Crawford Fund FOR A FOOD SECURE WORLD

WHAT CAN FARMERS DO?

Lucinda Corrigan Founding Chair Farmers for Climate Action & Director Rennylea Pastoral Company

Rennylea
creating your future in beef

FCA
FARMERS FOR CLIMATE ACTION

Beginnings

Our Networks of Change

Our board has over 200 years of combined experience in agriculture. They are industry leaders from across the country.

Our advisors are Australia's leading climate & agricultural researchers.

Our staff have expertise in politics, advocacy, regional development, research agriculture, media and marketing.

Our collaborators are some of the leading bodies in agriculture, conservation & rural Australia.

piccc

National Farmers Federation

ClimateWorks FOUNDATION

BCG SHARED SOLUTIONS

Landcare Australia

CLIMATE PROOFING AUSTRALIA

Australian Farm Institute

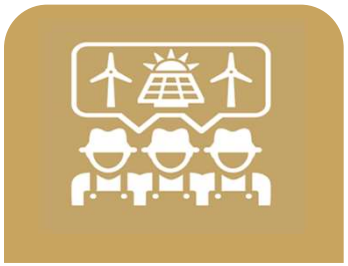
Crawford Fund FOR A FOOD SECURE WORLD

OUR STRATEGY

FCA has galvanised farmers and the Ag sector as a credible voice for climate action.

FOCUS AREA 1

Agriculture is Climate Smart



FOCUS AREA 2

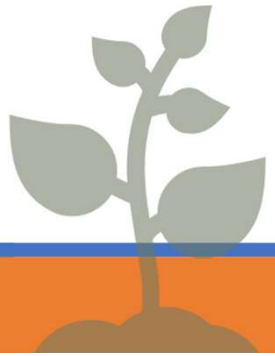
Farmers Mobilised to Drive a Clean Energy Transition

FOCUS AREA 3

Rural & Regional MPs Championing Climate Action & Renewable Energy

FOCUS AREA 4

Agriculture Leaders Championing Climate Action



Industry Targets are moving quickly

The Headline is the National Farmers Target CN2050

Red Meat – CN2030 (2017)

Dairy – 30% reduction by 2030

Pork – CN2025 to be announced by end FY21

Grains – consulting on a 2030 target, support NFF CN2050

Wine Industry – committed to a CN2050 vision

Horticulture – finalizing Draft Sustainability Framework

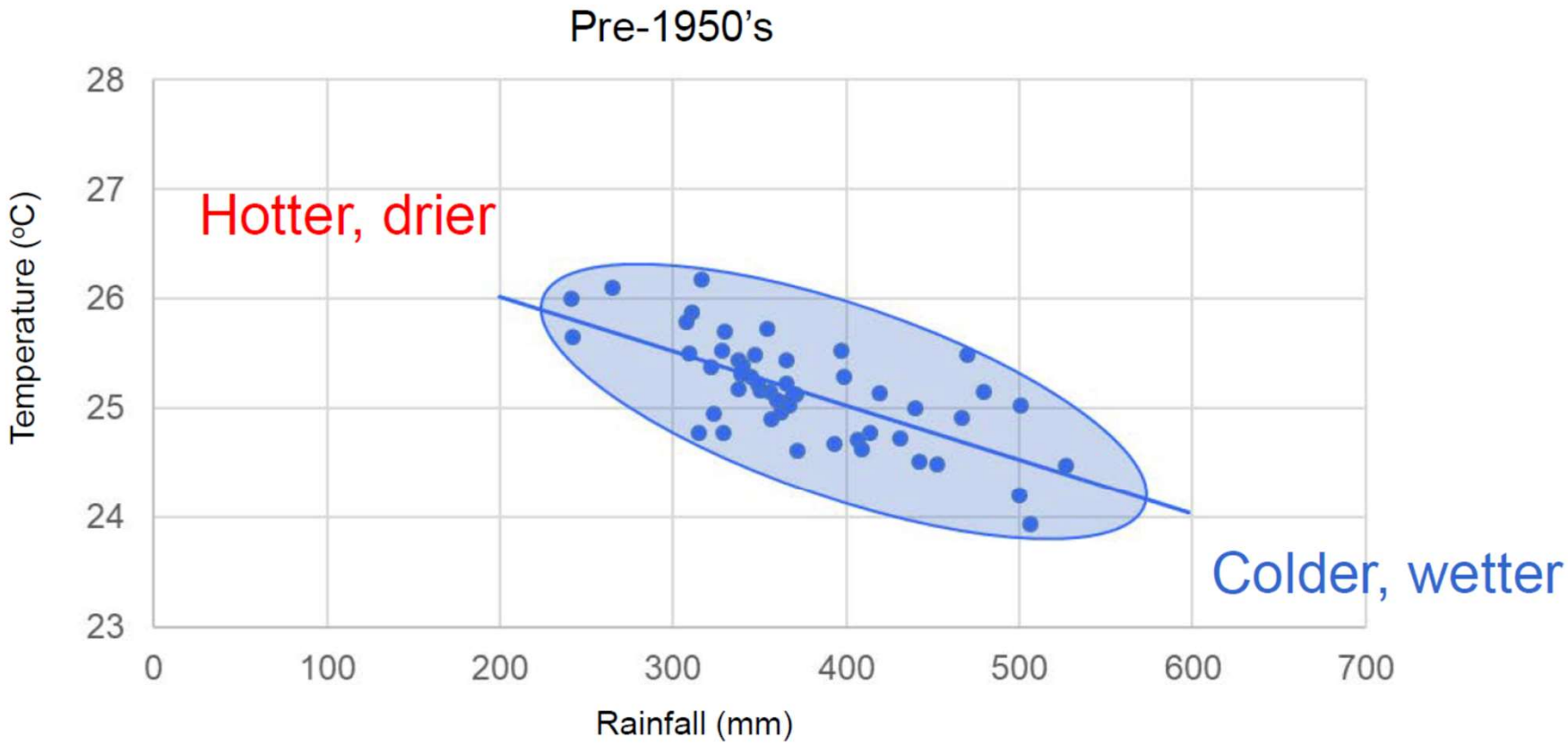
Sheep Meat & Wool – Launching their Sustainability Framework 21.4.21

& more…….

Crawford Fund FOR A FOOD SECURE WORLD

Australian National University

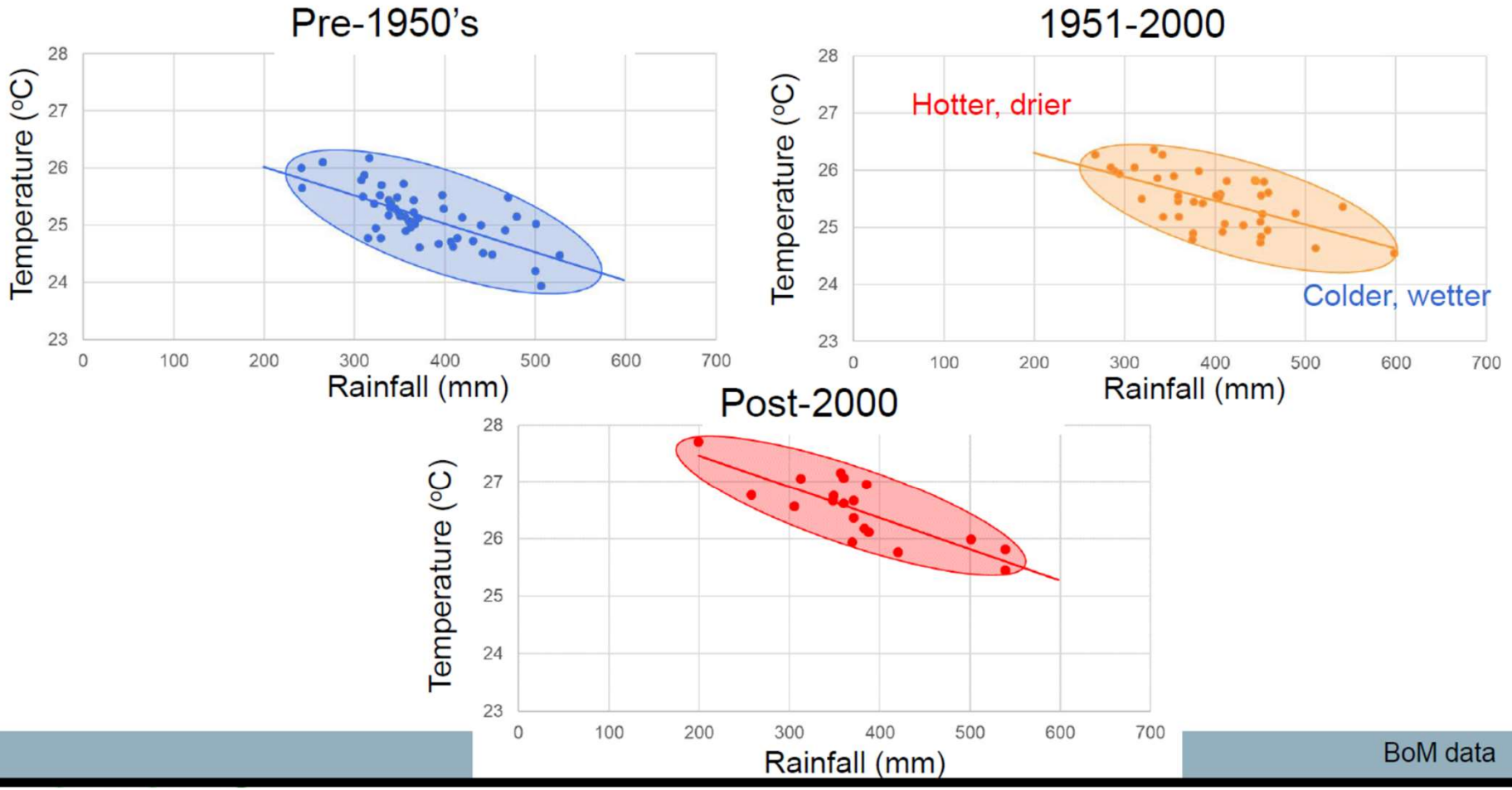
The rainfall-temperature operating envelope



BoM data: southern Australia

Australian National University

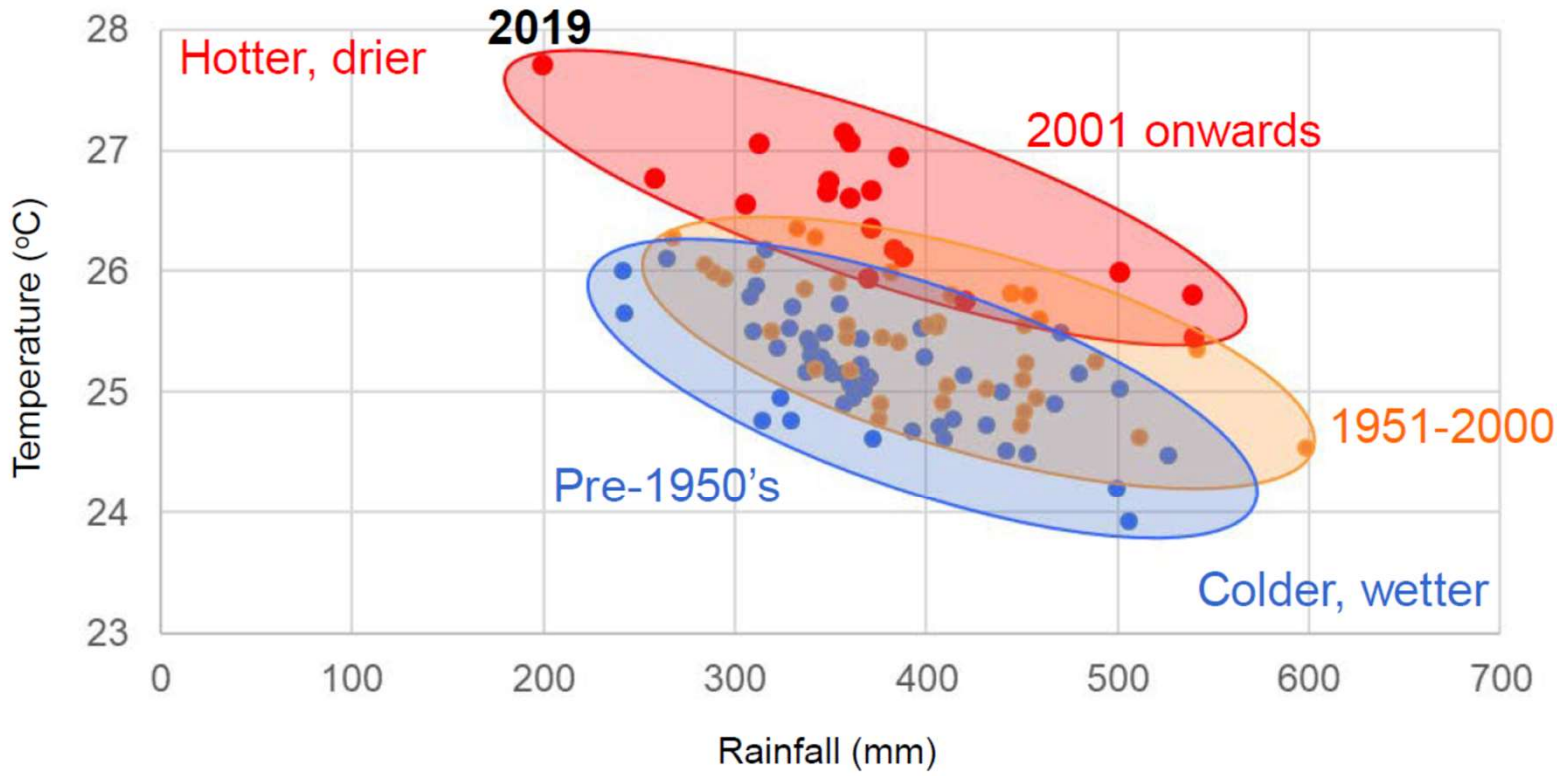
Rainfall-temperature operating envelopes



BoM data

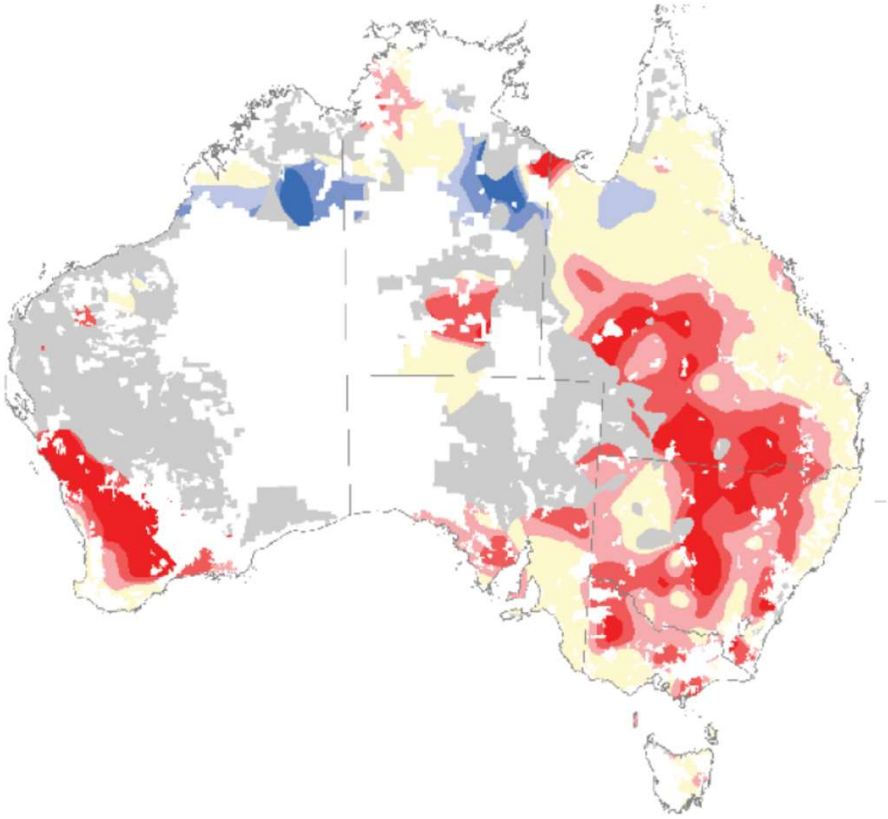
Australian National University

A changed operating environment



BoM data

Climate changes dragging back farm profits



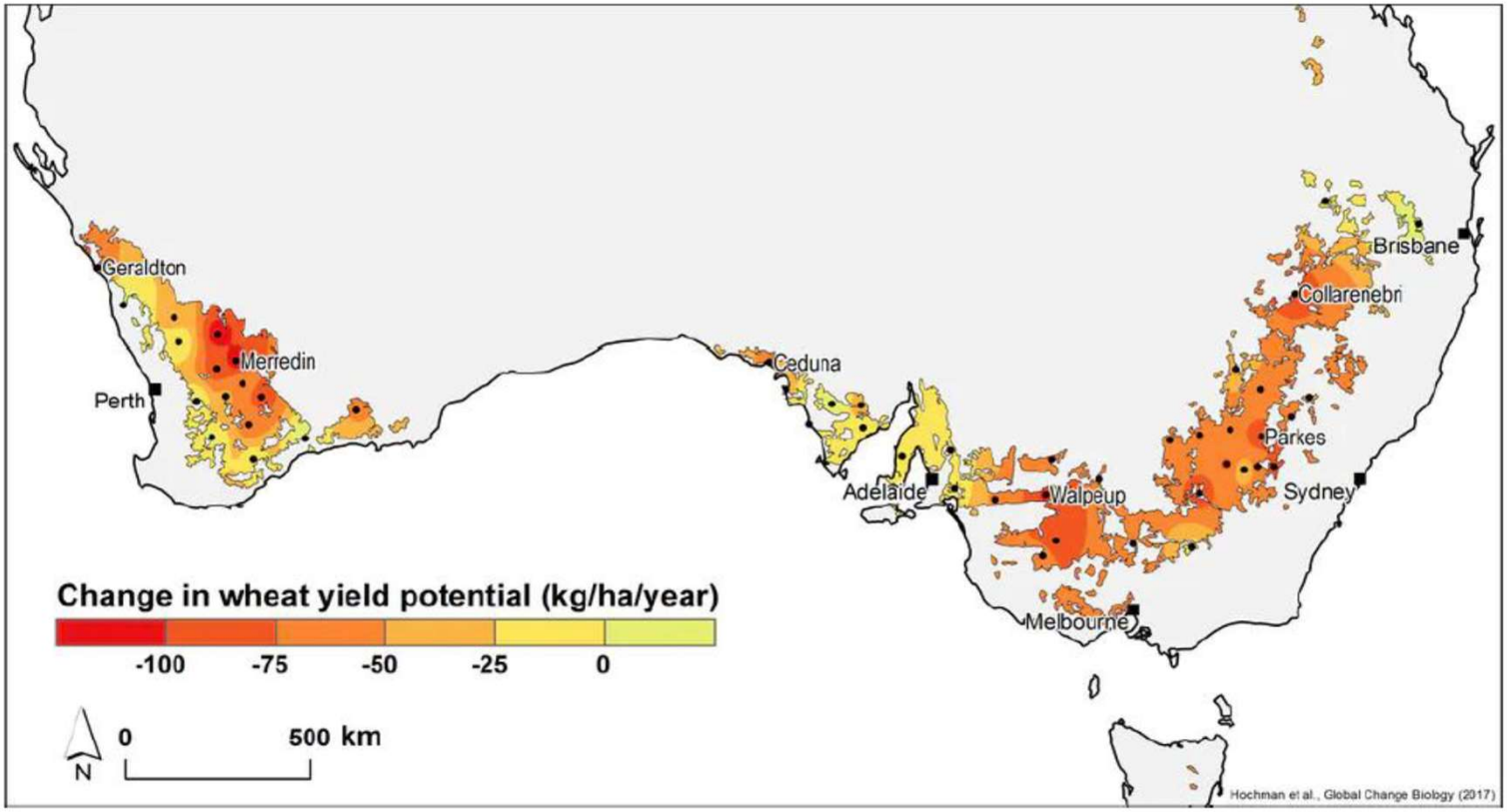
Farm business profit percentile ranges

90–100	Near highest
80–90	Very much above average
70–80	Above average
30–70	Average
20–30	Below average
10–20	Very much below average
0–10	Near lowest
	Insufficient sample
	Non-agricultural land

- Climate changes (post 2000) affecting farm profits from -37% (Vic.) to +8.7% (NT)

Hughes et al. 2020

Potential Wheat production is down



- Potential yields have declined by 27% since 1990, from 4.4 tonnes per hectare to 3.2 tonnes per hectare.
- Rainfall declines accounted for 83% of the decline in yield potential
- Temperature increases are responsible for 17% of the decline.

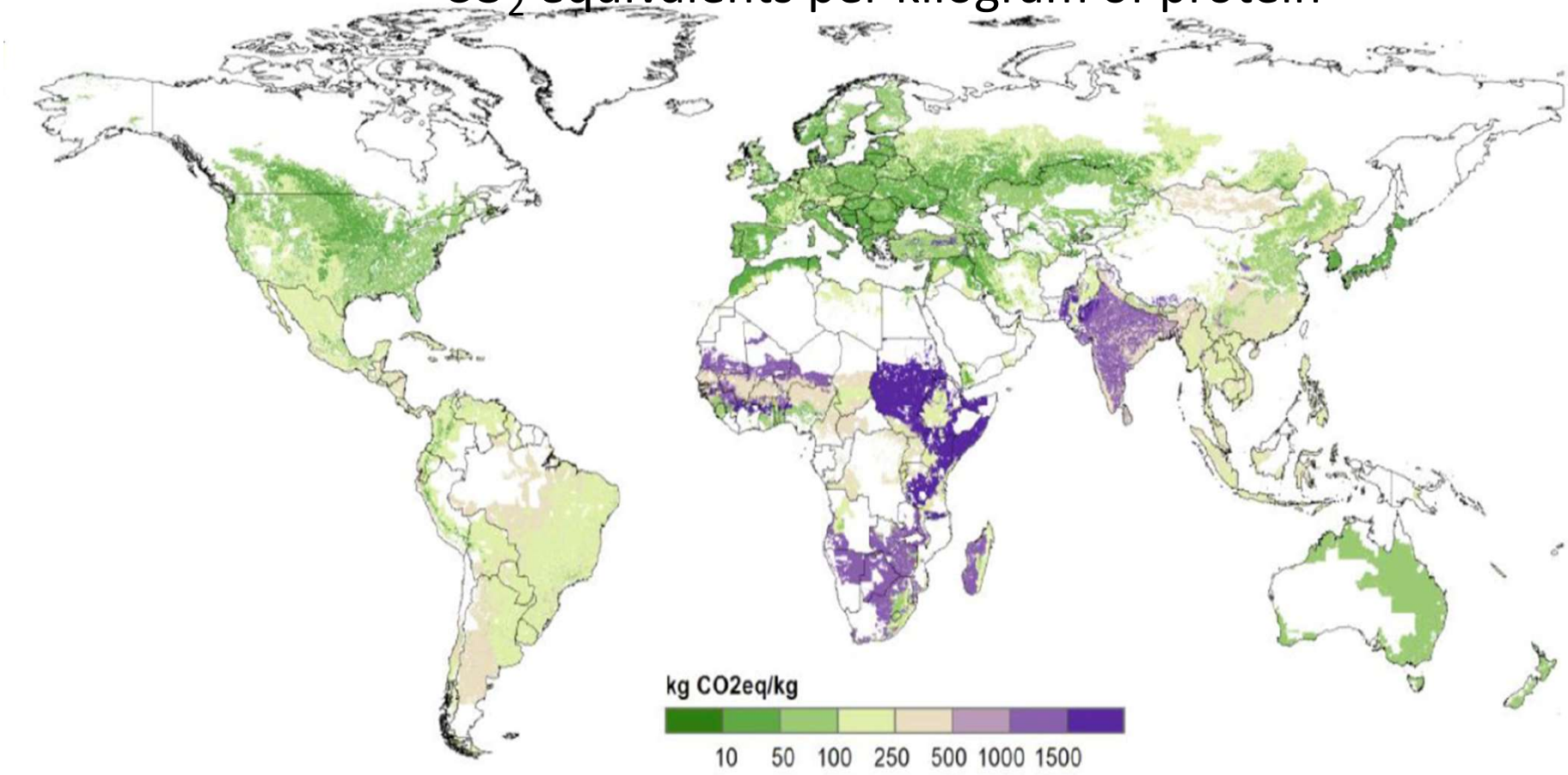
Potential Wheat production is down

- Why then have actual yields remained steady when yield potential has declined by 27%?

ADAPTATION

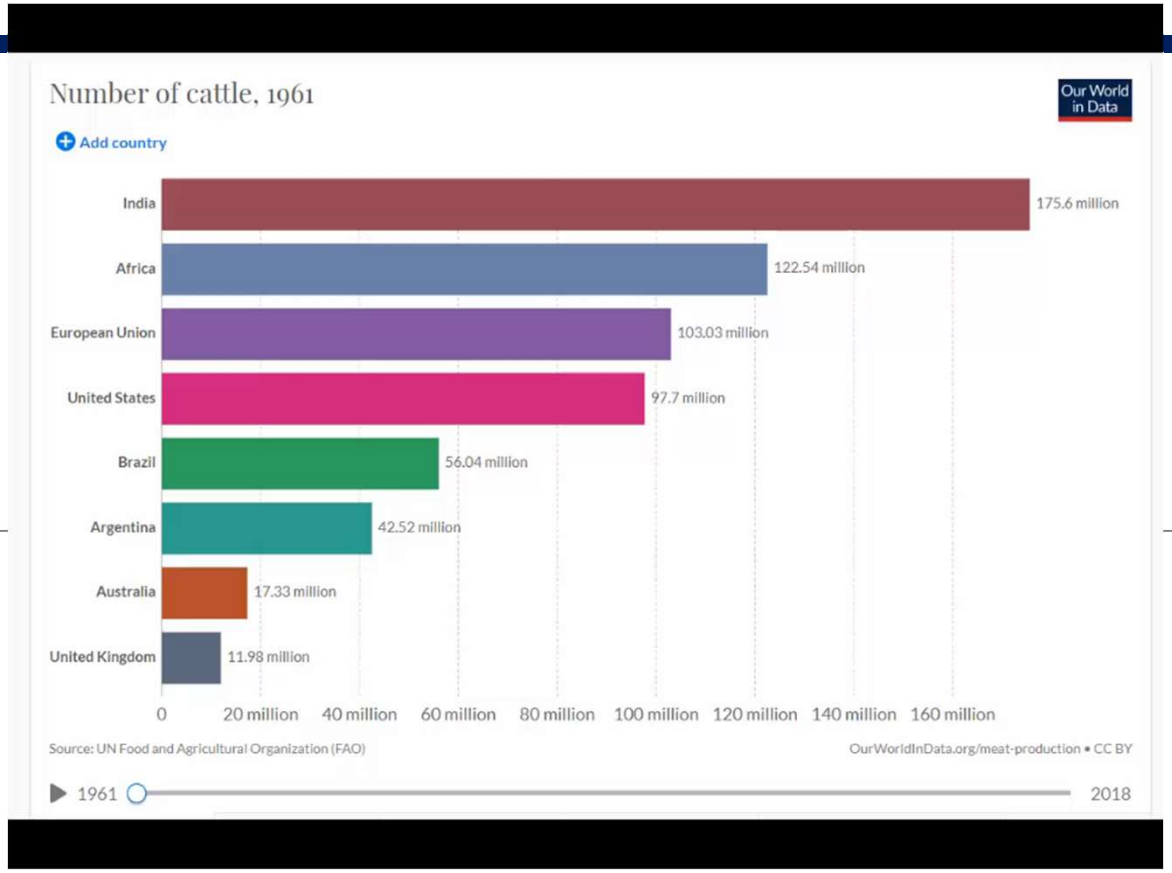
- Wheat farmers are closing the yield gap. From harvesting 38% of potential yields in 1990 this increased to 55% by 2015.
- Averaged out over a number of seasons, Australia's most productive farmers achieve about 80% of their yield potential.
- As climate change accelerates enhanced levels of adaptation will be required in order to increase the proportion of potential yield farmers can realise.

Greenhouse gas emissions from beef production expressed as kg of CO_2 equivalents per kilogram of protein



Source: Herrero et al., 2013 PNAS 110: 20888-20893

Growth by region in cattle numbers, 1961-2018



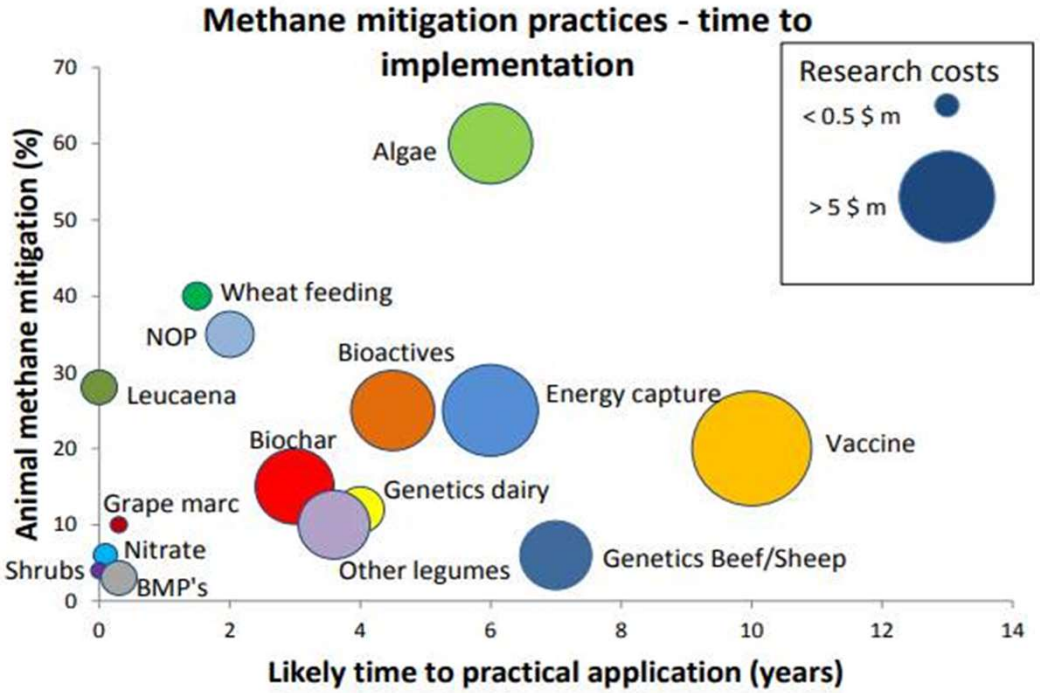


Figure 10. Relationship between the methane mitigation potential in individual animals and likely time to first implementation on farm after considering additional research needed for a range of methane mitigation practices. The size of the bubble-dot represents a relative estimate of the likely cost and risk of further research required.

Our Work At Rennylea

Crawford Fund FOR A FOOD SECURE WORLD

Genetics and Genomics – Accurate description

100 RENNYLEA Q1027^{PV} (APR)(AI) **Age: 12 MTH**

Born: 09/08/2019
Society Ident.: NORQ1027
Brand: R in Circle Q1027

USA17366506 HPCA INTENSITY
Sire: NORL467 RENNYLEA L467
NORH414 RENNYLEA H414

NORH708 RENNYLEA H708
Dam: NORM1057 RENNYLEA M1057
NORJ927 RENNYLEA J927

Structural Scores							
	F	R				SHEATH	TEMP.
6	6	6	5	5	32	4	2

June 2020 ANGUS GROUP BREEDPLAN EBVS

	Calving Ease				Growth & Maternal					Fertility		CWT	400 Kg Carcase					Temp
	Dir	Dtrs	GL	B Wt	200	400	600	M Wt	Milk	SS	DC	750d	EMA	Rib	Rump	RBY	IMF	Docil
EBV	+5.4	+1.9	-4.4	+2.9	+51	+97	+131	+103	+22	+1.0	-4.8	+74	+7.2	+0.1	-0.1	-1.8	+5.7	+2
Acc.	55%	49%	85%	74%	68%	67%	68%	66%	58%	63%	42%	62%	60%	64%	61%	62%	60%	57%

Traits Observed: GL,BWT,200WT,DOC,Genomics

$ Index			
ABI	Dom	Hvy Grain	Hvy Grass
+160	+127	+201	+141

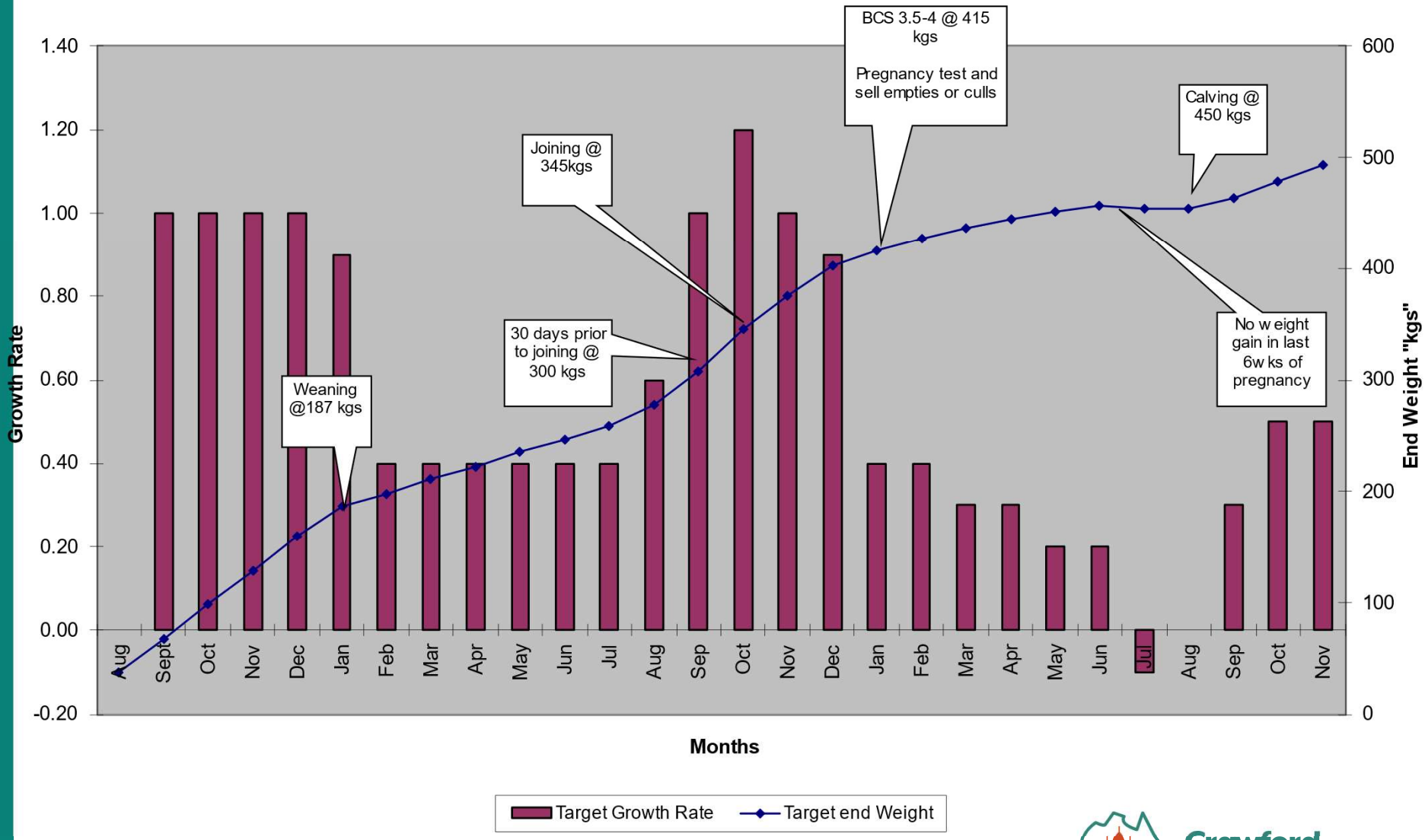
NHFU, AMFU, DDFU, CAFU

NOTES: Highest IMF bull in the sale at 5.7. L467 out of a H708 female. You can't access meat quality genetics like this anywhere else. Top 1% IMF, Angus Breeding, Heavy Grain Indicies. Top 5% Heavy Grass Index. Top 10% Domestic Index.

Crawford Fund FOR A FOOD SECURE WORLD


VENTA

Commercial British Heifer Target Growth Rate and End Weight



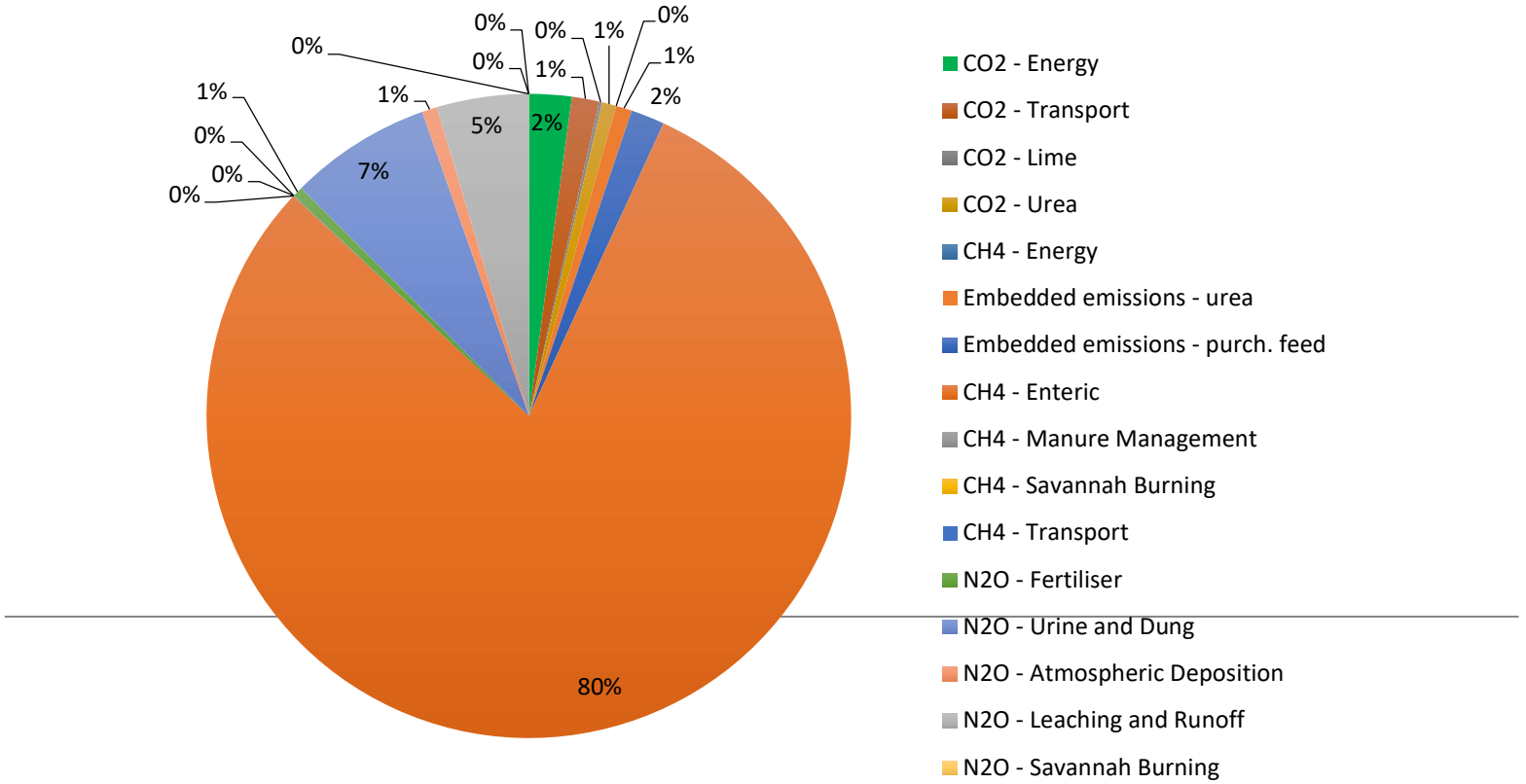
Crawford Fund FOR A FOOD SECURE WORLD

Dung Beetle Research Site

Solar Electricity to mitigate emissions

Crawford Fund FOR A FOOD SECURE WORLD

Rennylea Emissions profile



Rennylea

creating your future in beef

Farm Name	Rennylea Pastoral Company										
State/Region	Vic										
Herd Information	Bulls >1	Steers <1	Steers 1-2	Steers >2	Cows >2	Heifers<1	Heifers 1-2	Heifers >2 (not calving)	steer/heifer/cow	steer/heifer/cow	steer/heifer/cow	Units
Livestock Numbers	35 819	714 260	363 576	38 0	1360 583	628 199	456 425	50 690	0 0	0 0	0 0	head
Liveweight	0.70	1.20	0.70	0.18	0.20	0.89	0.40	0.00	0.00	0.00	0.00	kg/head
Live weight gain	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	kg/day
Crude Protein												%
Dry matter digestibility	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	67.8	%
	Dryland	Irrigated										
Nitrogen Fertiliser Pasture	30.82	0										t N/ year
Nitrogen Fertiliser Crops	0	0										t N/ year
Nitrogen Fertiliser (other)	7.6	0										
Annual Diesel Consumption	50477											litres/year
Annual Petrol Consumption	6000											litres/year
Annual Electricity Use	900											KWh
Transport	25000											km
Area of Trees Planted after 1990	150											
Type of Trees planted	Hardwood											
Rainfall	Med (500 - 700)											
Power Source	State Grid											

Outputs	t CO_2e/farm
CO_2 - Energy	146.39
CO_2 - Transport	93.76
CO_2 - Lime	10.69
CO_2 - Urea	49.13
CH_4 - Energy	0.23
Embedded emissions - urea	55.6
Embedded emissions - purch. feed	116
CH_4 - Enteric	5,506.03
CH_4 - Manure Management	1.20
CH_4 - Savannah Burning	0.00
CH_4 - Transport	0.27
N_2O - Fertiliser	35.98
N_2O - Urine and Dung	489.33
N_2O - Atmospheric Deposition	52.53
N_2O - Leaching and Runoff	315.73
N_2O - Savannah Burning	0.00
N_2O - Energy	0.42
N_2O - Transport	0.68
Tree Plantings (after 1990)	-4152.09
Net Farm Emissions	**2,721.90**

Summary on-farm emissions	t CO_2e/farm
CO_2	300
CH_4	5,508
N_2O	895
embedded emissions	172

Emission intensity owner-bred cattle (kg CO_2-e / kg LW) - excl. sequestration	**8.3**
Emission intensity owner-bred cattle (kg CO_2-e / kg LW) - inc. sequestration	**3.3**

Citation: **Beta version revised 2020 by Stephen Wiedemann (Integrity Ag and Environment) for MLA**

Doran-Browne N.A. and Eckard R.J. (2018). A **G**reenhouse **A**ccounting **F**ramework for **B**eef properties (B-GAF) based on the Australian National Greenhouse Gas Inventory methodology. Updated May 2018 http://www.greenhouse.unimelb.edu.au/Tools.htm

Rennylea
creating your future in beef

THE UNIVERSITY OF MELBOURNE

piccc
Primary Industries Climate Challenges Centre

What's next?
The Resilient Cow in a Changing Climate

Digital and disruptive, eg.

Auctions Plus

Supply chain value creation

Genomics – new traits

Efficiency using sensors to gather

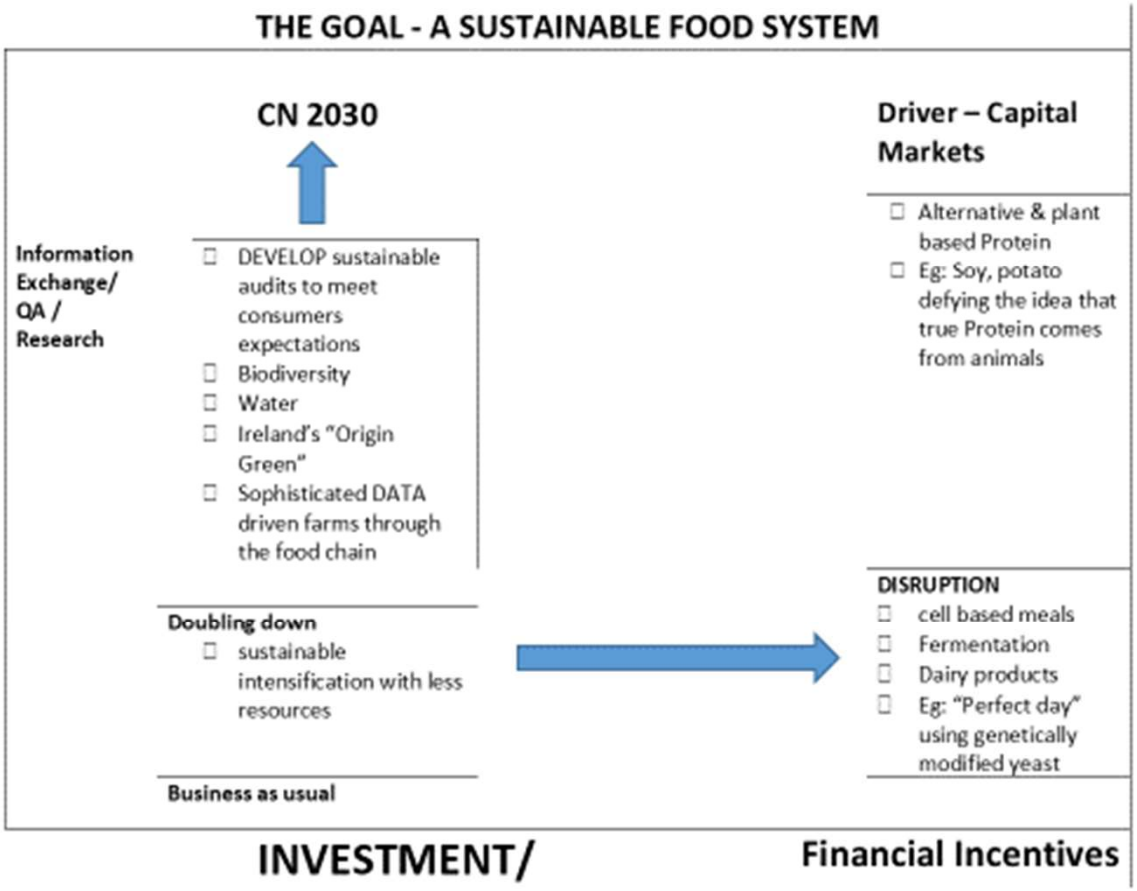
Pasture quantity & quality

Feed additives to mitigate CH4

New legumes

Crawford Fund FOR A FOOD SECURE WORLD

The Goal – A Sustainable Food System



Crawford Fund FOR A FOOD SECURE WORLD

Thank you!

Rennylea
creating your future in beef