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Finishing Kimberley cattle in the south-west

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The idea of integrating the Kimberley cattle industry with that in the south-west of Western Australia is not new, but until recently it had not been critically evaluated.

Over the past eight years the Department of Agriculture's Beef Cattle Branch has been assessing the performance of Kimberley cattle transported south for finishing in the agricultural areas.

Initially, animals of a range of ages were transported south. However, based on the performance of these animals, subsequent research has concentrated on weaners six to seven months old.

This research has shown that Kimberley weaners can be finished in the south, and that under the present (December 1988) economic conditions it is more profitable than running breeding cattle in the south-west and comparable with fattening store steers.

Research objectives
To determine the feasibility of this production system we had to evaluate the:

- Problems and losses during assembly and transportation.
- Growth of the animals grazing pastures in the south-west.
- Carcass characteristics at slaughter.
- Meat quality.

Assembly and transportation
Most of the weaners used in the project came from the Department of Agriculture's Ord Regeneration Research Station in the East Kimberley.

Before transportation south the weaners were dipped according to regulations to prevent cattle ticks being transferred south. In the early years of the project three dips were given over nine days. In 1985, the requirement was reduced to two dips, three days apart. Cattle were usually dipped first at the station before departure and again at Broome en route. They were transported in double-decked road trains that took about 30 hours to travel from Broome to Perth.
The small size of the weaners (about 150 kg) enabled up to 55 animals to be loaded per deck and this kept the transport cost per head low. At the start of the project in 1980, the cost was about $30/head. This has increased to about $50/head in 1989.

There were few losses during assembly, dipping and transportation. Of the 1097 weaners transported south, only six animals died. These animals died before 1985, when the dipping requirements were reduced. Since then no animals have died in transit or immediately after arrival. Overall losses were very low and well under those normally expected in cattle herds in the south-west.

**Growth**

The growth of the animals from the Kimberley was assessed as weaners and yearlings at Wooroloo Prison Farm in a co-operative programme with the Department of Corrective Services.

**Weaner phase (6 to 12 months)**

The weaner phase covered the first six months after the animals were transported south and ran from July to December. Only pastoral cattle were studied during this period as there were no comparable animals in the southern industry.

Kimberley Shorthorn animals were used from 1983 to 1985, Brahman x Kimberley Shorthorn in 1986 and three-quarter Brahman in 1987. From 1984, stocking rates for the weaners ranged from 3.5 to 7.0 animals per hectare. These high stocking rates were possible because the area was grazed for only six months so that all the available feed during this period could be used.

In most years the weaners grew slowly in the first month after their arrival in the South-West. This period may represent an adaptation to the change in environment and type of feed. After this initial slow growth, they consistently gained about 1 kg/day while the pasture remained green.

The live weight gained during this phase varied with the stocking rate and the year (Figure 1). In 1984, a relatively good year, the animals gained more than 100 kg at all stocking rates. However from 1985 to 1987 only animals grazing at stocking rates up to 4.7 animals per hectare gained this amount of weight. The Kimberley weaners must gain at least 100 kg during this phase to achieve fat score 3 by the end of the subsequent year.

However, the weaners did not reach fat score 3 by the time they were a year old. Even at the lowest stocking rate of 3.5 animals per hectare, only a small proportion reached fat score 2.

**Yearling phase (12 to 24 months old)**

The yearling phase followed the weaner phase and covered the full year from December to December. The performance of the Kimberley cattle was compared with that of Angus cattle from the agricultural areas that were weaned in December immediately before the comparisons started. Although the Angus cattle were about three to four months younger than the Kimberley cattle, they represented the closest comparable age range. All the cattle weighed about 250 kg each at the start of this comparison.
The animals grazed plots in groups of five at stocking rates ranging from 1.25 to 2.5 head per hectare. Over summer and autumn they were given supplementary feed when they reached fat score 1 and were losing weight. The supplementary feed came from outside the experimental area.

During the first three years the cattle from the Kimberley were Kimberley Shorthorn, in the fourth year they were Brahman x Shorthorn, and in the fifth year, at least three-quarter Brahman.

The influence of stocking rate on the gain in liveweight was similar for all breed types (Figure 2). At stocking rates of up to 1.67 head per hectare, the cattle gained about 200 kg/head/year. At the higher stocking rates they gained about 170 kg/head/year or less.

The Angus cattle gained more weight than the Kimberley Shorthorn in the three years of the comparison. Over all stocking rates, the Angus cattle had a 12 per cent advantage in the first year, 4 per cent in the second year and 3 per cent in the third year. This trend was reversed in the fourth year and the F1 Brahman x Shorthorn gained more weight than the Angus at all stocking rates, being 10 per cent better overall. Part of this superiority was due to hybrid vigour. In the fourth year, the three-quarter Brahman gained 4 per cent less weight than the Angus.

Cattle grazing at the higher stocking rates needed more supplementary feed (Table 1), but the amounts fed were similar among breed types.

### Carcass characteristics

The relationship between liveweight and carcass backfat thickness differed substantially between breed types (Figure 3). Although the Angus cattle attained fat score 3 (5 mm at the 12th rib) at about 380 kg, the Brahman x Shorthorn and Kimberley Shorthorn did not reach fat score 3 until they were about 420 kg and 450 kg respectively. This corresponded to carcass weights of 190 kg for the Angus and 225 kg for the Kimberley Shorthorn and the Brahman x Shorthorn.

### Table 1. Amount of supplementary hay fed

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<th>Stocking rate (ha/hd)</th>
<th>Hay fed (kg/hd)</th>
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<tr>
<td>1.25</td>
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<tr>
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<tr>
<td>1.67</td>
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<tr>
<td>2.00</td>
<td>440</td>
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<tr>
<td>2.50</td>
<td>460</td>
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One of the authors, Brian McIntyre, fat scoring Kimberley cattle at Wooroloo.
The higher weights needed in the Kimberley cattle meant that only those animals that gained 200 kg or more during the yearling phase reached fat score 3. This weight gain was restricted to animals stocked at 1.67 head per hectare or less.

In contrast, the Angus cattle attained fat score 3 at all stocking rates, and those on the lower stocking rates were over fat at the end of the year.

**Meat quality**

The carcasses of all the cattle were electrically stimulated immediately after slaughter. The tenderness of the meat was determined by both shear force measurements and taste panel evaluations. Shear force is a measurement of the force required to cut through a standard sized sample of meat that has been cooked in a standard way. For the taste panel evaluation, trained panellists assessed samples of meat cut and prepared in a standard manner.

The meat produced from all the breed types was of a high quality, a far cry from the very poor quality normally associated with Kimberley cattle. The taste panellists picked up small differences between the breed types, with the Angus generally being slightly more tender than the pastoral cattle (Table 2). This slight superiority may be related to the small differences in age between the Kimberley and Angus cattle. The Angus cattle were also consistently fatter at slaughter than the pastoral cattle and this may have also contributed to the difference.

**Conclusions**

Weaner cattle from the Kimberley, transferred to the south-west of Western Australia, can produce a similar quantity and quality of beef to animals bred in the south. They therefore represent a practical alternative supply of store animals to producers in the southern agricultural areas.

**Acknowledgement**

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