

Variation in Lactation Anoestrus in First Calf Cows in Tropical Cattle

A major research project within the Cooperative Research Centre for Beef Genetic Technologies (Beef CRC) has provided very useful information on the success of lifetime production in Brahman and Tropical Composites in Northern Australia.

One of the primary objectives of the Beef CRC project was to investigate what effect genetics had on the Post-Partum Anoestrus (period between calving and a return to cycling) in first calf cows and consequently what opportunities may exist to improve fertility rates in Northern Australia through genetic improvement.

PROJECT DESIGN

A total of 2137 cows were involved in the project (1020 Brahman and 1117 Tropical Composites (TC)). The cows (also used in the age of puberty studies) were bred on 7 co-operator properties (4 Brahman and 3 TC) and at "Belmont Research Station" which bred both Brahman and TC. Genetic linkage, across properties of origin and year within genotypes was generated by the use of AI.

The cows were generated over 4 and 3 years for Brahman and TC respectively. The cows were allocated according to genotype, property of origin and sire to one of the

following four properties "Toorak" Julia Creek, "Belmont" Rockhampton, "Swans Lagoon" Ayr and "Brian Pastures" Gayndah at weaning. Belmont and Toorak ran both Brahman and Tropical Composites while Brian Pastures only had Tropical Composites and Swans Lagoon with the harsher environment only had Brahman.

The project continued until all the cows were around 8.5 years of age and had been given the opportunity to have 6 calves and mated for the 7th time. The cows stayed in the project unless they failed to wean a calf in 2 consecutive years or were culled on management decisions (eg. temperament, udder etc).

Cows were naturally mated for 12 weeks and during this period the cows were ovarian/pregnancy scanned at 4 week intervals from joining by the use of real time ultrasound by an experienced scanner.

The cows were also scanned a further 4 times after mating and prior to calving. These were half way between mating and weaning, weaning, half way between weaning and pre calving and around 3 weeks prior to calving. Other data collected at each scan was live weight, condition score and a P8 fat measurement.

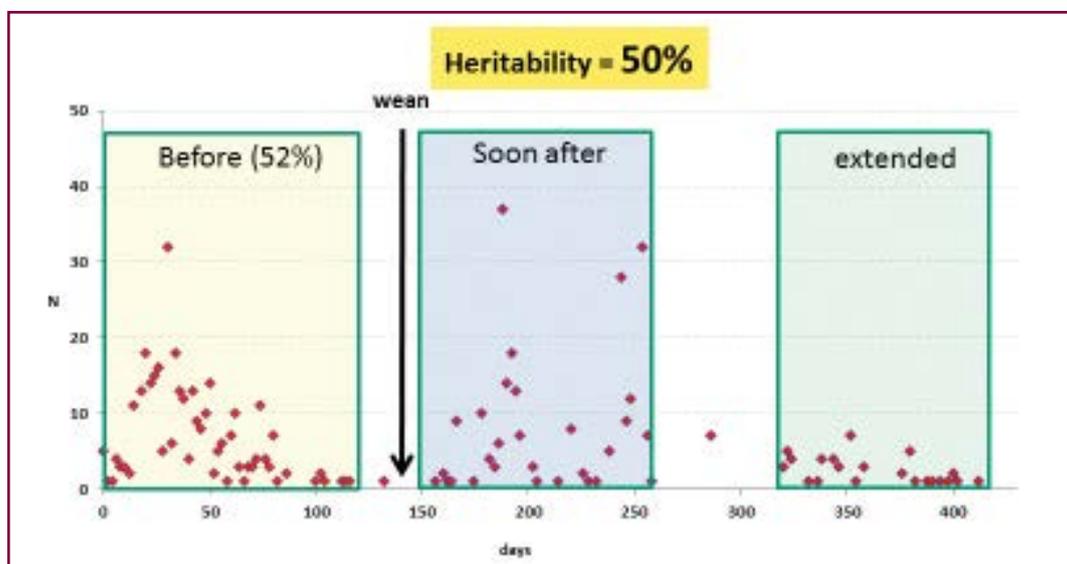


Figure 1. Wet First Calf Cow Resumption in Cycling Brahman

RESULTS

Resumption to Cycling in First Calf Cows

The research showed that 52% of the Brahman cows had cycled by weaning compared to 80% of the Tropical Composites. It must be mentioned that about 40% of the Brahmans were run on the harsher conditions at Swans Lagoon. Of the 48% of Brahmans cows that did not cycle before weaning, most cycled within 100 days post weaning but there were a percentage of cows that did not cycle until the start of the wet season or later as shown in figure 1. The remaining 18% of Tropical Composites that did not cycle before weaning cycled within 100 days after weaning.

Genetic Effects

One of the key outcomes of the Beef CRC research was that lactation anoestrous interval in 3 year old first calf cows was shown to be under moderate to high genetic control in both Brahmans and TC. Heritability estimates for lactation anoestrous interval in 3 year old first calf cows were 0.51 for Brahmans and 0.26 for TC. Further analysis revealed that there was a difference due to genetics of 4.4 months in lactation anoestrus between the top and bottom Brahman sire included in the research trial as shown in Table 1. Although not as high, there was a 2.8 month difference in lactation anoestrus

between the top and bottom sire in the TC. This had a major effect on the ability of daughters from bulls will the increased post-partum anoestrus to conceive during the joining period as first calf cows. This was illustrated with only 5 out 37 daughters of Belmont 79/96 reconceiving as first calf cows.

CONCLUSIONS

The results emphasise the substantial opportunity that exists to improve conception rates in tropical beef cattle breeds by focusing recording and selection on early in life female reproduction traits, particularly in Brahman for traits associated with lactation anoestrus. Culling first calf cows that do not conceive or not retaining replacement progeny from those animals will have a positive impact in the improvement of conception rates. The results show these cows are more likely to have progeny that will not conceive as first calf cows as well. Significant improvement can also be made by including selection for improved reproduction into a breeding program. This can be best achieved by recording female reproductive performance information with BREEDPLAN for the calculation of Days to Calving EBVs (particularly reproductive information for maiden heifers and first calf cows), and careful consideration of Days to Calving EBVs when selecting both sires and dams for use within a breeding program.

Table 1. Difference in lactation anoestrus between top and bottom Brahman sires in months

Brahman sires	
LANCEFIELD 4999M	-3.3
MR V8 797/3	-3.1
TARTRUS 3886	-2.9
CONA CREEK 2722	-2.3
NEWCASTLE WATERS TOBY	-2.1
LANCEFIELD 4461	-2.0
McKELLAR RICARDO	-1.9
TARTRUS ABEL MANSO	-1.8
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TARTRUS 2415	+1.9
TARTRUS 3292	+2.0
JDH DENVER DE MANSO	+2.1
LANCEFIELD AMBITION	+2.1
LYNDHURST 1660/7	+2.4
WAVERLEY SUPREME DE MANSO	+2.6
TARTRUS MR MANSO 025	+3.8
BELMONT 79/96	+5.6

lactation anoestrus interval EBV (days) (Wet 1st calf cow)

4.4 month difference in time 1st calf daughters to resume cycling