MANAGING YEARLING CATTLE TO ACHIEVE MARKET SPECIFICATIONS IN THE TOP END OF THE NORTHERN TERRITORY

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SUMMARY
A study was conducted to evaluate several production systems in the Top End of the Northern Territory, to produce steers under 18 months of age which meet specifications for overseas live feeder steer markets or the local butcher’s trade. Brahman weaner steers were exposed to 4 alternative grazing treatments during the first 12 months after weaning. These treatments comprised of sorghum stubble or improved pasture (with or without combinations of urea/mineral and protein and energy supplements) during the dry season and improved pasture with or without mineral supplement in the wet season. All treatments enabled the steers to achieve the specifications required for the overseas live export feeder steer markets. The addition of grain and meatmeal allowed earlier turnoff. The use of improved pasture treatments throughout allowed live feeder specifications to be achieved although the table trade specifications were not met by animals within these treatments.

Keywords.- cattle, feeder steer, crop residue, improved pastures.

INTRODUCTION
Traditionally, beef production in the Top End of the Northern Territory involved largely uncontrolled grazing of breeding cattle (mostly Bos taurus types) on native pastures. Management inputs were minimal and consisted of an annual muster where young cattle were marked and branded and male cattle of sufficient weight were tuned off, mainly for manufacturing purposes. Turnoff weight for bullocks was generally not reached until they were 4 to 7 years of age.

The expanding South-East Asian feeder steer market has become a popular outlet for producers in the Top End who can turn off younger, faster grown animals than those required for manufacture. There has also been some interest from local retail butchers in these younger animals. The requirements for each of these markets are becoming specific and it is important to identify systems capable of efficiently producing animals which meet these requirements. The Philippines and Indonesian feeder cattle markets require steers of 50% or more Brahman content within a liveweight range of 250–340 kg and a maximum age of 30 months, whereas the Malaysian market requires steers of 50% or more Brahman content and less than 24 months of age weighing 200–250 kg. Retail butchers in the NT readily accept steers under 30 months of age with a carcass weight of 180–225 kg and a P8 fat depth of 6-9 mm.

Previous studies have demonstrated improved cattle growth rates through the use of improved pastures (Wesley-Smith 1972), dry season grazing of sorghum stubble, and the use of non-protein nitrogen (NPN)/mineral supplements (Austin and Wesley-Smith 1988). The aim of this trial was to determine if the market specifications detailed above, could be achieved by steers grazing from weaning (at 6 months of age) to 18 months of age using various combinations of these systems.

MATERIALS AND METHODS

Location
The work was conducted at Douglas Daly Research Farm (13°50’S.,131°11’E.), 160 km south of Darwin. The main soil type involved was a sandy red earth of the Blain family which is suitable for cropping and pasture improvement. Mean annual rainfall is 1200 mm, falling in the wet season from November to April.

Duration
The experiment has been split into 2 periods. The first period (the dry season) lasted from 10 July 1990 to 23 October 1990 when 2 of the 4 treatment groups grazed sorghum stubble. The second period (the wet season) continued from 23 October 1990 to 25 June 1991. The dry season stubble treatments were moved to improved pasture on 23 October 1990 as most of the leaf material was grazed out by that date. The first significant rain for the wet season did not occur until 17 November 1990.
Table 1. Experimental treatments

<table>
<thead>
<tr>
<th>Group</th>
<th>Dry season</th>
<th>Wet season</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB</td>
<td>Stubble + ad lib. supplement block</td>
<td>Improved pasture + ad lib. supplement block</td>
</tr>
<tr>
<td>SBG</td>
<td>Stubble + ad lib. supplement block + 1.5 kg/steer.day rolled sorghum + 200 g/steer.day meal</td>
<td>Improved pasture + ad lib. supplement block</td>
</tr>
<tr>
<td>PB</td>
<td>Improved pasture + ad lib. supplement block</td>
<td>Improved pasture + ad lib. supplement block</td>
</tr>
<tr>
<td>P</td>
<td>Improved pasture only</td>
<td>Improved pasture only</td>
</tr>
</tbody>
</table>

Animals

Twenty-four Brahman cross weaner steers (200 kg empty liveweight, average age 8 months), were stratified by fasted liveweight and randomly allocated to 1 of 4 treatment groups (6 steers/treatment).

Design

The experimental treatments are shown in Table 1. There was no replication of the treatment areas. It was assumed that the paddock areas used in this study were homogenous. It was also assumed that random allocation of animals to groups and rotation of groups between paddocks ensured that there was no difference between treatment groups other than those due to feeding regimes.

Pastures and blocks

Improved pastures consisted of a mixed sward of buffel grass (*Cenchrus ciliaris*) and verano (*Stylosanthes humata*). Sorghum grain was rolled and supplement blocks were Phosrite in the wet season and Uramol in the dry season. The Phosrite blocks used during the wet season are designed to withstand leaching from rain so losses from this cause are normally insignificant.

Measurements

Full and fasted weights (i.e. feed withdrawn for 24 h and without access to water for the last 16 h) were taken at the start and finish of the trial. The steers were weighed (unfasted) at 3-week intervals throughout the trial, as were supplement blocks. Supplement intake was calculated and carcass evaluations were performed on all steers at the end of the trial.

Stocking rates

During the 1990 dry season the steers were grazed at 1.5 steer/ha on sorghum stubble and 1.3 steer/ha on improved pasture and rotated between paddocks within pairs of treatments during this period. During the wet season all groups grazed improved pasture at a stocking rate of 1 steer/ha and were rotated between paddocks every 3 weeks.

RESULTS

Period 1 (dry season)

Figure 1 shows the liveweight trends for the 4 treatments. The SB and SBG treatments gave significantly (*P<0.05*) higher mean growth rates (454 and 611 g/steer.day) than the P and PB treatments (5 and 94 g/steer.day). The SBG treatment gave a significantly (*P<0.05*) higher growth rate than the SB treatment. There was a moderate but not significant advantage of 9 kg in gain for the PB treatment over the P treatment. The small number of animals in this experiment probably precluded the chance of this result being statistically significant.

Table 2. Carcass characteristics for the SB, SBG, PB and P treatments

Means within columns with different letters are significantly different (*P<0.05*)

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Carcass weight (kg)</th>
<th>Eye muscle area (cm²)</th>
<th>P8 fat (mm)</th>
<th>Butt score</th>
<th>Dressing percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB</td>
<td>192ab</td>
<td>59a</td>
<td>7ab</td>
<td>C-</td>
<td>54a</td>
</tr>
<tr>
<td>SBG</td>
<td>210a</td>
<td>59a</td>
<td>9a</td>
<td>C-</td>
<td>55a</td>
</tr>
<tr>
<td>PB</td>
<td>183b</td>
<td>57a</td>
<td>5b</td>
<td>D+</td>
<td>51b</td>
</tr>
<tr>
<td>P</td>
<td>172b</td>
<td>55a</td>
<td>4b</td>
<td>D</td>
<td>54a</td>
</tr>
</tbody>
</table>
Period 2 (wet season)

Wet season liveweight gains were similar for the P, SB, and SBG treatments (128, 114 and 119 kg respectively) (Fig. 1), while the PB treatment gave a significantly \((P<0.05)\) higher weight gain (163 kg).

Total weight gain over 12 months was similar for the SB, SBG and PB groups (165, 190 and 167 kg respectively) but the P steers had a significantly \((P<0.05)\) lower total weight gain (125 kg).

Table 2 shows the results of the carcass evaluation conducted at the end of the trial. The SBG group achieved the highest carcass weight, fat cover and dressing percentage. The PB group however had a dressing percentage significantly \((P<0.05)\) lower than the other groups.

The intake of supplement lick blocks was similar in the 3 SB, SBG and PB groups, however varied considerably between the dry and wet seasons - mean individual intake in the dry season was 45 g of Uramol and 132 g of Phosrite in the wet season.

**DISCUSSION**

All treatments met the sex, breed and age requirements of the target markets detailed in the Introduction. The only remaining criterion to be met was liveweight. Because of the small number of

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Philippines/Indonesia (290 kg LW)</th>
<th>Malaysia (230 kg LW)</th>
<th>Darwin (400 kg LW, 6 mm BF)</th>
</tr>
</thead>
<tbody>
<tr>
<td>SBG</td>
<td>23.vi.90</td>
<td>31.vii.90</td>
<td>25.v.91</td>
</tr>
<tr>
<td>SB</td>
<td>29.i.91</td>
<td>21.viii.90</td>
<td></td>
</tr>
<tr>
<td>PB</td>
<td>19.ii.91</td>
<td>18.xii.90</td>
<td></td>
</tr>
<tr>
<td>P</td>
<td>12.iii.91</td>
<td>18.xii.90</td>
<td></td>
</tr>
</tbody>
</table>
animals in each treatment, it will be assumed that when treatment mean liveweight equals the market mean liveweight, all animals in the treatment will have reached market specification for this variable.

Table 3 shows the first (earliest) date at which each of the 3 market specifications were achieved by each of the 4 treatments. The only treatment to achieve the local (Darwin) table beef specifications was the SBG treatment although 4 out of 6 (67%) of the SB treatment animals did so. All treatments were able to achieve the 3 South-East Asian market specifications.

The SBG treatment also enabled the turnover of steers from stubble to all South-East Asian markets without the need for improved pastures. However, this treatment required 160 kg rolled sorghum and 21 kg of meatmeal per head compared to the SB treatment, and may therefore be economic.

Both the SB and SBG treatments achieved Malaysian market weight specifications soon after the start of the experiment while the PB and P treatments did not achieve those until 5 months later.

A combination of SB, PB, and P treatments could probably achieve a steady supply of steers to the Philippines and Malaysian markets for the first quarter of the year.

Although only small numbers of animals were used in the experiment and there are only 1 year’s data available, these results give an indication of the treatments likely to allow steers to meet market specifications by 18 months of age. Further work is warranted to clearly identify the most efficient system as the importance of these markets to the North Australian cattle industry is increasing.

REFERENCES