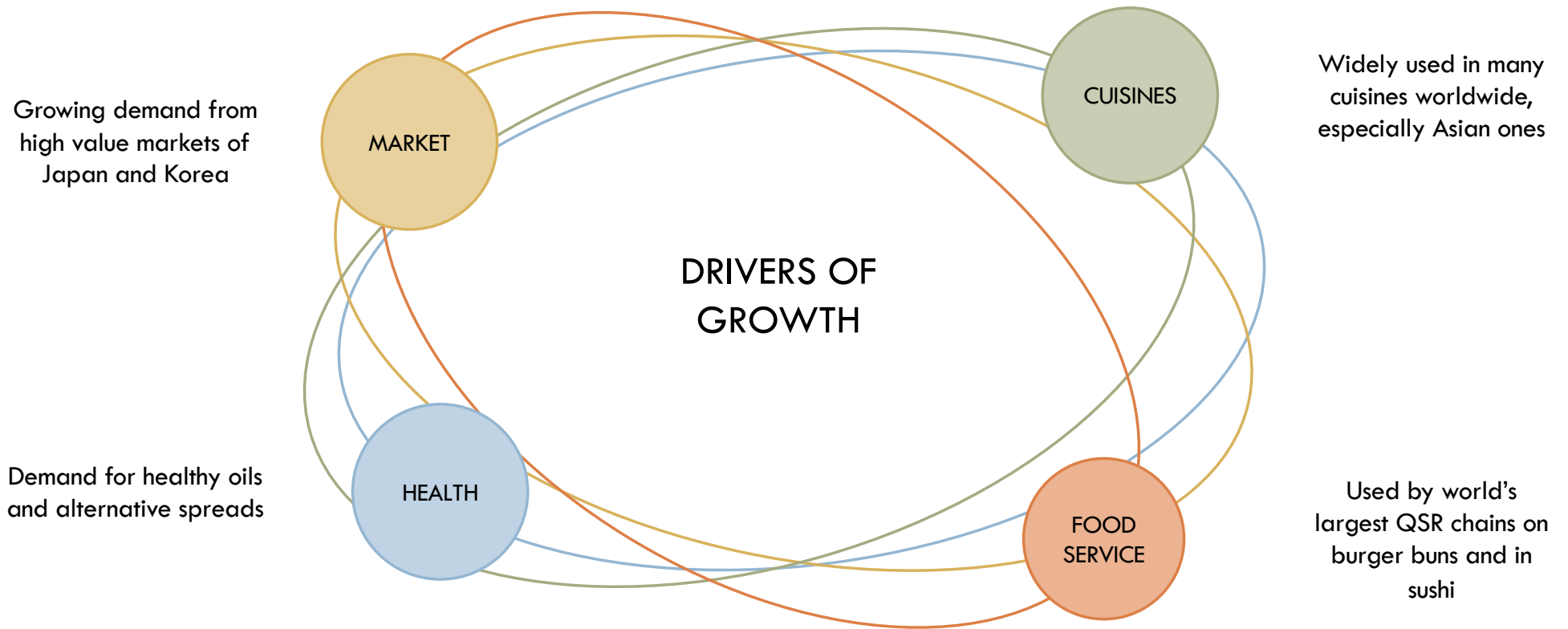


ICE CREAM



BURGER BUNS/BREADS

What is driving its success?



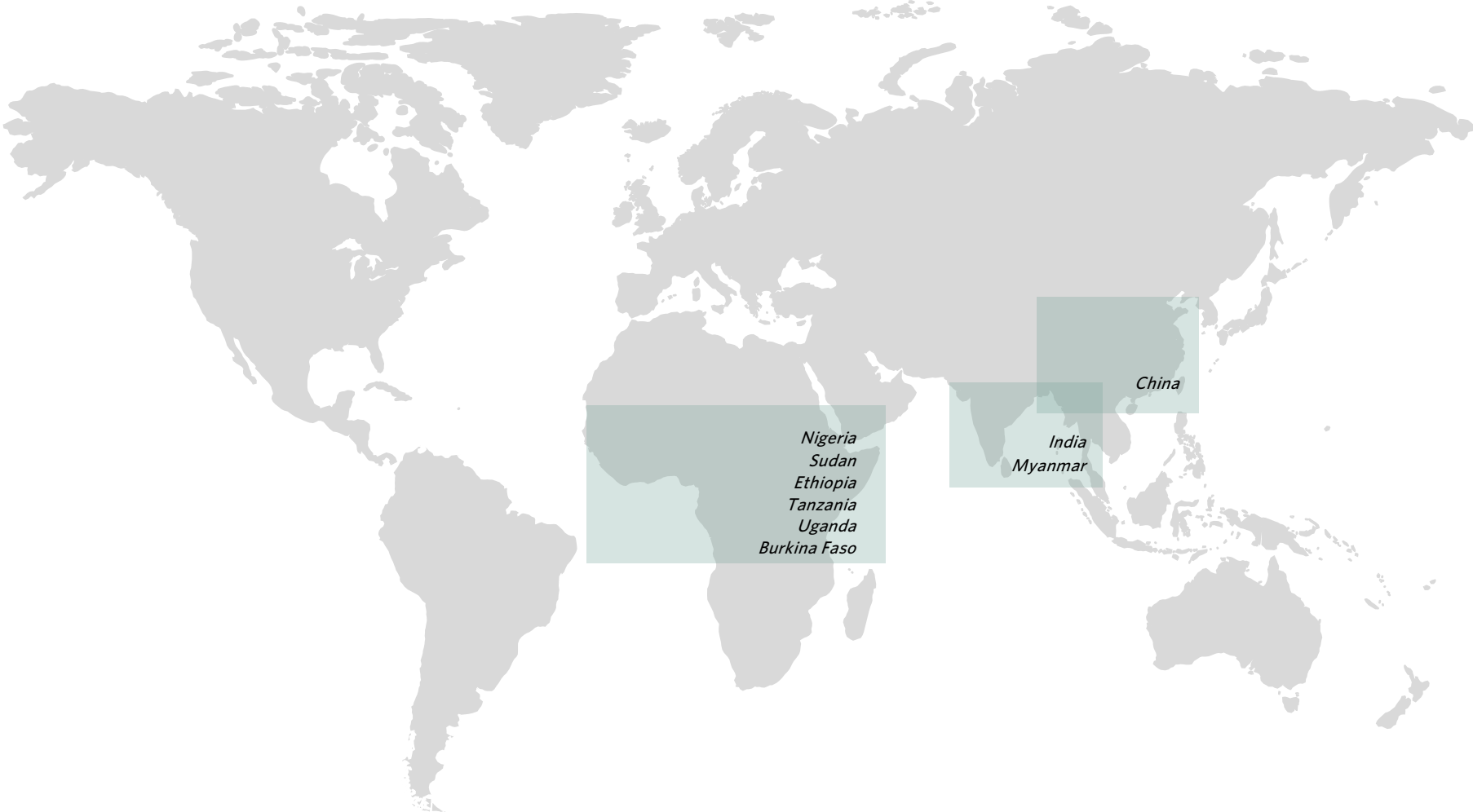
What does Dr. Food think?



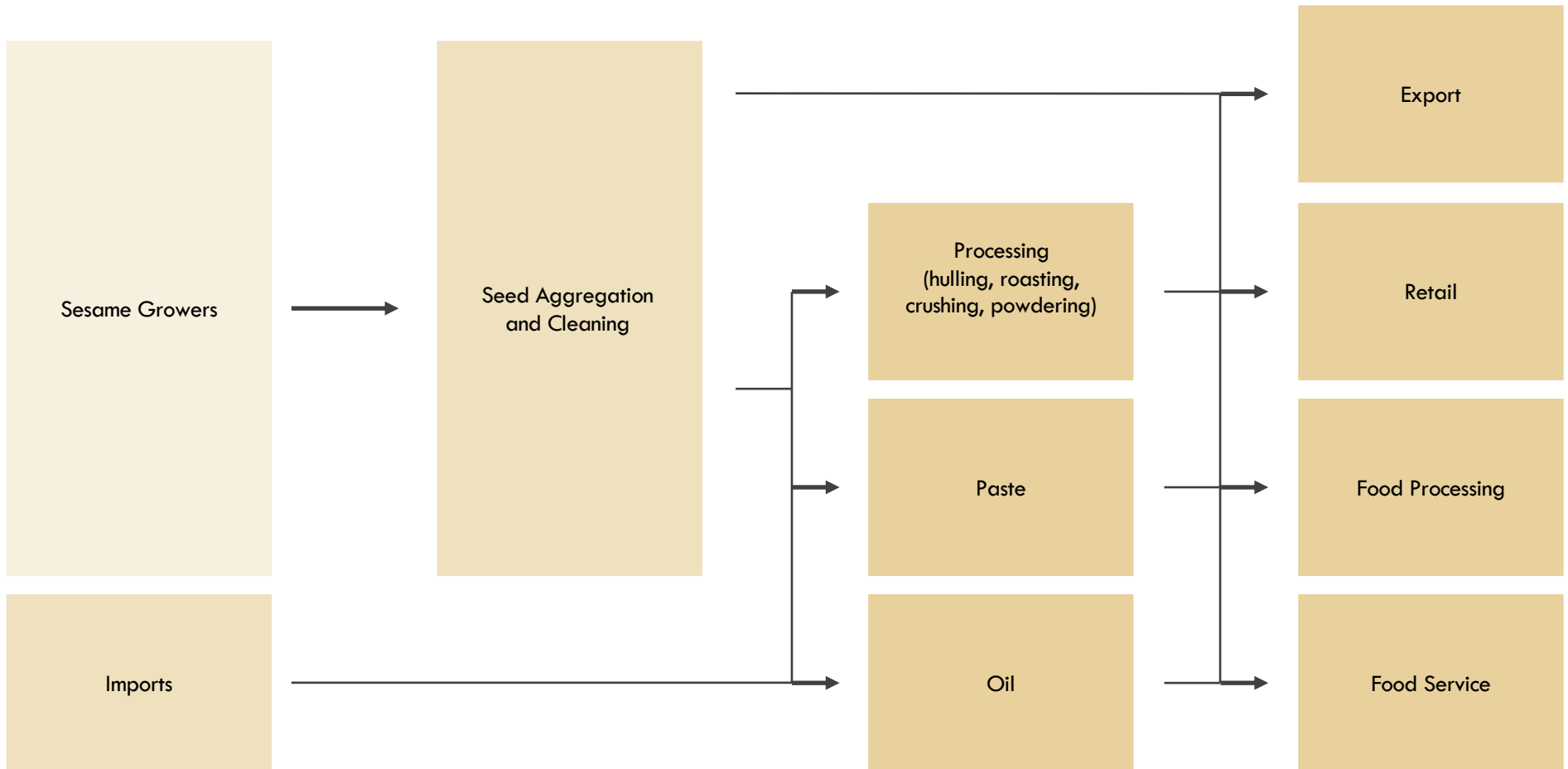
“Here’s a match made in heaven: tahini (toasted, ground sesame seeds), chickpeas, olive oil, lemon juice, garlic and salt – all produced in North West Queensland – blended together to produce delicious hummus. This Middle Eastern dish has become hugely popular in many markets (2016 to 2020 global sales projections show a CAGR of 9.4% and topping US\$1 billion by 2020).

North West Queenslanders and tourists alike will walk on hot coals to taste this brilliant concoction of local ingredients!”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

WHY DO WE THINK MARKETS WANT IT?

WHY DO WE THINK WE CAN SELL IT?

Suited to NW QLD climate

Growing demand in desirable markets

Our Unique Value Proposition

- Successfully produced by dry, climatic peers
- Long history of oilseed production in Australia
- Successful trials in region (albeit small scale)
- Research institution and agronomist support

- Strong demand from high value markets
- Demand from wide variety of channels and markets
- Increasing popularity of cuisines that rely heavily on sesame
- Growing interest in transparent and safe supply chains from end consumers

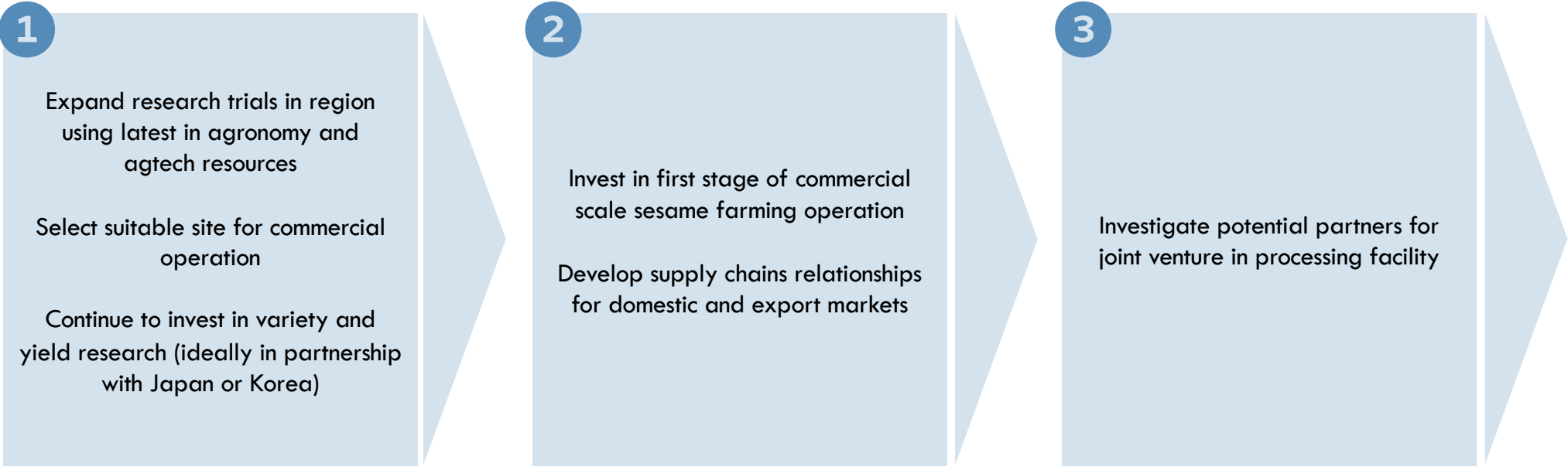
- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

Source: Coriolis analysis. Photo credit: Dollar Photo purchased by Coriolis






How could we do it?

STRAWMAN

VISION:
 North West Queensland builds a vibrant cropping sector based on sesame, leading to at-scale oil processing industry supplying Australian & export markets



Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	2017	North Sydney, Australia	N/A	Pulse, brassicas, cruciferous, dryland native rice, summer grains, oilseeds, soybeans, legume crops	Australia	https://www.agriventistechnologies.com.au Agricultural seed technology and development company; only commercial grower of black sesame in Australia
	1989	Singapore Public SGX:O32	SGD\$26.3b (2017) 72,000	Cotton, almonds, peanuts, pulses, cocoa, dairy, rice, coffee, nuts, spices, sesame, others	Global	http://olamgroup.com Third largest agribusiness in the world; largest almond grower in Australia; peanut shelling and blanching facilities in Argentina, India, USA
	1883	Osaka, Japan Private Wada family	¥1b N/A	Sesame seeds, paste, oil, jam, dressings, sprinkles, seasoning, confectionery	Japan	http://wadaman.com/english/about Processor and seller of sesame seeds and products; sesame restaurant; organic certification
	1919	Tokyo, Japan Public TSE:2809	¥24b 13,478	Mayonnaise, sesame dressing, salad dressings, prepared vegetables, prepared salads, egg products, ready meals, aged care meals, baby food, cosmetics	Global	https://www.kewpie.co.jp/english/about-us/history.html 9 factories in Japan; numerous subsidiaries; factories in USA, China, Thailand, Vietnam, Malaysia, Indonesia, Poland
	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

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



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Shea trees grow naturally across 21 countries in the dry savannah belt.
There is growing demand for natural health and skincare products.
North West Queensland provides an attractive safe and secure alternative supply compared to current high risk countries.
Queensland has extensive experience in growing tree nuts.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	●

AUSTRALIA

High performance genetics available	○
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Demand for healthy oils (contains 5 different fatty acids)
- Antioxidant properties via phenolic compound content
- Demand for natural skincare products
- Demand for natural health products (lowering cholesterol)
- Demand from food industry for substitute for cocoa butter

GROWING CONDITIONS

- Fruit takes 4-6 months to ripen; optimum yield up to 45kg/tree; each kg of fruit gives 330 grams of dry nuts
- Proportion of 5 fatty acids differs across distribution range in Africa
- Grows profusely in wild in dry savannah belt of Africa (21 countries)
- Survives droughts and fires; can live for hundreds of years
- Bears fruit after 7-15 years, reaches maximum production after 50 years

VALUE-ADDED OPPORTUNITIES

- Cocoa butter substitute (separation into stearin)
- Margarine
- Cooking oils
- Skincare
- Candles
- Waterproofing wax
- Animal feed component
- Pharmaceutical uses (bark of tree, shell of nut)

KEY RISKS & SENSITIVITIES

- Cracking soils in some areas of region not considered suitable for tree crops (without irrigation)
- Reluctance to introduce any new species (based on previous invasive species experiences)
- No commercial production model to follow; trees in African countries are not cultivated as plantations but managed in farmed parklands
- Long time to commercial production (has been reduced to 7 years with research); potential triannual bearing issues

KEY COMPETITORS

DOMESTIC

- Cocoa butter
- Coconut oil
- Imported shea butter
- Other oils
- Other emollients used in skin care

EXPORTERS/PRODUCERS

- Nigeria
- Mali
- Burkina Faso
- Ghana
- Cote d'Ivoire
- Benin
- Togo

WHAT YOU WOULD NEED TO BELIEVE

- Premium available to Australian grown shea nuts over lower cost (but high risk) producers (and can eventually meet market price)
- Rootstock and genetics will be available to producers
- Research and breeding can reduce time to commercial production and increase yields

What is shea? What is shea butter?



Common names	Shea, shi, karite (for shea butter)
Scientific name	<i>Vitellaria paradoxa</i>
Type of plant	Tree of the <i>Sapotaceae</i> family; thin, tart nutritious pulp of the fruit surrounds a relatively large, oil rich seed
Cultivation cycle	Deciduous; usually 7-15m tall; first bearings at 7-15, full production at 20-30; produces nuts for up to 200 years

Suited climate	Dry savannah
Uses	Shea butter is used in skin care as an emollient; used extensively for food and medicine throughout Africa; 90% of exported shea butter used in food industry (cocoa butter substitute)
Origin	Indigenous to Africa; traditional food plant
Established in AU	No apparent establishment

What is the market situation?



US\$152m global trade value in 2017
(outside of producing region)



4 million women partake in shea
industry related to export in West
Africa



5 countries in Africa account for 91%
of global production



20 kg of fruit will give almost 7kg of
raw shea butter



718,000 tonnes of shea nuts produced
in 2016



Growing demand in attractive
European markets

What can you do with it?



UNREFINED SHEA BUTTER



RAW SHEA BUTTER



BODY WASH



THERAPEUTIC CREAMS



CHOCOLATE



MARGARINE

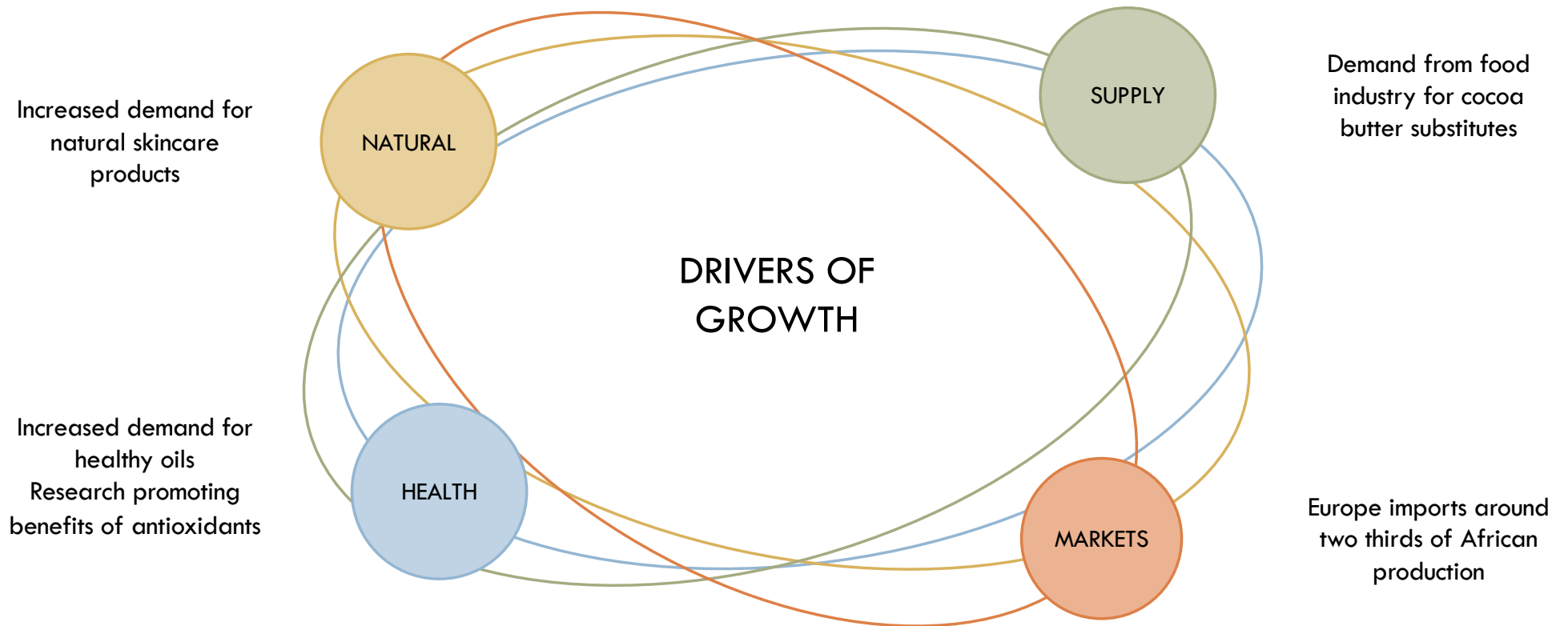


SOAP



COSMETICS

What is driving its success?



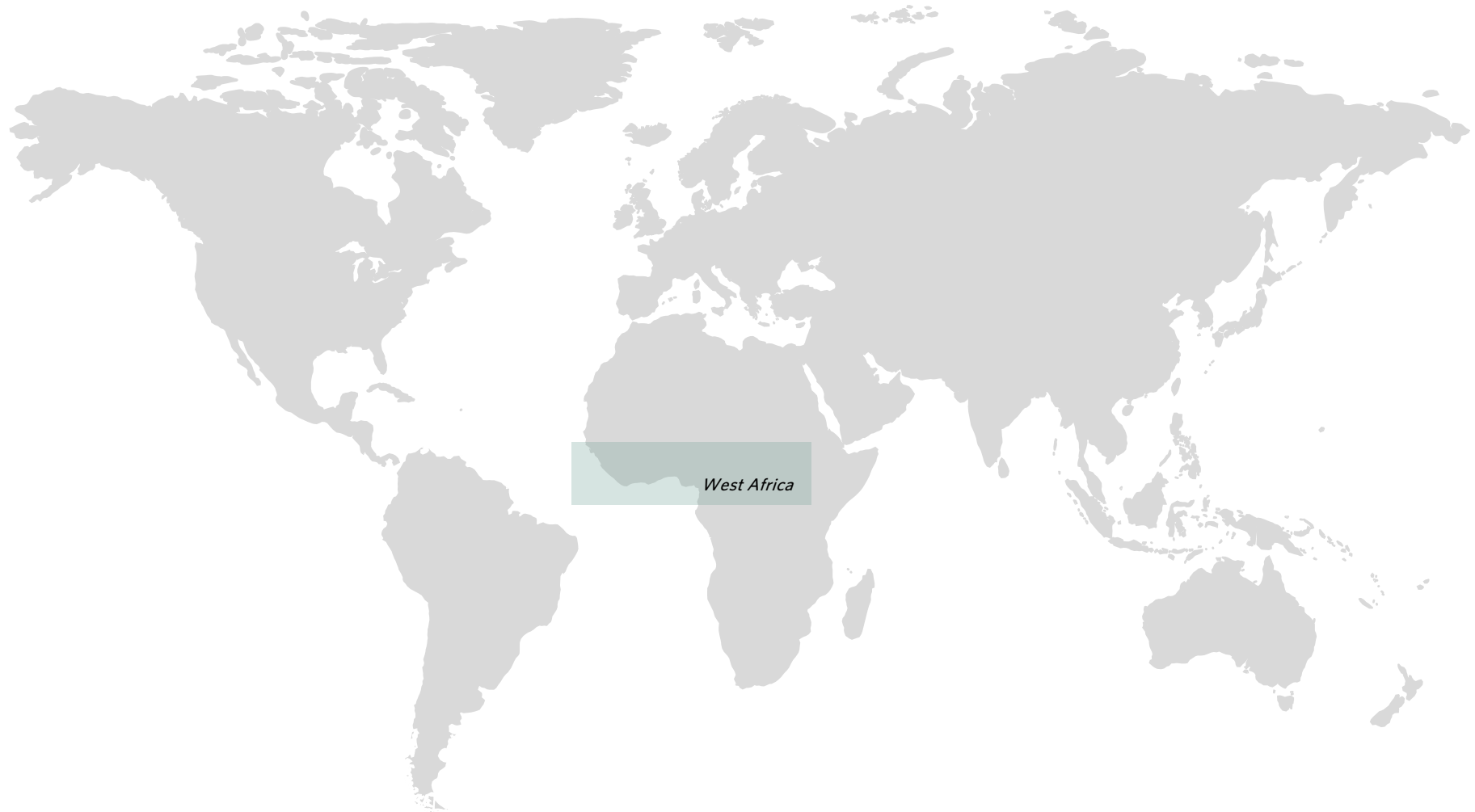
What does Dr. Food think?



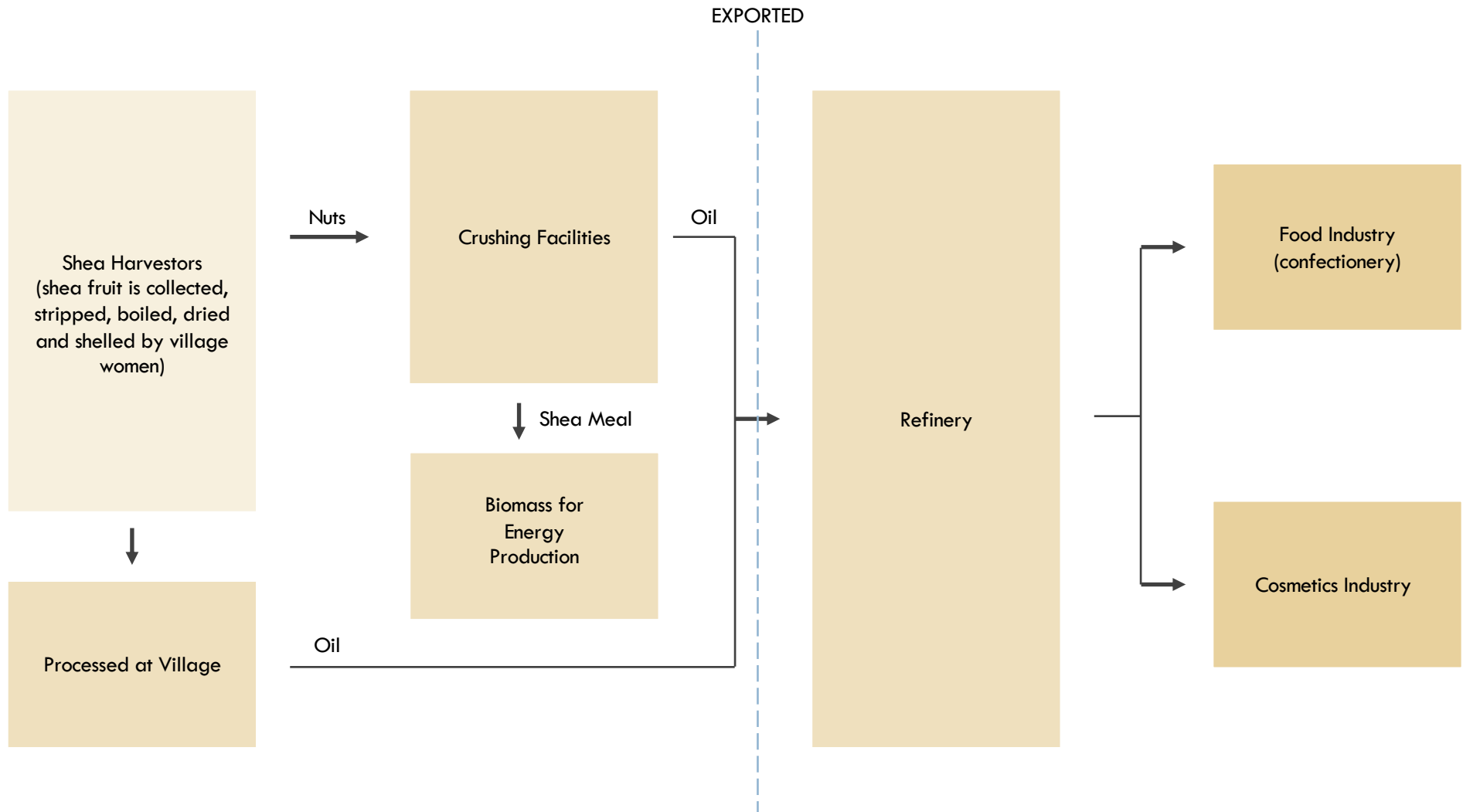
“Dr. Food was first introduced to shea nut butter 40 years ago when he was working in Northern Ghana. It was sold in every local market and used widely in cooking and by the women to give them shiny hair (sadly, less useful for the prematurely balding Dr. Food!). The natural and organic beauty market is exploding globally and will be in excess of US\$22 bn. by 2024.

The shea nut production belt in West Africa is prone to supply hiccups (e.g. unforeseen climate events, political instability) and there are simmering concerns about child labour abuses and related social issues. Premium skin and hair cosmetic companies will value a secure source of high integrity shea butter and, indeed, there may be complementary advantages for joint marketing initiatives with producers of jojoba and castor oils.”

Where is it currently produced?



How is the export supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced by dry, climatic peers (19 countries across savannah belt of Africa)
- Long history of tree nut growing in Queensland
- Waste water available for trial plots in various shires



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Increasing demand for natural health and skincare products
- Attractive alternative to cocoa butter for use by food industry
- Currently only supplied by high risk countries using very unsophisticated production methods



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Ability to provide transparent supply chain and sustainability credentials to final consumer

How could we do it?

STRAWMAN

VISION:

North West Queensland develops shea tree plantations; eventuating in processing industry producing shea butter and high value skincare and food products

1

Investigate sources of shea trees;
begin R&D into genetics

Determine best practice production
systems

Secure land and water for trial plots
(council waste water and land)

Investigate supply chain and
potential markets

2

Develop trial plots across
North West Queensland region
(ensure continuity for project life of
10-15 years)






Secure land and water for
commercial plantations

Establish small scale processing
plant for raw shea butter
production

3

Investigate potential partners for
joint venture in large scale
processing facility

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1975	Hamburg, Germany Stern-Wywiol Gruppe Family owned	€464m (2016; Stern- Wywiol) 1,300	Shea butter, castor oil derivatives, fatty alcohols, fatty acid esters, fatty acids, glycolic acid, etc.	Europe Asia United States	https://www.berg-schmidt.de/en/index.php Functional lipids producer for animal nutrition, oleochemicals, cosmetics industries
	1871/ 2005	Malmö, Sweden Public; OMK:AAK	SEK26.4m (2017) 3,300	Canola, palm, palm kernel, olive, soybean, sunflower, shea, corn, coconut oils	Europe Americas	https://aak.com Leading global provider of shea derived ingredients; 20 production facilities; sales offices in 25 countries
	1929	Saint Leonard, France Daudruy family	€100m 200	Shea butter, argan oil, vegetable oils, fish oils	Europe Africa	https://www.olvea.com/en Specialising in vegetable and fish oils Shea butter produced in accordance with Ethical BioTrade standards; production unit in Burkina Faso for shea butter
	1890/ 1972	Wormerveer, The Netherlands Bunge Limited Public; NYSE:BG	US\$45.7b (2016; Bunge Limited) 2,500	Palm, soybean, canola, sunflower, olive, coconut, shea oils, lecithin	5 continents; 100+ countries served	http://europe.bungeloders.com Leading producer of premium quality seed and tropical oils and fats for food and non food applications Acquired by Bunge in Mar 2018
	1909	Clichy, France Public; OR:PA	€26b (2017) 82,600	Hair colour, skincare, sun protection, cosmetics, perfume, haircare	5 continents; present in 150 countries	https://www.loreal.com/group Largest cosmetics group in the world Shea butter is ingredient in 1,200 Loreal Group products



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Long history of sheep and feed farming in the region; Australian expertise in dairy.
There is 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.

DRIVERS OF GROWTH

- Move away from bovine dairy
- Health benefits of sheep milk
- Increased demand for traditional European style cheeses

VALUE-ADDED OPPORTUNITIES

- Cheese (e.g. Roquefort style, feta, romano pecorino)
- Yoghurt
- Milk based beverages
- Infant formula
- Specialised powders
- Cosmetics (e.g. soaps, body lotion)
- Sale of lambs for meat
- Wool
- Lanolin

KEY COMPETITORS

DOMESTIC

- Other milks (cow, goat, camel)
- Plant based milks
- Imported sheep milk powder
- Imported sheep milk cheeses
- Imported sheep milk baby formula

EXPORTERS/PRODUCERS

- Europe
- China
- Middle East
- New Zealand (powder, infant formula)

GROWING CONDITIONS

- Awassi and Assaf dairy breeds suited to North West Queensland conditions (bred in Middle East)
- East Friesian and Lacaune breeds while most productive milk producers, are considered to be more fragile
- Grandveve Dairysheep is robust and drought tolerant Australia cross breed

KEY RISKS & SENSITIVITIES

- 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.
- Drought risks (water, feed, heat) lowering production
- Shed production required to reach required milk yields

WHAT YOU WOULD NEED TO BELIEVE

- 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

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce



Mechanically harvested



Hot, dry environment product



Trucking/shipping friendly



Value-added opportunities



MARKET SITUATION

Attractive high value markets



Large agribusiness involved



Proven, scalable production model



Attractive competitive set



AUSTRALIA

High performance genetics available



Required skills for success



Leverage country reputation



OVERALL



What is sheep milk?



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 (however sheep are farmed in region)
Uses	Fluid milk, fresh dairy products, powders and infant formula
Origin	Mesopotamia
Established in AU	1788 (East Friesian in 1990s)

What is the market situation?



\$5.5m industry turnover in Australia in 2012



5,500 head milking herd in Australia in 2012



Growing demand in attractive Asian markets



13 producers in Australia in 2012



550,000 litres produced in Australia in 2012



Limited exports currently; New Zealand shows how to succeed

What can you do with it?



CHEESE



ICE CREAM



CALCIUM CHEWS



SKIN CARE



YOGHURT



BUTTER

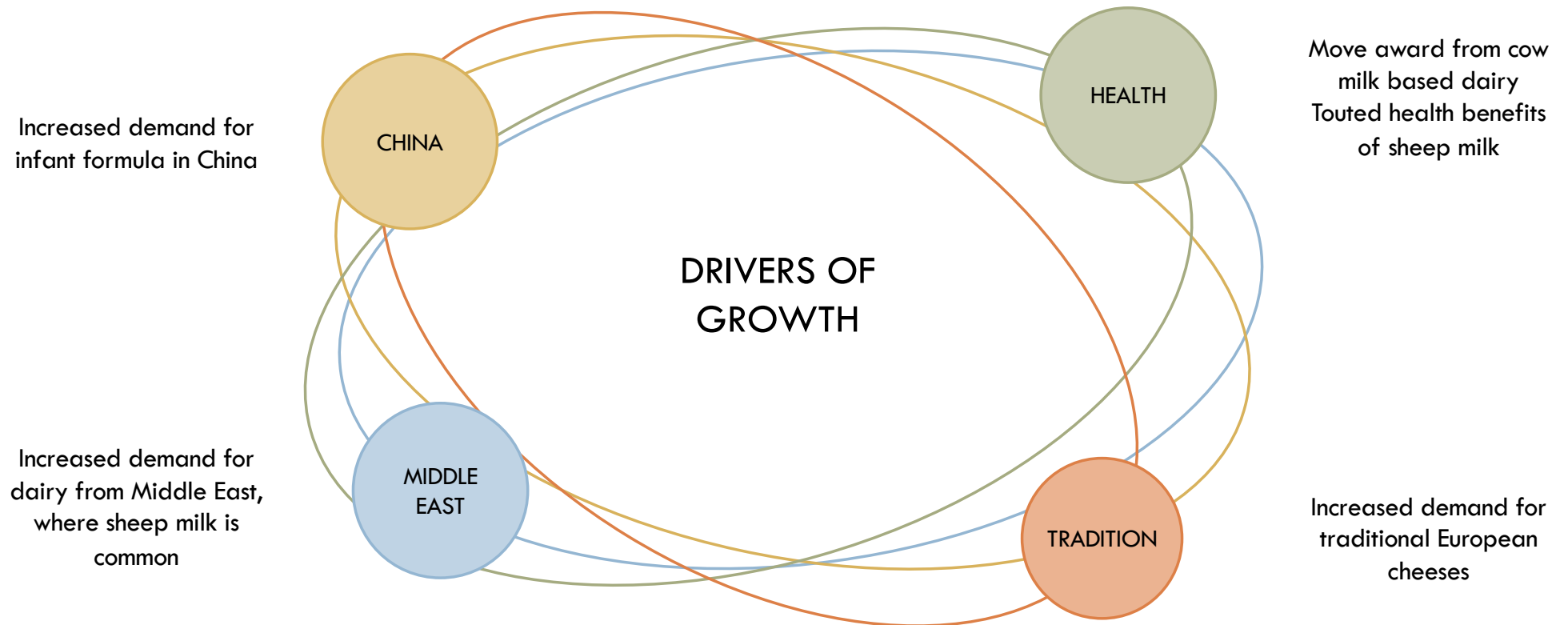


MILK POWDER



INFANT FORMULA

What is driving its success?



What does Dr. Food think?



“Did you know that the success of Ancient Greek culture was based on a healthy breakfast of strained yoghurt made from cultured sheep and goat’s milk?! Two millennia later, Greek yoghurt is fashionable in the wider world and its high protein content is firmly on-trend, but, it lacks authenticity as, generally, it’s made from cows’ milk.

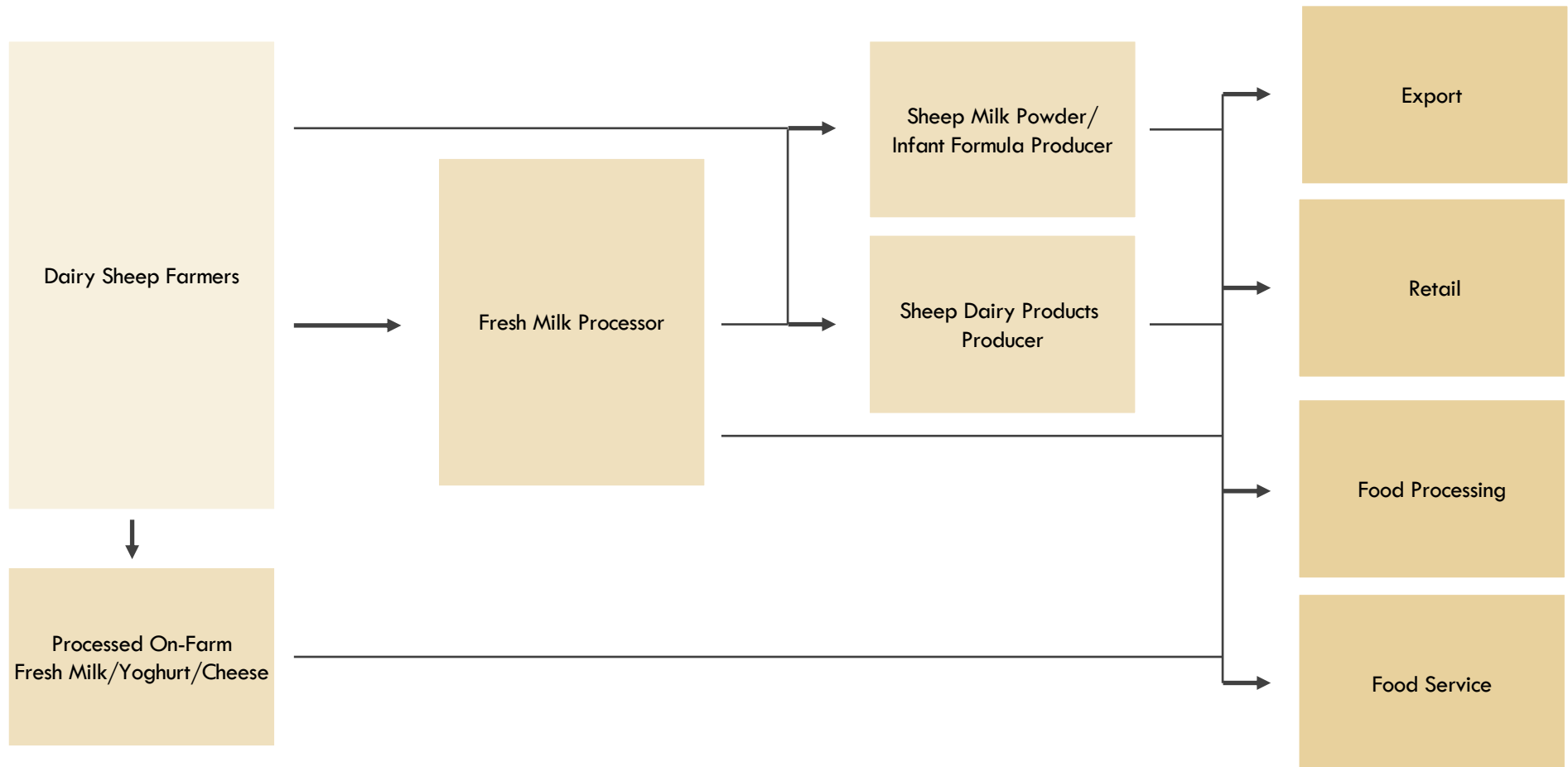
This presents an opportunity for North West Queensland goat and sheep milk producers to work together and produce a Greek yoghurt with authentic goat and sheep milk ingredients. This should appeal to consumers willing to pay a premium for “the real McCoy” and to those allergic to cows’ milk.

Similarly, North West Queensland-produced authentic feta cheese using both sheep and goat milk would fit very well in the domestic market with the popular Mediterranean diet and a reassuring “Produce of Queensland” provenance.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

Suited to NW QLD
climate

- Successfully produced by dry, climatic peers
- Long history of sheep and feed production in the region
- Low intensity, long range production system
- Organic rangeland



WHY DO WE THINK MARKETS WANT IT?

Growing demand in desirable
markets

- Increasing demand for non bovine dairy globally
- China demands outstrips domestic supply
- Strong demand from traditional consumers in Middle East
- Growing middle class looking for safe, nutritious, trusted products for their children



WHY DO WE THINK WE CAN SELL IT?

Our Unique Value Proposition

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant dairy sheep farming sector, leading to at-scale sheep milk processing industry supplying Australian & export markets

1

Research production systems with educational trip to observe successful New Zealand producers

Investigate resource consent requirements (Can it be done?)

Develop supply chain relationships

2

Source and secure milking flock






Focus on genetic improvements to milking productivity

Invest in milking shed and related infrastructure

3

Investigate potential partners for joint venture in processing facility in order to move up the value chain

Who are the potential commercial partners?

FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
	1993	Lucerne, Switzerland Public/Co-op ZMP 51% cornerstone	CHF3.3b 5,780	Cheese, dairy products, functional dairy beverages	Europe North America Global	www.group.emmi.com Subsidiaries specialising in goats and sheep milk products globally
	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
	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
	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
	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



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Global consumption and production of table grapes has almost doubled since 2000.
Opportunity to provide counter seasonal grapes to domestic market, replacing imports.
Leverage expertise of growers in neighbouring regions of Queensland.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce



Mechanically harvested



Hot, dry environment product



Trucking/shipping friendly



Value-added opportunities



MARKET SITUATION

Attractive high value markets



Large agribusiness involved



Proven, scalable production model



Attractive competitive set



AUSTRALIA

High performance genetics available



Required skills for success



Leverage country reputation



OVERALL



DRIVERS OF GROWTH

- Health benefits of antioxidants
- Premium product in Asia; gifting aspect
- Top five most produced fruit in the world
- Counter seasonal supply of Australian grown fruit

GROWING CONDITIONS

- Grows in variety of soil types
- Tropical temperatures disrupt the normal vine cycle of winter dormancy
- Require more intensive irrigation than wine grapes due to trellis systems for higher production
- Not tolerant of waterlogging or water stress
- Grown with irrigation in some countries (Iran)

VALUE-ADDED OPPORTUNITIES

- Fresh
- Dried
- Jam, jelly, vinegar, juice
- Grape seed extract (seeded varieties)
- Grape seed oil (seeded varieties)

KEY RISKS & SENSITIVITIES

- Need for seasonal manual labour
- Perishable product; long transport to market and vibration damage issues
- Needs to be immediately competitive with imported USA grapes
- Other new world, counter seasonal suppliers at scale/low cost if looking to export

KEY COMPETITORS

DOMESTIC

- Imported grapes
- Imported grape products

EXPORTERS/PRODUCERS

- Chile
- United States
- Italy
- Peru
- China
- India
- Turkey
- Egypt
- Brazil

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers in export market
- North West Queensland can compete with high rainfall regions of Australia in domestic market
- Premium for counter seasonal production covers high transport costs for region
- Australians are willing to pay premium for domestically grown fruit

What are table grapes?



Common names	Grapes
Scientific name	<i>Vitis vinifera</i>
Type of plant	Deciduous woody vine
Cultivation cycle	Spring to autumn, harvest fruit during summer

Suited climate	Temperate to tropical climates; prefer low humidity
Uses	Fresh, dried, jam & jellies, vinegar, juice, seed extract and oil
Origin	Middle East
Established in AU	1788 with First Fleet

What is the market situation?



\$534.4m value of production in Australia in 2017



~10,000 hectares are planted in table grapes in Australia



14,405 tonnes were imported into Australia in 2017



~1,000 table grape growers in Australia



171,637 tonnes produced in Australia in 2017



106,666 tonnes were exported in 2017, 62% of production; value of A\$373m

What can you do with it?



JUICE



DRIED



VINEGAR



SKIN CARE



JAM & JELLIES



CONFECTIONERY

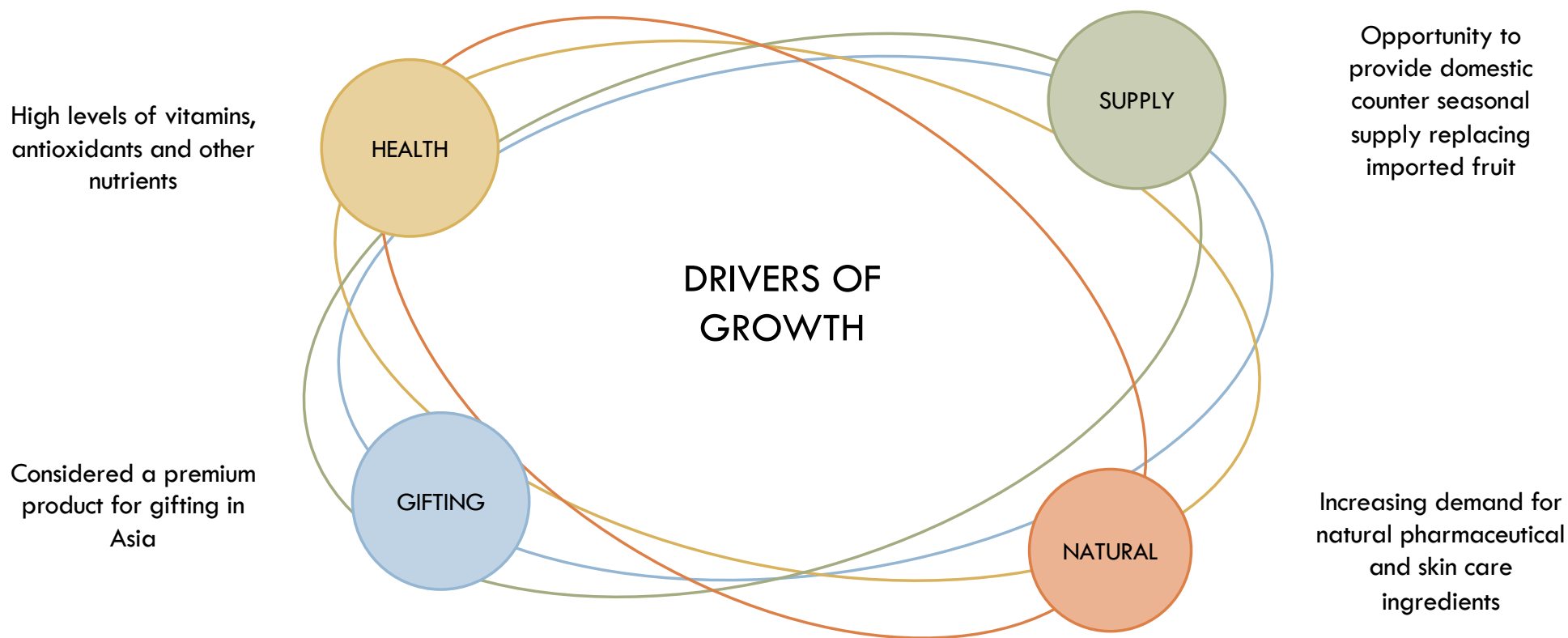


GRAPE SEED OIL



SUPPLEMENTS

What is driving its success?



What does Dr. Food think?



“Australia is an active player in the export marketing of grapes to Asia (e.g. China/HK, Japan, Indonesia, Thailand) and there are well-established supply chains to these emerging and expanding markets.

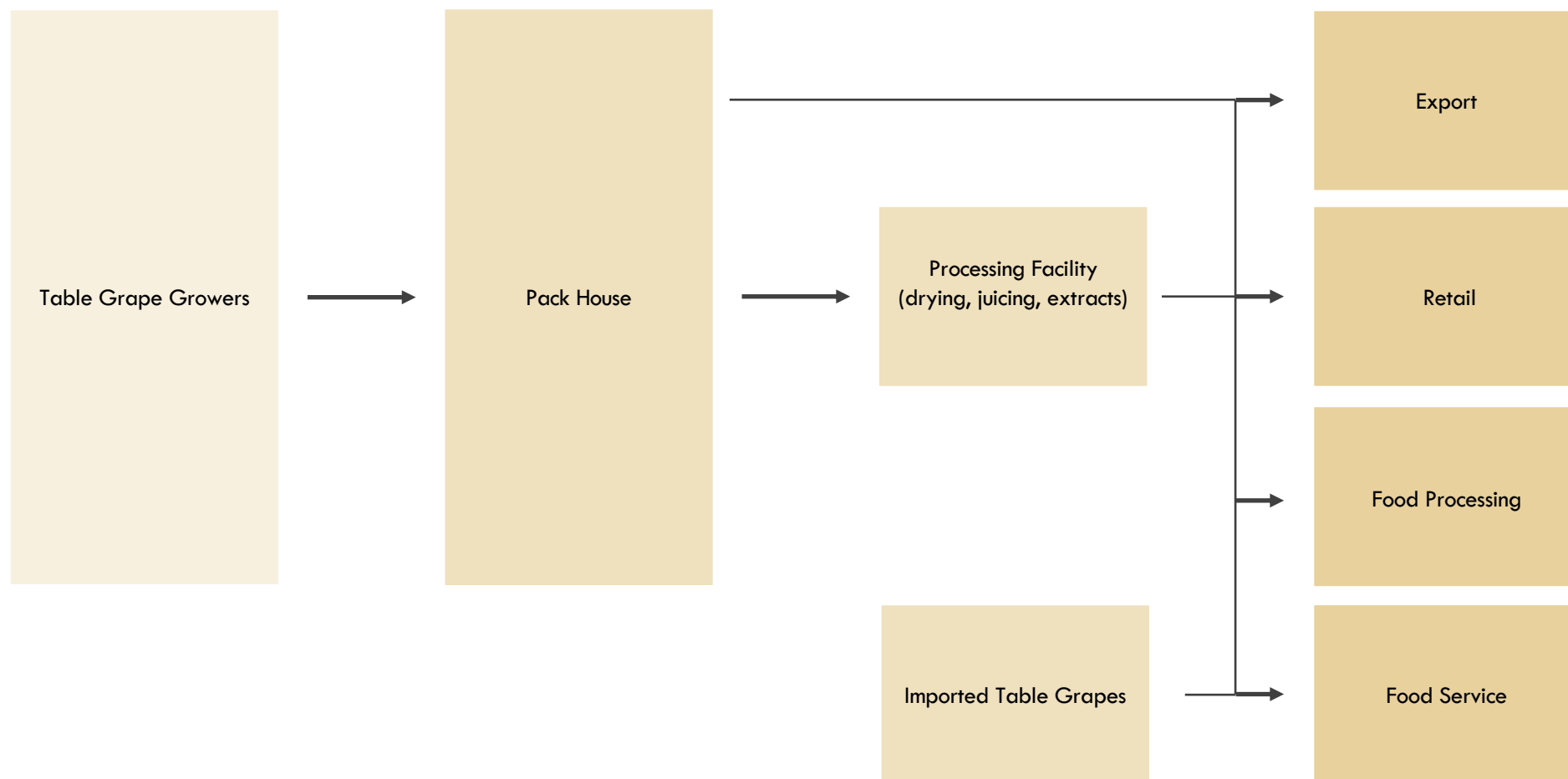
Opportunities for table grapes in North West Queensland are twofold in both domestic and export markets: new varieties suited to local conditions; and market windows that are not well serviced by existing grape exporters.

Additionally, the grape pomace would serve well as supplemental cattle feed in this arid region, particularly when grazing areas have been water-stressed. Don't reinvent the wheel! There are experienced Australian table grape exporters willing and able to market North West Queensland grapes and to provide agronomic and commercial advice to newcomers to table grape production.”

Where is it currently produced?



How is the supply chain organised?



Why do it in the NW QLD? Why would it work in the NW QLD?



WHY DO WE THINK WE CAN PRODUCE IT?

WHY DO WE THINK MARKETS WANT IT?

WHY DO WE THINK WE CAN SELL IT?

Suited to NW QLD climate

Growing demand in desirable markets

Our Unique Value Proposition

- Successfully produced by dry, climatic peers
- Long history of table grape production in the state
- Counter seasonal supply is desired outcome

- Increasing demand for premium fruit globally
- Global consumption has doubled since 2000
- Growing middle class looking for safe, nutritious, trusted products for them and their children

- Leverage Australia's reputation as safe and secure producer
- Excellent proximity to East & South-East Asian markets
- Free Trade Agreement with many trading partners
- Isolated location with excellent biosecurity credentials

How could we do it?

STRAWMAN

VISION:

North West Queensland builds a vibrant table grape growing sector, leading to at-scale grape industry supplying Australian & export markets

1

Select suitable site for commercial operation

Continue to invest in variety and yield research

Investigate best production practices in climatic peer regions

2

Invest in first stage of commercial scale table grape growing operation






Develop supply chains relationships for export markets

Develop regional brand for premium fruit

3

Investigate potential for further processing in Queensland to develop value added products

Who are the potential commercial partners?













FIRM	YEAR EST.	HEAD OFFICE LOCATION OWNERSHIP	GLOBAL SALES # OF EMPLOYEES	KEY PRODUCTS	KEY REGIONS	WEBSITE NOTES
 Total Produce <small>Latin Grower Logistics</small>	2006	Dundalk, Ireland Public ISEQ:T70; LSE: TOT	€3.45b (2015) 4,500+	Apples, pears, grapes, tropical, citrus, salad, stone fruit, vegetables	Global	www.totalproduce.com Europe's largest fresh produce provider; 100+ facilities; operates in 22 countries; 45% stake in Dole in 2018
 costa <small>fresh is our passion</small>	1888	Ravenhall, Victoria, Australia Public ASX:CGC	A\$909m (2017) 6,000	Berries, tomatoes, mushrooms, citrus, avocados, bananas, grapes	Australia Asia	http://costagroup.com.au/citrus Largest citrus grower in Australia
 SUN WORLD	1979	Bakersfield, California, United States	N/A	Table grapes, stone fruit breeder	USA	https://www.sun-world.com One of California's largest growers of table grapes; licenses varieties to Coast and Perfection Fresh in Australia
 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
 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

80 FURTHER OPPORTUNITIES

03

- + Stage I Screen
- + All products to emerge from stakeholders
- + Major traded products to emerge from peer group

One hundred products emerged from stakeholders and peers

ANIMALS	BROADACRE/FIELD CROPS	HORTICULTURE	TREE CROPS
AQUACULTURE Barramundi Prawn Redclaw Crayfish* Silver Perch 	ANIMAL FEED Amaranth Bambatsi Canary Grass Grain Sorghum* Lablab Leucaena Lucerne Maize 	HORTICULTURE Bitter Melon Cassava* Chilli Cucumber Horned Melon Melon Okra Onion Pumpkin/Squash Snake Bean Sweet Corn Sweet Potato Taro Yam 	TREE CROPS NUTS Cashew Coconut Jojoba* Pistachio* Shea* Tung 
MEAT Buffalo Meat Camel Meat Emu Meat Goatmeat* Kangaroo Meat Ostrich Meat Rabbit Meat Wild Pig 	INDUSTRIAL Blue Agave Castor* Cotton* Flaxseed Guar Hemp Jute Kenaf Mustard* Safflower* Stevia Sugarcane Sunn Hemp Triodia ("Spinifex") 		FRUIT Baobab Custard Apple Date Desert Date Jackfruit Lemon/Lime* Mango* Marula Pitaya Pomegranate Table Grape* Tamarind 
DAIRY Buffalo Milk Camel Milk Goat Milk* Sheep Milk* 	FOOD Bambara Canola Chia Chickpea Coriander Fenugreek Fonio Lentil* Mate Mungbean* Native Rice Peanut* Pearl Millet Peppercorn Quinoa Rice Sesame* Soybean Sunflower Teff 		NATIVE FOODS Native Foods (Desert limes, Davidson plum, Kakadu plum, wattlesseed, caperbush, wild orange, wild passionfruit, conkerberry, ruby saltbush, desert fig, doubah, emu apple, quandong, bush tomato, parakeelya, bush potato, pencil yam, peppercreases, large pigweed, mulga seeds, dogwood seeds, witchetty bush seeds) 
FIBRE/LEATHER Alpaca Fibre Crocodile Goat Fibre 			PLANTATION African Mahogany Eucalyptus Oil Indian Sandalwood Oil Palm Pongamia Mallee 

*Passed into Stage II, see Stage II for profile page. Source: Coriolis analysis

AFRICAN MAHOGANY (*khaya*)

INDICATED
MARKET
DEMAND

NA

PASS INTO
STAGE II

N

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grown in climatic peer regions (Burkina Faso, Mali, Niger, Sudan, etc.) and common in backyards in region.
Several African Mahogany plantations in north Queensland are reaching maturity now (including one in Julia Creek).
Endangered in native home of Africa.
Considerable research by NT and QLD into African Mahogany’s potential in Australia.

DRIVERS OF GROWTH

- Demand for sustainable sources of timber

VALUE-ADDED OPPORTUNITIES

- Timber (carpentry, interior trim, construction)
- Animal feed (pruned leaves)
- Traditional medicine (bark)
- Seed oil

KEY COMPETITORS

DOMESTIC

- Imported hardwoods
- Native hardwoods
- “Genuine” mahogany

EXPORTERS/PRODUCERS

- Tropical African countries
- Other mahogany family producers (China, India, Indonesia, New Zealand)

GROWING CONDITIONS

- Grows in riparian forests and higher rainfall savannah woodlands in Africa
- Most drought resistant of its genus
- Rainfall of 400-1,750 mm

KEY RISKS & SENSITIVITIES

- No static mills in region
- Termites

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland plantations can replace the vulnerable regions of Africa (IUCN Red List of Threatened Species)
- North West Queensland can generate yields greater than plantations near Katherine, NT
- Research undertaken in the Douglas Daly, NT is applicable to North West Queensland and can be leveraged

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	◐
OVERALL	◐

NOTE: No individual trade code exists for timber species, market demand not calculated. Source: various published articles and sites; UN Comtrade; UN FAOSTAT; Coriolis analysis and estimates

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Alpacas are extremely adaptable livestock.
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.

DRIVERS OF GROWTH

- Increasing demand for luxury goods
- Increasing demand for natural fibre products

VALUE-ADDED OPPORTUNITIES

- Fibre (clothing and homewares)
- Leather
- Meat
- Breeding stock/stud sales

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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

GROWING CONDITIONS

- Temperate climates with high altitudes
- Able to withstand dry conditions for longer than most livestock
- Require shelter from weather extremes
- Poor pastures will lead to loss in fleece quality
- Require ready access to good quality, fresh drinking water
- Best to avoid pastures with seeds likely to contaminate fleece

KEY RISKS & SENSITIVITIES

- 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

WHAT YOU WOULD NEED TO BELIEVE

- The market for alpaca meat will increase, giving second revenue stream
- North West Queensland can produce premium fibre to compete with low cost producers
- Alpacas could thrive in North West Queensland conditions which are not traditionally their preferred habitat

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Grown in many of climate peer regions.
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 Australian industry can “do a chia”.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input type="radio"/>
Large agribusiness involved	<input checked="" type="radio"/>
Proven, scalable production model	<input checked="" 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"/>

DRIVERS OF GROWTH

- 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 produces 10x the amount of fodder/ha than competition, thereby reducing the cost of meat production 10-20%

GROWING CONDITIONS

- Temperate and tropical climates
- Drought tolerant
- Highly tolerant of arid environment
- High sunlight and warm temperatures (air temperatures above 25 degrees for optimum growth)
- Can not stand waterlogging

VALUE-ADDED OPPORTUNITIES

- Animal feed/fodder crop (including aquaculture)
- Cereals (gluten-free)
- Breakfast muesli
- Flour (gluten-free)
- Oil (cosmetic, pharmaceutical)

KEY RISKS & SENSITIVITIES

- Birds
- Currently small ‘emerging crop’ therefore difficult to achieve scale efficiencies beyond fodder
- Ability to turn into a noxious weed

WHAT YOU WOULD NEED TO BELIEVE

- Fodder trials will successfully develop a high yielding crop suitable for Australian conditions using Chinese breeds in partnership with Amaranth Ecological Technology (Shenzhen) Co. Ltd
- Ongoing research into health properties (antioxidant benefits) of amaranth for human consumption
- North West Queensland able to grow a premium seed (organic?) to achieve a higher price

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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"> - United States - China

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Originates in West Africa; grain legume similar to peanuts.
Market demand for peanuts is strong and growing.
Demand for new and unique products from food industry.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for new and unique foods by food service
- Demand for healthy nuts

VALUE-ADDED OPPORTUNITIES

- Fresh (roasted or boiled)
- Dried
- Flour
- Baked goods
- Animal feed

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Peanuts - Beans - Tree nuts 	<ul style="list-style-type: none"> - Nigeria - Myanmar - Burkina Faso - Ghana - Mali - Indonesia - Thailand - Malaysia

GROWING CONDITIONS

- Grows very well anywhere peanuts grow; can grow when peanuts fail
- Very drought resistant
- 500-600 mm rainfall
- Tropical and subtropical (Aw and Cs zones)*
- Optimum temperature range 19-30 degrees
- Tolerant of high temperatures and marginal soils
- No serious pest or disease issues

KEY RISKS & SENSITIVITIES

- Untested crop for region and Australia
- Most of world's production is consumed domestically
- Biosecurity issues with bringing in genetics

WHAT YOU WOULD NEED TO BELIEVE

- Closely related to cowpea enough to be able to access suitable varieties
- Market demand exists for peanut alternative

*See page 18; Note: market demand based on in shell peanuts; no individual trade code; indicative only. Source: various published articles and sites; UN Comtrade; UN FAOSTAT; Coriolis analysis and estimates

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown throughout northern Australia for forage and hay production.
Ability for graziers to retain cattle for longer in drought periods or to sell at higher weights during non drought periods.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for animal feed

VALUE-ADDED OPPORTUNITIES

- Animal feed (grazing)
- Hay
- Potential biomass for biofuels

KEY COMPETITORS

DOMESTIC

- Other forage crops
- Other hay and silage crops
- Destocking/selling cattle rather than feeding

EXPORTERS/PRODUCERS

- (category includes lucerne hay)
- United States
 - Spain
 - Canada
 - Italy

GROWING CONDITIONS

- Drought tolerant perennial grass
- Prefers heavier clay soils
- Tolerates moderate levels of salinity and flooding
- Low frost tolerance
- Would require irrigation

KEY RISKS & SENSITIVITIES

- Prices heavily dependent on availability of other animal feeds

WHAT YOU WOULD NEED TO BELIEVE

- Prices received for hay or increased carrying capacity of station is worth the investment in water allocation and irrigation infrastructure
- That water is available during drought periods when prices are highest for hay



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grows across climatic peer regions in Africa; Australia has own native species.
Over 300 uses in Africa and Madagascar.
Pegged as next “superfood” in United Kingdom as sales rise.
North West Queensland provides an attractive safe and secure alternative supply compared to current high risk countries.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	○
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	○
Attractive competitive set	●

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	◐
OVERALL	◐

DRIVERS OF GROWTH

- Wide range of uses across edible portions (roots, leaves, fruit, seeds, bark, sprouts, flowers)
- Demand for natural health products

VALUE-ADDED OPPORTUNITIES

- Fresh fruit (Madagascar baobab)
- Dried pulp of fruit (“baobabfruit flour”; African baobab)
- Health drink
- Snack food (nuts)
- Porridge
- Thickener
- Smoothies
- Muesli bars
- Cream of tartar substitute, coffee substitute
- Oil
- Cosmetics
- Nutraceuticals
- Traditional medicine uses
- Fibre (bark)

GROWING CONDITIONS

- Dry climates; extremely drought tolerant once established
- Temperature of 20-30 degrees preferred
- Rainfall 250-1,000 mm
- Tolerates fire
- Intolerant to frost
- Growth rate depends on rainfall or ground water
- Maximum age suspected to be 2,500 years
- Can fruit in 5 years with grafting (15-20 years naturally)

KEY RISKS & SENSITIVITIES

- Oldest and largest trees in Africa seem to be dying due to climate change in last decade
- Only gained approval as food in EU in 2008
- Concern over fairness and sustainability of trade

WHAT YOU WOULD NEED TO BELIEVE

- Australian species (*Adansonia gregorii*) can offer same uses or cultivation of African baobab will be permitted
- High value markets exist internationally for North West Queensland produced baobab (provenance opportunities)
- Research into ‘superfood’ supports USP for Australian Baobab

KEY COMPETITORS

DOMESTIC

- Imported baobab products
- Food processing aids
- Other “superfoods”

EXPORTERS/PRODUCERS

- Senegal
- Malawi
- Zimbabwe
- South Africa



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Barramundi farming is Queensland's second largest aquaculture industry; expertise and supply chains can be leveraged.
Growing demand for sustainably farmed fish.
NW Queensland can leverage Barramundi's iconic status in Australia.

DRIVERS OF GROWTH

- Demand for healthy protein
- Demand for sustainably produced fish
- Considered a premium and iconic fish in Australia

VALUE-ADDED OPPORTUNITIES

- Live trade (for fish tanks in Asian restaurants)
- Fresh and frozen, whole and filleted for food service and retail
- Prepared products (e.g. crumbed, battered, formed)
- Fish oil and extracts

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Barramundi from other Australian regions - Other Australian fish - Imported white fish 	<ul style="list-style-type: none"> - Thailand - Indonesia - Malaysia - Taiwan

GROWING CONDITIONS

- Queensland's climate permits pond-based production of plate sized fish (majority); sea cages produce larger fish
- Can tolerate wide range of salinities
- Can be grown in sea, brackish or fresh water
- Tropical species requiring water temperatures of 20-30 degrees; commercial growth rates require temperatures above 25 degrees
- Fish deaths will occur below 13 degrees in commercial operations

KEY RISKS & SENSITIVITIES

- Large capital costs for infrastructure; unproven in region
- Risk of flooding
- High evaporation rates in region would increase water requirements compared to other regions
- Main market is for larger fish (2-3 kg) that are produced in sea cage systems and require second grow out season
- Electricity requirements for pumping, aerating, water exchange, etc.
- Logistics cost of trucking in feed; distance to market for fresh product

WHAT YOU WOULD NEED TO BELIEVE

- NW Queensland can compete in domestic and export markets with other Australian regions and with low cost producers from south east Asia
- More effort will be put into developing value added products for barramundi in Australia
- Suitable sites that are completely safe from risk of flooding are available
- Suitable sites that minimise environmental impacts are available
- Power and water requirements can be met

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	○
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	◐



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

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.

DRIVERS OF GROWTH

- 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

VALUE-ADDED OPPORTUNITIES

- Fresh ingredient in many dishes
- Tea
- Beverage flavouring
- Supplements and powders
- Cosmetics

KEY COMPETITORS

DOMESTIC

- Imported processed products
- Other supplements and teas

EXPORTERS/PRODUCERS

- China
- India
- Thailand
- Philippines
- Vietnam
- Caribbean
- Africa

GROWING CONDITIONS

- Subtropical and tropical climates
- Require 3-4 months of warm to hot and humid conditions to mature; 24-31 degrees
- Tolerant of high rainfall and can be grown through the wet season
- Frost intolerant
- Member of Cucurbitaceae family

KEY RISKS & SENSITIVITIES

- Production levels fluctuate widely
- Highly perishable
- Labour intensive harvesting

WHAT YOU WOULD NEED TO BELIEVE

- 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

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	○
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	○

AUSTRALIA

High performance genetics available	○
Required skills for success	◐
Leverage country reputation	◐
OVERALL	◐

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Successful small scale crops in Tablelands; looking to ramp up in partnership with MSF Sugar.
Extremely efficient water user.

“Agave offers promising opportunities for bioenergy production in arid or semi-arid regions, with minimum pressure on food production and water resources.”

DRIVERS OF GROWTH

- Demand for biofuel for co-generation at sugar mills
- Demand for boutique spirits
- Demand for healthier alternatives to refined sugar

VALUE-ADDED OPPORTUNITIES

- Sugar alternative
- Biofuels (sugar mill cogeneration of ethanol)
- Tequila
- Fibre

KEY COMPETITORS

DOMESTIC

- Other sugars
- Imported Agave syrup
- Other biofuel feedstock crops

EXPORTERS/PRODUCERS

- Mexico
- India
- Brazil
- China

GROWING CONDITIONS

- Prefer altitudes of more than 1,500m (successfully grown in Tablelands at much lower)
- Prefers sandy soils in arid and semi-arid subtropical areas
- Extremely efficient water user
- 5 years to commercial production/harvest

KEY RISKS & SENSITIVITIES

- New crop to Australia with different end use (biofuel) than traditionally in Mexico (tequila)
- Entire supply chain only recently developed (AusAgave pioneer)

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can obtain commercial yields under lower rainfall conditions
- Economics of biofuel industry continues to stack up
- Biofuel industry remains focused on agave crop
- Sisal fibre variety grown in India, Brazil and China does not pose serious competitive threat
- Mechanised harvesting equipment developed in Australia will be affordable

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	○
Attractive competitive set	○

AUSTRALIA

High performance genetics available	◐
Required skills for success	○
Leverage country reputation	○
OVERALL	◐

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland has long history of raising cattle using low intensity production methods.
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).

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for new alternative proteins by food service
- Demand for healthier meat options (low cholesterol, lean)
- Demand for traditional foods by expat communities

VALUE-ADDED OPPORTUNITIES

- 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

KEY COMPETITORS

DOMESTIC

- Beef
- Sheep & goat
- Other game meats

EXPORTERS/PRODUCERS

- India
- East Asia
- South East Asia
- Europe

GROWING CONDITIONS

- Tropical and subtropical forests and wet grasslands
- Regions in the Gulf suitable; occasionally sighted in Burke Shire
- Efficient converters of feed to energy compared with beef

KEY RISKS & SENSITIVITIES

- Lack of export abattoirs for buffalo meat
- Need water for wallowing; dehydrate easily
- Non restricted invasive species under *Biosecurity Act 2014*
- No exact figures for feral population in QLD

WHAT YOU WOULD NEED TO BELIEVE

- Able to optimise meat breeds (as opposed to dairy)
- Buffalo maintain their disease free status in Australia
- 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)
- Support of marketing and certifications e.g. TenderBuff continues

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland has long history of raising cattle using low intensity production methods. 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.

DRIVERS OF GROWTH

- Move away from bovine dairy
- Health benefits of buffalo milk
- Increased demand for traditional European style cheeses
- Demand from expats for traditional products

VALUE-ADDED OPPORTUNITIES

- 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

KEY COMPETITORS

DOMESTIC

- Other milks (cow, goat, sheep, camel)
- Plant based milks
- Imported cheeses
- Cheaper cow milk mozzarella

EXPORTERS/PRODUCERS

- European traditional mozzarella producers
- India
- Pakistan
- China

GROWING CONDITIONS

- Tropical and subtropical forests and wet grasslands
- Regions in the Gulf suitable; occasionally sighted in Burke Shire
- Efficient converters of feed to energy compared with beef

KEY RISKS & SENSITIVITIES

- 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
- Need water for wallowing; dehydrate easily
- Non restricted invasive species under *Biosecurity Act 2014*
- No exact figures for feral population in Queensland

WHAT YOU WOULD NEED TO BELIEVE

- Genetic material will continue to be able to be imported to improve breeding of dairy herd
- Feral herd remains Tuberculosis (TB) free
- Export abattoir becomes available to utilise male calves
- Increased demand from dairy processors for non-bovine milk continues
- Scale can be reached to allow local processing

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	◐
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	◐
Leverage country reputation	●
OVERALL	◐

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland has the ideal climate for camel production and a wild population.
Queensland has existing camel dairy, meat and tourism industries.
Camel meat is valued as a delicacy in key markets.
Expansion in camel milk production will, as a byproduct, increase farmed camel meat supply.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- 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

GROWING CONDITIONS

- Bushland and sand plain country in summer, salt lakes and saltmarshes in winter
- Hot and dry desert climates

KEY RISKS & SENSITIVITIES

- 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

WHAT YOU WOULD NEED TO BELIEVE

- Global slaughter trade will continue to increase
- North West Queensland able to achieve a premium about the world average
- Australia able to grow exports; in particular to Middle East and China
- Able to farm-finish the wild camels
- North West Queensland able to transition the petfood grade meat to human consumption premium meat
- Australia able to maintain disease-free status (highly valued in Middle East)
- Able to differentiate premium North West Queensland camel meat

VALUE-ADDED OPPORTUNITIES

- Pet food
- Leather
- Camel oil
- Edible offal
- Camel milk
- Textiles
- Racing camels live exports to Middle East
- Tourist attraction

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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 - United Arab Emirates - Ethiopia - China

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland has the ideal climate for camel production and a wild population of camels.
Queensland has existing camel dairy, meat and tourism industries.
Camel milk has been consumed by humans for over 6,000 years.
Australia currently exports to New Zealand and Singapore, albeit at very small amounts.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	○
Required skills for success	●
Leverage country reputation	●
OVERALL	●

DRIVERS OF GROWTH

- Health properties of camel milk
- Move away from bovine dairy
- Diaspora of traditional camel milk consumers

VALUE-ADDED OPPORTUNITIES

- 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)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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

GROWING CONDITIONS

- Bushland and sand plain country in summer, salt lakes and saltmarshes in winter
- Hot and dry desert climates

KEY RISKS & SENSITIVITIES

- 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

WHAT YOU WOULD NEED TO BELIEVE

- 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

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Grown in climatic peer regions.
New varieties can meet demand for gluten free products.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- New variety safe for human consumption bred in Canada
- Demand for gluten free products
- Demand for animal feed

GROWING CONDITIONS

- Similar to wheat requirements
- Sensitive to heat and drought stress
- Prefers seasonally moist areas

VALUE-ADDED OPPORTUNITIES

- Bird seed
- Gluten free food products (new variety)

KEY RISKS & SENSITIVITIES

- Low value crop compared to other arable crops

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported bird feed - Other alternative grains 	<ul style="list-style-type: none"> - Canada - Argentina - Belgium - Egypt - Hungary - Myanmar

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland canary seed can compete with Canadian grown product
- North West Queensland able to grow crop efficiently to achieve high returns
- Successful trials of gluten-free varieties



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Globally canola seed and oil production is increasing; strong growth over the last decade.
Australia's market share is growing long term.
Able to feed into National distribution system

DRIVERS OF GROWTH

- Demand for healthier vegetable oils
- Demand for biodiesel

VALUE-ADDED OPPORTUNITIES

- Canola oil (cooking, food ingredient)
- Industrial lubricant
- Cosmetic uses
- Biodiesel
- Canola meal (animal feed)

KEY COMPETITORS

DOMESTIC

- Canola from other regions in Australia
- Other vegetable oils
- Imported canola oil

EXPORTERS/PRODUCERS

- Canada
- Germany
- Czech Republic
- France
- Poland
- Ukraine
- Netherlands

GROWING CONDITIONS

- Winter crop in cooler temperate regions of southern Australia
- 450-700mm rainfall regions; new varieties allow much drier environments
- Optimum temperature range for growth of 20-25 degrees; upper limit of 35 degrees
- Sensitive to waterlogging

KEY RISKS & SENSITIVITIES

- Currently only being grown at trials in region, unclear if commercial yields will be on par with other producing regions
- Not grown at scale in climatic peers other than Iran

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can grow canola at higher yields than other regions in Australia to counter higher transport costs to coastal processing
- Canola varieties better suited to North West Queensland growing conditions are accessible

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grows well on marginal soils unlike other fruit trees.
Australia is the highest per capita consumer of cashews.
Growing demand for premium nuts.
Opportunity to introduce new cashew apple products to Australian market.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	○
Leverage country reputation	◐
OVERALL	◐

DRIVERS OF GROWTH

- Demand for premium nuts
- Growing demand for vegan dairy products
- Demand for healthy nuts and oils
- Common ingredient in Indian, Thai and other Asian cuisines

VALUE-ADDED OPPORTUNITIES

- Raw or roasted
- Oil
- Muesli, snack bars, dessert, salad, stir fry ingredient
- Vegan dairy substitute (milk, cheese, sauces, thickener)
- Shell derivatives used in lubricants, paints, fungicides, pharmaceuticals
- Cashew apple is eaten fresh, juiced, cooked in curries, made into preserves or an alcoholic beverage

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other nuts - Imported cashews - Other plant milks - Other vegan cheeses and thickeners 	<ul style="list-style-type: none"> - Cote d'Ivoire - Guinea-Bissau - Tanzania - Ghana - Benin - Cambodia - Indonesia - Nigeria

GROWING CONDITIONS

- Tropical tree, adapted to latitudes 25° north and south of the equator
- Temperatures should not drop below 10 degrees; very frost sensitive
- Drought resistant; 1,000mm average rainfall minimum for production
- Will grow well on marginal soils unlike other fruit trees
- Cracking soil regions of North West Queensland may require irrigation

KEY RISKS & SENSITIVITIES

- Very frost sensitive
- Cashew apple needs to be processed onsite as too perishable for transport
- Cashews susceptible to aflatoxin contamination if not stored correctly
- 3 years until commercial harvest for dwarf varieties, longer for others
- Trials and sole commercial farm in northern Queensland have not been wildly successful
- Shelling is labour intensive

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers
- Cashew apple co-product can be commercially valuable
- Low yields of dry climate producers can be overcome



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown successfully in similar climate region of Western Australian.
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.

DRIVERS OF GROWTH

- Ancient grains, superfood, popular ingredient
- High in omega-3

VALUE-ADDED OPPORTUNITIES

- Processed chia (pods, desserts, shots)
- Chia beverages, energy drinks, health drinks
- Organic chia

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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

GROWING CONDITIONS

- Variety of climates from tropical coastal desert, tropical rainforest, inter-Andean dry valley
- Susceptible to frost
- New varieties able to grow in temperate climates

KEY RISKS & SENSITIVITIES

- Cheap imports of chia from South America
- Severely impacted by rain at the wrong time during harvesting

WHAT YOU WOULD NEED TO BELIEVE

- 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
- Able to develop a unique Australia story and brand message around chia products
- North West Queensland growers able to obtain new variety being grown successfully in Ord region of Western Australia

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grown across climatic peer regions.
Queensland produces a lot of Australia’s chickpeas; lower value Desi variety for dhal into Asian sub continent.
Strong market demand for chickpeas globally.

DRIVERS OF GROWTH

- Demand for non animal sources of protein
- Widely used in many cuisines globally
- Offers numerous health benefits (stabilising blood sugar levels, weight management, improving digestion and minimising the risk of heart-attack)

VALUE-ADDED OPPORTUNITIES

- Canned or dried whole (salads, soups, stews, curries, dhal)
- Roasted or fried as snack
- Hummus
- Falafel
- Flour
- Pasta
- Vegetable fries
- Extruded snacks
- Aquafaba (vegan mayonnaise, meringue)
- Animal feed

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported chickpeas - Other pulses 	<ul style="list-style-type: none"> - India - Mexico - Russia - Canada

GROWING CONDITIONS

- Best yields in regions with reliable seasonal rainfall and mild spring conditions
- Desi requires >350mm rainfall
- Temperatures range of 15-35 degrees optimum
- Does not tolerate waterlogging
- Does not tolerate frosts

KEY RISKS & SENSITIVITIES

- Recent 30% tariff on imports into India has dampened the market

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can get higher yields to compete with other Australian regions

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Chillies are native to Mexico, a climatic peer to North West Queensland.
Grown in other regions of Queensland; can leverage expertise.
Ongoing trend and demand for spicier food, from top end restaurants right through to the major fast food chains.
Global chilli trade is worth nearly US\$30b.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- 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

VALUE-ADDED OPPORTUNITIES

- Processed chilli products (dried, paste, frozen, powder, canned)
- Chilli hot sauce
- Chilli flavourings and rubs
- Chilli oils and essences
- Pharmaceutical grade extracts (capsaicin)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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

GROWING CONDITIONS

- Tropical and subtropical regions
- Frost sensitive
- Temperatures above 30 degrees can interfere with fruit setting
- Sunburn and wind damage are issues

KEY RISKS & SENSITIVITIES

- 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

WHAT YOU WOULD NEED TO BELIEVE

- 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



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Coconut is experiencing “superfood” status for nearly all its products.
Coconuts grow throughout tropical north Queensland (11,000 palms in Douglas Shire).
Use of byproducts in adjacent mining industry

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	◐
Attractive competitive set	○

AUSTRALIA

High performance genetics available	○
Required skills for success	○
Leverage country reputation	◐
OVERALL	○

DRIVERS OF GROWTH

- “Superfood” status of coconut
- Wide range of uses (byproducts into mining industry)

VALUE-ADDED OPPORTUNITIES

- Fresh coconut flesh
- Coconut water
- Dried coconut
- Coconut oil
- Coconut sugar
- Coconut cream and milk
- Charcoal (shell)
- Coir (husk)
- Cosmetics
- Fibre

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
- Imported coconuts and products	- Indonesia - India - Thailand - Vietnam - Philippines - Brazil - Sri Lanka

GROWING CONDITIONS

- First fruit in 6-10 years; peak production 15-20 years
- Sandy soils preferred
- Highly tolerant of salinity
- Abundant sunlight
- Regular rainfall of 1,500-2,500mm (unless humid region)
- High humidity of 70-80%
- Intolerant of frosts

KEY RISKS & SENSITIVITIES

- Region generally does not have appropriate climate
- Even in coastal regions where coconuts grow there is no commercial production

WHAT YOU WOULD NEED TO BELIEVE

- Returns would justify water infrastructure and allocation costs
- Varieties that grow in low humidity can be developed
- North West Queensland can compete with traditional, low cost producers

CORIANDER (seed)

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

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.

DRIVERS OF GROWTH

- Very commonly used spice globally
- Health benefits (anti-inflammatory, antibacterial properties)

VALUE-ADDED OPPORTUNITIES

- Roasted seeds (eaten as a snack in India)
- Coriander powder
- Coriander oil
- Cosmetics (body wash, shampoo)

KEY COMPETITORS

DOMESTIC

- Imported coriander seeds
- Imported coriander products
- Other spices
- Other essential oils

EXPORTERS/PRODUCERS

- India
- Bulgaria
- Iran
- Canada
- Morocco
- Russia
- Italy

GROWING CONDITIONS

- Cultivated as dryland broadacre crop in Western Australia
- Bolts in high temperatures
- Hot and humid climates
- Frost sensitive

KEY RISKS & SENSITIVITIES

- Light seed makes harvesting difficult
- Disease issues that cause yield fluctuations, especially in early 2000s
- Tropical/subtropical variety grown in Australia contain lower volatile oil content than temperate varieties
- Premium position not apparent

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can grow the smaller fruit variety that grows in temperate regions for the valuable essential oil product
- North West Queensland can compete with low cost, established producers

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input type="radio"/>
Large agribusiness involved	<input checked="" type="radio"/>
Proven, scalable production model	<input checked="" 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 type="radio"/>
OVERALL	<input type="radio"/>



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland is within both freshwater and saltwater crocodiles native ranges.
Demand for luxury leather products is strong.
Recent reports have 80% of Australian production capacity now owned by “offshore fashion interests”.
Opportunity to link into tourism.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	○
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	◐
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	○
Required skills for success	◐
Leverage country reputation	●
OVERALL	◐

DRIVERS OF GROWTH

- Demand for luxury leather products
- Demand for healthy proteins (low fat, high protein)
- Demand for unique/interesting proteins from food service

VALUE-ADDED OPPORTUNITIES

- Meat
- Pet food
- Leather (98% of export value in 2012)
- Final leather products (handbags, wallets, luggage, shoes, belts)
- Taxidermy
- Tourism

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other leather - Imported skins from other crocodile species - Other game meats 	<ul style="list-style-type: none"> - Zimbabwe - South Africa - Vietnam - Cambodia - Papua New Guinea - Indonesia - Thailand - United States (alligators) - Colombia (caiman)

GROWING CONDITIONS

- Tropical climates
- Temperatures around 30 degrees

KEY RISKS & SENSITIVITIES

- Can not legally harvest eggs or crocodiles from the wild; import eggs and young from Northern Territory or captive breeding (unless “problem crocodile”)
- Regulated industry
- Housing infrastructure required
- High costs to feed (poultry processing waste ideal)
- High water requirements

WHAT YOU WOULD NEED TO BELIEVE

- Outcome of three year estuarine crocodile survey commenced in April 2017 is supportive of commercial industry
- North West Queensland producers can achieve high proportion of top grade skins (where demand is unmet)
- Improved marketing can increase demand for crocodile meat
- Protocols for export to China for meat can be developed
- North West Queensland can compete with lower cost producers
- Genetics can be improved for blemish free, high grade skins

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Queensland is major producer of cucumbers in Australia.
Widely believed to grow well in region.
High sunshine and light intensity to suit cucumber

DRIVERS OF GROWTH

- Widely used in cuisines around the world

VALUE-ADDED OPPORTUNITIES

- Fresh in salads
- Pickles and gherkins
- Juice and smoothie ingredients
- Cosmetics

KEY COMPETITORS

DOMESTIC

- Imported gherkins and pickles

EXPORTERS/PRODUCERS

- Spain
- Netherlands
- Mexico
- Canada
- Belgium

GROWING CONDITIONS

- Semi tropical climates
- Grows best in high temperatures (30 degrees), humidity, light intensity and uninterrupted supply of water and nutrients
- Often grown in glasshouses commercially in cooler temperate climates
- Requires irrigation; intolerant to waterlogging

KEY RISKS & SENSITIVITIES

- High water requirements
- Long distance to market
- Cost and accessibility of labour

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers (China 77% of production in 2016)
- Varieties and cultivars suitable to North West Queensland can command premiums in market

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce



Mechanically harvested



Hot, dry environment product



Trucking/shipping friendly



Value-added opportunities



MARKET SITUATION

Attractive high value markets



Large agribusiness involved



Proven, scalable production model



Attractive competitive set



AUSTRALIA

High performance genetics available



Required skills for success



Leverage country reputation



OVERALL





**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Unique variety grown in Australia (hybrid of sugar apple and cherimoya).
Can leverage expertise of growers in other Queensland regions (50% of AU production).
Strong demand for tropical fruit in global markets.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Counter season supply
- Growth in local population for whom custard apple is traditional fruit
- Demand for new and exotic fruits

VALUE-ADDED OPPORTUNITIES

- Canned and pouch pulp
- Juice
- Flavoured beverages (dried tea, powdered mixes, mineral water)
- Custard Apple seed oil
- Liqueur
- Baked products (Kalakand slice)
- Nutraceutical extracts

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported custard apple products - Other winter tropical fruit - Dessert products 	<ul style="list-style-type: none"> - Taiwan - Spain - Brazil - Chile - China

GROWING CONDITIONS

- High humidity and relatively warm winters
- Intolerant to frosts
- Tropical and subtropical climates
- Tolerant of poor soil
- Irrigation essential for high quality fruit
- Yields from 2-5 years depending on variety

KEY RISKS & SENSITIVITIES

- 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
- Transport costs and risk of fruit damage

WHAT YOU WOULD NEED TO BELIEVE

- 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 Queensland
- Consumer knowledge of handling and preparing can be improved



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Widely grown across climatic peer regions.
Enjoying popularity as “superfood” and key ingredient in raw/paleo food products.
Australia imports 5,000-7,000 tonnes of dates per year.

DRIVERS OF GROWTH

- Popular ingredient and snack in many cuisines globally
- Demand for healthy snack foods

VALUE-ADDED OPPORTUNITIES

- Fresh, ripe, cured
- Paste
- Syrup
- Confectionery
- Baked goods
- Ingredient in many sweet and savoury dishes
- Vinegar and alcohol
- Animal feed
- Soap and cosmetics (date seed oil)
- Fibre and textiles (leaves)

KEY COMPETITORS

DOMESTIC

- Imported dates
- Other health foods
- Other syrups

EXPORTERS/PRODUCERS

- Egypt
- Iran
- Algeria
- Saudi Arabia
- United Arab Emirates
- Iraq
- Pakistan
- Sudan

GROWING CONDITIONS

- Only female plants bear fruit; commercial plantations pollinated manually
- Bear fruit after 4-8 years; commercial production for 7-10 years
- Many cultivars are grown around the world
- Tolerant of wide range of soils
- Tolerant of salinity and waterlogging
- Semi arid and arid climate with abundant supply of water
- Require long, hot growing season; prefers low humidity
- Drought resistant; requires irrigation for maximum yields (total of 15-25 ML/ha from either rainfall or irrigation)

KEY RISKS & SENSITIVITIES

- Potential to become invasive species in some regions
- Very labour intensive
- Relatively water thirsty

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can access best cultivar for yield and markets
- North West Queensland grown dates can replace imported dates in domestic market

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	◐
OVERALL	◐

DESERT DATE (*balanites*)

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Heavy yielding, date-like fruit tree; pulp of fruit is one third sugar.
Oil yield of 40-50% from kernel; similar composition to soybean.
Oil contains steroids used as raw material for pharmaceutical hormones.
Thrives in the heart of the Sahara and parts of Middle East.

DRIVERS OF GROWTH

- Demand for drought tolerant crops
- Demand for new and unique food products
- Potential pharmaceutical uses (wide ranging traditional medicine uses from every part of tree)
- Demand for biofuels

VALUE-ADDED OPPORTUNITIES

- Fresh
- Roasted kernel
- Spread (similar peanut butter)
- Ingredient in cooked dishes (like dates)
- Beverages, including alcoholic
- Oil (kernel)
- Protein (kernel)
- Animal feed (oilcake)
- Traditional medicine uses
- Biofuels
- Charcoal

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Dates 	<ul style="list-style-type: none"> - Burkina Faso - Uganda - Niger - West African countries

GROWING CONDITIONS

- Tolerates heat and aridity
- Thrives on 200mm annual rainfall
- Arid to sub humid climates
- Temperatures 20-35 degrees preferred, can tolerate 15-41 degrees
- Wide range of soils
- Tolerant of flooding, livestock and fire
- Produces fruit even in dry periods
- Intolerant to shady areas; prefers open savannah
- Fruiting at 5-8 years; increasing yield until 25 years

KEY RISKS & SENSITIVITIES

- Novel tree and fruit in Australia; lack of knowledge and local market
- Invasive species risk
- Nuts are hard to crack to obtain oil (village industry)

WHAT YOU WOULD NEED TO BELIEVE

- Suitable varieties already exist in Australia (~4 years through quarantine if not)
- Domestic market can be developed based on demand for/consumer knowledge of dates
- North West Queensland can compete with subsistence farmers in African countries

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	○
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	●

AUSTRALIA

High performance genetics available	○
Required skills for success	◐
Leverage country reputation	◐
OVERALL	◐



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland has regions well suited to farming emus.
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.

DRIVERS OF GROWTH

- Demand for healthier meats (low fat, cholesterol, high protein)
- Health benefits of emu oil

VALUE-ADDED OPPORTUNITIES

- Meat cuts
- Emu oil from rendered fat (health products for joint pain)
- Skin for high quality leather
- Feathers
- Pet food ingredient
- Eggs

KEY COMPETITORS

DOMESTIC

- Chicken
- Ostrich
- Turkey
- Other meat proteins

EXPORTERS/PRODUCERS

- United States
- Canada
- India

GROWING CONDITIONS

- Preferred habitat includes open plains, forest and savanna
- Found throughout most of Australia

KEY RISKS & SENSITIVITIES

- Wild harvesting prohibited, must be licensed
- Farm numbers in decline
- Currently uneconomical to farm in Australia
- Rarely found in wild in rainforest or very arid areas

WHAT YOU WOULD NEED TO BELIEVE

- 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

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

EUCALYPTUS (oil)

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland’s potential for forestry has been highlighted previously.
Eucalyptus gums thrive in their native country.
Medical grade Australian eucalyptus oils are increasingly in demand.
Australia should ‘own’ this product globally.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	○
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	●
OVERALL	◐

DRIVERS OF GROWTH

- Demand for natural medical ingredients
- Demand for natural household products

VALUE-ADDED OPPORTUNITIES

- 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

KEY COMPETITORS

DOMESTIC

- Imported eucalyptus oil
- Other essential oils
- Other naturally scented household and personal products

EXPORTERS/PRODUCERS

- China (75% of world trade)
- Spain
- Portugal
- India
- South Africa
- Brazil
- Chile
- Swaziland

GROWING CONDITIONS

- Biggest oil producer is southern blue gum found in Tasmania and southern Victoria
- However, also now grows in Spain, Portugal, southern Africa, California
- Mediterranean climates but also high altitudes in tropics

KEY RISKS & SENSITIVITIES

- 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

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland produced eucalyptus oil can regain market share that Australia lost to low cost producers
- North West Queensland 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



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Increasing demand from healthcare industry (pharmaceutical industry).
Widely used in many Asian cuisines.
Grown in semi arid climates.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input type="radio"/>
Hot, dry environment product	<input checked="" type="radio"/>
Trucking/shipping friendly	<input type="radio"/>
Value-added opportunities	<input checked="" type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<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 type="radio"/>
OVERALL	<input type="radio"/>

DRIVERS OF GROWTH

- Common ingredient in many cuisines of south and central Asia
- Potential pharmaceutical uses
- Changing dietary patterns
- Rising athletes demand for health supplements

GROWING CONDITIONS

- Grows in semi arid regions of India
- Hardy crop, tolerates dry conditions
- Temperature range of 10-32 degrees
- Requires frost free climate

VALUE-ADDED OPPORTUNITIES

- Vegetable, sprouts, microgreens
- Herb and spice
- Pastes
- Galactomannan gum
- Pharmaceutical (traditional medicine)
- Cosmetics
- Animal feed
- Green manure crop

KEY RISKS & SENSITIVITIES

- Allergy and anti-nutrient potential
- Very niche crop in Australia; lack of agronomic knowledge

WHAT YOU WOULD NEED TO BELIEVE

- Fenugreek can offer better returns to growers than similar rotational crops (chickpeas and lentils)
- North West Queensland can compete with low cost producers
- North West Queensland can supply directly into dedicated supply chain
- Increased production will support investment in modern technology for processing and oil extraction

KEY COMPETITORS

DOMESTIC

- Imported fenugreek seeds
- Other spices
- Other rotational crops

EXPORTERS/PRODUCERS

- India
- Pakistan
- Afghanistan
- Iran
- Nepal
- Egypt



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

New irrigation regions in North West Queensland may be suited to growing flax seed.
Flaxseed oil is on trend as a healthy oil and nutritional supplement that can extend into wider food applications.
Strong market demand in attractive high value markets.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	○
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	◐
OVERALL	◐

DRIVERS OF GROWTH

- Demand for functional foods with health benefits (high in omega 3 & 6 oils, rich in alpha linolenic acid)
- Demand for organic oils

VALUE-ADDED OPPORTUNITIES

- Ingredient in baking, muesli bars, confectionery
- Spread
- Oil (not suitable for cooking)
- Salad dressing
- Nutritional supplement
- Cosmetics (linoleic acid), featuring anti-inflammatory properties, acne reduction, moisture retention
- Specialist niche feed ingredient
- Industrial uses for oil (declining use)
- Fibre/linen production (different variety to oil producing)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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"> - Canada - Russia - Kazakhstan - Belgium - Netherlands

GROWING CONDITIONS

- Temperate and tropical climates
- Grows best with rainfall from 450-750mm
- Can be grown under irrigation
- Cool temperatures after flowering tend to increase oil content

KEY RISKS & SENSITIVITIES

- 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)
- Market demand is better for seeds than for oil

WHAT YOU WOULD NEED TO BELIEVE

- 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 Queensland
- Able to differentiate North West Queensland produced flaxseed oil
- Market will extend beyond niche ingredient into everyday product
- Development of new varieties to maximise health benefits or yield improvements (CSIRO developed Linola variety in past)
- Able to develop linseed as a aquaculture feed substitute (high protein)



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grows in semi-arid regions of West Africa.
One of the fastest growing cereals; can be harvested three times a year in optimum conditions.
Being touted as next “superfood” in United States.
Valuable animal feed crop.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- High nutritional value
- High medicinal value
- Demand for gluten free products

VALUE-ADDED OPPORTUNITIES

- Used in any whole grain product
- Flour
- Semolina substitute
- Breads
- Beer (Africa)
- Animal feed (grain, straw, chaff, hay)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported fonio - Other gluten free alternative grains 	<ul style="list-style-type: none"> - Guinea - Nigeria - Mali - Ivory Coast - Burkina Faso - Niger - Senegal

GROWING CONDITIONS

- Tropical climates with defined dry season
- Highly adaptable to diverse weather conditions; grows well in drought and flood
- Can grow in soils considered too poor for other cereal crops
- Temperature range of 25-30 degrees
- Dryland cropping; rainfall of 150mm to 300mm
- Does not grow well in humidity

KEY RISKS & SENSITIVITIES

- Small grain size is difficult to process
- No established supply chain and infrastructure in Queensland
- Pest threats are high in region
- Possibility of becoming invasive species (white fonio grown in USA without issues)
- Very little agronomic research on crop
- Low yields, seed shattering (lack of varietal/improvement research to date)

WHAT YOU WOULD NEED TO BELIEVE

- Research on varieties/breeding programs can achieve rapid improvements
- Mechanical processing is possible
- North West Queensland can compete with low cost, traditional African producers

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Goats can thrive in North West Queensland conditions; there are feral populations in Richmond and Flinders Shires
Goats are easily integrated into wheat, sheep, or grazing operations.
Cashmere and mohair are considered luxury fibres.

DRIVERS OF GROWTH

- Increasing demand for luxury goods
- Increasing demand for natural fibre products

VALUE-ADDED OPPORTUNITIES

- Dairy
- Meat
- Skins
- Manufacture into garments (rather than sell as fibre)

KEY COMPETITORS

DOMESTIC

- Angora rabbits fibre
- Alpaca fibre
- Wool
- Possum fibre
- Synthetic fabrics

EXPORTERS/PRODUCERS

- China
- Mongolia
- Iran
- South Africa
- Lesotho
- Argentina
- United States

GROWING CONDITIONS

- Semi arid rangelands and ranges
- Australian Cashmere goat was cross bred from bush goats, retaining their hardiness

KEY RISKS & SENSITIVITIES

- Herds are at risk from wild predators
- Most of world production of cashmere comes from low cost “peasant style” production systems

WHAT YOU WOULD NEED TO BELIEVE

- Can continue to access global best genetics to improve herd
- North West Queensland produced goat fibre is superior to cheaper produced Chinese, etc. cashmere and mohair
- Sole cashmere processor in Victoria will continue to operate

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	◐
OVERALL	◐



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Has been shown to grow in region in trials; grown successfully in Tablelands.
Valuable in rotation cropping as nitrogen fixing legume crop.
Growing demand for inputs for oil shale gas industry.

DRIVERS OF GROWTH

- Demand for vegetation gelling agents in food processing
- Demand for industrial use in oil shale gas industry
- Demand for functional foods (prebiotic, laxative)

VALUE-ADDED OPPORTUNITIES

- Fresh (leaves and pods)
- Food quality guar gum (baked goods, cheese, ice cream, fried products)
- Industrial guar gum and resin (paper, textile, cosmetics, explosives)
- Extractive industries (ore flotation, hydraulic fracturing)
- Animal feed (meal)
- Animal forage (mature beans only)

KEY COMPETITORS

DOMESTIC

- Imported guar gum
- Imported guar mucilage and thickeners
- Other gums

EXPORTERS/PRODUCERS

- India
- Pakistan
- United States

GROWING CONDITIONS

- Grows well in semi arid regions but requires consistent rainfall
- Requires sufficient soil moisture before planting and during seed maturation (too much moisture leads to lower seed quality)
- Very drought tolerant; grows well under hot conditions
- Intolerant to frosts
- Tolerant of salinity
- Research found yields of 2-3 tonnes per hectare as dryland crop in parts of Queensland

KEY RISKS & SENSITIVITIES

- Has been researched and trialed in Queensland since the 70's with no real traction achieved

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost, large scale producers India and Pakistan
- Improvements in varieties globally can be accessed by North West Queensland growers

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	○
OVERALL	●



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

New food industry demand for “superfood” hemp products.
Versatile crop that can be directed into numerous industries (variety specific).
Climate is not particularly suitable; future research may find new varieties for North West Queensland region.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	○
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	◐
Attractive competitive set	●

AUSTRALIA

High performance genetics available	○
Required skills for success	◐
Leverage country reputation	◐
OVERALL	◐

DRIVERS OF GROWTH

- Demand for healthy, natural food products
- Demand for newest, latest “superfood” product
- Push to develop new products and markets on back of new food status

VALUE-ADDED OPPORTUNITIES

- Seed for food products
- Oil for food products
- Flour
- Cosmetics
- Pharmaceutical products
- Fibre (textiles, paper, rope, building materials)
- Industrial oil for lubricant, inks, fuel, plastics
- Stock feed

KEY COMPETITORS

DOMESTIC

- Imported seeds and oil
- Other oils (flax seed, linseed)

EXPORTERS/PRODUCERS

- France
- Netherlands
- Spain
- Belgium
- Germany
- Canada
- Chile

GROWING CONDITIONS

- Intolerant to waterlogging, drought, frosts, very humid conditions, excessive cold or hot climates
- Mild temperate, subtropical and tropical climates
- Requires non cracking soils
- Optimum temperatures 15-27 degrees
- Rainfall of 600-700 mm or 3-6 ML/ha of irrigation
- Different varieties for seed, fibre and pharmaceutical uses

KEY RISKS & SENSITIVITIES

- Bedding-in process as newly 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

WHAT YOU WOULD NEED TO BELIEVE

- Variety suited to climatic conditions can be developed
- North West Queensland able to produce high quality oils at competitive prices
- Able to develop a unique selling proposition (USP) for North West Queensland hempseed oil

HORNED MELON (kiwano)

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

"ELEVATOR PITCH" WHY DO IT IN NORTH WEST QUEENSLAND?

Grown in climatic peer regions (Kalahari desert) and in Queensland.
Demand for new, trendy ingredients in high end cocktail bars.

DRIVERS OF GROWTH

- Demand for new, unique ingredients from food service
- Demand for nutraceuticals

VALUE-ADDED OPPORTUNITIES

- Dessert fruit
- Vegetable (like cucumber)
- Smoothies
- Salads
- Salsas
- Cocktails
- Traditional medicines

KEY COMPETITORS

DOMESTIC

- Other cucumbers and melons
- Other exotic tropical fruit

EXPORTERS/PRODUCERS

- New Zealand
- Kenya
- South America
- United States
- Israel

GROWING CONDITIONS

- Native to semi arid Africa
- Temperate, subtropical, semi arid climates
- Optimum germination temperature between 20-35 degrees

KEY RISKS & SENSITIVITIES

- Became an invasive weed when introduced to Australia 70 years ago

WHAT YOU WOULD NEED TO BELIEVE

- Yields are comparable with other melons or cucumbers that grow under same conditions
- Vine can be controlled and not spread uncontrollably

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

INDIAN SANDALWOOD

INDICATED
MARKET
DEMAND

NA

PASS INTO
STAGE II

N

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Demand for sustainable source of oil and incense from India and China.
Potential source of biofuels.
Australia (mostly Western Australia) is one of the largest producers of sandalwood in world.

DRIVERS OF GROWTH

- Demand for incense (traditional cultural importance)
- Demand for essential oils for perfume industry
- Demand for biofuel

VALUE-ADDED OPPORTUNITIES

- Essential oil (perfume)
- Incense (pulp)
- Nuts
- Cosmetics
- Pharmaceuticals
- Timber
- Biofuels

KEY COMPETITORS

DOMESTIC

- Imported sandalwood products
- Other essential oils

EXPORTERS/PRODUCERS

- India
- Pakistan
- Nepal
- Hawaii
- Fiji

GROWING CONDITIONS

- Require greater soil depth
- Intolerant of water logging
- Requires irrigation, especially on cracking soils
- Heartwood develops at 10 years; harvestable maturity at 15-35 years
- Require 2-3 host trees over life of plantation

KEY RISKS & SENSITIVITIES

- Long time to commercial harvest
- Uncertainty of market by time of harvest
- Australia has many examples of failed sandalwood investments
- Synthetic and biosynthetic sandalwood oil is threat to industry
- Termites are pest threat, reducing yields
- Host trees must also suit North West Queensland growing conditions
- Impact of a bush fire event would be high

WHAT YOU WOULD NEED TO BELIEVE

- Sandalwood industry would work in North West Queensland when it hasn't been successful elsewhere

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	○
OVERALL	◐

NOTE: No individual trade code exists for timber species, using essential oils nes would not include timber or biofuel demand, market demand not calculated Source: various published articles and sites; UN Comtrade; UN FAOSTAT; Coriolis analysis and estimates



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Tropical parts of Gulf region may suit Jackfruit production; can leverage expertise of Far North growers.
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.

DRIVERS OF GROWTH

- Staple in many cuisines globally
- Demand for new and exotic foods
- Increasing demand for Asian cuisines
- Move to plant based meat alternatives

VALUE-ADDED OPPORTUNITIES

- 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

KEY COMPETITORS

DOMESTIC

- Imported processed Jackfruit
- Other tropical fruit
- Other meat substitutes

EXPORTERS/PRODUCERS

- Bangladesh
- India
- Thailand
- Vietnam
- Brazil
- Indonesia

GROWING CONDITIONS

- Warm, humid climate of tropical lowlands; up to 30° latitude from equator
- Can tolerate 3-4 months of drought but most productive with year round moisture
- Optimum rainfall of 1,500mm without pronounced dry season
- Fruit after 2-4 years for vegetatively propagated trees

KEY RISKS & SENSITIVITIES

- 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

WHAT YOU WOULD NEED TO BELIEVE

- 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 aroma and amount of preparation required for ripe, fresh fruit
- Off season supply could provide an export advantage

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?		QUALITATIVE SCORECARD				
<p>Grown in climatic peer regions. Demand for sustainable, natural fibres is strong (100% biodegradable and recyclable). Jute is second only to cotton in versatility with uses across a wide range of industries.</p>		<p>PRODUCT</p>				
		Capital intensive to produce <input type="radio"/>				
		Mechanically harvested <input type="radio"/>				
		Hot, dry environment product <input type="radio"/>				
		Trucking/shipping friendly <input checked="" type="radio"/>				
		Value-added opportunities <input checked="" type="radio"/>				
DRIVERS OF GROWTH	GROWING CONDITIONS	MARKET SITUATION				
<ul style="list-style-type: none"> - Demand for natural, sustainable fibres - One of the most affordable nature fibres - Widely used across many industries 	<ul style="list-style-type: none"> - Monsoon climate during the wet - Alluvial soil and standing water - 20-40 degrees - Relative humidity of 70-80% for optimum growth 	Attractive high value markets <input checked="" type="radio"/>				
VALUE-ADDED OPPORTUNITIES	KEY RISKS & SENSITIVITIES	Large agribusiness involved <input type="radio"/>				
<ul style="list-style-type: none"> - Soup/stew (Tossa jute) - Fibre (biodegradable) - Cosmetics - Medicine - Paints 	<ul style="list-style-type: none"> - Competing with established, large scale, low cost producers - Variability in wet seasons in region - Lack of further processing industry in Australia 	Proven, scalable production model <input type="radio"/>				
KEY COMPETITORS	WHAT YOU WOULD NEED TO BELIEVE	Attractive competitive set <input type="radio"/>				
<table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS/PRODUCERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Imported jute - Imported final products - Other fibres </td> <td> <ul style="list-style-type: none"> - India - Bangladesh - China - Uzbekistan </td> </tr> </tbody> </table>	DOMESTIC	EXPORTERS/PRODUCERS	<ul style="list-style-type: none"> - Imported jute - Imported final products - Other fibres 	<ul style="list-style-type: none"> - India - Bangladesh - China - Uzbekistan 	<ul style="list-style-type: none"> - North West Queensland can compete with low cost producers India and Bangladesh - Local processing and value add processing will be established 	<p>AUSTRALIA</p>
DOMESTIC	EXPORTERS/PRODUCERS					
<ul style="list-style-type: none"> - Imported jute - Imported final products - Other fibres 	<ul style="list-style-type: none"> - India - Bangladesh - China - Uzbekistan 					
		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"/>				

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Kangaroos thrive in the region.
Growing demand for kangaroo meat in high value markets.
Improved processing and marketing can result in kangaroo being perceived as a premium meat.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for healthy red meat (high protein, low fat)
- Demand for unique/interesting ingredients from food service
- Demand for sustainably produced meat

VALUE-ADDED OPPORTUNITIES

- Fresh, chilled or frozen meat cuts
- Pre-prepared cuts, ready-meal ingredients
- Retail-ready packaging
- Pre-prepared cuts for foodservice
- Jerky
- Pet food industry
- Pelts

KEY COMPETITORS

DOMESTIC

- Venison
- Other game meats
- Beef
- Mutton/Lamb
- Other sources of protein

EXPORTERS/PRODUCERS

- Countries exporting other proteins, especially venison

GROWING CONDITIONS

- Queensland had a population in surveyed areas of 23m Red, Eastern Grey and Wallaroo species in 2017; quota of 3.3m able to be harvested in 2018
- In 2017 only 868,129 harvested (26% of quota)

KEY RISKS & SENSITIVITIES

- Lack of control over final product due to wild harvest
- Ability to increase production when not farmed animal
- Social license and environmental justification to increase numbers harvested
- Wild population fluctuate with seasons/rainfall
- Cluster/exclusion fencing may have consequences on kangaroo population and migration

WHAT YOU WOULD NEED TO BELIEVE

- Export rules requiring kangaroo leaves Australia in whole pieces can be changed (Macro Meats looking to open European value added processing plant to get around this restriction)
- Wild harvest can support premium meat supply chain requirements
- Wild populations in North West Queensland of the three harvestable species are large enough to support a viable industry

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown in climatic peer regions.
Grown in Atherton Tablelands both as summer and winter crops.
Demand for sustainable fibres and biofuel sources.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input checked="" type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<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 type="radio"/>
OVERALL	<input type="radio"/>

DRIVERS OF GROWTH

- Demand for sustainable fibre sources
- Demand for biofuel

VALUE-ADDED OPPORTUNITIES

- Seed oil (cooking, lubricants, cosmetics)
- Fibre
- Paper
- Building materials
- Car components
- Bioplastics
- Absorption materials
- Fertiliser
- Animal feed
- Biofuels

KEY COMPETITORS

DOMESTIC

- Other fibre sources
- Other biofuels

EXPORTERS/PRODUCERS

- United States
- India
- China
- Bangladesh
- Indonesia
- Malaysia
- South Africa

GROWING CONDITIONS

- Temperate and tropical climates
- Warm and wet conditions
- Will grow under dryland conditions with adequate soil moisture for germination
- Can be grown as rotation crop with sugar

KEY RISKS & SENSITIVITIES

- No commercial processing facility in Australia
- New crop in Australia; limited knowledge and experience

WHAT YOU WOULD NEED TO BELIEVE

- Demand for fibre and biofuel use is high enough for industry to develop in Australia
- Processing plant is built in region



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Legume grown throughout northern Australia for forage, green manure and hay production.
Ability for graziers to retain cattle for longer in drought periods or to sell at higher weights during non drought periods.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input type="radio"/>
Large agribusiness involved	<input checked="" type="radio"/>
Proven, scalable production model	<input checked="" type="radio"/>
Attractive competitive set	<input checked="" type="radio"/>

AUSTRALIA

High performance genetics available	<input checked="" type="radio"/>
Required skills for success	<input checked="" type="radio"/>
Leverage country reputation	<input type="radio"/>
OVERALL	<input type="radio"/>

DRIVERS OF GROWTH

- Demand for animal feed

VALUE-ADDED OPPORTUNITIES

- Animal feed (grazing)
- Hay
- Potential biomass for biofuels

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other forage crops - Other hay and silage crops - Destocking/selling cattle rather than feeding 	(category includes lucerne hay) <ul style="list-style-type: none"> - United States - Spain - Canada - Italy

GROWING CONDITIONS

- Grown on majority of arable soils
- Requires irrigation
- Moderately sensitive to salinity
- Does not tolerate heavy grazing
- Drought tolerant once established

KEY RISKS & SENSITIVITIES

- Prices heavily dependent on availability of other animal feeds

WHAT YOU WOULD NEED TO BELIEVE

- Prices received for hay or increased carrying capacity of station is worth the investment in water allocation and irrigation infrastructure
- That water is available during drought periods when prices are highest for hay

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Long use as cattle forage crop in Queensland.
Interest from international investor.
Strong government policy supporting biofuels industry development.

DRIVERS OF GROWTH

- Demand for biofuels
- Demand for animal feed

VALUE-ADDED OPPORTUNITIES

- Young pods eaten as food
- Animal feed
- Biofuels (wood, seed oil)
- Pulp/wood

KEY COMPETITORS

DOMESTIC

- Other permanent forage crops
- Other animal feeds
- Other sources of biomass

EXPORTERS/PRODUCERS

- Mexico
- Central America
- South East Asia

GROWING CONDITIONS

- Tropical and subtropical climates preferred
- 700 – 800mm rainfall
- Once established can tolerate dry spells and droughts
- Growth falls below daily maximums of 25 degrees

KEY RISKS & SENSITIVITIES

- Invasive weedy variety exists (most projects based on developing sterile variety)
- Research still ongoing into sterile varieties
- Biofuels industry may not remain focused on wood biomass options
- Toxic to cattle if not inoculated with specific bacteria
- Only one market identified for wood pellets into biofuel (Japanese company)
- Still in research phase for use in biofuels industry

WHAT YOU WOULD NEED TO BELIEVE

- Sterile variety will be developed in order for “social license” from graziers already battling many introduced and now invasive weeds
- Biofuels industry will continue to demand wood rather than other biomass options

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

North West Queensland has long history of growing crops and animal feed; lucerne is widely grown in southern Queensland.
Market exists supplying live export trade out of Northern Territory.
Australia is #2 exporter into key target markets.
Increasing demand for animal feed in China and Middle East.

DRIVERS OF GROWTH

- Great nutritional profile and high yielding animal fodder
- Increasing use of feedlot production systems
- Growing demand for animal feed out of China and Middle East

VALUE-ADDED OPPORTUNITIES

- Hay, silage, pasture
- Meal, pellets
- Seed
- Sprouts for human consumption

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other animal fodder - Other animal feeds 	<ul style="list-style-type: none"> - United States - Canada - Argentina - Italy - Spain

GROWING CONDITIONS

- Well adapted to dryland and irrigation systems
- Temperate climates
- Drought resistant
- Cracking soil regions of North West Queensland may require irrigation for perennial crops

KEY RISKS & SENSITIVITIES

- Difficult phytosanitary requirements for export
- Other regions in Australia able to produce higher yields
- Unless compressed or pelletised it is very bulky to transport

WHAT YOU WOULD NEED TO BELIEVE

- Some irrigation is available
- Bee pollination is available

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Extensive maize growing experience in other regions of Queensland.
Maize silage is high value feed; increasing demand for feed into intensive beef operations.
Extremely versatile starch and extruded snack food ingredient.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input checked="" type="radio"/>
Proven, scalable production model	<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 type="radio"/>
OVERALL	<input type="radio"/>

DRIVERS OF GROWTH

- Demand for snack foods
- Demand for animal feed
- Demand for gluten free snack foods and baked goods

VALUE-ADDED OPPORTUNITIES

- Breakfast cereals
- Snack foods
- Starch
- Animal feed (grain, silage)
- Ethanol production

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported maize products - Other starch products - Other animal feeds 	<ul style="list-style-type: none"> - United States - Brazil - Argentina - Ukraine - France

GROWING CONDITIONS

- Warm but not hot days and mild nights give best yields
- Tropical, subtropical and temperate climates

KEY RISKS & SENSITIVITIES

- Focus on domestic market
- Competing with regions more suited to growing maize domestically
- Large scale crop grown in massive quantities overseas

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with higher rainfall, lower transport cost regions of Australia
- Domestic market can absorb more production
- Scale can be reached
- Return on maize crop justifies water infrastructure costs

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Eucalyptus gums thrive in their native country.
Extensive research has been undertaken in growing mallee eucalyptus for biofuel.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	●
Trucking/shipping friendly	○
Value-added opportunities	○

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	○
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	○
OVERALL	◐

DRIVERS OF GROWTH

- Demand for sustainable biofuel sources

VALUE-ADDED OPPORTUNITIES

- Biofuel
- Wooden pellets

KEY COMPETITORS

DOMESTIC

- Other mallee growing regions
- Other sources of biofuel

EXPORTERS/PRODUCERS

- United States
- Brazil
- China

GROWING CONDITIONS

- Can be grown on marginal land
- Western Australia research locations experience 290-570mm annual rainfall
- Harvested every few years; coppices from cut stump

KEY RISKS & SENSITIVITIES

- Harvesting and transporting to processing can require 80% of energy inputs; need to improve efficiency with long distances
- Biomass production potential is very low (2-6t/ha) compared to other sources (e.g. sugar); would have to utilise non-productive land

WHAT YOU WOULD NEED TO BELIEVE

- Varieties best suited for region are highly productive
- Processing plant will be built locally
- Research undertaken in other regions of Australia can be utilised in North West Queensland
- The mechanical harvester being developed in 2014 becomes a commercial reality



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Grows in climatic peer regions (Sudano-Sahelian range of West Africa).
Fruit has 8 times the vitamin C of oranges.
Marula oil is sought after by beauty industry; referred to as “luxury oil”.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	●

AUSTRALIA

High performance genetics available	○
Required skills for success	◐
Leverage country reputation	◐
OVERALL	◐

DRIVERS OF GROWTH

- Demand for natural cosmetic ingredients
- Demand for new and unique foods by food service
- Demand for healthy oils and nuts

VALUE-ADDED OPPORTUNITIES

- Fresh fruit
- Puree
- Beverages
- Jam
- Jellies
- Nuts/kernels (like macadamia)
- Cooking oil (long shelf life)
- Amarula liqueur
- Cosmetics (oil)
- Dye (bark)
- Traditional medicines

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported processed products containing marula - Shea butter - Macadamia nuts - Other liqueurs 	<ul style="list-style-type: none"> - South Africa - Botswana - Namibia - Kenya

GROWING CONDITIONS

- Subtropical and tropical climates
- Intolerant of frost
- Moderately drought resistant
- Salt tolerant
- 650-800mm annual rainfall; concentrated in summer wet (250-800 mm in South Africa)
- Relative of mango, cashew, pistachio
- Seedlings bear fruit in 7-10 years; commercial production 15-20 years with increasing yields

KEY RISKS & SENSITIVITIES

- Extracting kernels from inside the stone/seed is difficult
- Unproven plant and industry in Australia

WHAT YOU WOULD NEED TO BELIEVE

- Market exists for non-African produced marula oil internationally
- Grafting could shorten time to commercial production
- Harvesting can be mechanised



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Strong global trade metrics; US\$126m trade value in 2016.
Demand for new and “natural” energy drinks.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Traditional tea beverage of South American countries
- Demand for new, “natural” beverages
- Demand for new health foods

VALUE-ADDED OPPORTUNITIES

- Iced tea beverages
- Energy drinks

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported mate beverages - Other “natural” energy drinks - Other iced tea beverages 	<ul style="list-style-type: none"> - Brazil - Argentina

GROWING CONDITIONS

- Subtropical climates
- Evergreen, dioecious shrub or small tree
- Grows in regions with extremely high rainfall, temperatures 15-29 degrees

KEY RISKS & SENSITIVITIES

- Issues with pests in commercial plantation setting (South America)

WHAT YOU WOULD NEED TO BELIEVE

- Varieties with lower water requirements can be developed
- Able to improve germination rates and timeframes
- North West Queensland could compete with traditional producers into their traditional markets
- A domestic market could be developed

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Grown in Atherton Tablelands and Burdekin regions in Queensland. Grown successfully in Katherine (NT)
Widely believed to grow well in region.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

DRIVERS OF GROWTH

- Demand for premium fruit
- Gift giving culture in Asia
- Healthy juices/smoothies trend

GROWING CONDITIONS

- Tropical and subtropical regions
- Long, warm growing periods; temperatures above 25 degrees
- Susceptible to frost; low temperatures can cause defects
- Sunburn can be issue for fruit
- Require good drainage

VALUE-ADDED OPPORTUNITIES

- Fresh in desserts and salads
- Canned, pickled
- Frozen for smoothies
- Flavouring
- Juice, beverages
- Wine
- Seeds can be roasted, ground into flour (if seeded variety)

KEY RISKS & SENSITIVITIES

- Watermelons do not store well; susceptible to chilling injury or decay at higher temperatures
- Large, heavy to transport; rough, long roads not ideal
- Highly publicised food poisoning outbreaks has troubled industry in recent years

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other fruit - Imported canned fruit - Imported juice products 	<ul style="list-style-type: none"> - Spain - Mexico - United States - Italy - Netherlands - Brazil - Guatemala

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers (China produces 68% of global production)
- Logistics difficulties can be overcome
- Able to produce fruit with unique selling proposition, or supply into key seasonal window

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Demand for Australian native produce is outstripping supply; interest from Asian markets.
Native foods offer a means for food processors to differentiate their products in the crowded overseas market.
Potential nutraceutical market.

DRIVERS OF GROWTH

- Demand for unique products from food service
- Demand for nutraceuticals

VALUE-ADDED OPPORTUNITIES

- Spices and flavouring
- Herbal teas
- Jams and chutneys
- Ingredient in processed food products (e.g. Pork and Kakadu Plum sausages)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other bushfoods from coastal and southern regions - Conventional herbs and spices 	<ul style="list-style-type: none"> - Other countries with unique/native foods

GROWING CONDITIONS

- The following are examples of bushfoods that grow in central outback Australia (wider region than North West Queensland):
- Desert limes, Davidson plum, Kakadu plum, wattleseed, caperbush, wild orange, wild passionfruit, conkerberry, ruby saltbush, desert fig, doubah, emu apple, quandong, bush tomato, parakeelya, bush potato, pencil yam, peppercrosses, large pigweed, mulga seeds, dogwood seeds, witchetty bush seeds, others

KEY RISKS & SENSITIVITIES

- Lack of commercial production models to follow
- No commercial varieties optimised for yields and harvesting

WHAT YOU WOULD NEED TO BELIEVE

- Commercial yields can be achieved
- Demand will continue to grow and not just be a “fad”
- Ongoing research into the health properties and/or marketing messages of Native Foods

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Australia has four native or “wild” rice species which are an important traditional food for Indigenous Australians.
Grows in abundance in wetlands of North Queensland.
Demand for new (old), healthier grains.

DRIVERS OF GROWTH

- Demand for unique, new foods (especially food service)
- Demand for healthier grains
- Demand for native species to improve resilience of commercial rice varieties

VALUE-ADDED OPPORTUNITIES

- Rice
- Ready to cook rice mixes
- Health foods

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported “wild” rice - Brown and black rice - Other “alternative” grains 	<ul style="list-style-type: none"> - Other countries exporting their native rice

GROWING CONDITIONS

- Wet tropics regions of Australia
- Native to Northern Queensland

KEY RISKS & SENSITIVITIES

- Milling and processing techniques for commercial rice does not work for native rice
- Early stages of research into commercial potential

WHAT YOU WOULD NEED TO BELIEVE

- Commercial production is possible
- Research into varieties and yields will be funded and timely
- Premium exists over and above currently commercially produced “wild rice”
- Able to develop unique selling proposition around the “original home of rice”

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<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"/>



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Strong market demand for palm kernel oil.
Market exists for sustainably produced palm oil.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for cheaper oil substitutes by food industry
- Demand for animal feed
- Demand for biofuel

VALUE-ADDED OPPORTUNITIES

- Commercial cooking oil
- Food ingredient
- Butter substitute in baked goods
- Soap, washing powder
- Cosmetics and personal care products
- Animal feed (expeller)
- Biofuel

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported palm oil - Other vegetable oils - Other biofuel sources 	<ul style="list-style-type: none"> - Indonesia - Malaysia - Nigeria - Thailand - Colombia - Ghana

GROWING CONDITIONS

- Suits humid tropics or semi arid tropics
- Needs uninterrupted supply of water and sufficient topsoil
- Minimum of 1,600mm annual rainfall
- Palm fruit takes 5-6 months from pollination to maturity; produce fruit after 2.5 years; commercial harvest at 3 years; peak production 7-18 years

KEY RISKS & SENSITIVITIES

- Produced on massive scale by low cost producers at considerable environmental cost
- Requires higher rainfall than region receives
- Labour intensive production systems

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers Indonesia and Malaysia who dominate global trade
- Could reach scale needed to support refinery (higher market demand for palm kernel oil)
- Less water hungry varieties could be developed

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Emerging identification of significant health benefits in okra.
Okra has a wide range of cosmetic and industrial uses.
Grown in climatic peers regions.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input type="radio"/>
Value-added opportunities	<input checked="" type="radio"/>

MARKET SITUATION

Attractive high value markets	<input type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<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"/>

DRIVERS OF GROWTH

- Health benefits (dietary fibre, vitamins, minerals)
- Functional use as natural thickening agent in cooking
- Demand for natural supplements
- Common staple in many cuisines

GROWING CONDITIONS

- Tropical and warm temperate regions; long warm growing season
- Optimum temperature range of 24-27 degrees
- Tolerates heavy rainfall
- Intolerant of frost
- Fail to germinate below 20 degrees

VALUE-ADDED OPPORTUNITIES

- 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

KEY RISKS & SENSITIVITIES

- Lack of consumer awareness and knowledge (has slimy texture)
- Very labour intensive to harvest
- Australia does not export any okra

WHAT YOU WOULD NEED TO BELIEVE

- Further research will confirm health benefits (diabetes, liver disease, kidney disease)
- Australia can develop a value added processing industry for okra (nutraceutical and cosmetic)

KEY COMPETITORS

DOMESTIC

- Imported processed okra
- Other Asian vegetables

EXPORTERS/PRODUCERS

- India
- Nigeria
- Iraq
- Sudan
- Cote d'Ivoire
- Africa
- Middle East

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown in neighbouring regions in Queensland.
Grown in climatic peer regions.
Low water requirements compared to other horticultural products.
Robust product with long shelf life and transportable over long distances.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input checked="" type="radio"/>
Proven, scalable production model	<input checked="" 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"/>

DRIVERS OF GROWTH

- Widely used in cuisines around the world

VALUE-ADDED OPPORTUNITIES

- Fresh, frozen, canned
- Dehydrated
- Minced
- Powder
- Chutneys, pickles, relishes
- Soup
- Food ingredient

KEY COMPETITORS

DOMESTIC

- Imported onions
- Imported onion products

EXPORTERS/PRODUCERS

- China
- India
- Egypt
- United States
- Iran
- Mexico
- Tanzania

GROWING CONDITIONS

- Fertile soils, well drained
- Best grown in temperatures between 18-22 degrees
- Bolt with hot temperatures
- Need 400-600mm of water during growing season
- Tropical (short day) varieties grown in south Queensland

KEY RISKS & SENSITIVITIES

- Unproven crop in region
- May be too hot even for tropical varieties (though grown in African climatic peers successfully)

WHAT YOU WOULD NEED TO BELIEVE

- Short day tropical onion varieties are in demand from domestic and global markets
- North West Queensland can compete with other growing regions in Australia
- Onions give an high enough return to justify investment in water and irrigation infrastructure

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

North West Queensland has regions well suited to farming ostriches.
Ostrich is a lean and healthy alternative to chicken with larger portion sizes.
Ostrich has valuable meat and also has high value co-products.
Ostrich achieves high prices in export markets.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for healthier meats (low fat, cholesterol, high protein)
- Demand for new and unique meats
- Demand from EU, USA, Japan

GROWING CONDITIONS

- Prefer open land and desert
- Native to savannas and Sahel of Africa
- Some feral populations in South Australia

VALUE-ADDED OPPORTUNITIES

- 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..)

KEY RISKS & SENSITIVITIES

- Susceptible to Avian bird flu outbreaks
- Declining industry results in declining support services and processing facilities
- Industry nervous post boom bust of industry

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Emu - Beef, Veal - Other proteins 	<ul style="list-style-type: none"> - South Africa - China - Canada - United States - Pakistan

WHAT YOU WOULD NEED TO BELIEVE

- 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



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grown across climatic peer regions in Africa.
Potential for dryland cropping as grain feed.
New semi dwarf varieties released for high productivity and easy grazing management.

DRIVERS OF GROWTH

- Demand for animal feed (potential for poultry grain feed)

VALUE-ADDED OPPORTUNITIES

- Wholegrain uses
- Flour
- Flatbreads
- Fermented beverage
- Extruded products (breakfast cereals, pasta)
- Animal feed (forage, grain, silage)
- Bird seed

KEY COMPETITORS

DOMESTIC

- Other millets and grains
- Imported products

EXPORTERS/PRODUCERS

- India
- Niger
- China
- Mali
- Nigeria
- Sudan
- Burkina Faso
- Ethiopia
- Chad
- Russia

GROWING CONDITIONS

- Tolerant of heat, drought and flood
- Yields reliably in regions too arid and too hot for other major grains
- Will grow on black cracking soils
- High growth rates
- Rotation crop with legumes

KEY RISKS & SENSITIVITIES

- Shattering can be issue
- Reasonably new crop to Australia; limited agronomic knowledge

WHAT YOU WOULD NEED TO BELIEVE

- Market exists for animal feed uses other than birdseed market
- North West Queensland can compete with other regions

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input checked="" type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<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 type="radio"/>
OVERALL	<input type="radio"/>



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Grown in range of climatic peer regions; tropical parts of Gulf region may be suitable.
One of the most widely used spices in the world.
North West Queensland is a safe and secure producer.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	○
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	○

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	◐
Proven, scalable production model	◐
Attractive competitive set	○

AUSTRALIA

High performance genetics available	○
Required skills for success	○
Leverage country reputation	◐
OVERALL	○

DRIVERS OF GROWTH

- One of the most important spices in almost all cuisines

VALUE-ADDED OPPORTUNITIES

- Dried whole, cracked, crushed or ground
- Pepper spirit and oil for cosmetic and pharmaceutical products

KEY COMPETITORS

DOMESTIC

- Imported peppercorns

EXPORTERS/PRODUCERS

- Vietnam
- Indonesia
- Sri Lanka
- Malaysia
- India
- Brazil
- Cambodia
- United Arab Emirates
- China

GROWING CONDITIONS

- Best grown below 900 m above sea level
- Grown in soil that is not too dry or susceptible to flooding
- Thrives in warm and wet tropical climate

KEY RISKS & SENSITIVITIES

- 4 or 5 years until commercial production
- Currently manually pruned and harvested

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost producers
- Tried growing peppercorns in Australia succeeds
- Able to compete with strong growth and high yields out of Vietnam and Cambodia

PITAYA (dragon fruit)

INDICATED
MARKET
DEMAND



PASS INTO
STAGE II

N

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Tropical Gulf region is suited to pitaya production; can leverage expertise of Far North growers
Very striking fruit with “superfood” halo.
Red and white fleshed varieties are grown in Australia, with red fleshed being the more valuable.
Popular cosmetics industry ingredient.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for new and exotic fruits
- Visually striking
- “Super food” status
- Relatively long shelf life for a tropical fruit

GROWING CONDITIONS

- Dry, tropical climates with moderate amount of rain
- Can endure temperatures of up to 40 degrees
- Excessive rainfall can cause flower drop and fruit rot
- Can grow in arid climates with addition of shade and irrigation (Israel)
- Fruit after 2 years from seed

VALUE-ADDED OPPORTUNITIES

- Juice, smoothies
- Beverage flavouring
- Jams, marmalades and jellies, pickles
- Sorbet, ice block flavoring
- Desserts
- Chips
- Powdered ingredient
- Phytoalbumin antioxidant extracts
- Soaps, cosmetics (body scrubs, lip balm, shampoo, etc.)
- Perfume, scents (household products, candles)
- Tourism attraction

KEY RISKS & SENSITIVITIES

- 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)

WHAT YOU WOULD NEED TO BELIEVE

- Health claims (“super food” status) will continue and be backed up by research
- Australian cosmetics industry will embrace pitaya as ingredient
- North West Queensland can reach world price on powder/extracts/nutraceutical products
- North West Queensland growers can reach world price and maintain market share against low cost imports

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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 - United States (Texas) - Israel - Thailand - Vietnam - Malaysia



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grown successfully by climatic peer regions.
Pomegranate juice market exploded in USA in early 2000s.
Very limited Southern Hemisphere production.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	◐
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	●
OVERALL	◐

DRIVERS OF GROWTH

- “Super food” status
- Health benefits (antioxidants, dietary fibre, antibacterial properties)
- Increasing demand from food service industry
- Traditional medicinal uses
- Counter seasonal supply

GROWING CONDITIONS

- Very adaptable, can grow in regions ranging from temperate to tropical regions
- Dislikes high humidity
- Fruit can suffer from sunburn in temperatures over 38 degrees
- Very drought tolerant but requires adequate water to be productive
- Cracking soil regions of North West Queensland may require irrigation

VALUE-ADDED OPPORTUNITIES

- Frozen arils
- Juice
- Flavouring, powders
- Syrups, jams
- Ice cream and confectionery
- Tea
- Wine, grenadine
- Nutraceutical products
- Cosmetic products
- Dyes

KEY RISKS & SENSITIVITIES

- 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
- Currently under 500 ha in Australia, not yet at full potential, producing 3,000 to 4,000 tonnes

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland fruit can compete with cheap South American exports in the Asian markets
- North West Queensland growers can access better varieties suited to climate and solve tree health issues
- Health benefits will be confirmed by research; on trend status continues
- Some irrigation is available

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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 - United States - Turkey - Spain - Israel - South America

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grown throughout Asia, Pacific Islands and northern Australia, including along Norman River in Gulf of Carpentaria.
Demand for biofuels.
Research projects backed by industry partners (Australia, United States) underway.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	○

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	○
OVERALL	◐

DRIVERS OF GROWTH

- Demand for biofuels

VALUE-ADDED OPPORTUNITIES

- Oil
- Biodiesel and aviation fuel
- Wood
- Paper pulp
- Green manure (oilcake)
- Pharmaceutical uses (traditional medicines)
- Animal fodder

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other biofuel oils - Biodiesels 	<ul style="list-style-type: none"> - India

GROWING CONDITIONS

- Suited to northern tropical and subtropical regions of Australia
- Tolerates high temperatures
- Prefer humid conditions
- Rainfall of 500-800mm; irrigation during establishment stage
- Grows on marginal soils
- Nitrogen fixer
- Pod production starts at 4-7 years (data is limited)

KEY RISKS & SENSITIVITIES

- Not currently grown commercially in Australia (number of trials including commercial trial site in Roma by Origin Energy using coal seam gas waste water)
- Toxic flavonoids makes oil non-edible (limited alternative revenue streams)
- Lack of agronomic knowledge

WHAT YOU WOULD NEED TO BELIEVE

- Research will continue to be funded for developing varieties and improving yields
- Demand for biodiesel will continue to grow
- Biofuel industry will continue to demand pongamia oil



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?		QUALITATIVE SCORECARD										
<p>Farmed extensively in other regions in Queensland; can leverage expertise and reputation. Disease free region could be major drawcard. High demand for prawns from high value markets.</p>		<p>PRODUCT</p>										
		<table border="1"> <tr> <td>Capital intensive to produce</td> <td>●</td> </tr> <tr> <td>Mechanically harvested</td> <td>◐</td> </tr> <tr> <td>Hot, dry environment product</td> <td>◐</td> </tr> <tr> <td>Trucking/shipping friendly</td> <td>○</td> </tr> <tr> <td>Value-added opportunities</td> <td>◐</td> </tr> </table>	Capital intensive to produce	●	Mechanically harvested	◐	Hot, dry environment product	◐	Trucking/shipping friendly	○	Value-added opportunities	◐
Capital intensive to produce	●											
Mechanically harvested	◐											
Hot, dry environment product	◐											
Trucking/shipping friendly	○											
Value-added opportunities	◐											
DRIVERS OF GROWTH	GROWING CONDITIONS	MARKET SITUATION										
<ul style="list-style-type: none"> - Demand for premium seafood in high value markets - Demand for sustainably produced seafood 	<ul style="list-style-type: none"> - Subtropical and tropical regions - Water temperatures above 25 degrees 	<table border="1"> <tr> <td>Attractive high value markets</td> <td>●</td> </tr> <tr> <td>Large agribusiness involved</td> <td>●</td> </tr> <tr> <td>Proven, scalable production model</td> <td>●</td> </tr> <tr> <td>Attractive competitive set</td> <td>○</td> </tr> </table>	Attractive high value markets	●	Large agribusiness involved	●	Proven, scalable production model	●	Attractive competitive set	○		
Attractive high value markets	●											
Large agribusiness involved	●											
Proven, scalable production model	●											
Attractive competitive set	○											
VALUE-ADDED OPPORTUNITIES	KEY RISKS & SENSITIVITIES	AUSTRALIA										
<ul style="list-style-type: none"> - Fresh, chilled prawns - Frozen prawns - Processed prawn products - Ready to cook meals 	<ul style="list-style-type: none"> - Large capital costs for infrastructure; unproven in region - Risk of flooding - High evaporation rates in region would increase water requirements compared to other regions - Electricity requirements for pumping, aerating, water exchange systems, etc. - Logistics cost of trucking in feed; distance to market for fresh product - Labour requirements 	<table border="1"> <tr> <td>High performance genetics available</td> <td>●</td> </tr> <tr> <td>Required skills for success</td> <td>●</td> </tr> <tr> <td>Leverage country reputation</td> <td>●</td> </tr> </table>	High performance genetics available	●	Required skills for success	●	Leverage country reputation	●				
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Leverage country reputation	●											
KEY COMPETITORS	WHAT YOU WOULD NEED TO BELIEVE	OVERALL										
<table border="1"> <thead> <tr> <th>DOMESTIC</th> <th>EXPORTERS/PRODUCERS</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> - Imported prawns - Imported processed prawn products </td> <td> <ul style="list-style-type: none"> - Indonesia - Thailand - India - Ecuador - Vietnam - China </td> </tr> </tbody> </table>	DOMESTIC	EXPORTERS/PRODUCERS	<ul style="list-style-type: none"> - Imported prawns - Imported processed prawn products 	<ul style="list-style-type: none"> - Indonesia - Thailand - India - Ecuador - Vietnam - China 	<ul style="list-style-type: none"> - North West Queensland can compete with coastal producers in the domestic market - North West Queensland can command a premium for their prawns in order to compete with low cost Asian producers - North West Queensland can remain disease free 	<p>○</p>						
DOMESTIC	EXPORTERS/PRODUCERS											
<ul style="list-style-type: none"> - Imported prawns - Imported processed prawn products 	<ul style="list-style-type: none"> - Indonesia - Thailand - India - Ecuador - Vietnam - China 											

Source: various published articles and sites; GHD Advisory NW Queensland Aquaculture Study; CSIRO; UN Comtrade; Coriolis analysis and estimates

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Queensland is major producer of pumpkins in Australia.
Grown in climatic peer regions.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input checked="" type="radio"/>
Proven, scalable production model	<input checked="" type="radio"/>
Attractive competitive set	<input checked="" 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"/>

DRIVERS OF GROWTH

- Demand for premium produce from Asian markets

VALUE-ADDED OPPORTUNITIES

- Cooked
- Puree
- Soup
- Dessert and baked goods
- Beer
- Pumpkin seeds
- Pumpkin leaves as vegetable
- Pumpkin seed oil
- Halloween pumpkins
- Animal feed

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported pumpkin products 	<ul style="list-style-type: none"> - Mexico - Spain - Netherlands - United States - Italy - Canada - India - China

GROWING CONDITIONS

- Very frost sensitive
- Tolerate high temperatures with adequate moisture; above 35 degrees and low humidity not conducive to high yields
- 4-5 months of daily maximums above 22 degrees to grow and mature
- Sensitive to saline soils
- Reasonably high water requirements at certain stages (4-8 ML/ha grown)
- Sensitive to sunburn if left on vine

KEY RISKS & SENSITIVITIES

- Very heavy to transport

WHAT YOU WOULD NEED TO BELIEVE

- Pumpkins give an high enough return to justify investment in water and irrigation infrastructure
- Mechanised harvesting for seeds can be adapted to whole pumpkins



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown in Wheatbelt of Western Australia and Tasmania.
“Superfood” status pushing demand for healthy, alternative grains.
Gluten-free food demand.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input checked="" type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<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 type="radio"/>
OVERALL	<input type="radio"/>

DRIVERS OF GROWTH

- Demand for gluten free products
- Demand for healthier grains
- “Superfood” status
- Demand for new, on trend, products from food service industry

VALUE-ADDED OPPORTUNITIES

- “Wholegrain” uses
- Flour
- Gluten free products (cereals, pasta, bread)
- Porridge
- Cosmetics
- Animal feed
- Industrial uses (plastics)

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported quinoa - Other gluten free grains 	<ul style="list-style-type: none"> - Peru - Bolivia - Ecuador

GROWING CONDITIONS

- Salt tolerant
- Intolerant to waterlogging
- Saponin coating on seeds deters birds and pests (removed during processing)
- Highly variable requirements across different varieties (altitudes, climates, soil types)
- Rainfall requirements range from 300mm to 1,000mm depending on variety

KEY RISKS & SENSITIVITIES

- Niche crop in Australia; limited agronomic knowledge

WHAT YOU WOULD NEED TO BELIEVE

- Ideal variety for region can be accessed
- Domestic market can absorb more production
- Export markets can be accessed
- North West Queensland can compete with traditional and large scale producers of South America



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

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.

DRIVERS OF GROWTH

- Demand for healthy red meat alternative (high protein, low fat)
- Demand for new proteins by food service industry
- Demand for traditional foods

VALUE-ADDED OPPORTUNITIES

- Value-added meat cuts
- Prepared ready to cook cuts (sausages, patties, steaks etc..)
- Pre-prepared meals
- Jerky
- Fur
- Skins

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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

GROWING CONDITIONS

- Prefer regions below Tropic of Capricorn
- Require soil types suitable for burrowing

KEY RISKS & SENSITIVITIES

- Market access for rabbit meat
- Disease entering farmed operations
- Labour intensive nature of industry results in high cost of production
- Restricted invasive animal under *Biosecurity Act 2014* restricting movement and sale
- Rabbit Haemorrhagic Disease Virus

WHAT YOU WOULD NEED TO BELIEVE

- Queensland would allow commercial farming of restricted invasive species
- North West Queensland able to reach industry scale and increase efficiencies
- North West Queensland able to reach competitive prices
- Continuous improvement of breeding stock is possible
- Ongoing access to processing facilities
- Ongoing research around labour saving technologies

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Interest in upland rice being grown in neighbouring region from SunRice.
Research and funding is occurring into best varieties and production systems for growing rice in Queensland.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for Australian grown products
- Global demand growth for rice
- Demand for premium rice varieties

VALUE-ADDED OPPORTUNITIES

- Rice
- Ready to eat rice products
- Rice based snack foods
- Rice flour
- Noodles

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - NSW produced rice - Imported rice - Other grains and carbohydrates 	<ul style="list-style-type: none"> - India - Thailand - Vietnam - Pakistan - United States

GROWING CONDITIONS

- Requires 500-600 mm of rainfall a year
- Fits well into cropping rotation or as sugarcane break crop

KEY RISKS & SENSITIVITIES

- Many failed rice growing attempts around Australia

WHAT YOU WOULD NEED TO BELIEVE

- Current research will result in suitable varieties with market demand
- North West Queensland can compete with higher rainfall areas of Queensland and New South Wales
- On-going research into water efficient varieties and using less water/tonne
- Return on rice crop justifies water infrastructure costs

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland can leverage coastal Queensland expertise in Silver Perch aquaculture.
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.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	○
Trucking/shipping friendly	○
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	●
OVERALL	◐

DRIVERS OF GROWTH

- 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)

VALUE-ADDED OPPORTUNITIES

- Live trade (for fish tanks in Asian restaurants)
- Fresh and frozen, whole and filleted for food service and retail
- Prepared products (e.g. crumbed, battered, formed)
- Fish oil and extracts

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<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

GROWING CONDITIONS

- Natural distribution through Murray-Darling River system
- Aquaculture in purpose built earthen ponds

KEY RISKS & SENSITIVITIES

- 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)
- Large capital costs for infrastructure; unproven in region
- Risk of flooding
- High evaporation rates in region would increase water requirements compared to other regions
- Electricity requirements for pumping, aerating, water exchange systems, etc.
- Logistics cost of trucking in feed; distance to market for fresh product

WHAT YOU WOULD NEED TO BELIEVE

- 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 North West Queensland
- North West Queensland can compete with low cost producers in export markets



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

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.
Grows in North Territory and central and north Queensland.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- 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

VALUE-ADDED OPPORTUNITIES

- Fresh ingredient in many cuisines
- Dried as soup ingredient
- Animal feed

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported canned and frozen snake beans - Other fresh green bean varieties - Processed green bean products 	<ul style="list-style-type: none"> - India - Philippines - Malaysia - Caribbean - Ghana

GROWING CONDITIONS

- Subspecies of cowpea; family also includes black-eyed peas
- Warm tropical and subtropical climates
- Temperatures of 25-35 degrees
- Thrive in poor, dry conditions
- Intolerant to frost
- Needs irrigation through dry spells

KEY RISKS & SENSITIVITIES

- 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

WHAT YOU WOULD NEED TO BELIEVE

- Market can be developed domestically and globally
- North West Queensland can compete with higher rainfall, lower cost producers



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grows across all the climatic peer regions.
Can leverage expertise of growers in other Queensland regions.
Can grow in dryland situations

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	●
Leverage country reputation	◐
OVERALL	◐

DRIVERS OF GROWTH

- Demand for meat and dairy substitutes
- Wide range of uses across many cuisines
- High protein and oil content
- Growth in organic soybean sector

GROWING CONDITIONS

- Optimum growing temperature of 20-30 degrees
- Potential of double cropping in right conditions
- Grows in a wide range of soils
- Grown in trials in North West Queensland

VALUE-ADDED OPPORTUNITIES

- Whole beans in pods or shelled, sprouts
- Meal, flour, oil
- Natto, miso
- Tofu, textured vegetable protein, tempeh
- Soy milk
- Soy sauce
- Soy protein concentrate and isolates
- Animal feed
- Biofuel

KEY RISKS & SENSITIVITIES

- Produced on massive scale by United States and Brazil
- China dominates import market
- Relatively water intensive for relatively low value when unprocessed

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with low cost, massive scale producers in export market
- North West Queensland can compete with higher rainfall regions of Australia in domestic market
- Return on soybeans justifies water infrastructure costs
- Able to grow organic soybeans to generate significant price premium

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported soy products - Other meat substitutes - Canola oil 	<ul style="list-style-type: none"> - Brazil - United States - Argentina - Paraguay - Canada



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Growing demand for alternatives to sugar, market to grow at ~5% 2017-2021*.
Global beverage industry has embraced stevia as natural sweetener of choice.

DRIVERS OF GROWTH

- Demand for low calorie, natural, high-intensity sweeteners
- Used in combination with sucrose

VALUE-ADDED OPPORTUNITIES

- Sugar replacement
- Plant growth regulators
- Pharmaceutical uses

KEY COMPETITORS

DOMESTIC

- Imported stevia
- Other natural sweeteners
- Non calorific sweeteners
- Sugar

EXPORTERS/PRODUCERS

- China
- Korea
- Taiwan
- Vietnam
- Kenya
- Vietnam
- Brazil
- India
- Argentina
- Colombia

GROWING CONDITIONS

- Semi humid, subtropical climates
- Native to Paraguay but grown from Indonesia to St Petersburg
- Rainfall of 1,200-1,700 mm, evenly distributed in native region
- Ideal temperatures between 25-35 degrees (can range from -6 to 43 degrees in Paraguay)
- Grown in Victoria currently

KEY RISKS & SENSITIVITIES

- No processing facilities in Australia
- Ideal variety for Australian conditions is still being researched
- Would require irrigation

WHAT YOU WOULD NEED TO BELIEVE

- Returns would justify costs of water and irrigation infrastructure
- Commercial scale processing will develop in Australia
- Stevia will remain the alternative sweetener of choice
- Supply chain able to compete with large players (e.g. Cargill, ADM, Ingredion)
- North West Queensland (and Australia) can compete with low cost, large scale producers that have first mover advantage

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Some regions in Burke Shire and new irrigated regions of North West Queensland could hypothetically suit sugarcane production. Australia is third largest exporter of raw cane sugar; Queensland has the expertise.

DRIVERS OF GROWTH

- Fundamental ingredient in nearly all processed food
- Demand for safe and secure ingredient suppliers
- Increasing demand for raw and organic sugar

VALUE-ADDED OPPORTUNITIES

- Raw and refined sugars
- Animal feed
- Ethanol
- Fertiliser
- Rum
- Citric acid
- Mulch
- Paper

KEY COMPETITORS

DOMESTIC

- Natural and artificial sweeteners

EXPORTERS/PRODUCERS

- Brazil
- Thailand
- Guatemala
- Cuba

GROWING CONDITIONS

- Hot, sunny tropical and subtropical climates with long, warm growing season
- High water use (1,100 - 1,500mm minimum rainfall if distribution is right)
- Tolerates flooding

KEY RISKS & SENSITIVITIES

- Industry needs immediate scale to supply required local processing plant; closest processing plants currently are in Mossman and Mareeba on the coast
- Current nutritional studies portray sugar in poor light, food processors trying to reduce sugar content and replace with other sweeteners
- Queensland Agricultural Land Audit found biophysical potential within the Gulf region but ruled out sugarcane production due to highly variable rainfall and isolation factors; CSIRO Flinders and Gilbert Agricultural Resource Assessment reports found soil suitability to be marginal for sugarcane

WHAT YOU WOULD NEED TO BELIEVE

- Can grow successfully in Gulf region; requires minimum 1,100mm annual rainfall or irrigation
- Sugarcane was best use of precious water resources in new irrigated regions
- Can reach scale necessary for processing facility
- Sugar prices will raise; currently stockpiles worldwide
- Recent anti-sugar sentiment will not dampen demand long term

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	◐
Value-added opportunities	◐

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	○

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	●
OVERALL	●



“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grows across the region’s climatic peers in significant quantities; successfully grown across Queensland
Attractive markets in Asia and Middle East want oil. Healthy oils are in demand; domestic demand outstrips supply.
Opportunity to create healthy snack foods with unique Australian flavours.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	○
Mechanically harvested	●
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	◐
OVERALL	●

DRIVERS OF GROWTH

- Demand for healthy oils (mono or polyunsaturated depending on variety, high in vitamin E
- Functional cooking oil (high smoke point)

GROWING CONDITIONS

- Semi-arid climates
- Best suited to mild temperatures but can grow in relatively hot areas with sufficient moisture
- Suitable to no tillage

VALUE-ADDED OPPORTUNITIES

- Bird seed
- Meal
- Snack foods and confectionery
- Oils and spreads
- Nutraceutical uses
- Cosmetic uses
- Biodiesel
- Paints
- Lubricants

KEY RISKS & SENSITIVITIES

- Scale is the key challenge
- Current production systems and scale marginal; may need right genetics and new systems
- Lack of quarantine glasshouse facilities limits importation of genetic material
- Targeted species required to achieve high oil quality in hotter temperatures
- Market demand is better for crude sunflower oil rather than sunflower seeds

KEY COMPETITORS

DOMESTIC

- Canola oil
- Imported palm oil
- Other feed seeds
- Other nuts and seeds

EXPORTERS/PRODUCERS

- China
- Romania
- United States
- Ukraine (oil)
- Russia (oil)
- Argentina (oil)

WHAT YOU WOULD NEED TO BELIEVE

- Irrigation is available
- Bee pollination available
- North West Queensland can compete with low cost producers such as China, Romania
- North West Queensland can leverage expertise of growers in other Queensland regions

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Important crop rotation plant for nitrogen fixing.
Demand for sustainable fibre sources.
Demand for biofuel sources that do not impinge on food production.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input checked="" type="radio"/>
Trucking/shipping friendly	<input checked="" type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<input checked="" 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 type="radio"/>
OVERALL	<input type="radio"/>

DRIVERS OF GROWTH

- Demand for sustainable fibre sources
- Demand for biofuel

VALUE-ADDED OPPORTUNITIES

- Green manure
- Animal feed
- Fibre
- Biofuel

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Other fibre sources - Other biofuel sources 	<ul style="list-style-type: none"> - India - Bangladesh - Brazil - Thailand - Cuba - United States

GROWING CONDITIONS

- Tropics and sub tropics
- Drought hardy
- Rainfall as low as 200mm; irrigation for maximum growth and nitrogen fixation
- Temperatures 15-27 degrees
- One of the fastest growing legumes – 1.8m in 90 days

KEY RISKS & SENSITIVITIES

- Biosecurity restrictions limits ability to access best global varieties
- No commercial processing facility in Australia
- New crop in Australia; limited knowledge and experience

WHAT YOU WOULD NEED TO BELIEVE

- Biofuel industry will develop in Australia focusing on fibre crops
- North West Queensland can compete with low cost, large scale producers
- Able to access or develop suitable genetics

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown under irrigation in other regions of Queensland.
One of the most popular vegetables in United States.
Able to supply a counter-seasonal product.
Successfully grown maize in the region.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input checked="" type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input checked="" type="radio"/>
Large agribusiness involved	<input checked="" type="radio"/>
Proven, scalable production model	<input checked="" 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"/>

DRIVERS OF GROWTH

- Demand for counter seasonal produce
- Widely eaten across many cuisines

VALUE-ADDED OPPORTUNITIES

- Fresh on the cob
- Canned
- Frozen
- Soup
- Prepared meals
- Corn nuts snack food

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported sweet corn - Other fresh or frozen vegetables 	<ul style="list-style-type: none"> - United States - Brazil - Argentina - Ukraine - France

GROWING CONDITIONS

- Frost sensitive
- Preferred temperatures of 15-32 degrees
- Requires irrigation; 3.5-8 ML/ha depending on conditions and type of irrigation
- Prone to insect damage
- Intolerant to heat stress
- Moderately sensitive to salinity

KEY RISKS & SENSITIVITIES

- Requires processing locally to chill rapidly after harvesting
- Long transport routes and some rough roads may damage product
- Can lose entire crop to pest or weather incidents
- Biosecurity concerns limit access to best cultivars globally

WHAT YOU WOULD NEED TO BELIEVE

- Valuable export markets for North West Queensland sweet corn can be developed
- North West Queensland can compete with other Australian producers with lower transport and processing costs
- More heat tolerant varieties exist (Peruvian corn)
- Sweet corn gives an high enough return to justify investment in water and irrigation infrastructure
- Able to leverage learnings from northern WA growers

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Queensland is major producer of sweet potato in Australia.
Grown in climatic peer regions in Africa.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for healthy starches
- Widely used in many cuisines worldwide

VALUE-ADDED OPPORTUNITIES

- Young leaves eaten as vegetable
- Baby food
- Roasted whole, wedges, oven fries
- Flour
- Deep fried snacks
- Beverages
- Desserts
- Soup
- Beer
- Animal feed
- Biofuel

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
- Imported sweet potato	- United States
- Other starchy root vegetables	- Netherlands
- Imported processed sweet potato products	- Vietnam
- Processed potato products	- China
	- Spain

GROWING CONDITIONS

- Semi tropical climates
- Grows best between 20-30 degrees
- Dislike waterlogging, heavy and swampy soils
- Intolerant of frosts
- Requires 750-1,000mm rainfall

KEY RISKS & SENSITIVITIES

- Require rotation to prevent disease; should be grown only once in 2-4 years
- Mechanical harvesting leads to skin damage and lower quality
- Very susceptible to bruising

WHAT YOU WOULD NEED TO BELIEVE

- Sweet potato gives an high enough return to justify investment in water and irrigation infrastructure
- Able to compete with other low cost suppliers



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grows across climatic peer regions and in Northern Australia.
Widely used across many cuisines worldwide.
Potential for health food and pharmaceutical uses.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	◐
Large agribusiness involved	●
Proven, scalable production model	●
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	◐
Required skills for success	◐
Leverage country reputation	◐
OVERALL	◐

DRIVERS OF GROWTH

- Used in many cuisines worldwide
- Demand for natural pharmaceutical ingredients
- Demand for natural health foods

VALUE-ADDED OPPORTUNITIES

- Pulp of fruit fresh or dried
- Pickles, chutneys, marinades
- Paste
- Ingredient in HP and Worcestershire sauce
- Desserts/sweets
- Oil from seeds
- Beverages
- Tea
- Traditional medicine
- Timber
- Sizing powder, manufacturing of gums and adhesives

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Imported tamarind - Imported processed food products 	<ul style="list-style-type: none"> - India - Thailand - Mexico - Indonesia - Myanmar - Philippines - United States

GROWING CONDITIONS

- Dry savannas and monsoonal regions
- Cultivated around the world in tropical and subtropical zones
- Tolerant of drought and aerosol salt
- Frost sensitive
- Temperatures of 10-37 degrees; mature trees can withstand extremes of -3-47 degrees
- Optimal rainfall 500-1,500mm; long dry period each year is necessary for fruit development
- Grafted trees can fruit in 3-4 years under optimum conditions

KEY RISKS & SENSITIVITIES

- Many of the food products using tamarind are imported
- Domestic demand currently small; would have to compete in global market

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with high rainfall, low cost producers
- Domestic food processors would demand North West Queensland produced tamarind paste

**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grown in climatic peer regions and in other regions of Queensland.
Australia imports over 2,000 tonnes per year; import substitution is possible.
Australia is free of the pests and diseases present in other producing countries.

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

DRIVERS OF GROWTH

- Range of health benefits including low GI
- Extremely versatile vegetable that can be a sweet or savoury ingredient
- Staple ingredient around the world

GROWING CONDITIONS

- Wet tropics
- Tolerant of waterlogging
- Annual rainfall of at least 1,500mm
- 21-27 degrees

VALUE-ADDED OPPORTUNITIES

- 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

KEY RISKS & SENSITIVITIES

- Very little of global production enters world trade
- Considered to be staple of developing countries (no premium positioning)
- Better yields result in wetter regions; would require irrigation in region

WHAT YOU WOULD NEED TO BELIEVE

- Increased and improved mechanisation is possible to reduce production costs closer to world price
- Value added processing to functional ingredients can be developed in Australia
- Taro gives an high enough return to justify investment in water and irrigation infrastructure

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

KEY COMPETITORS

DOMESTIC

- Potato products
- Other starch products
- Other functional food ingredients

EXPORTERS/PRODUCERS

- Nigeria
- China
- Ghana
- Cameroon
- Fiji
- United States

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Native to Ethiopia and Eritrea.
Growing demand for “ancient” nutritious, gluten free grains.
Extremely fast growing and light to transport.
Being grown in New South Wales, Victoria and Tasmania.

DRIVERS OF GROWTH

- High in dietary fibre and iron, protein, calcium, minerals
- Demand for gluten free products
- Demand for high yield and quality animal forage crops

VALUE-ADDED OPPORTUNITIES

- Wholegrain (similar to quinoa and millet)
- Porridge, stews, salads
- Flour, flaked
- Pancakes, baked goods
- Flatbread
- Animal feed

KEY COMPETITORS

DOMESTIC

- Other “ancient” grains and gluten free alternatives
- Imported teff
- Conventional baked goods

EXPORTERS/PRODUCERS

- Ethiopia
- Eritrea
- India
- Kenya
- United States
- South Africa

GROWING CONDITIONS

- Drought tolerant
- Tolerant to waterlogged soils
- Rainfall of 450-550mm during growing season
- Temperature range of 10 to 27 degrees; does not tolerant frost
- Flowers best with 12 hours of daylight
- Traditionally grown at altitude; grown in Tasmania at sea level

KEY RISKS & SENSITIVITIES

- New crop to Australia; agronomic understanding is United States derived

WHAT YOU WOULD NEED TO BELIEVE

- Australian market can support growth in teff production (already several brands)
- Able to be successfully grown with high commercial yields in North West Queensland conditions

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

TRIODIA (“spinifex”)

INDICATED
MARKET
DEMAND

NA

PASS INTO
STAGE II

N

“ELEVATOR PITCH” WHY DO IT IN NORTH WEST QUEENSLAND?

Grows throughout region; research project harvesting in Camooweal.
Long history of harvest and use by Indigenous Australians.
Current research using nanofibres to improve properties of latex.

QUALITATIVE SCORECARD

PRODUCT

Capital intensive to produce	○
Mechanically harvested	○
Hot, dry environment product	●
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	○
Proven, scalable production model	○
Attractive competitive set	●

AUSTRALIA

High performance genetics available	●
Required skills for success	○
Leverage country reputation	○
OVERALL	◐

DRIVERS OF GROWTH

- Demand for natural source of nanofibres
- Demand for Indigenous driven industries
- Demand for natural pharmaceutical ingredients

GROWING CONDITIONS

- Native to central Australia
- Thrives in arid Australian conditions

KEY RISKS & SENSITIVITIES

- In research stages with University of Queensland and Indjalandji-Dhidhanu People
- Triodia is also mistakenly referred to as “spinifex” but are not actually part of the coastal genus *Spinifex* found in coastal areas of Africa, Australia, New Zealand, Middle East, Asia

WHAT YOU WOULD NEED TO BELIEVE

- Research results in high value market for Triodia grass
- Triodia can be grown and harvested at scale, cost effectively and sustainably
- Nanofibres can be extracted at commercial scale cost effectively
- Industry develops and demands commercial scale supply of Triodia in timely fashion

VALUE-ADDED OPPORTUNITIES

- Additive to strengthen range of products
 - Roads, tyres, plastics, carbon fibre
 - Latex products (surgical gloves, condoms)
- Pharmaceutical uses (traditional medicine)
- Resin and fibre uses (traditional)

KEY COMPETITORS

DOMESTIC

- Other sources of nanofibres (natural polymers)
- Unimproved latex, etc.

EXPORTERS/PRODUCERS

- China
- United States
- South Korea
- Japan
- Germany
- Spain



“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

Native variety in North Queensland (commonly called candlenut).
Increasing demand for environmentally friendly industrial products.
Potential markets in bee keeping and horse racing industries.

DRIVERS OF GROWTH

- Used in wide range of Asian cuisines
- High oil content
- Demand for environmentally friendly wood finishes
- Potential use as weight loss supplement

VALUE-ADDED OPPORTUNITIES

- Sauces and pastes (Indonesian, Malaysian, Hawaiian cuisines)
- Cosmetic products (soap)
- Drying oil for finishing and protecting wood (bee hives, horse stables, houses)
- Pharmaceutical products (laxative effect of uncooked nuts)
- Dye (“India ink”)
- Sealant/water proofing
- Paints
- Pesticides (shells of nuts)
- Timber (packing cases)
- Fertiliser
- Fodder (seed cake)

KEY COMPETITORS

DOMESTIC

- Linseed oil
- Safflower, poppy, soybean oils
- Industrial wood finishes

EXPORTERS/PRODUCERS

- China
- Hawaii
- Philippines
- South America

GROWING CONDITIONS

- Native to North Queensland; varieties also grow throughout Asia and Pacific regions
- Tropical wet and dry savanna climates
- Each tree produces 45-70 kg of nuts (35-40% oil yield)
- Requires water in growing stage but tolerates drought once grown (can grow in minimum 200mm rainfall in Indonesia)
- Commercial production 4-5 years; maximum in 10-12 years (*Vernicia fordii* variety)

KEY RISKS & SENSITIVITIES

- Different varieties have differing levels of toxicity
- Vigorous self seeder; invasive species potential outside of range
- Requires water in growing stage

WHAT YOU WOULD NEED TO BELIEVE

- Industry can move from local use to international trade
- North West Queensland can compete with traditional, low cost producers
- Irrigation is available for early stages of growth

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	●
Mechanically harvested	◐
Hot, dry environment product	◐
Trucking/shipping friendly	●
Value-added opportunities	●

MARKET SITUATION

Attractive high value markets	●
Large agribusiness involved	◐
Proven, scalable production model	◐
Attractive competitive set	◐

AUSTRALIA

High performance genetics available	●
Required skills for success	●
Leverage country reputation	◐
OVERALL	●

“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?

North West Queensland has an existing wild pig population that could be utilised.
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.

QUALITATIVE
SCORECARD

PRODUCT

Capital intensive to produce	
Mechanically harvested	
Hot, dry environment product	
Trucking/shipping friendly	
Value-added opportunities	

MARKET SITUATION

Attractive high value markets	
Large agribusiness involved	
Proven, scalable production model	
Attractive competitive set	

AUSTRALIA

High performance genetics available	
Required skills for success	
Leverage country reputation	
OVERALL	

DRIVERS OF GROWTH

- Demand for healthy meat alternative (compared to traditional beef and lamb)
- Export growth due to seasonal weather conditions in EU impacting supply
- Demand for traditional foods
- Demand for new and different proteins in food service

VALUE-ADDED OPPORTUNITIES

- Pre-prepared steaks, ready-meal ingredients
- Retail-ready packaging
- Pre-prepared cuts for foodservice
- Jerky
- Pet food industry

KEY COMPETITORS

DOMESTIC	EXPORTERS/PRODUCERS
<ul style="list-style-type: none"> - Farmed pork - Chicken - Beef - Sheep & Goat - Other meat proteins 	<ul style="list-style-type: none"> - United States - Germany - Poland - Hungry - Spain

GROWING CONDITIONS

- Queensland has a widespread wild pig population
- Wild pigs thrive from subalpine grasslands to monsoonal floodplains

KEY RISKS & SENSITIVITIES

- Numbers controlled/culled due to environmental impact on land and 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
- Restricted invasive animal under *Biosecurity Act 2014* restricting movement and sale

WHAT YOU WOULD NEED TO BELIEVE

- 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 through maintaining numbers in the wild



**“ELEVATOR PITCH”
WHY DO IT IN NORTH WEST QUEENSLAND?**

Grows in climatic peer regions.
Widely used across many cuisines.
Industrial starch uses.
Potential pharmaceutical uses, used for years in Asian medicine.

DRIVERS OF GROWTH

- Widely used in many cuisines
- Demand for natural pharmaceutical components

VALUE-ADDED OPPORTUNITIES

- Cooked
- Dessert
- Flour
- Industrial starch
- Pharmaceuticals (certain wild yam varieties)

KEY COMPETITORS

DOMESTIC

- Other starchy foods
- Imported yam products

EXPORTERS/PRODUCERS

- Nigeria
- Ghana
- Ivory Coast
- Benin
- Ethiopia

GROWING CONDITIONS

- Humid, tropical to arid climates (25-30 degrees to develop normally)
- Annual rainfall over 1,500mm distributed uniformly
- Can survive dry periods with reduced yields
- Require fertile soils

KEY RISKS & SENSITIVITIES

- Some varieties can become invasive weeds
- High labour requirements; harvested by hand in African countries
- Yams need to be stored correctly (arid climate varieties better than tropical ones)

WHAT YOU WOULD NEED TO BELIEVE

- North West Queensland can compete with African producers
- High value markets exist for the staple crop
- Yams give an high enough return to justify investment in water and irrigation infrastructure

**QUALITATIVE
SCORECARD**

PRODUCT

Capital intensive to produce	<input type="radio"/>
Mechanically harvested	<input type="radio"/>
Hot, dry environment product	<input type="radio"/>
Trucking/shipping friendly	<input type="radio"/>
Value-added opportunities	<input type="radio"/>

MARKET SITUATION

Attractive high value markets	<input type="radio"/>
Large agribusiness involved	<input type="radio"/>
Proven, scalable production model	<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 type="radio"/>
OVERALL	<input type="radio"/>

THE GLOBAL TRADE DATA

04

+ Global cross-border trade
analysed

This section uses data from “New Opportunities in New & Emerging Agricultural Industries in Australia” (no newer data is available, as of late 2018)



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.

Farmers and investors can use this scan to develop businesses to execute on these opportunities/

Contact

Duncan Farquhar

Program Manager, Research & Innovation

02 6923 6912

0429 495 499

duncan.farquhar@agrifutures.com.au

AgriFutures Australia Project No.: PRJ-011014

https://www.agrifutures.com.au/wp-content/uploads/2017/07/Coriolis-Scan_new-and-emerging-industries.pdf

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 etc; 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

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 hysts	\$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%	◐

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%	●

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%	●

APPENDICES

05

+ Glossary of terms

STAKEHOLDER ENGAGEMENT

Thankyou to the stakeholders and teams who kindly gave their time and energy to the project

STAKEHOLDERS

- Warren Devin (Mayor), Etheridge Shire Council
- Norm Garsden (CEO), Etheridge Shire Council
- Gary Pickering (Operations), Croydon Shire Council
- Jane McNamara (Mayor), Flinders Shire Council
- Graham Sealy (Councillor), Flinders Shire Council
- Ernie Camp (Mayor), Carpentaria Shire Council
- Jack Bowen (Mayor), Burke Shire Council
- Mike Hayward (CEO), Burke Shire Council
- Mark Crawley (Deputy CEO), Mount Isa City Council
- Greg Campbell (Mayor), Cloncurry Shire Council
- Belinda Murphy (Mayor), McKinlay Shire Council
- John Kelly (CEO), McKinlay Shire Council
- Peter Bennett (CEO), Richmond Shire Council
- Kevin Bawden, (Councillor), Richmond Shire Council
- Corbett Tritton, Silver Hills
- James Lord, May Downs
- Nikko Lord, Sutherland Station
- Jim Lindsay, KLR Marketing
- Peter Anderson, Strathmore
- Alister McClymont, AJM Pastoral
- Alison Collier, Port of Townsville
- Helaina Bannister, Port of Townsville
- Andrew Maclean, Southern Gulf NRM
- Glen Graham, MITEZ
- Jed Matz, CRCNA
- Tim McGrath, QDAF
- Peter Leach, QDAF
- Peter Siemen, QDNRME
- Cameron Venables, QDNRME
- Paul MacIntosh, Pulse Australia
- Mark Schmidt, Australia Mungbean Assoc.
- Brett Williams, QUT
- Surya Bhattarai, CQU
- Oron Gar, Equinom
- Chris Lambridge, University of Queensland
- Murry Smith, GHD
- Tony Matchett, Savannah Agriculture Consulting
- Angus Macdonald, Marsden Jacobs Associates
- Joe Moro, Mareeba F&V Growers Assoc.
- Steve Scurr, Pinata
- Paul Fagg, Skybury Coffee
- Denis and James Howe, Howe Farming
- Colin and Ursula Verde, Red Claw Aquaverde

PROJECT SPONSORS

- Adam West (Regional Director - North Region), Queensland Department of Agriculture & Fisheries
- Gareth Jones (Manager, Regional Agribusiness Development, Trade & Investment), Queensland Department of Agriculture & Fisheries
- Greg Mason (Senior Industry Development Officer (Agribusiness)), Queensland Department of Agriculture & Fisheries

NWMP STRATEGIC BLUEPRINT – PROJECT LINKAGES

- John Hoare (Director - Economic and Industry Development) Department of State Development, Manufacturing, Infrastructure and Planning
- Kate McClean (Project Manager, NWMP), Department of State Development, Manufacturing, Infrastructure and Planning

INTERVIEWS AND ANALYSIS

- Tim Morris (Director), Coriolis Australia
- Virginia Wilkinson (Director), Coriolis Australia
- Nicki Hall (Consultant), Coriolis Australia
- Professor David Hughes, “Dr Food”, Imperial College, London

GLOSSARY OF TERMS

A\$/AUD	Australian dollar	HK	Hong Kong
ABS	Absolute change	IQF	Individually quick frozen
ANZSIC	AU/NZ Standard Industry Classification	JV	Joint venture
AU	Australia	m	Million
Australasia	Australia and New Zealand	n/a	Not available/not applicable
b	Billion	NA/ME/CA	North Africa / Middle East / Central Asia
CAGR	Compound Annual Growth Rate	N. America	North America (USA, Canada)
CIF	Cost plus Insurance and Freight	Nec/nes	Not elsewhere classified/not elsewhere specified
CN	China	N/C	Not calculable
C/S America	Central & South America (Latin America)	N.H	Northern Hemisphere
CSIRO	Crown Scientific Institute Research Organisation	R&D	Research and Development
CY	Calendar year	S Asia	South Asia (Indian Subcontinent)
E Asia	East Asia	SE Asia	South East Asia
EBITDA	Earnings before interest, tax, depreciation and amortization	S.H	Southern Hemisphere
FAO	Food and Agriculture Organisation of the United Nations	SS Africa	Sub-Saharan Africa
FOB	Free on Board	T	Tonne
FTA	Free Trade Agreement	US/USA	United States of America
FY	Financial year (of firm in question)	US\$/USD	United States dollar
GBP	British pounds		
HS Code	Harmonized Commodity Description and Coding System		



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