MEAT & LIVESTOCK AUSTRALIA

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For the latest in red meat R&D

How to shop for the best sire to accelerate your beef business

Hamish Chandler

Meat & Livestock Australia

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What drives genetic progress?

$$Response = \frac{selection\ intensity \times selection\ accuracy}{generation\ interval} \times Variation$$

- pick only the best
- make the right choice more often
- breed from them ASAP
- identify differences between animals.

How fast you make genetic progress is dependent on how you balance these factors.

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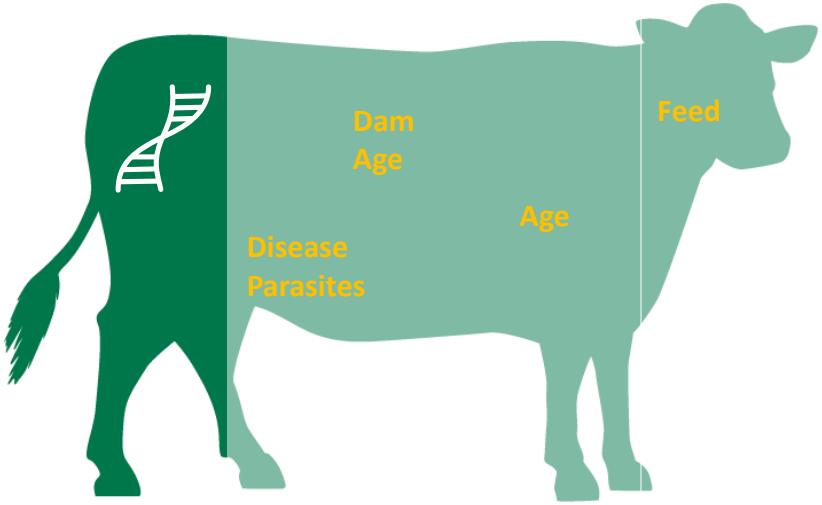
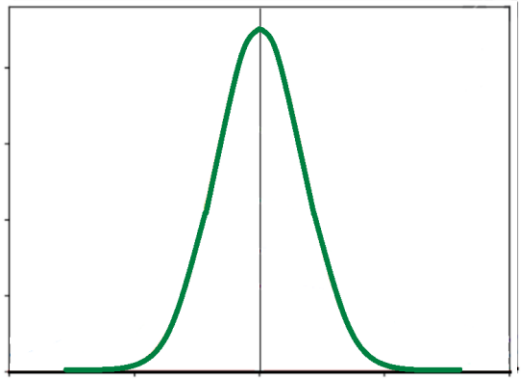
Performance = environment + genetics



How often do I choose the right animal?



The genes are the only thing that will be passed onto their progeny.

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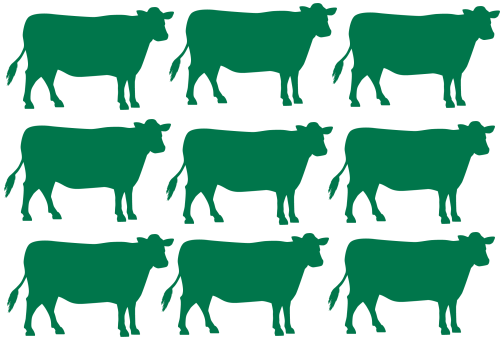
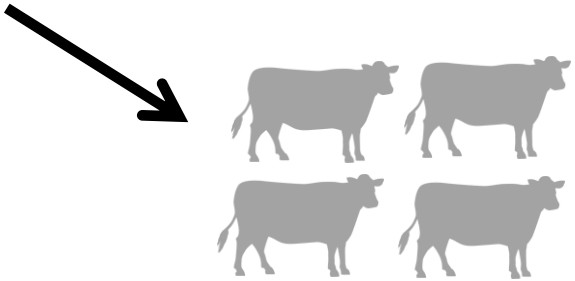
Genomics – basic principle



Reference population:

- measuring phenotypes and genotypes
- hard to measure traits
- late in life traits.



Industry animals:

- DNA tests on young animals
- predict breeding values based on genomic
- relationship and traits measured in reference.

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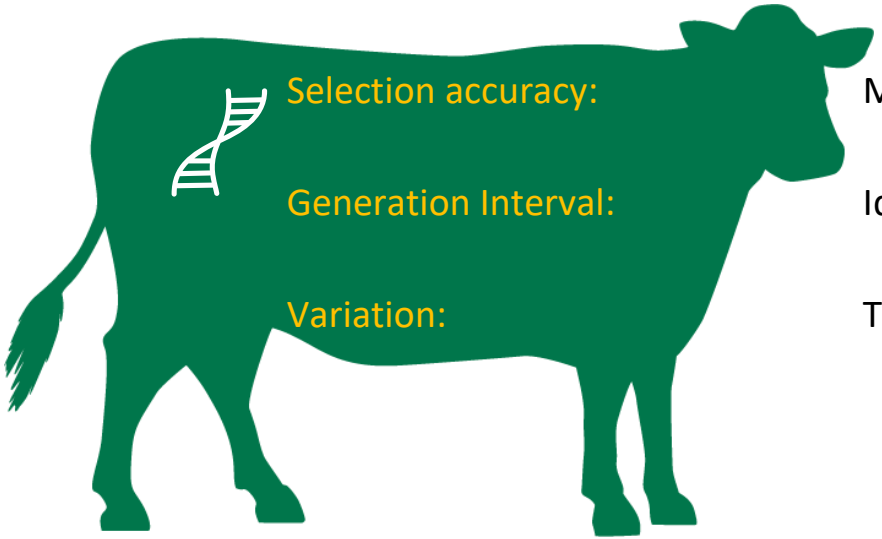
How does genomics help?



More information coming from “relatives”

Identifying earlier who carries good genes

Traits that we can’t measure any other way

Genomics can be used to drive faster rates of genetic gain.

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Why are we selecting? What drives profit?

Productivity

- Weight
- Yield
- Reproduction

Price

- Shear Force
- Intra Muscular Fat

Cost of Production

- Environmental suitability
- Disease/Parasite Resistance
- Resilience
- Welfare

Lessons from the

Angus Sire Benchmarking Program

EBVs RELIABLY PREDICT PROGENY PERFORMANCE

Angus AUSTRALIA

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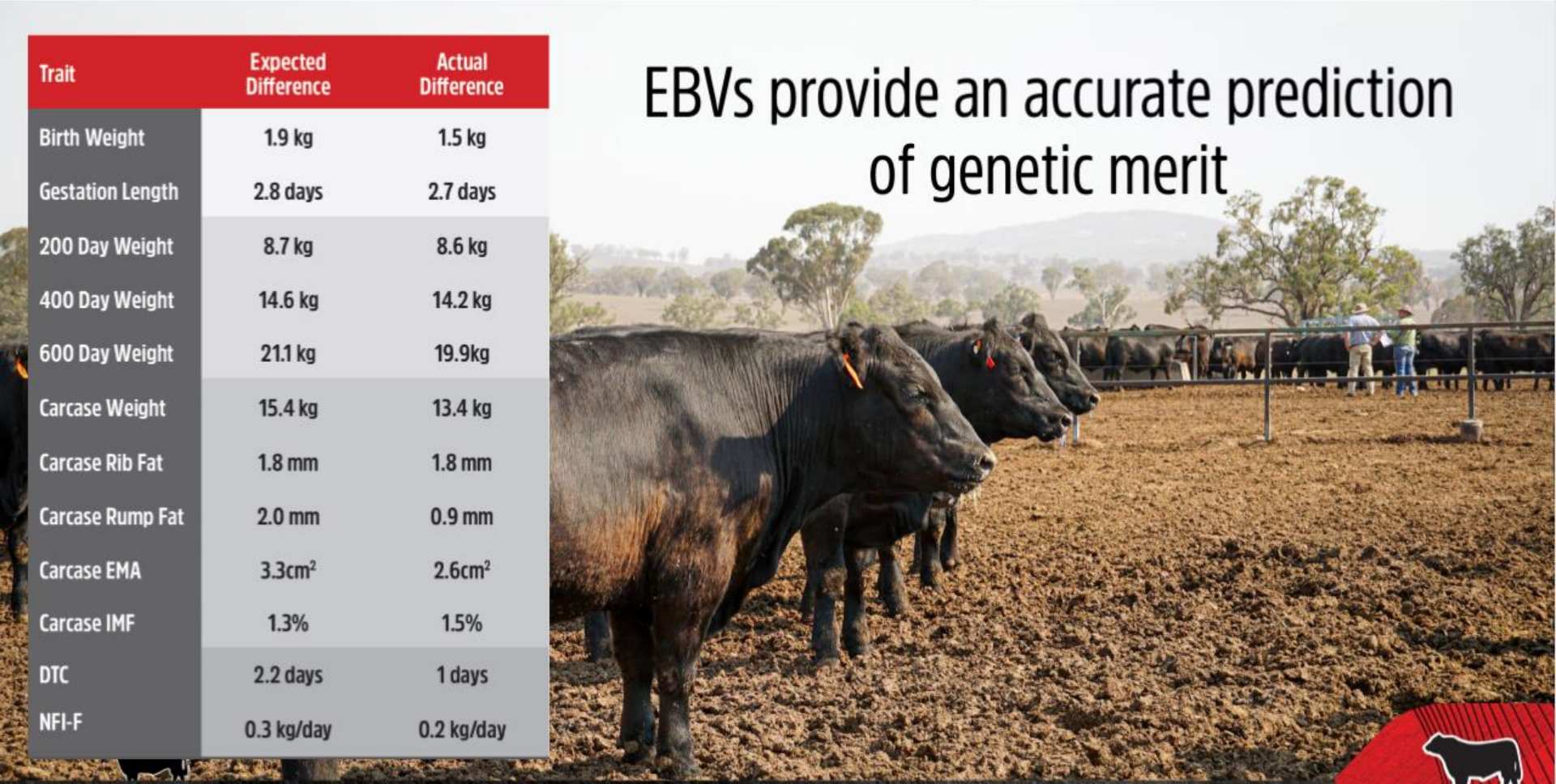
EBVs provide an accurate prediction of genetic merit

Trait	Expected Difference	Actual Difference
Birth Weight	1.9 kg	1.5 kg
Gestation Length	2.8 days	2.7 days
200 Day Weight	8.7 kg	8.6 kg
400 Day Weight	14.6 kg	14.2 kg
600 Day Weight	21.1 kg	19.9kg
Carcase Weight	15.4 kg	13.4 kg
Carcase Rib Fat	1.8 mm	1.8 mm
Carcase Rump Fat	2.0 mm	0.9 mm
Carcase EMA	3.3cm^2	2.6cm^2
Carcase IMF	1.3%	1.5%
DTC	2.2 days	1 days
NFI-F	0.3 kg/day	0.2 kg/day



Lessons from the

Angus Sire Benchmarking Program

CAPITALISING ON THE GENETIC VARIATION BETWEEN ANGUS ANIMALS

Angus AUSTRALIA

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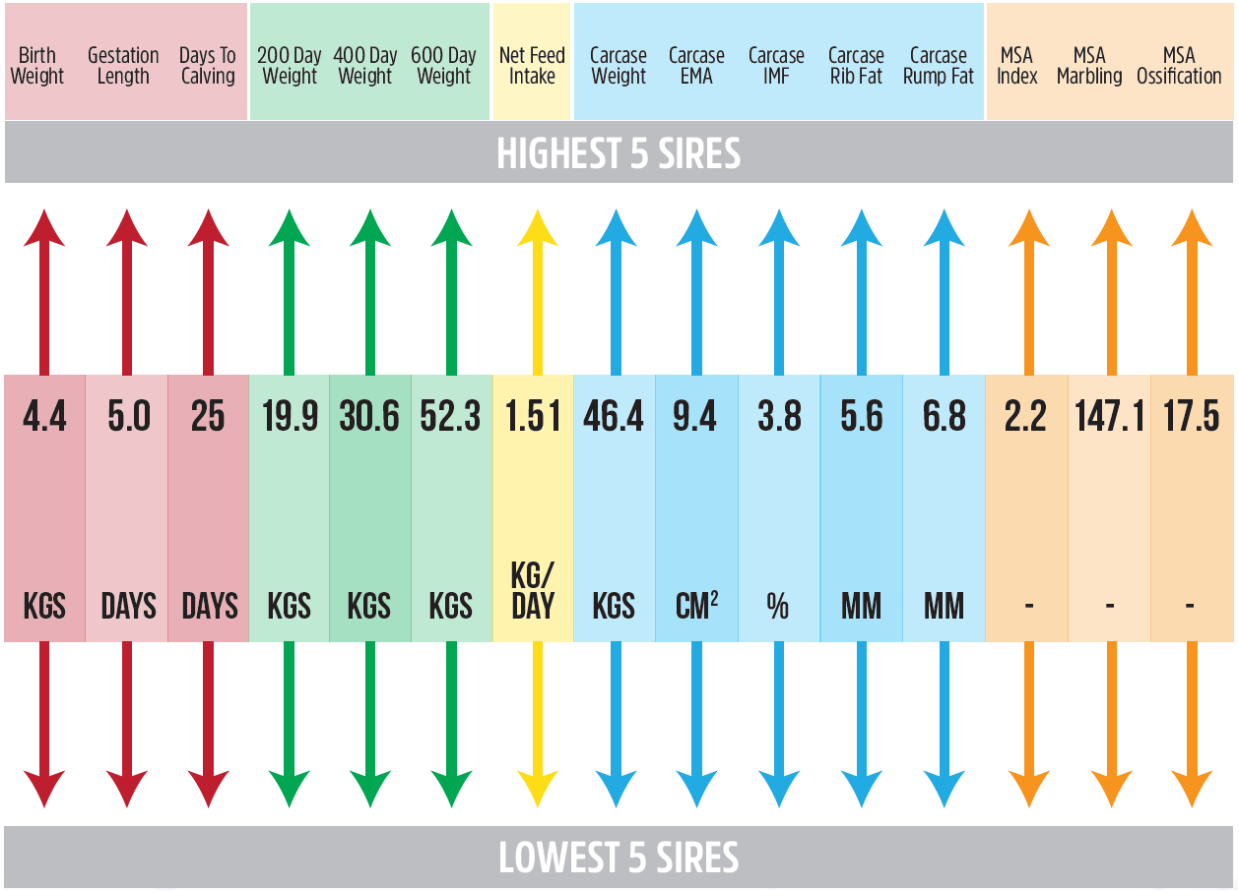


There is a significant amount of genetic variation between animals within the Angus population

ABOUT

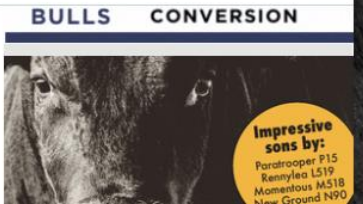
- General Information
- Consultative Committee
- Bull Nominations

SIRE COHORTS

- First Cohort
- Second Cohort
- Third Cohort
- Fourth Cohort
- Fifth Cohort
- Sixth Cohort
- Seventh Cohort
- Eighth Cohort
- Ninth Cohort
- Tenth Cohort
- Eleventh Cohort

LESSONS FROM THE ASBP

- Project Overview
- Capitalising on genetic variation
- EBVs reliably predict progeny performance
- Starting vs. Finishing EBVs
- Individual Sire EBV Changes



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What drives genetic progress?

Respons ... *riation*

- pick or
- make t
- breed
- identif

Where will our industry be in 20 years?

balance these factors.

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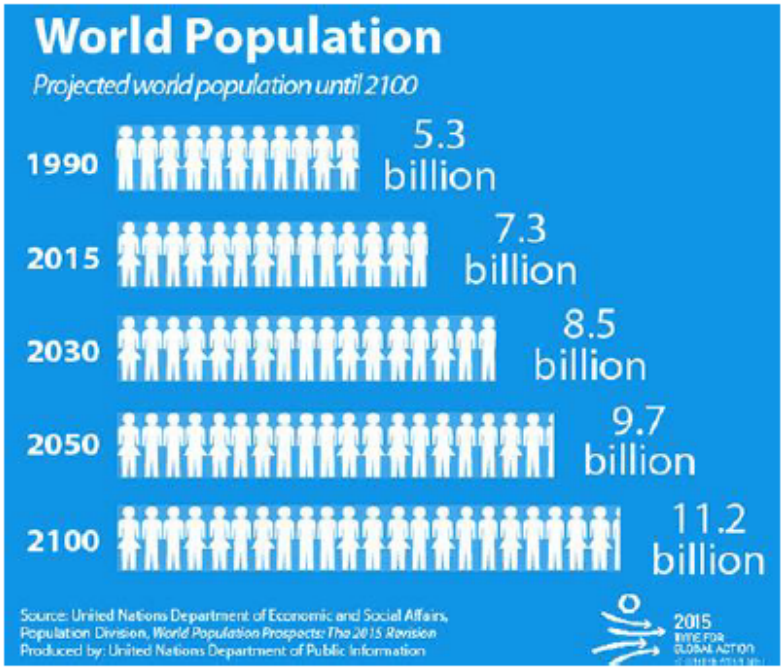
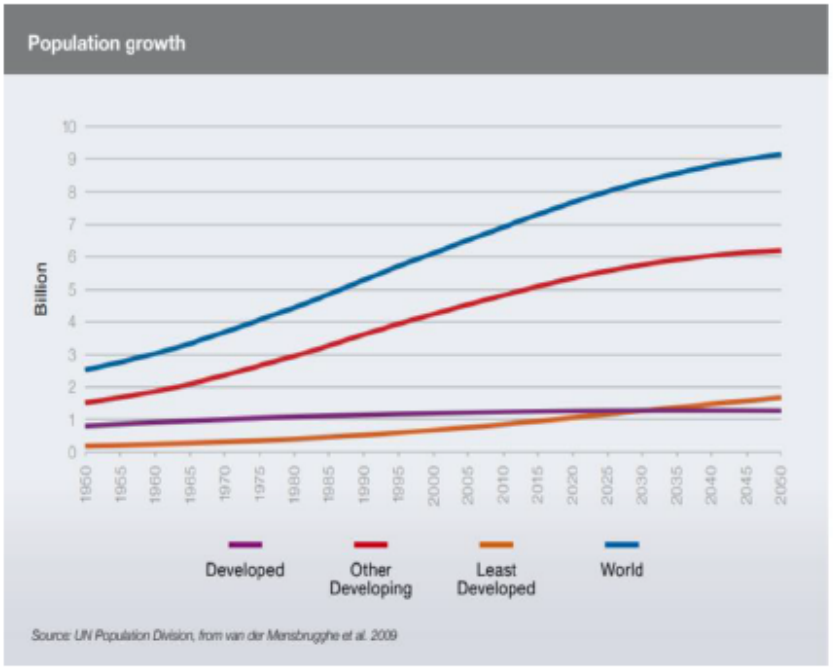
Global Population will continue to grow





An extra 1 BILLION people to feed every 15 years

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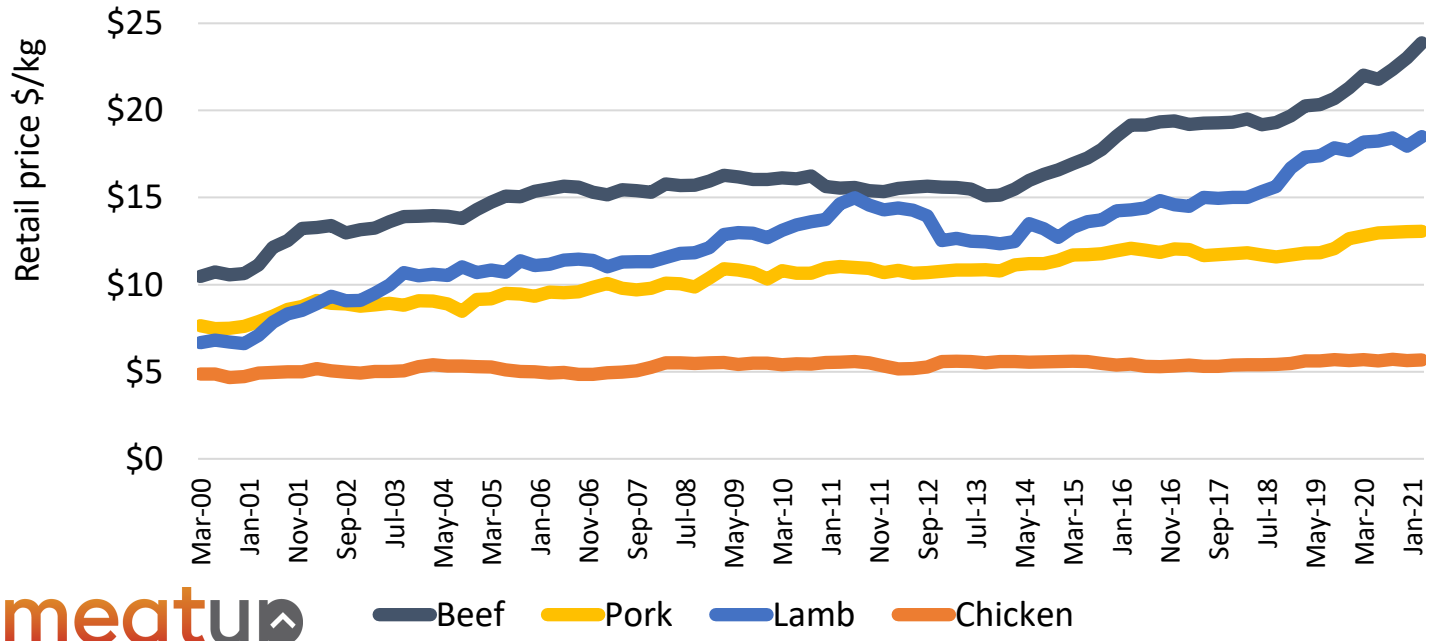
https://news.un.org/en/story/2017/06/560022-world-population-hit-98-billion-2050-despite-nearly-universal-lower-fertility; UN Dept of Economic & Social Affairs, 2017

There is a growing price gap for red meat relative to chicken and pork

Australian retail meat prices by meat type – price per kg



Price growth since 2000

- Beef +128%
- Lamb +177%
- Pork +71%
- Chicken +17%

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Source: Australian retail meat prices by meat type, ABARES calculated using ABS data

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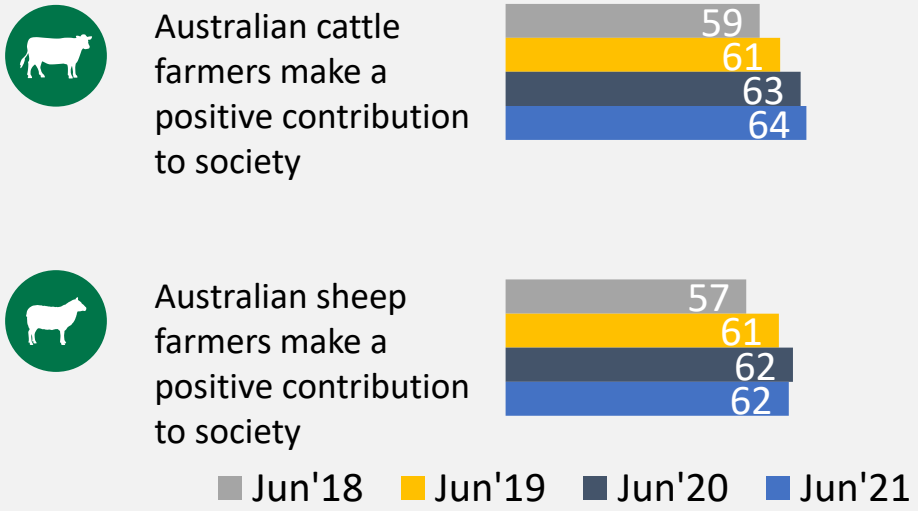
Positively, perceptions of farmers contributing to society are increasing over time

2 in 3

Australians think farmers make a positive contribution to society (and only 6% disagree)



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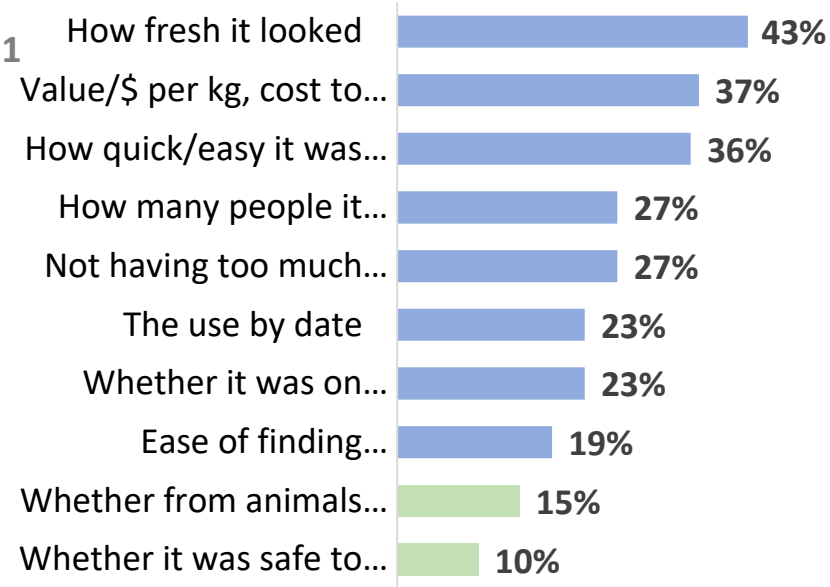
PURCHASE DECISIONS: Functional factors driving choice between proteins. ‘Claims’ need a link to consumer benefit.

Grocery shopping behaviour

83 %

System 1

Purchase decision factors – Fresh meat



AND ONLY….

7% mention sustainable farming

4% mention grass or grain fed

7% mention organic

5% mention meat grading

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Source: MLA Koji Shopper Research

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REDUCERS: Consumers who are reducing RM consumption not as big as ‘noise’ suggests. Price and health driving reduction.

- Less than **1 in 3** consumers are **reducing** their red meat consumption
- Proportion of reducers has **remained stable** for over a decade
- **Price, health perceptions, environmental** and **animal welfare concerns** are driving reduction

So what? Address concerns of reducers to help them feel good about eating red meat.

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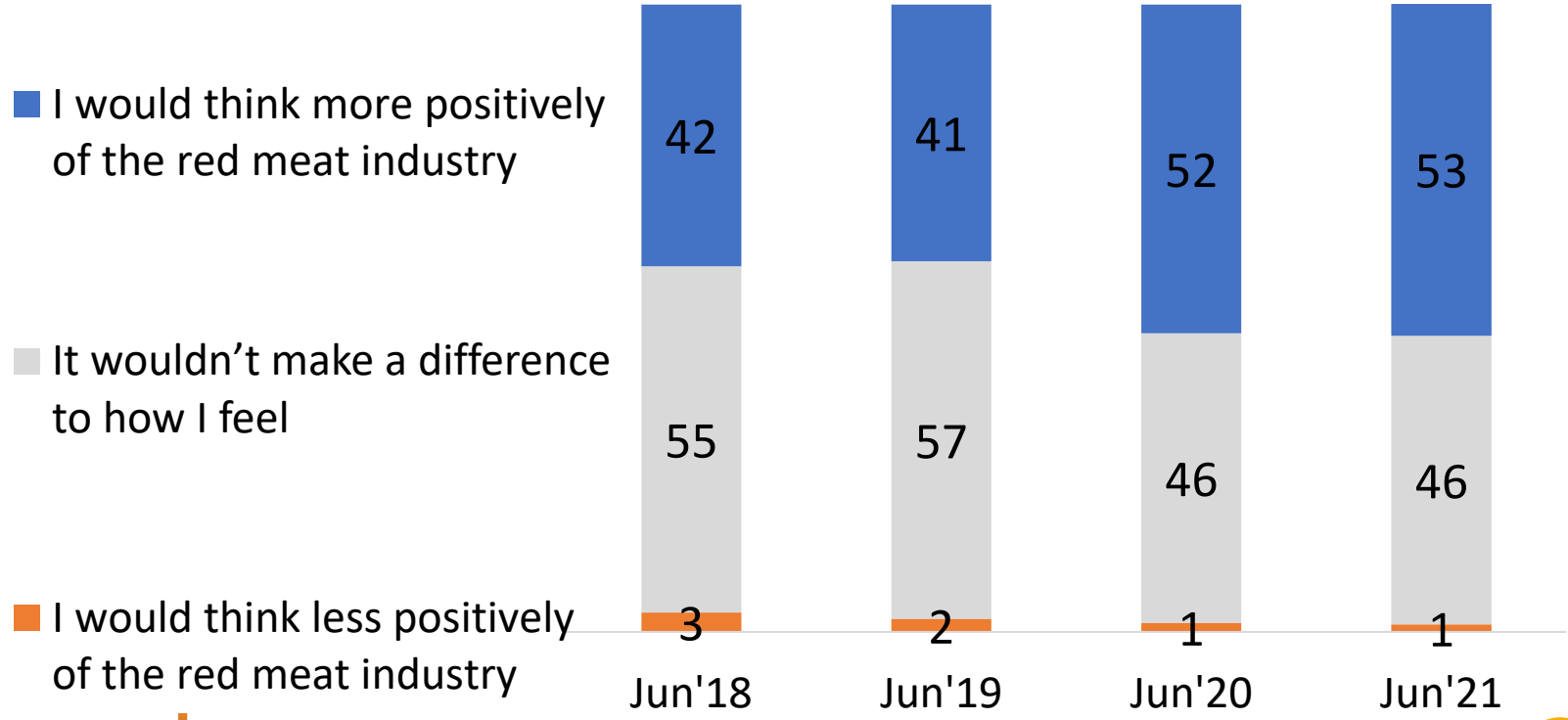
Similar to 2020, half would feel more positive about the red meat industry if emissions were reduced to zero by 2030

If cattle industry can reduce emissions to zero by 2030… (%)



E9 If the cattle farming industry can reduce methane emissions to zero by 2030, which of the following statements describe how you feel? Base n=1501/153/81422/1556/1510

CN30 | Carbon Neutral 2030

Two key components:

1. Target – for the Australian red meat industry to achieve net zero greenhouse gas (GHG) emissions by 2030
2. Coordinated RD&A effort

GHG emissions are measured and reported by the National Greenhouse Gas Inventory accounts:

GHG emissions — Emissions captured and/or offset = 0 tonnes CO_{2w}

What will new technologies mean?

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Cost of Production

Rising feedgrain prices "extremely concerning" for lot feeders

Lot feeders are having to make some tough decisions as rising feedgrain prices join the already record-breaking cattle and diesel prices...

Read More

Eric Barker, 25/03/2022

Feedgrain Focus: More gains amid tight road freight

Domestic markets have continued to rise in the past week, catching some consumers with no choice but to bid up to compete with heady export demand...

Read More

Liz Wells, 25/03/2022

CROPPING

Fertiliser prices to remain high into 2023

Due to rising gas and shipping

CROPPING

Costly inputs dent appeal of cash cropping in NSW

Despite high canola and cereals prices, mixed farmers are weighing up the economic wisdom of maximum input expenditure on cash crops...

Read More

Liz Wells, March 28, 2022

PROPERTY

Rural property experts predict more upside in values

Terry Sim, 25/03/2022

ad of sales Andrew Smith, managing director of Agribusiness at odfellow and Warakarri Asset Management's head of cropping & diversified

alues have not peaked yet according to speakers at a Rural Press Club of usiness Australia event in Melbourne this week.

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Businesses that adapt will prosper!

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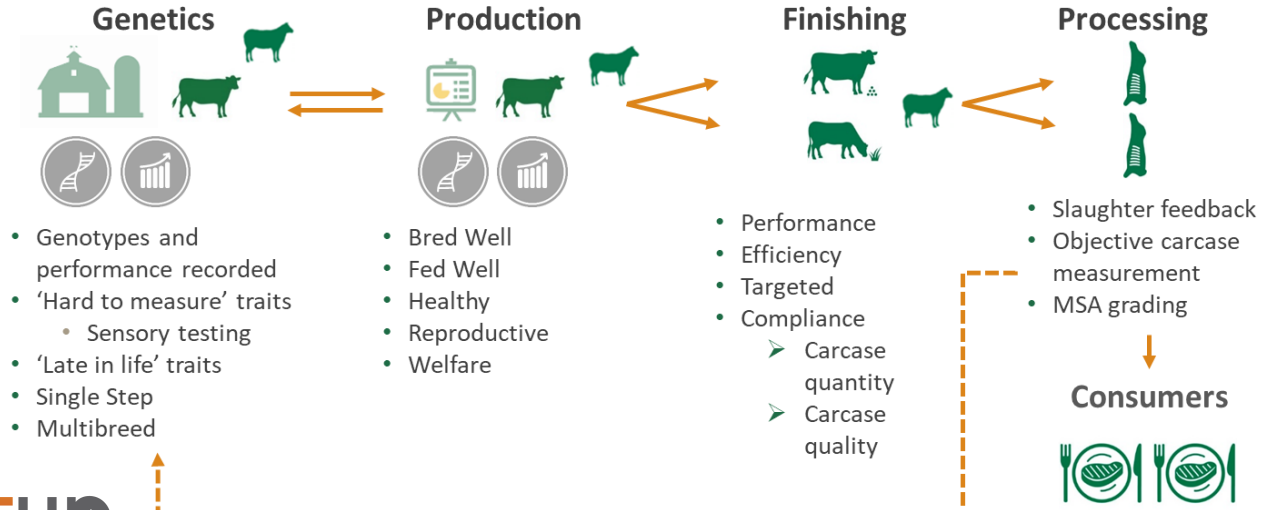
What does this mean for our genetic selection on farm?

- Continued focus on traits that influence;
  - Productivity – reproduction, growth, yield
  - Price of product – marbling
  - Cost of production – mature size, feed intake
- Increasing focus on sustainability traits;
  - Feed efficiency
  - Methane
- New focus on welfare traits;
  - Cow survival, calf survival
  - Heat tolerance
  - Disease and parasite resistance
  - Structural traits
  - Recessive defects

What is already in progress to meet these needs?

- Supporting the development and delivery of better breeding values for the traits breeders are already familiar with
- Developing genomic technologies to allow more accurate selection of animals sooner and more easily particularly for hard to measure traits



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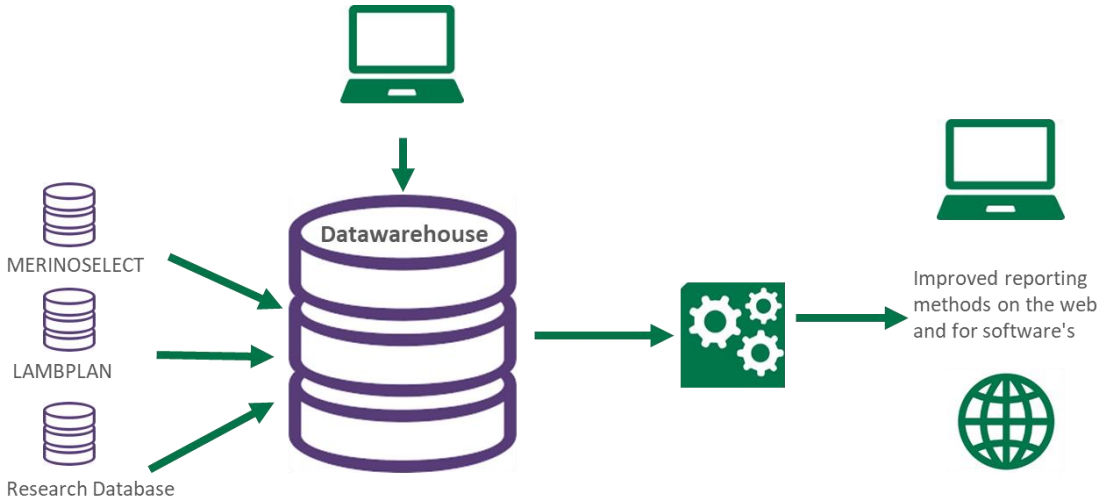
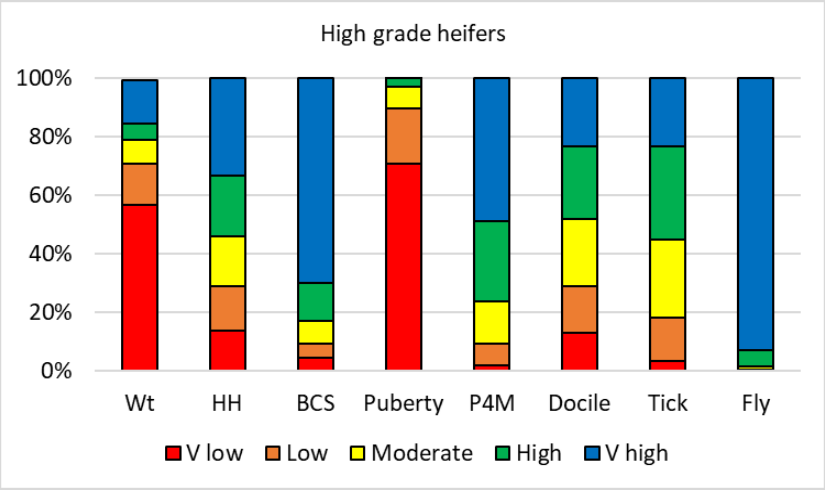
What is already in progress to meet these needs?

- Making systems easier to use and developing database infrastructure
- Working to improve on the delivery models to improve services and enable multi-breed evaluations



What is already in progress to meet these needs?

- Developing new genetic selection tools for different parts of the supply chain, e.g. high accuracy EBVs for seedstock, GBVs and profile/benchmarks for commercial breeders.



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THE UNIVERSITY OF QUEENSLAND AUSTRALIA

QAAFI Queensland Alliance for Agriculture and Food Innovation

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What is already in progress to meet these needs?

- Supporting greater adoption of genetic technologies

	IPSOS Survey - 2015	Genetics Campaign Market Research - 2020	% of sires sold that have been included in the genetic evaluation - 2020
Beef	**18%**	**48%* (10% of beef producers using them for 1-5 years)**	**51%**
Sheep	**14% Merino 16% Terminal/Maternal**	**44%* (23% of sheep producers using them for 1-5 years)**	**47%**

**EBVs being too complicated or sophisticated was not identified as a significant barrier among producers in the genetics campaign market research survey*

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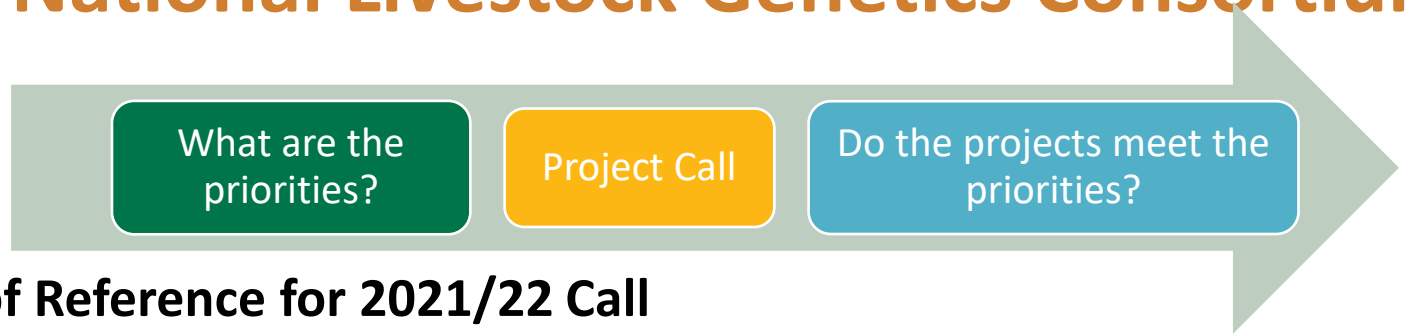
The National Livestock Genetics Consortium



Terms of Reference for 2021/22 Call

1. Carbon Neutrality through all aspects of genetics with a focus on northern beef
2. Sustainability – structure, welfare, resilience traits
3. Cost and Speed of Genotyping

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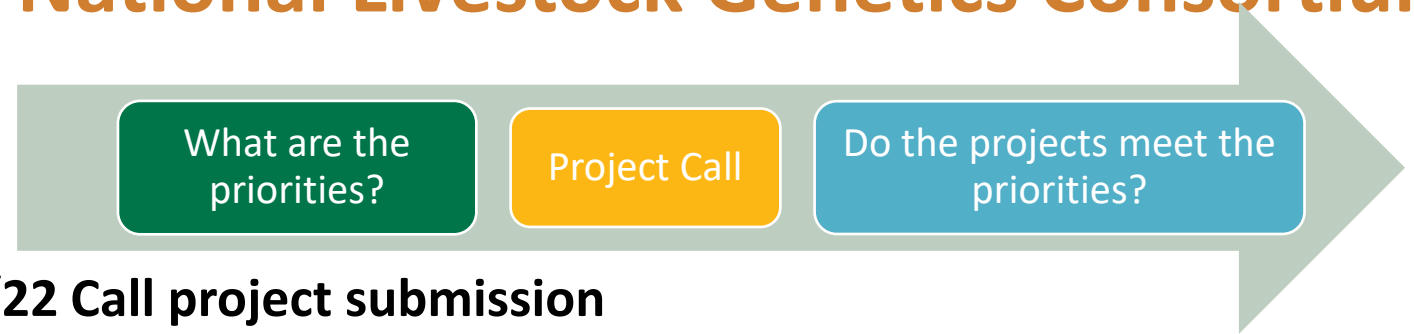
The National Livestock Genetics Consortium



- **2021/22 Call project submission**

12 Projects applications submitted with a total value of $32M

NLGC Taskforce recommended 8 project for support

6 Projects seeking approval

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Take home messages

- Identify your profit drivers and how to best select for them?
- What are your drivers going to be in another 20 years?
  - Will you still have a social licence to operate?
- Our focus has been on improving accuracy of selection for traits from conception to consumption and tools to do this faster.
- Additional focus on sustainability, welfare, resilience…

Tools and resources

- MLA Genetics Hub – https://genetics.mla.com.au
- BREEDPLAN – https://breedplan.une.edu.au
- Southern Beef Technology Services – http://sbts.une.edu.au/
- Bred Well Fed Well – https://www.mla.com.au/extension-training-and-tools/Bred-Well-Fed-Well
- Lessons from the ASBP – https://www.angusaustralia.com.au/