



Mr Tim Schatz and the Douglas Daly Research Station (DDRS) Brahman stud herd

Location

Breeders run on Victoria River Research Station (VRRS), 220 km south-west of Katherine, NT. Yearling heifers mated at Daly Douglas Research Farm (DDRF), 220 km south of Darwin.

Rainfall and pastures

Average rainfall at VRRS is 737 mm supporting native grass pastures. DDRF receives 1200 mm supporting buffel grass pastures for growing out weaner heifers in preparation for yearling mating and weaner steers for live export.

Objectives

To improve the fertility of a Brahman herd through objective selection, including identifying 'inherently more fertile' females using yearling mating as the selection tool.

Achievements

More than doubled yearling pregnancy rates compared to commercial NT herds. Higher pregnancy rates in lactating cows. Exciting improvements in days to calving and scrotal size EBVs.

Impressive increase in Brahman fertility in NT case study

“We have proven, beyond many people’s expectations, that selection can strongly influence fertility rates within a pure Brahman herd.” Tim Schatz, Principal Pastoral Production Research Officer, NT Department of Resources

Since 1994 a small team of researchers working with 90–150 breeder cattle have achieved impressive results in fertility rates in Brahman cattle in the Tropics.

Veterinarian and researcher Gehan Jayawardhana began selecting for fertility traits in the NT Government’s Brahman stud (DDRS) at Douglas Daly Research Farm (DDRF) in 1994 and the work continues, now under the watchful eye of Principal Research Officer Tim Schatz and Research Officer Renee Rippon.

“We have proven, beyond many people’s expectations, that selection can strongly influence fertility rates within a pure Brahman herd,” said Mr Schatz.

Selection pressure is put on both bulls and cows in the herd and has more than doubled yearling heifer conception rates compared to heifers from four commercial herds, each in four different seasons.

“Graziers in the Northern Territory have long accepted the lower fertility rates in Brahman cattle

compared to *Bos taurus* breeds in other places,” said Mr Schatz. “However, we are seeing much higher fertility in this herd as a result of our selection work and the industry is starting to show a strong interest in using our genetics.”

Throughout the project the selection criterion has remained the same:

- Cows are culled from the herd if they don’t raise a calf to weaning each year. Raising a calf to weaning age each year proves maternal traits of calving ease, mothering ability and milk production while maintaining good body condition ready for reconception each year.
- Young bulls are selected at 12 months of age based on scrotal size, 400-day weight, per cent normal sperm, low age dam at calving and the dam’s ‘never miss a calf’ score. These bulls are retained in the herd for natural mating services.
- New genetics are carefully selected from

“Using the NLIS tags, electronic readers and scales, the team collects data on weight, body condition, pregnancy and lactation status of each cow.”

Tim Schatz

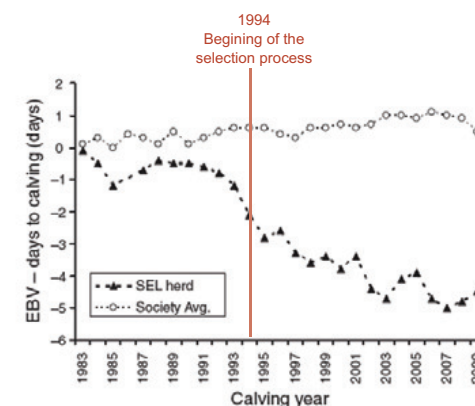


Figure 1. Days to calving EBV

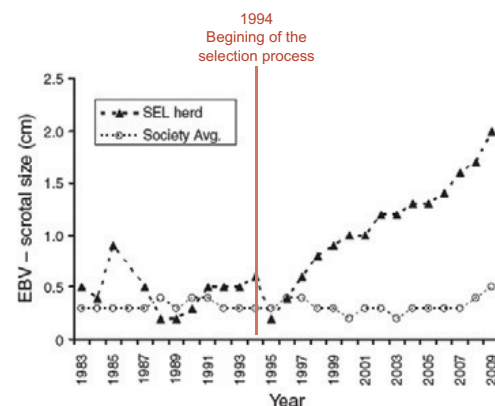


Figure 2. Scrotal size EBV

- herds that cull empty cows each year. Semen is used from bulls with low ‘days to calving’ and high scrotal size EBVs to AI 2-year-old heifers in the DDRS herd.
- Yearling mating is used to identify highly fertile females. Brahman are notorious for taking longer to reach puberty than *Bos taurus* breeds. This selection technique favours individual females with smaller mature size that reach puberty earlier than the breed average.

The DDRS herd is now based at the Department’s Victoria River Research Station, 220

km south-west of Katherine. However, the weaner heifers are taken to the Douglas Daly Research Farm to grow-out until they are mated at 12 months of age. “Having the Douglas Daly property, situated 220 km south of Darwin, gives the heifers the best chance possible to reach target mating weight by 12 months of age,” said Mr Schatz. “Douglas Daly is in the monsoonal zone, receiving 1200 mm mostly over the summer months. The fertile soils and high rainfall support improved buffel grass pastures for the heifers to graze. Growth rates are much higher than can be achieved at VRRS.”

For four years heifers from the DDRS herd have been compared with yearling heifers purchased

from a different, high quality commercial herd each year. Each year the two groups of heifers have been taken to DDRF as weaners, grazed separately but with the same level of nutrition, and mated as yearlings. Recent Beef CRC research has found that the average age at puberty of Brahman heifers is 750 days, which is why most northern graziers do not put the bulls with their heifers until two years of age. Heifers in the DDRS herd are expected to conceive by 450 days of age. The DDRS heifers have consistently achieved an average pregnancy rate of 65% compared to the 30% pregnancy rate in the commercial heifer groups.

“Commercial producers may find it difficult to



Conditions at Victoria River Research Station (VRRS), formerly Kidman Springs, are typical of much of the NT pastoral zone. DDRS breeders are outperforming the breeders in the Department's commercial herd.

do the level of herd recording we do to track the fertility of their heifers and cows," Mr Schatz said, "but they can easily use fertility EBVs to help choose the bulls they use and this alone could make a big difference to herd fertility rates across the northern cattle industry."

Mr Schatz has observed the trend of many producers to select bulls based more on their growth traits than their fertility traits. "Selecting for fertility in our herd has favoured animals with smaller mature size," he said. "This means it is easier for our cows to stay in good condition and have a good chance of getting back in calf every year, even under the hot, harsh conditions on the native pastures at Victoria River."

Obviously the research team have also kept track

of the DDRS herd's growth traits and Mr Schatz said that their steers have continued to compete well in feedlot trials with commercial steers.

"Our herd management is otherwise much the same as the industry norm," said Mr Schatz. "We don't muster the cattle any more than commercial operations but we probably do collect more information from our cattle while they are in the yards than many commercial operators would do. We also collect calving dates to comply with BREEDPLAN requirements."

Using the NLIS tags, electronic readers and scales the team collects data on weight, body condition, pregnancy and lactation status of each cow.

The NT Government's commercial herd of

600 breeders also runs on Victoria River Research Station. This herd provides a perfect 'control' line for the selection project since the DDRS herd was relocated to Victoria River in 2002. Reconception rates in lactating cows at the first weaning round muster in May have been, on average, 31% higher in the DDRS herd compared to the commercial herd. Mr Schatz says that this shows the selection program is having a real impact on fertility in the herd. Figure 1 shows that prior to the selection project the DDRS herd was already below the industry average for days to calving EBV but when selection pressure was applied the response was immediate and dramatic, reducing this EBV by a further 4 units.

Similarly, the effect on scrotal size EBV was also immediate when selection pressure was applied to



Yearling mating of heifers favours smaller framed females that reach puberty early. As cows they find it easier to maintain condition and to get back in calf within the 12 month cycle.

the DDRS herd. Prior to the project's start the herd's scrotal size EBV was similar to the Brahman breed average but has rapidly increased, raising this EBV by almost 2 units.

Mr Schatz and his team are currently building up the herd size using embryo transfer into cows in their commercial herd. "We are aiming to build the herd from about 150 breeders plus replacement heifers to around 300 breeders as quickly as possible," said

Mr Schatz.

The best bulls from the DDRS herd are kept in the herd and the rest are offered by tender to commercial producers. Mr Schatz said that increased interest in the DDRS genetic line had seen several enquiries about buying semen from the top bulls and also one of the larger pastoral companies undertaking embryo transfer to access the genetics and improve the fertility in their herd.

"Our work has demonstrated the value of selecting for fertility and the value of using the days to calving and scrotal size EBVs when selecting bulls," said Mr Schatz. "Brahmans are always going to have a place in the north because they can handle the stressful environment but improving fertility rates have been long known as the key to improving profitability in northern grazing operations."