



# PLANT-BASED PROTEIN OPPORTUNITY HARNESSING AUSTRALIAN SWEET LUPIN

*August 2020*







# PLANT-BASED PROTEIN INDUSTRY OVERVIEW



Global protein consumption **rose 40%** between 2000 and 2018. More than 50% of this increase was driven by Asia.<sup>1</sup>



Climate change, animal-welfare concerns, and greater interest in wellness are driving consumers to look for **alternative sources of protein** in their diets.





This shift is providing companies with a **large commercial opportunity** to develop and launch plant-based alternatives within the meat, dairy, beverage and egg sectors.



Plant-based protein products have proven to be highly nutritious and are now **widely available** across supermarkets globally.

# INDUSTRY EXPERIENCING RAPID EXPANSION

 Alternative plant-based proteins have been introduced across numerous food groups with **sales exploding** as products become accepted by mainstream consumers.

 These estimates reflect the emerging nature of the sector, and highlight the massive opportunity for Australia to become an **industry leader** during this critical growth phase.

## PLANT-BASED MEAT



US\$12.1 billion 2020<sup>1</sup>

US\$28 billion 2025<sup>1</sup>

## NON-DAIRY MILK



US\$21.4 billion 2020<sup>5</sup>

US\$38 billion 2024<sup>2</sup>

## PLANT-BASED SNACKS



US\$31.8 billion 2018<sup>3</sup>

US\$73 billion 2028<sup>3</sup>

## EGG ALTERNATIVES



US\$1.6 billion 2025<sup>4</sup>





## **TASTE IMPROVEMENTS**

Dramatic improvements have been made with regards to taste, texture and the variety of plant-based products available.

# **GROWTH DRIVERS**



## **HEALTH & ETHICS**

The shift towards plant-based diets has been predominantly driven by consumer concern surrounding health, wellbeing and animal welfare.



## **CLIMATE CHANGE**

Climate awareness has demonstrated the impact of traditional meat and dairy production on greenhouse gases and global warming.



## **INVESTMENT**

Disruptor brands such as Beyond Meat and Impossible Foods are driving innovation in the plant-based sector which is leading to record investments in alternative protein companies.




# ENVIRONMENTAL COMPARISON


**PLANT-BASED  
BURGER**




**TRADITIONAL  
'NON-REGENERATIVE'  
BEEF BURGER**



 **99%**  
LESS WATER

 **93%**  
LESS LAND

 **90%**  
LESS GREENHOUSE GASES

 **46%**  
LESS ENERGY





# MASS MARKET



Purchasing behaviour is no longer niche with health-minded shoppers spanning almost **every consumer segment**.



In the US, 98% of consumers who buy plant-based meats also buy animal meat<sup>2</sup>



79% of Millennials already eat plant-based meals<sup>3</sup> and 79% of Gen-Z eat plant-based 1-2 times a week<sup>4</sup>



Average Shopper

Plant-based shoppers spend 61% more per shop<sup>1</sup>



Plant-Based Shopper



# EXISTING PLANT PROTEIN SOURCES



## PEA

Pea protein is fast gaining traction in the market due to its minimal cost and environmental impact

Production process can lead to a high volume of starch by-product, meaning manufacturers potentially require a specialty starch market to ensure economic viability



## SOY

Soy is the highest-value alternative protein currently in commercial production

Soy is generally genetically modified (GMO), so perceptions may be affected by the broader consumer debate about the safety of GMOs



## LENTILS

High in fibre and medium protein content (20-30%)<sup>1</sup>



## CHICKPEAS

Established food group used in many plant-based products



## MYCOPROTEIN

Promising filamentous fungus processed into protein with limited scale to date



## SEEDS (HEMP, CHIA)

Emerging applications in plant-based food products



# INTRODUCING AUSTRALIAN SWEET LUPIN



WOA has a **first mover advantage** to develop a lupin-based protein that can be used to create alternative meat, dairy, beverage and convenience food products.



Lupin is one of the **highest sources of plant proteins** available (40%) combined with a high source of dietary fibre (37%).<sup>1</sup>



**Non-GMO**, low GI, easily digestible, high in essential amino acids and cholesterol free.



Current market valued at **AUD~\$200mill with 96% consumed by livestock** and 60% of global supply produced in Western Australia.<sup>2</sup>

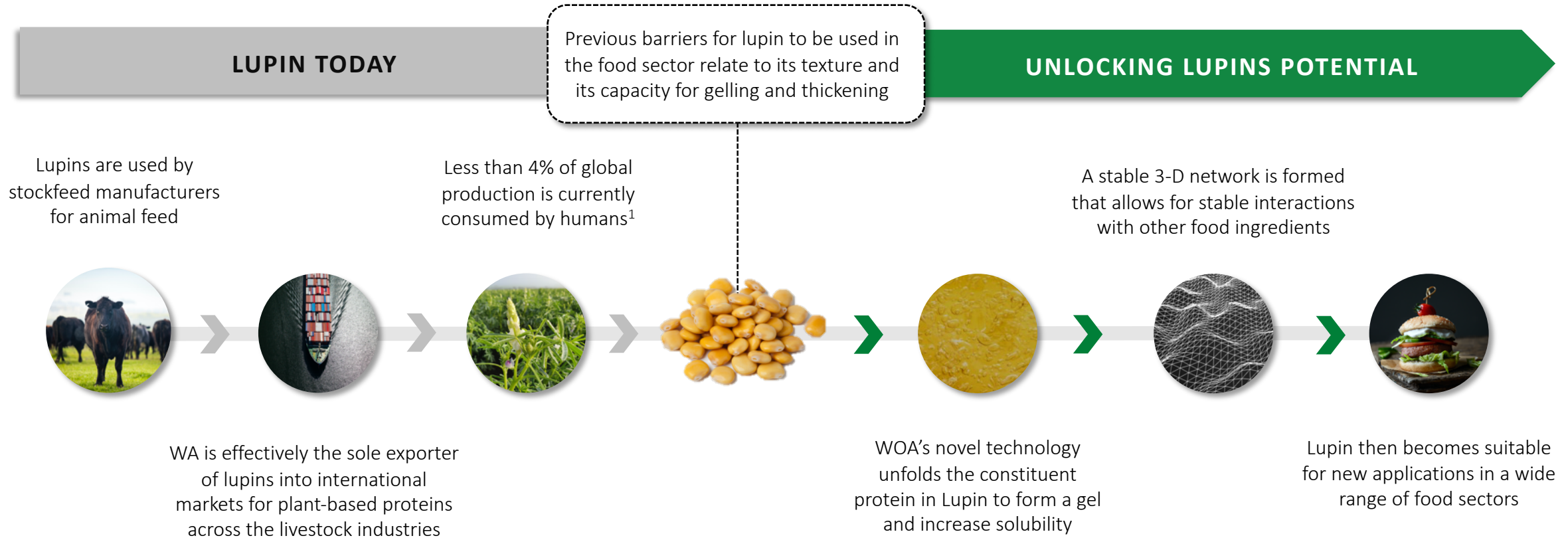


**Eco-friendly**, low carbon foot-print, low water pollution and critical to regenerative farming systems.





# TECHNOLOGY TO UNLOCK LUPINS POTENTIAL



# COMMERCIAL STRATEGY

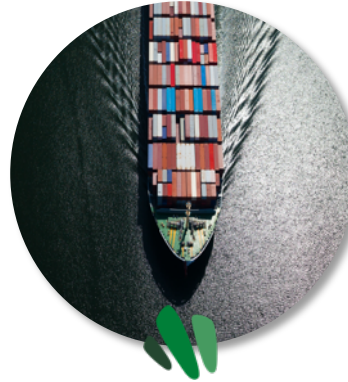


## BUILD SUPPLY CHAIN

AUSTRALIAN SWEET LUPIN:  
**AUD\$400-500 PER TONNE<sup>1</sup>**

Secure **commercial quantities** of Lupin from farmers committed to regenerative farming principles.

Develop a processing facility and logistics infrastructure to become a **globally competitive** plant-based food brand from WA.

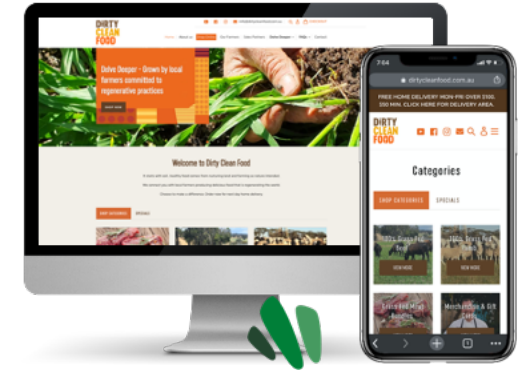


## SUPPLY OTHER BRANDS

PLANT-BASED PROTEIN ISOLATE:  
**AUD\$4-6k PER TONNE<sup>2</sup>**

Sign **supply agreements** with established plant-based protein brands and offer lupin as the key ingredient.

Food manufactures can then develop and launch their own products globally.



## LAUNCH PRODUCTS


PLANT-BASED PROTEIN RETAIL:  
**AUD\$35,000 PER TONNE<sup>3</sup>**


Develop, launch and market plant-based protein products under the **Dirty Clean Food brand**.


Offer products to customers across our fully operational direct-to-consumer online portal, retail and distribution network.

















































# IMMENSE OPPORTUNITY TO SUPPLY BRANDS

 Significant opportunity for WOA to supply Lupin to **current plant-based protein companies** and offer an ingredient with measurable eco credentials.

 WOA is a member of Europe's leading plant-based partnership group, Bridge2Food.

 The Company has also commenced early stage discussions with European and North American food companies in relation to its lupin technology.

Brand	Plant-based meat products stocked in major Australian retailers	Retailers	Manufacturing Origin
The Alternative Meat Co.	 2-5	coles 	Australia
Bean Supreme	 6-10	coles  	New Zealand
Beyond Meat	 1	coles 	USA
Coco & Lucas	 2-5		Australia
Eaty	 2-5	coles 	Australia
Field Roast	 2-5		USA
Fry's Family Foods	 >10	coles  	South Africa
Funky Fields	 1		Denmark
Gardein	 6-10	coles  	Canada
Linda McCartney	 6-10		United Kingdom
Loma Linda	 6-10	coles	Thailand
Nature's Kitchen	 2-5	coles	Australia
Next-Gen	 1		Australia
Quorn	 >10	coles  	United Kingdom
Sophie's Kitchen	 5-10	coles  	Taiwan
Sunfed	 1	coles	New Zealand
Tofurky	 2-5	 	USA
Unreal Co.	 2-5		Australia
Veef	 1		Australia
The Vegan Factor	 2-5		Australia
Vegie Delights	 >20	coles  	Australia

# DEVELOPMENT TEAM



Leading Australian university with pedigree in developing and commercialising novel technologies.

WOA signed an Option & Licence Agreement to advance Curtin's novel technology to create a plant-based protein from Australian sweet lupin.



Australia's national science agency who work with leading research and industry organisations around the world.

CSIRO Food Innovation Centre engaged to utilise their pilot-plant food processing facilities to accelerate the scale up process of extracting protein from lupin.



Highly regarded Food and Beverage industry specialist with extensive experience in designing and building food processing plants.

Assisting with data collection and analysis during the upcoming pilot trial and conducting a scoping study with estimates on future CAPEX and OPEX.





# DEVELOPMENT PROCESS



200kg's of **regeneratively produced lupin** has been purchased for upcoming production trials and ongoing discussions have commenced to secure future supply for commercialisation.



**Preparation of lupin underway** for CSIRO to produce a food grade commercial quantity of lupin protein isolate to be used in plant-based product development.



Scaling and refining of the production process is advancing, with the pilot trial on schedule for commencement in **September 2020**.

# SURGE IN INVESTMENT



Beyond Meat (NASDAQ: BYND) is a global producer of plant-based meat substitutes designed to simulate chicken, beef, and pork sausage.

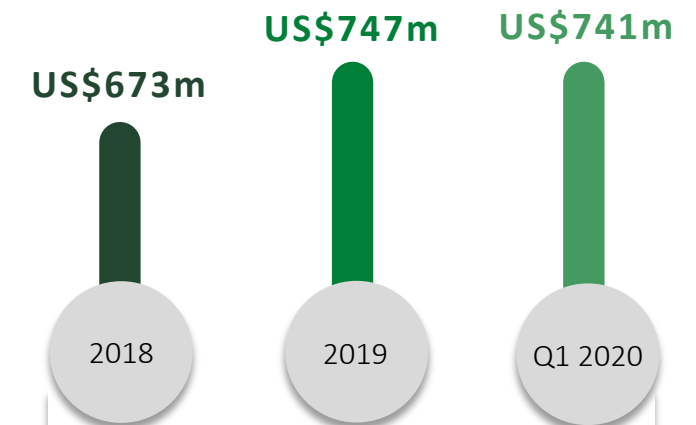
Beyond Meat raised US\$760 million and went public in May 2019<sup>1</sup>. The company currently has a **market value of US\$8.4 billion**<sup>2</sup>.



Impossible Foods Inc develops plant-based meat substitutes with their signature product, the Impossible Burger, launching in July 2016.

Impossible Foods raised an estimated **US\$300 million Series E** round in 2019 - the single largest funding round in the sector that year<sup>3</sup>.

## INVESTMENT IN PLANT-BASED FOOD BRANDS



A record US\$747 million was invested in plant-based protein companies in 2019, **US\$741 million already invested in Q1 2020**<sup>4</sup>.





# FOOD INDUSTRY GIANTS HIGHLY ACTIVE IN THE SECTOR



World's second largest processor and marketer of chicken, beef and pork



American multinational food manufacturing company



Multinational food and drink conglomerate and the largest food company in the world



Launched Raised & Rooted - A line of products which includes vegan meat alternatives



Kellogg's MorningStar Farms brand produces a number of plant-based food products



Launched its own veggie burger from Nestle's Sweet Earth Brand the Awesome Burger.



Tyson Ventures (Venture capital arm) is investing in a plant-based shrimp company called New Wave Foods<sup>1</sup>



Recently launched, Incogmeato that produces ready-to-cook plant-based burgers and chicken nuggets



Offers a soy-and-wheat-based burger in Europe and its Incredible Burger is available at McDonald's in Germany

# INVESTMENT HIGHLIGHTS



## HEALTHY ALTERNATIVE

WOA is developing a plant-based protein to make high growth consumer food alternatives within the meat, dairy, beverage and egg sectors



## STRONG TAILWINDS

Climate change, animal-welfare concerns, and greater interest in wellness are driving mass adoption



## INCREASED AVAILABILITY

Supermarkets are increasing product ranges globally with most major Australian retailers offering plant-based protein products



## MASS MARKET

Purchasing behaviour is no longer niche with health-minded shoppers spanning almost every consumer segment



## SALES ACCELERATING

US plant-based meat sales grew 265% over the eight-week period ending April 2020, 6x faster than conventional meat sales.<sup>1</sup>



## SURGE IN INVESTMENT

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