Learning from Cash Cow – The Northern Australia Beef Fertility Project

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Cash Cow project team

Cash Cow producers and cattle vets

The Cash Cow project sought answers to 2 fundamental questions

- Why do some cows become pregnant quickly after calving whilst others takes significantly longer, or fail to become pregnant?
- Why do some pregnant cows successfully wean their calf whilst others fail to do so
- However during the course of the project we developed a more holistic approach focussed on answering the question **‘how is my breeding herd performing in relation to what is practically achievable in this environment’.**

Estimating business KPI's using readily available data – 'The BRICK"

Measure	Value	Measure	Value	
Branding rate (C[§] mated)	74%	Herd size	4,656	AE[#]
Weaning rate	72%	Average annual steer growth	170	kg/yr
Branding rate (C retained)	91%	Weaner production	183	kg/cow
Lactation rate	90%	Herd LWP	168	kg/AE
Heifers as replacements	86%	Breeding cattle LWP	161	kg/AE
Average herd size change	5%	Steer LWP	187	kg/AE
Mortality: Female weaners	1.9%	Herd LWP ratio	0.37	kg/kg
Mortality: Yearling heifers	1.9%	Breeding cattle LWP ratio	0.36	kg/kg
Mortality: Heifers 2-3 yrs	2.3%	Steer LWP ratio	0.42	kg/kg
Mortality: Cows	5.2%	Income	$1.43	/kg
Mortality: Spays		Cost of production	$0.95	/kg
Mortality: Male weaners	1.9%	Operating margin	$0.48	/kg
Mortality: Yearling males	2.3%	Labour	$0.30	/kg
Mortality: Males 2-3 years	5.7%	Mortality effect on sales	-$0.23	/kg
Mortality: Mature males	8.3%	Income	$241	/AE
Mortality: Bulls	1.0%	Variable costs	$4	/AE
Sold: Male weaners	4%	Gross Margin	$237	/AE
Sold: Male yearlings	3%	Overhead costs	$155	/AE
Sold: Males 2-3 years	71%	EBIT	$83	/AE
Sold: Mature males	27%	Labour	$50	/AE
Female / Total sales	48%	Bull costs	$24	/weaner

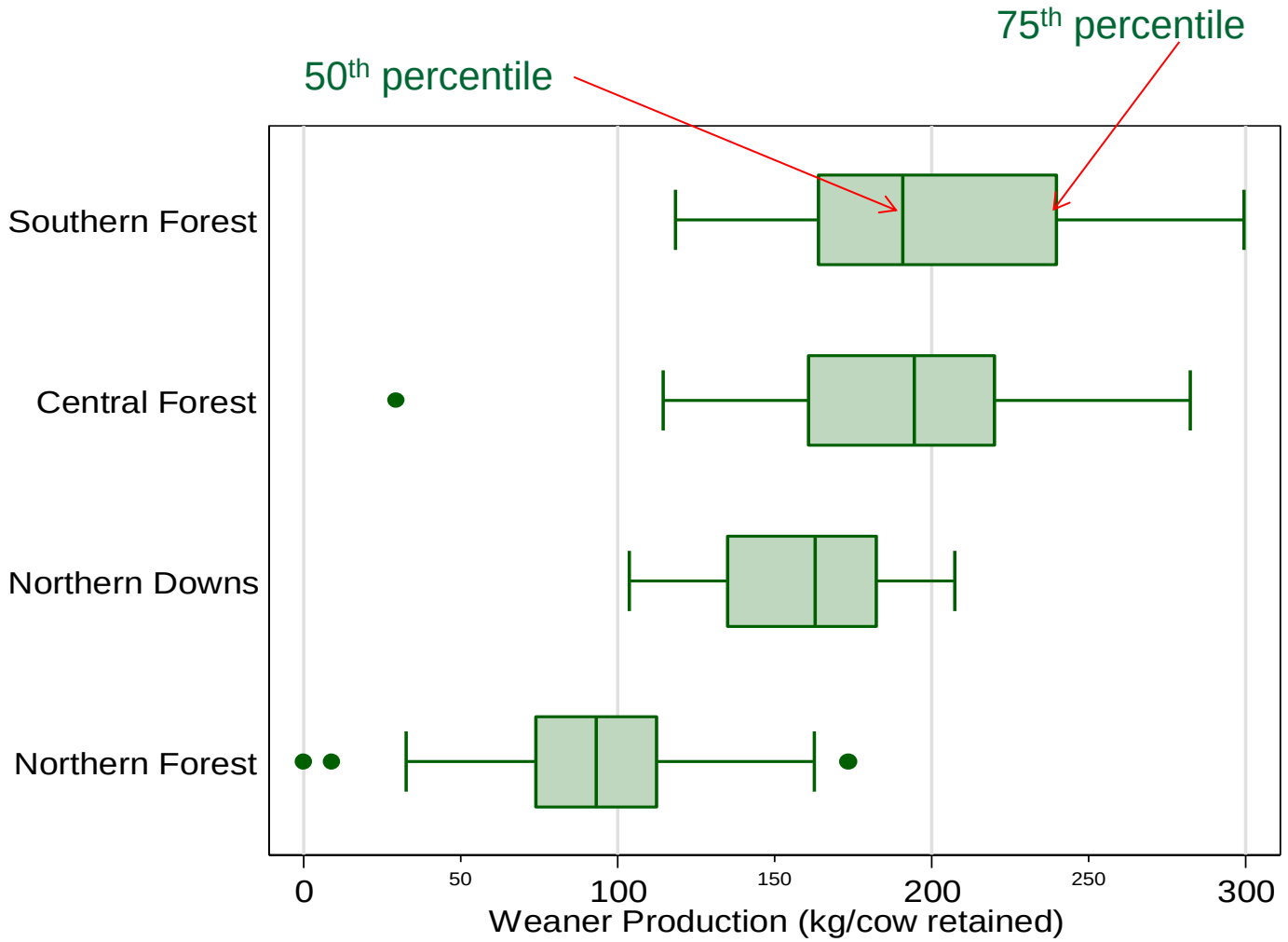
LWP – liveweight production

Measuring beef production

- If I retain 500 cows at the end of the year how much beef can I potentially sell 12 months later
- Annual liveweight production - annual change in total weight of cows adjusted for mortality plus weaner production

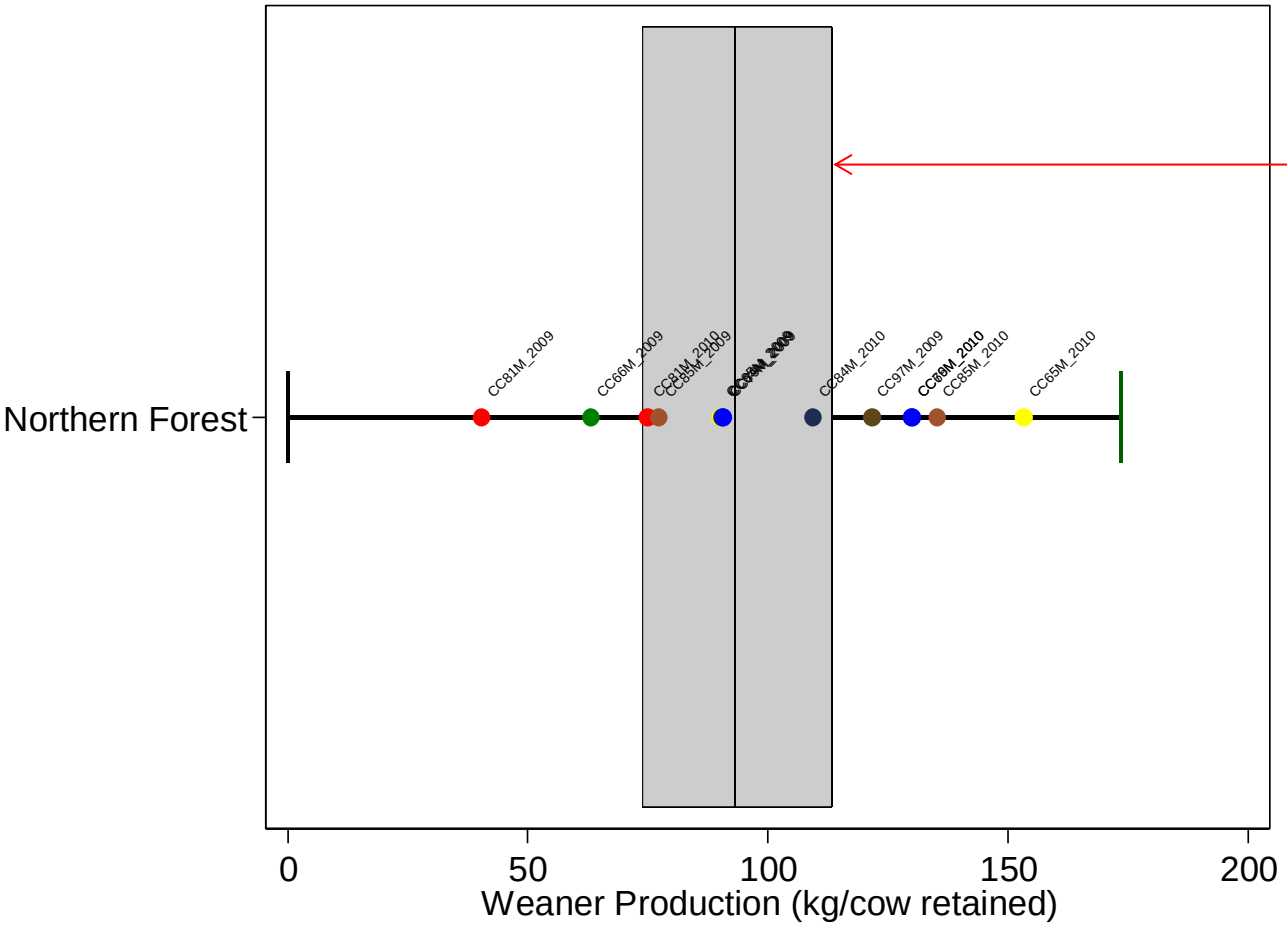
Weaner production is easy to measure, and provides a good estimate of annual live weight production

Annual total number of calves weaned multiplied by average weaner weight, divided by number of females retained the previous year



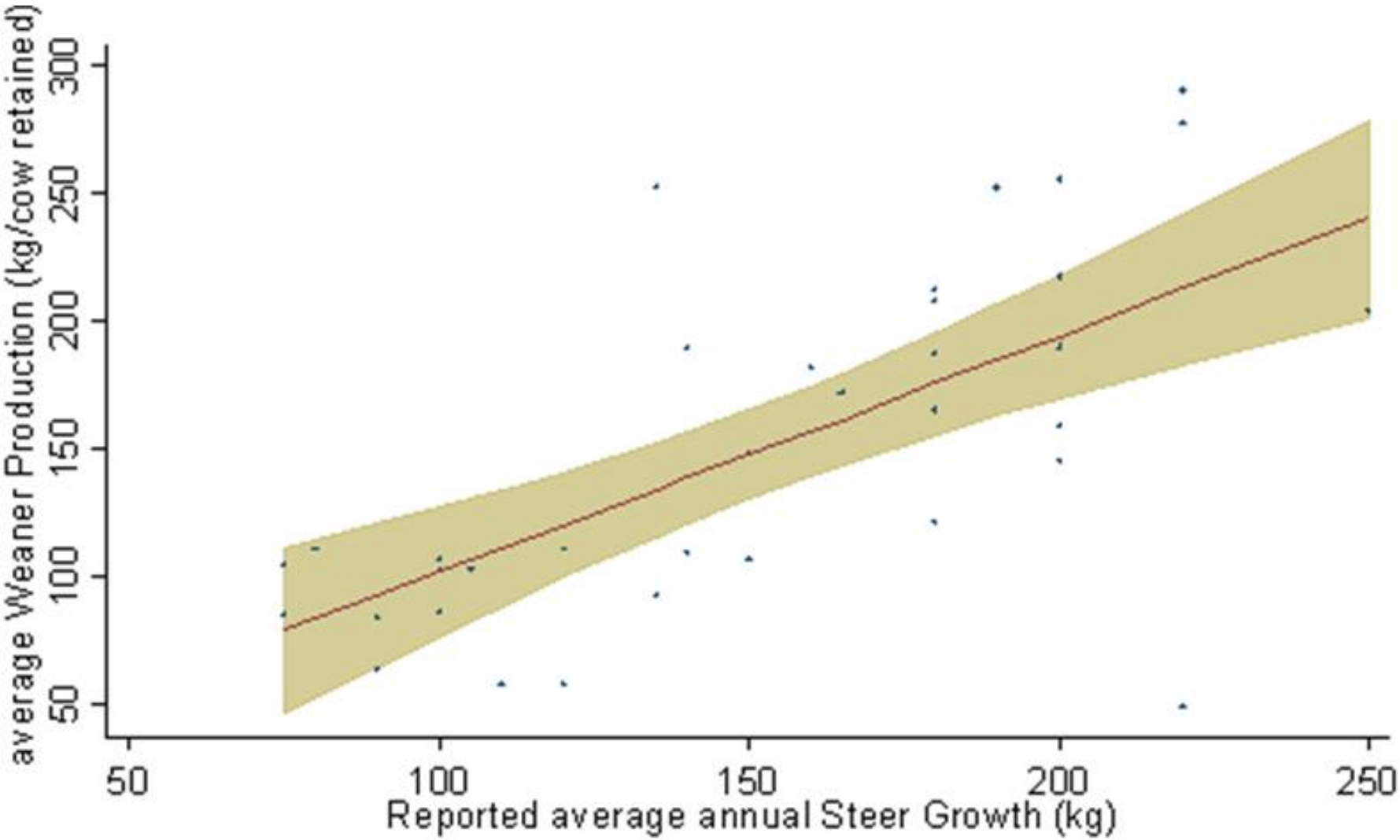
Weaner production (kg/cow retained) by country type

What is commercially achievable beef production?

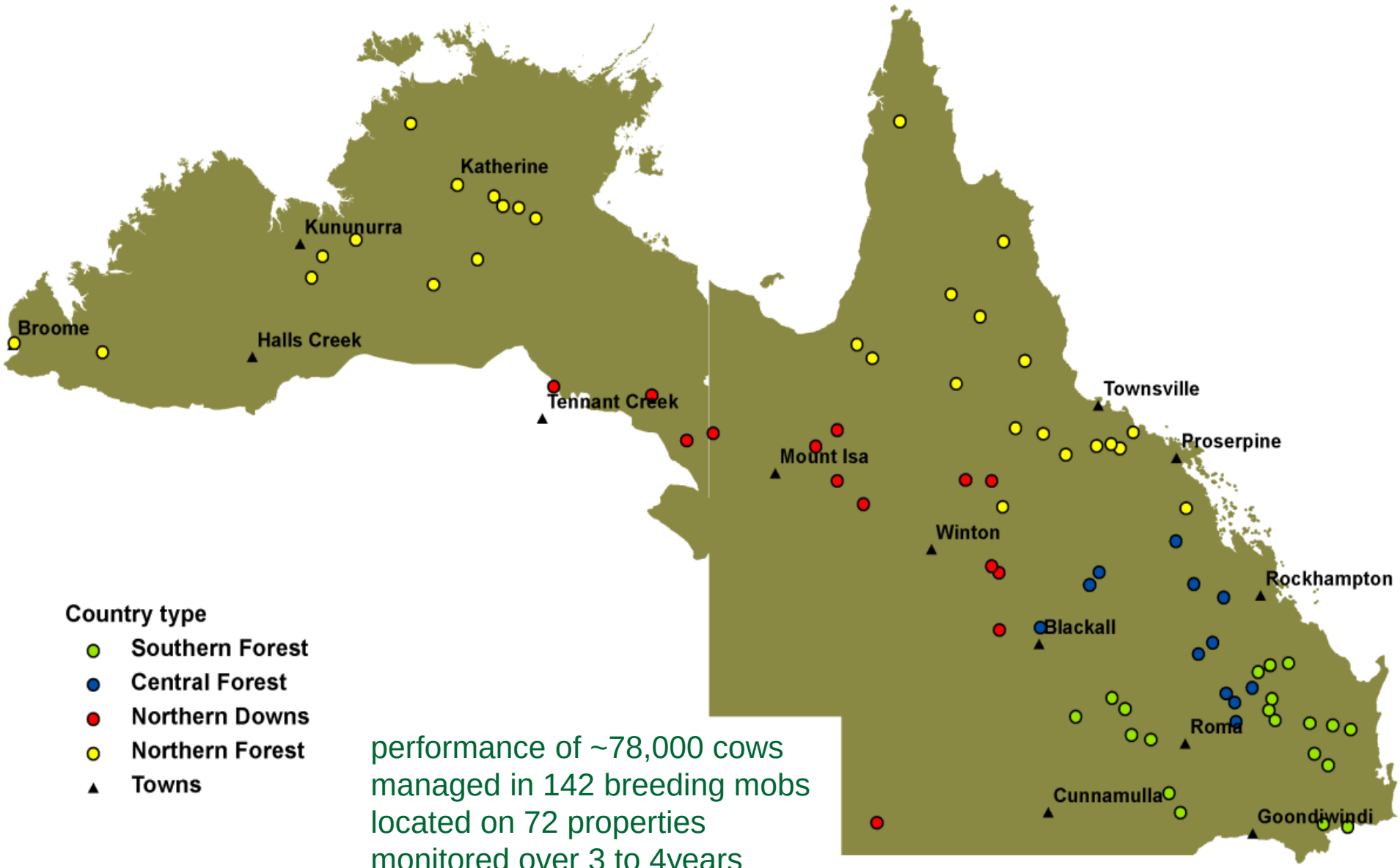


Commercially achievable performance by country type

Weaner production is similar to annual steer growth



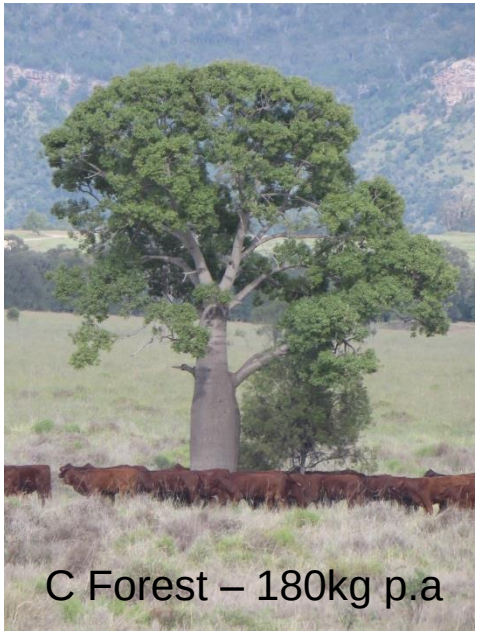
Measuring reproductive performance and identifying the major factors affecting performance – a key objective of Cash Cow

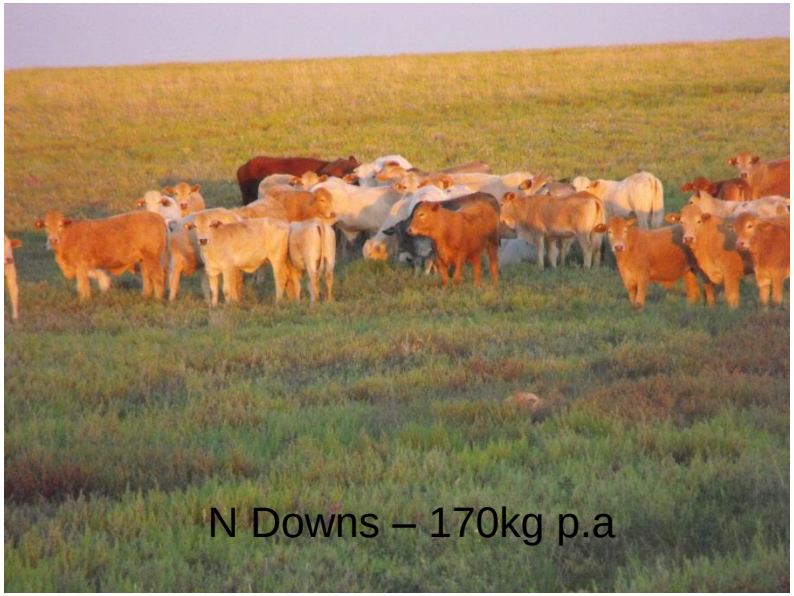


performance of ~78,000 cows managed in 142 breeding mobs located on 72 properties monitored over 3 to 4years

Cash Cow country types and producer estimates of annual steer growth


N Forest – 100kg p.a


C Forest – 180kg p.a


N Downs – 170kg p.a


S Forest – 200kg pa

Data collected during the Cash Cow project

Animal

Pilot Heifers induced

Breeders induced

Main Heifers induced

First reproductive cycle for Pilot Heifers

Second reproductive cycle for Main Heifers and Breeders
Third reproductive cycle for Pilot Heifers

2008 PD Muster

2009 WD Muster

2009 PD Muster

2010 WD Muster

2010 PD Muster

2011 WD Muster

2011 PD Muster

2009 Weaning data

2010 Weaning data

2011 Weaning data

First reproductive cycle for Main Heifers and Breeders
Second reproductive cycle for Pilot Heifers

Disease

1st blood sample collected for Pilot Heifers &Breeders

* 1st blood sample collected for Main Heifers and 2nd blood sample collected for Pilot Heifers and Breeders
* 1st vaginal swab collected for Pilot and Main Heifers and Breeders

2nd blood sample collected for Main Heifers

1st 2011 blood sample collected for Pilot and Main Heifers and Breeders

* 2nd 2011 blood sample collected for Pilot Heifers and Breeders
* 1st 2011 vaginal swab collected for Pilot and Main Heifers and Breeders

Nutrition & Management

Induction resource, breeder and bull management surveys

NIRS

Sep 2008

Mar 2009

Sep 2009

Mar 2010

Sep 2010

Mar 2011

Sep 2011

Dec 2008

Jun 2009

Dec 2009

Jun 2010

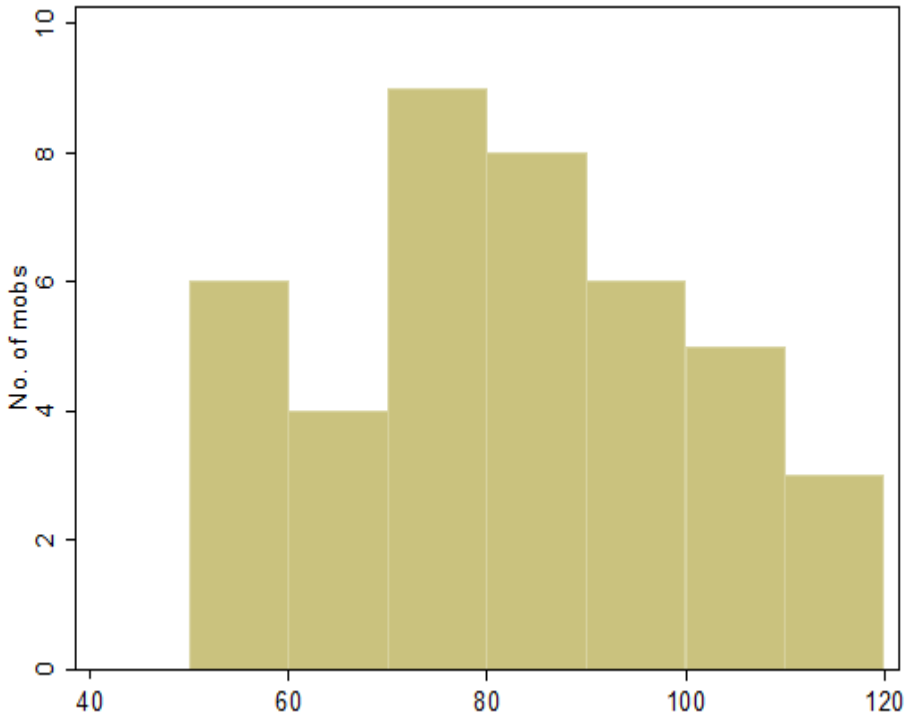
Dec 2010

Jun 2011

Dec 2011

Management & template data

Crush-side electronic data capture

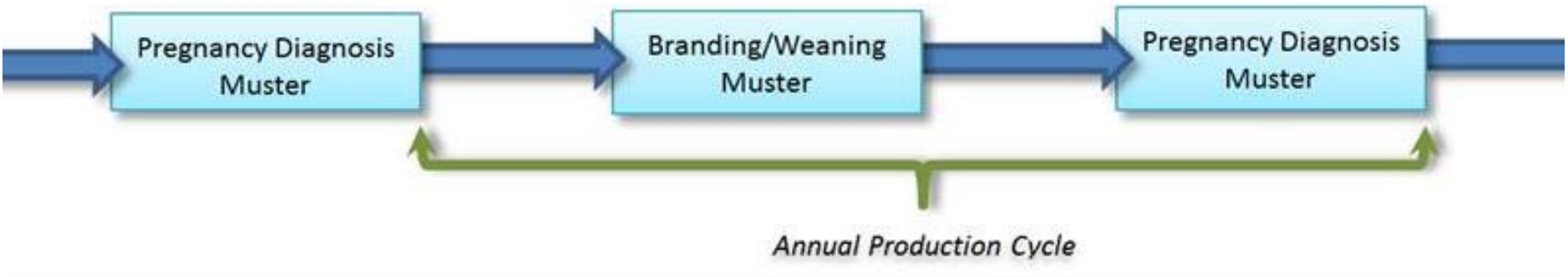


Cows processed per hour

12 to 20 pieces of data on factors affecting cow and heifer performance electronically recorded at first annual weaning muster and/or at pregnancy test muster for 3 to 4years

~8% of NLIS tags needed to be replaced

The Cash Cow measures of reproductive performance



Foetal aging used to define month of calving and month of re-conception

- Percentage of lactating cows pregnant within 4 months of calving
  - a measure of the proportion of cows likely to wean a calf in consecutive years
- Annual pregnancy rate
- Percentage foetal/calf loss
- Incidence of missingness – the Cash Cow estimate of mortality

Understanding what level of performance is achievable

Observed performance (median, interquartile range) of cows (≥ 4years old) by country type.

Measure	Southern Forest	Central Forest	Northern Downs	Northern Forest
Pregnant within 4months of calving (%)	74 (39 - 85)	77 (56 - 84)	68 (60 - 76)	17 (7 - 31)
Annual pregnancy rate (%)	87 (77 - 93)	88 (79 - 92)	82 (75 - 91)	66 (56 - 74)
Foetal/calf loss (%)	5 (2 - 9)	6 (4 - 9)	7 (3 - 15)	14 (9 - 19)
Pregnant cow missingness (%)	8 (3 - 13)	6 (1 - 11)	7 (4 - 13)	12 (6 - 18)

Values in red are what is commercially achievable

Have you any questions

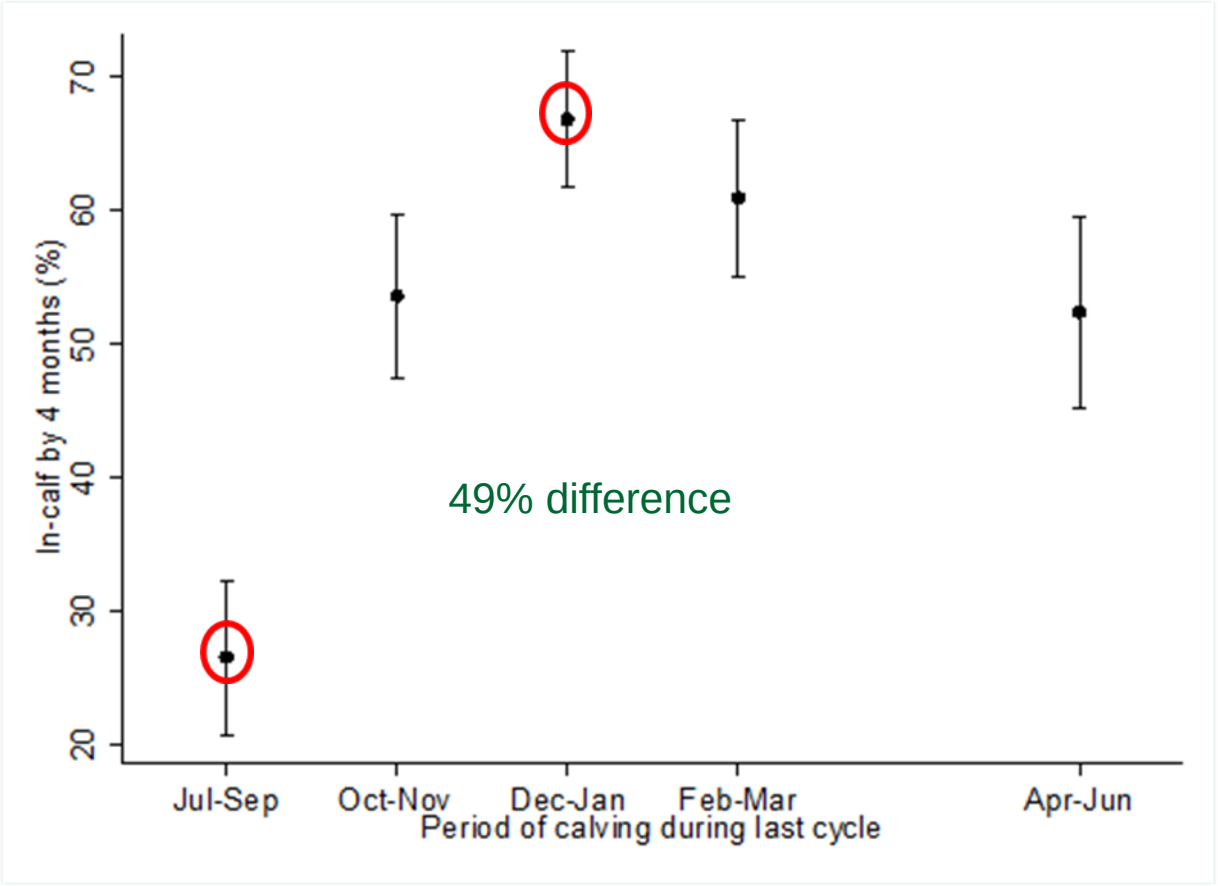
Major factors affecting percentage of lactating cows pregnant within 4months of calving (P4M)

- Country type – on average when all other major factors were taken into account, performance in Southern Forest was 12% higher than Central Forest, 23% higher than Northern Downs and 59% higher than Northern Forest

- Parity - 1st lactation cows 13-16% lower than mature and aged cows. Supports recommendations that replacement heifers should be segregated until they wean their first calf

- Average wet season (Nov-Apr) CP:DMD - when this ratio was <0.125 performance was 7.5% lower. Potential response to 'best practice' grazing management such as wet season spelling
- Cows which gained condition between the PD and the W/D muster were 8% higher than those which lost condition

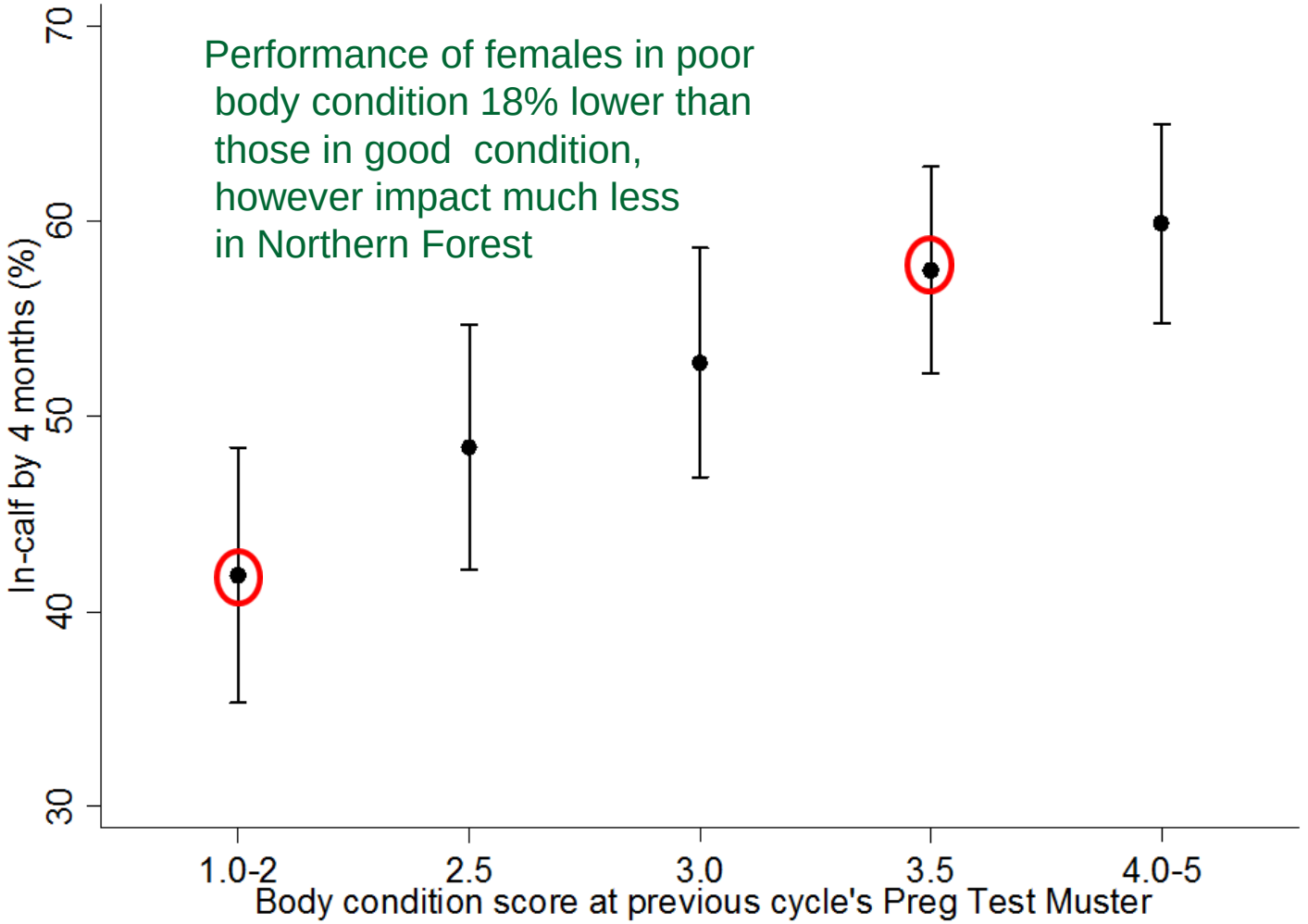
Effect of time of calving



Concept of an optimum calving period and hence an optimum re-conception period

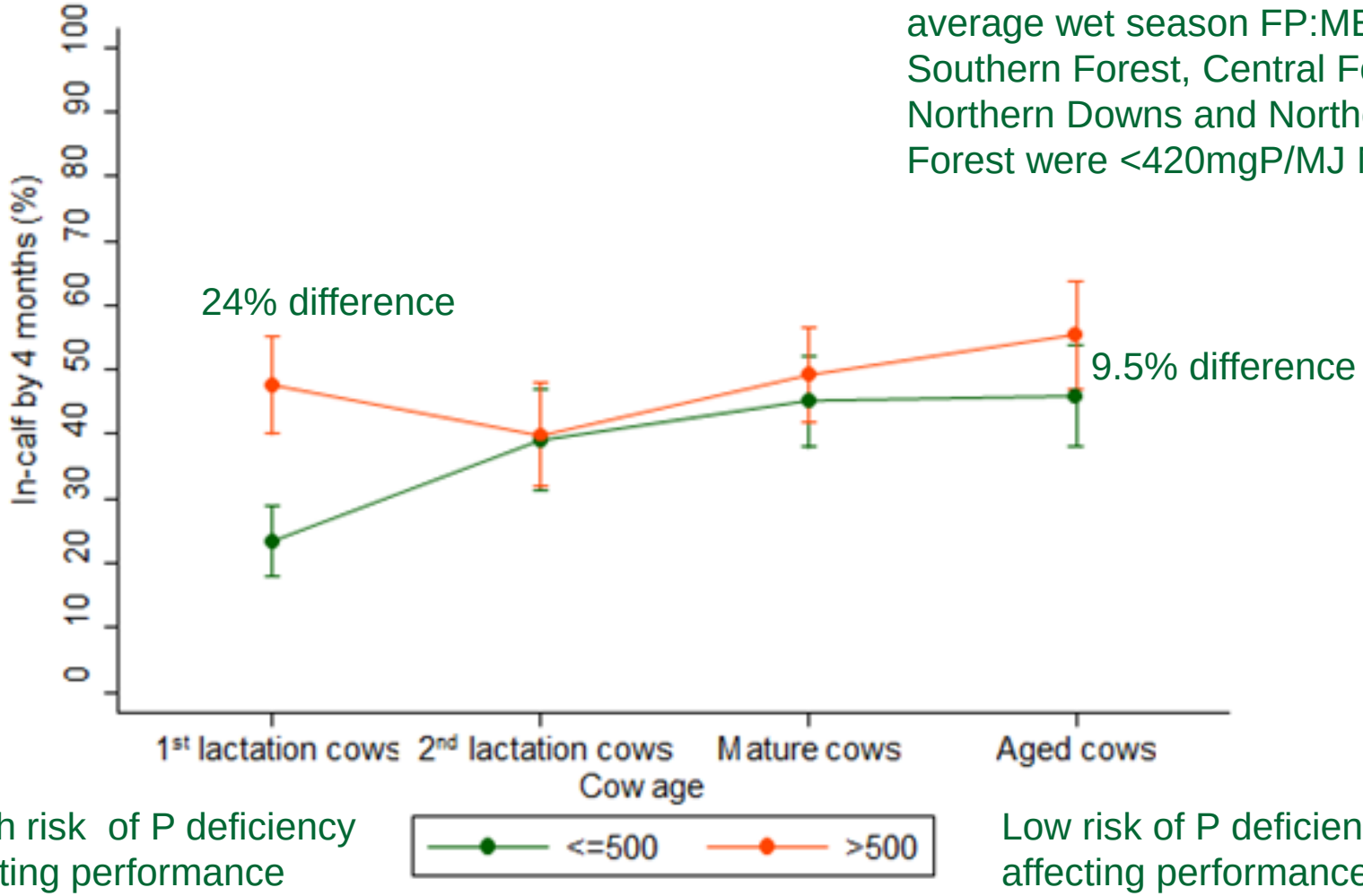
Effect of body condition score at time of pregnancy diagnosis

Performance of females in poor body condition 18% lower than those in good condition, however impact much less in Northern Forest



Effect of wet season cow phosphorous status

26%, 25%, 63% & 72% of average wet season FP:ME in the Southern Forest, Central Forest, Northern Downs and Northern Forest were <420mgP/MJ ME



High risk of P deficiency affecting performance

Low risk of P deficiency affecting performance

Have you any questions

Major factors affecting percentage foetal/calf losses between confirmed pregnancy and weaning

- Country type - percentage loss in the Central Forest, Northern Downs, and Northern Forest were respectively 4%, 2% and 7% higher than in the Southern Forest

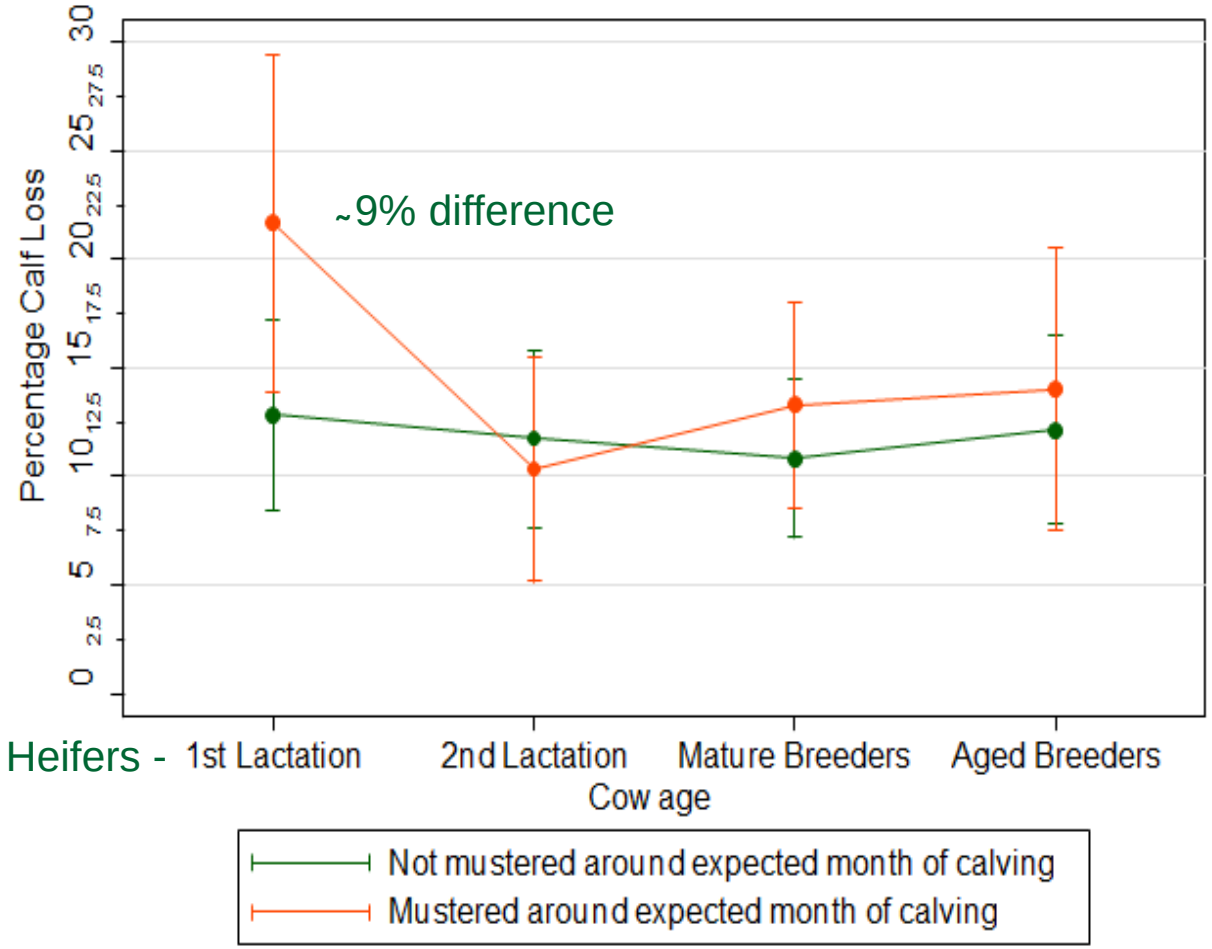
- Reproductive history of cow – percentage loss in cows which lactated previous year 4% lower than in those that did not lactate

- Lactation number – when all other factors were taken into account percentage loss in heifers was 2% higher than in mature cows

- Mustering efficiency – 9% higher loss where mustering efficiency was <90%.

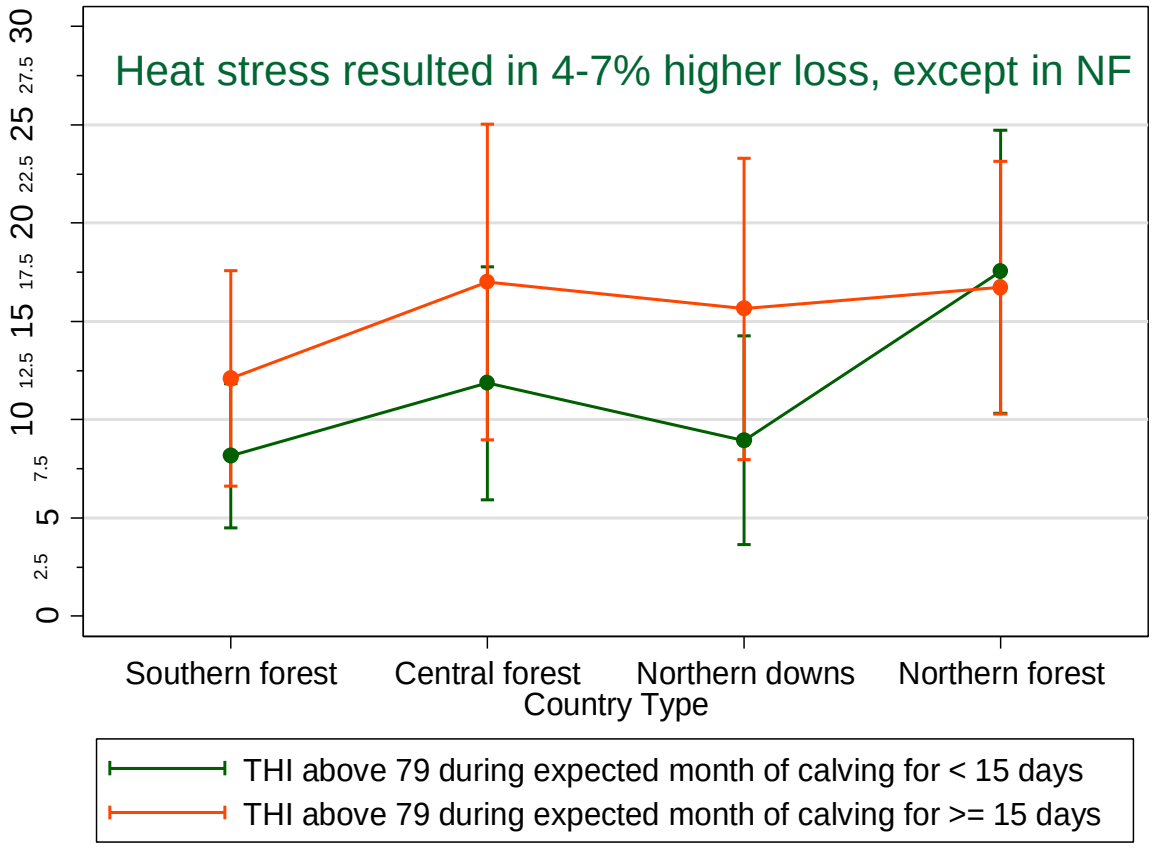
- Inadequate protein status (low CP:DMD) during the dry season (May-Oct) prior to calving – 4% higher loss

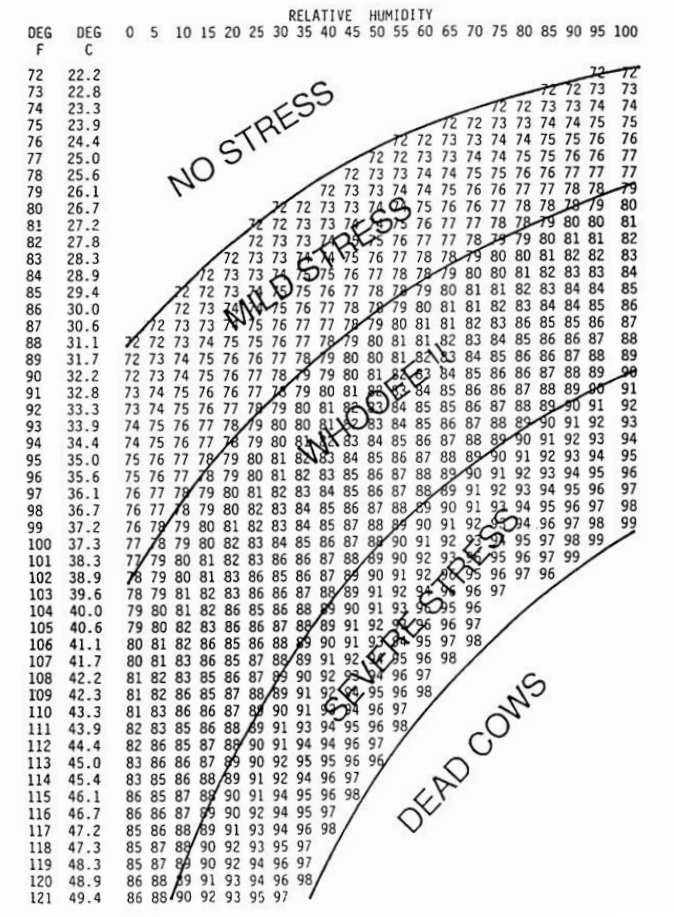
Mustering around time of calving



Foetal aging enables period of calving to be estimated and hence when weaning musters should be conducted to minimise these losses

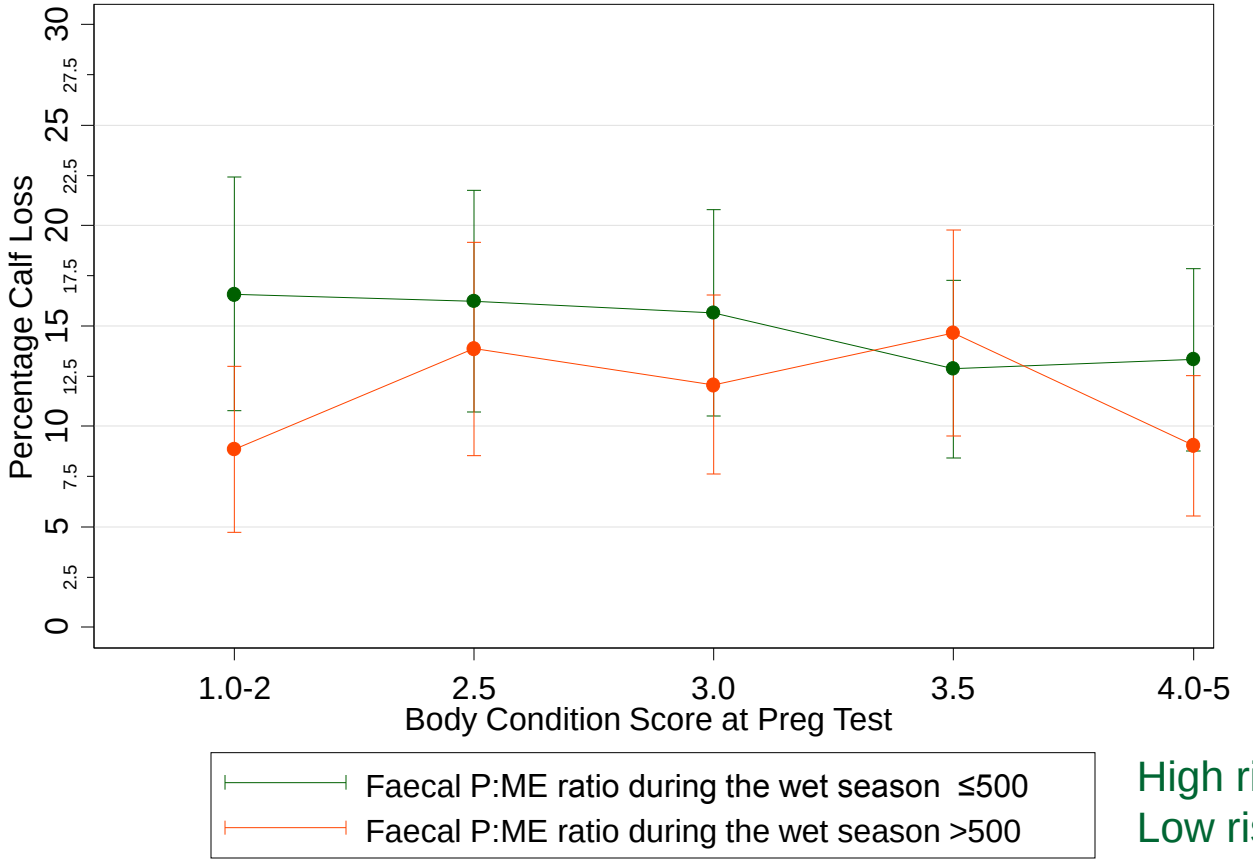
Heat stress during month of calving





Critical importance of mothering ability & distance to waters. Paddock shade?

Wet season P status and BCS at PD muster



Where risk of wet season P deficiency adversely affecting performance was high and cows were in poor condition at the previous pregnancy diagnosis muster calf loss was ~8% higher than where the risk of P deficiency adversely affecting performance was low and cows were in poor condition.

High risk of P deficiency effect
Low risk of P deficiency effect

Effect of genotype and cow size/height on performance

P4M in ≥50% *B indicus* *13-15%%* lower than in <50% *B indicus.*

P4M in shorter cows 5% higher than taller cows and, foetal/calf loss 4% lower in shorter cows compared to taller cows.

Impact of wild dogs on foetal/calf loss

Producers knew when wild dogs were adversely affecting performance, but method of control had no significant effect.

Predicted percentage foetal/calf loss for each wild dog category.

Wild dog Category	Foetal/Calf Loss (%)	95% Confidence interval	
		Lower	Upper
Wild dogs considered a problem – baiting used	11.81	9.33	14.29
Wild dogs considered a problem - intermittent control only	10.84	6.40	15.28
Wild dogs not considered a problem	6.29	3.27	9.31

There is a critical need to rethink our approach to control of wild dogs

Impact of infectious diseases

- Pestivirus (BVDV) – 23% lower percentage pregnant within 4months in mobs with widespread evidence of infection. In mobs with high level of recent infection foetal/calf loss was 8% higher
- Venereal diseases (vibrio) – in mobs with evidence of widespread infection foetal/ calf loss was 7% higher
- Lepto – only low level of infection detected. Trend for higher foetal/calf loss in mobs with high level of recent infection with *L.pomona*
- 3-day (BEF) – widespread evidence of infection but no significant impact on likelihood of cows becoming pregnant.
- Neospora – widespread evidence of infection but no impact on foetal/calf loss

Using the Cash Cow findings to improve my beef breeding business

Key questions to ask

1. How is my beef breeding business going? Use the BRICK to generate KPI's.
2. How much beef is being produced by each of my breeding herds? Measure annual liveweight production from each herd.
3. Are the annual kilograms of beef produced from each breeding herd lower than expected or below what is commercially achievable? Compare to Cash Cow production benchmarks.
4. How are my breeding herds performing? Measure performance using the Cash Cow measures.
5. Is the reproductive performance of my breeding herds lower than expected or below what is commercially achievable? Compare to Cash Cow performance benchmarks.
5. What is likely to be contributing to any lower than expected or below what is commercially achievable performance? Examine the major factors affecting performance identified in the Cash Cow project.

Thankyou - questions

Rainfall variation during the Cash cow project