Exploiting Genetic Gain: Optimising the reproductive performance of productive females

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What are the key drivers of productivity:

- the consistent supply of calves that demonstrate good growth

(i.e efficient production of kilo's of beef)

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Minimise mortality	Good growth	Reproductive performance

What are the key drivers of productivity:

Minimise mortality	Good growth	Reproductive performance
More cattle surviving to maturity, increasing the overall supply of beef in the market.	Improved growth rates reduces the resources required per head over their lifetime (efficiency)	Improvements leads to increased cattle numbers and beef production
	Increased carcass yields	
Sustainability: Collectively they contribute to a more sustainable beef industry, reducing the environmental footprint per unit of beef produced.		
Economics: A more productive herd increases income for farmers, contributing to economic growth.		

What is reproductive performance?

The capacity to efficiently and consistently conceive, carry a pregnancy to term and produce a healthy vigorous calf the demonstrates good growth

Key determinants

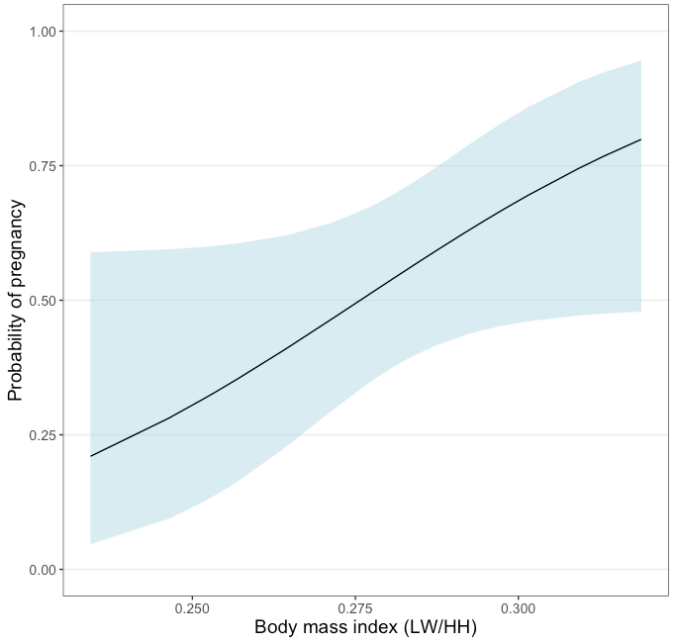
- Age of puberty
- Efficient conception
- Return to cycling
- Reduced calf loss
- Good growth of progeny

Age of puberty

The key determinants of puberty are:

- breed
- age
- body weight
- a guide - 2/3 of mature size

Body weight

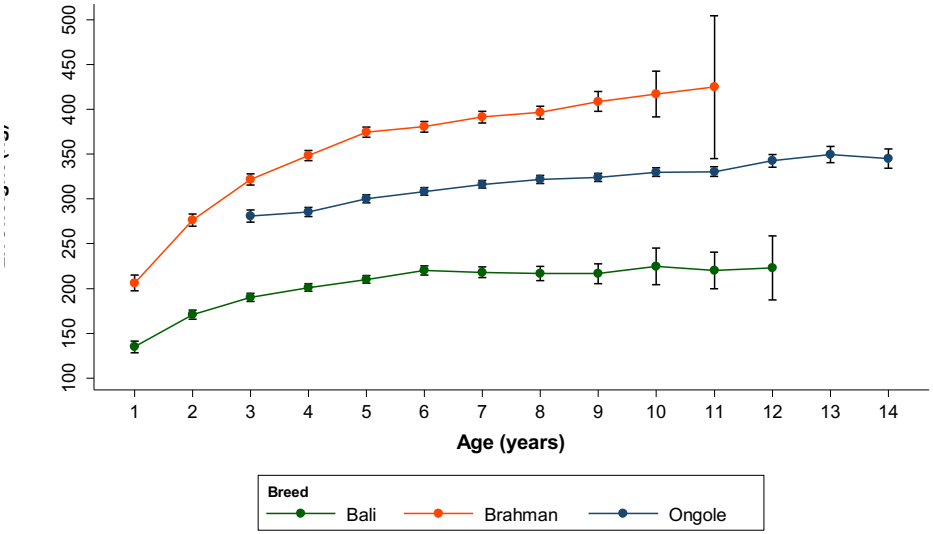


Early maturing (smaller, fertile, put on fat easily, suit western cooking) – Angus, Wagyu

Late maturing (large, less fertile, harder to feed, produce lots of lean beef) – Charolais, Limousin, Simmental

Medium maturing (best choice?) – most of the rest

Variation within breed, so there is overlap



Efficient conception (return to cycling)

- Nutritional management
  - Dry matter intake
  - address nutritional deficiencies

- Management of lactation (time from birth to weaning)

- Using appropriate genetics

- Mating management (AI vs. Bulls)

100 day pregnancy percentage

Overall, was 24.9% (95% CI, 12.8-37.1%) of females

Varied between villages (8-51%)

Village	Number of cows	Percent Preg. 100d	95% Conf. Limits Lower	Upper
Lamongan	81	16.0	9.5	25.8
Lombok	144	51.4	43.2	59.5
Malang	104	7.7	3.9	14.7
Probolinggo	132	22.0	15.7	29.9
Seputih Banyak	52	44.2	31.3	58.0
Sultra	71	38.0	27.5	49.9
Tulung Bawang	35	14.3	6.0	30.4

Nutritional requirements

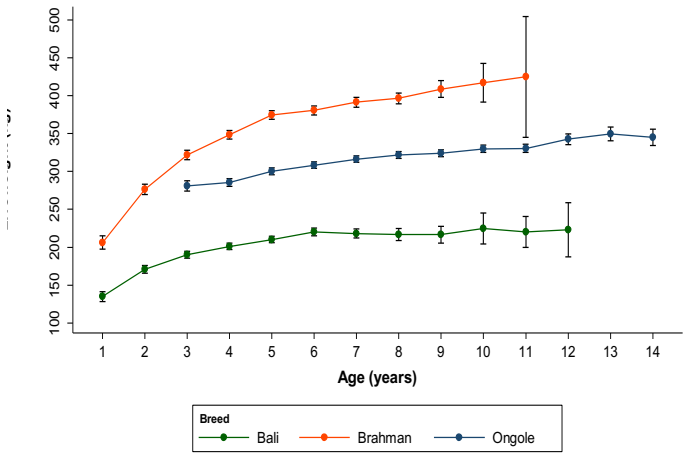
- Stocking rate (1.5 Bali : 1 Brahman)
- Difference between heifers and cows.
- Inclusion of additives/legumes may need to be included
- Address any mineral deficiencies

Pre-calving – 2.2%

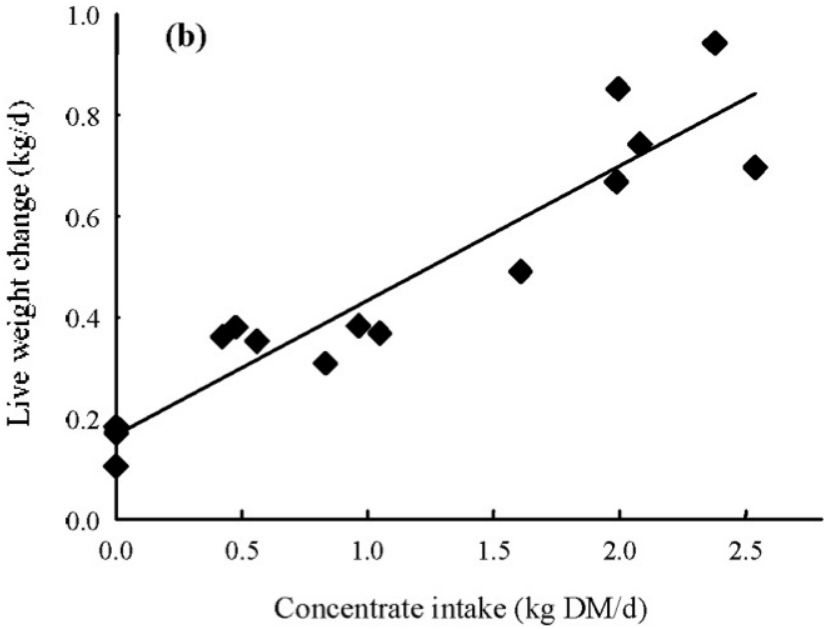
Early Lact – 2.3%

Lactating – 2.5%

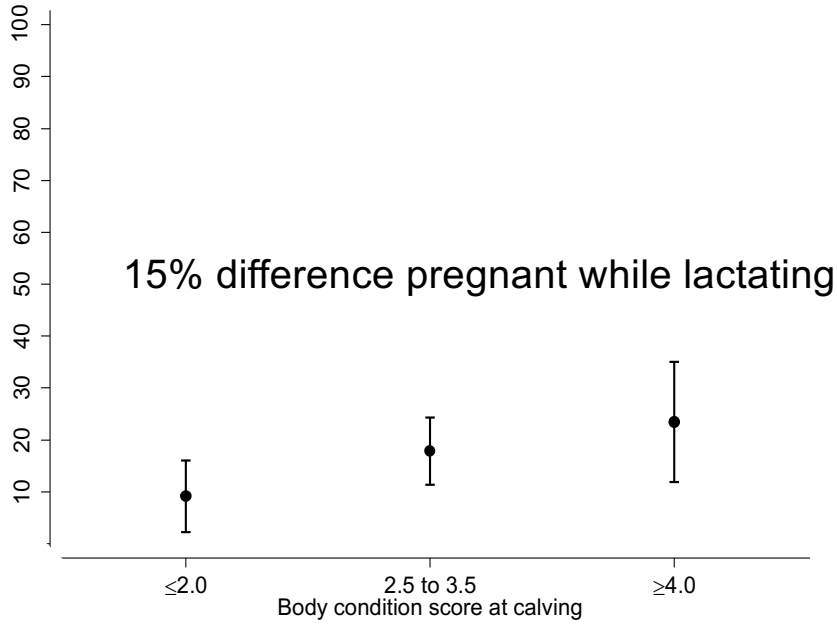
Gestation – 2.1%



Body condition score



(Xuan Ba, 2008)



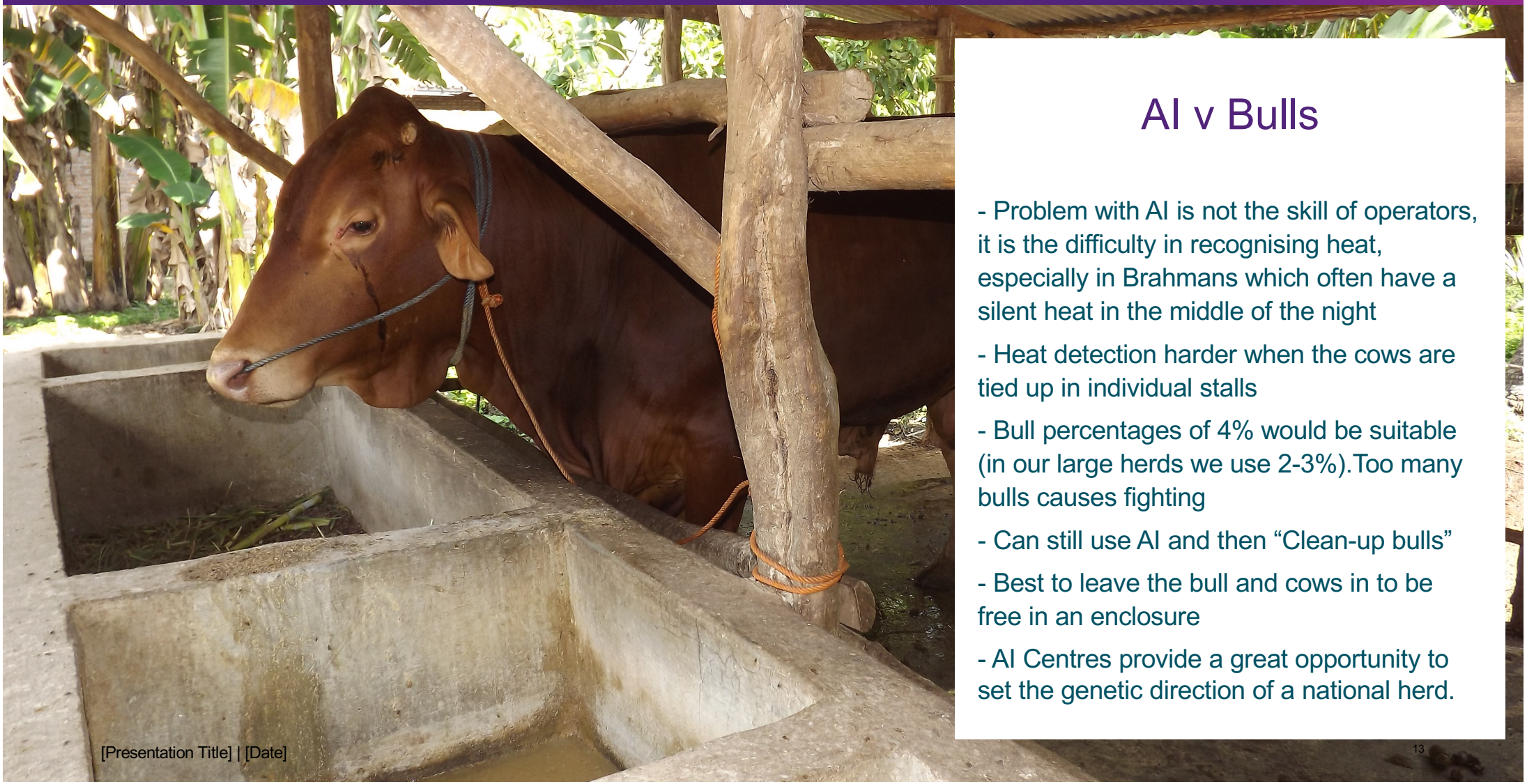
- Review available food sources
- Inclusion of concentrates at strategic touch points.

Management of lactation

- Suckling reduces cycling (particularly in *B. indicus* cattle)
- Wean calves within 3-6 months
  - These will, if appropriately fed, perform similar to if they were kept on the cow
  - This will allow cows to calf at BCS≥3.0
- Avoid cows lactating during the unfavourable times of the year.

Calf survival
(providing the best chance of a calf)

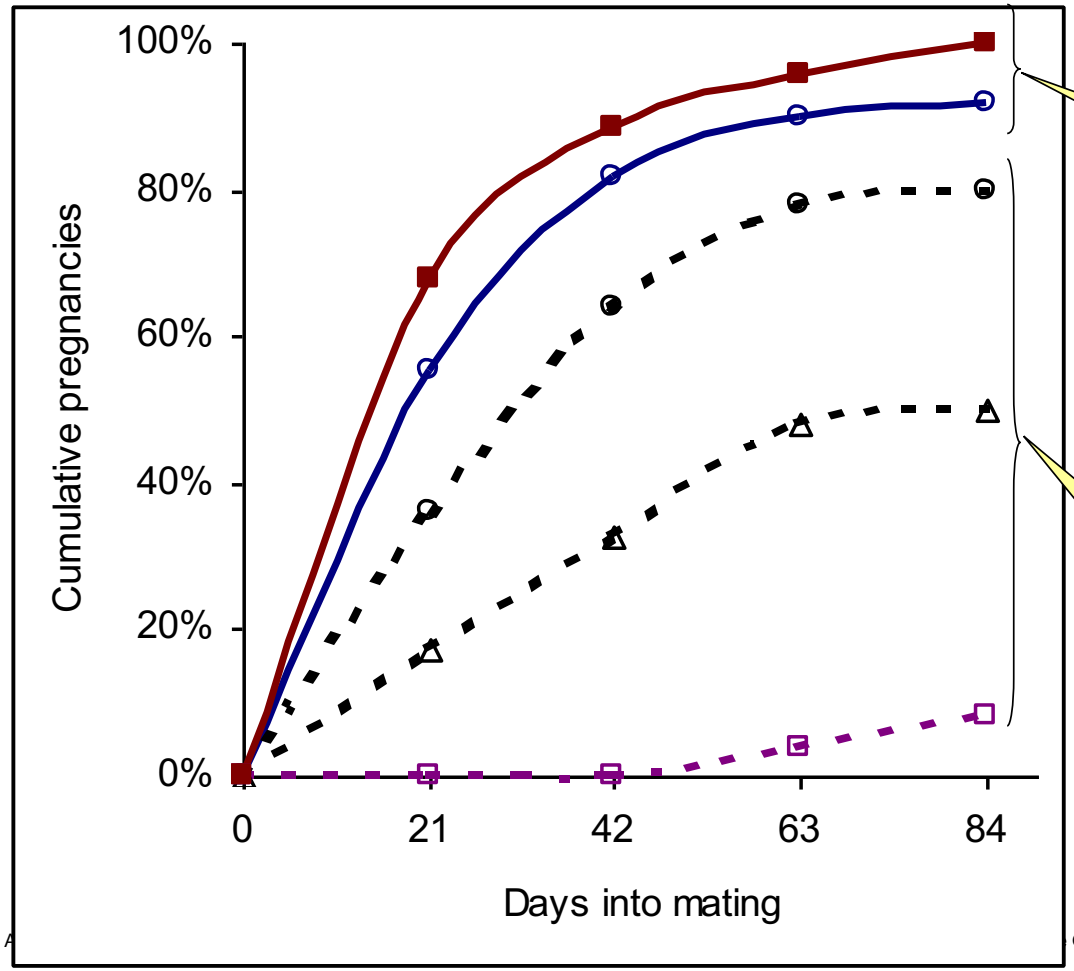
- Animal Class (Heifer vs. Cow)
- Environment or production system
  - Conditions (Wet / Dry)
  - Disease risk
- Nutrition around calving
  - Ease of birth
  - Milk supply and immunity transfer
- Predation



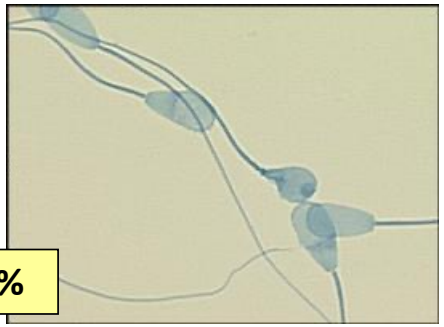
AI v Bulls

- Problem with AI is not the skill of operators, it is the difficulty in recognising heat, especially in Brahmans which often have a silent heat in the middle of the night
- Heat detection harder when the cows are tied up in individual stalls
- Bull percentages of 4% would be suitable (in our large herds we use 2-3%).Too many bulls causes fighting
- Can still use AI and then “Clean-up bulls”
- Best to leave the bull and cows in to be free in an enclosure
- AI Centres provide a great opportunity to set the genetic direction of a national herd.

>70% vs <50% Normal Sperm



> 70%



< 50%

Concluding remarks

The recipe:

- keep it simple and do the basics well before intensifying
- utilise available feed resources to cost-effectively minimise mortality, optimise growth and reproductive productivity
- select appropriate genotypes suited to markets and environment
- identify opportunities, and utilise sound breeding practices and technologies to improve genetics

If successful, these principles will result in an overall improvement in sustainability and economy.

The Queensland Alliance for Agriculture and Food Innovation (QAAFI) is a research institute of The University of Queensland (UQ), supported by the Queensland Government.