SENSITIVITY OF BEEF CATTLE TURNOFF STRATEGIES TO PRICES AND BRANDING RATES ON NORTH-WEST QUEENSLAND MITCHELL GRASS PASTURES

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SUMMARY

The twin forces of higher prices for younger store animals relative to older bullocks, and higher interest rates, are leading some graziers to adopt a younger turnoff of male cattle. There has also been some forced turnoff of younger cattle due to drought. On 1989 prices, indications were that selling 18 month old steers became at least as profitable as older turnoff once average branding rate exceeds 70%, although most herds have yet to achieve such branding rates.

INTRODUCTION

The suggestion has been made by central Queensland beef cattle fattening enterprises that north Queensland properties should be the source of store cattle for central Queensland. However, this will only happen if the price of young store cattle relative to bullock prices increases or if branding rates are increased to levels of 70% or greater. More advantageous store prices may enable the economic turnoff of store cattle at branding rates lower than 70%.

The Mitchell grass downs country of north-western Queensland is a semi-arid region with an average annual rainfall ranging between 380 and 500 mm. However, the area receives effective rainfall in only two summer months in 75% of years (Weston and Moir 1969). Therefore, net property income in this region is governed by a number of factors including rainfall, branding percentages, price structure and interest rates. Branding percentages have been found to range from 45 to 85% in this region (Holmes 1986).

Because of the variable seasonal conditions graziers often cannot finish bullocks to market requirements. This factor coupled with an increased demand for store cattle and subsequent increase in prices has encouraged graziers to sell cattle at younger ages. Droughts and high interest rates have accentuated this trend.

Using a herd modelling approach this paper examines the effect of different turnoff strategies on net property income in this environment. Further, the sensitivity of gross margins (GM) to changes in prices and branding rates are considered.

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The model herd was constructed using inputs from a number of Mitchell grass downs properties situated in north-western Queensland. Using a steady state herd budgeting model developed by Holmes (1988) the objective was to determine the optimum turnoff age of a 50% Bos indicus, 50% British herd based on the present 1989 price structure, interest rates and branding percentages of a 2,200 adult equivalent (AE) herd operating in this region.

Assumptions regarding management policies are presented in Appendices 1 and 2.

RESULTS AND DISCUSSION

Table 1 presents a summary of total AE, total cows and heifers mated, total calves branded, female sales/total sales %, total steers and bullocks sold, capital value of the herd, net cattle sales, gross margin per AE (GM/AE) and GM/AE after imputed interest (GM/AE ex interest of 18%). An interest charge was inputed on the value of stock on hand so as to account for herds of differing values (though similar total AE) resulting from different turnoff strategies. Older bullock turnoff generally means more capital tied up in the herd, despite adjusting back to the same AE's.

Optimum turnoff age depends on expected branding rate. At the assumed branding rate of 82%, optimum male turnoff is at age 18 months. This branding rate can drop to about 70% before it becomes more profitable to adopt the 3.5 year old steer (60%), 4.5 year old steer (40%) turnoff strategy.

Optimum turnoff age also depends on the relative price of young male animals (18 mth) relative to older animals (bullocks). If the assumption of an 82% branding rate is retained, then the assumed price for 18 month old stores can be dropped from $380 per head to $315 per head before the profitability of selling 18 month old stores falls below the profitability of producing bullocks.

This herd budgeting exercise demonstrates the price and branding rate conditions under which individual graziers may opt for 18 months old steer.
turnoff in lieu of traditional bullock turnoff. On 1989 price differentials
the breakeven branding rate on the data used is around 70%. If these price
differentials change to further favour younger animals, the breakeven branding
rate will fall further, inducing more graziers to adopt younger store turnoff.
On other pasture types producing different animal growth rates the breakeven
figures may be higher or lower. The adoption of improved breeder management
practices in northern herds should also lead to younger male turnoff from these
herds.

REFERENCES

grazing properties 1972-73 to 1983-84". Rural Information Publication No.
3. (Qld. Dept Primary Industries: Charleville).
Spreadsheet Models Versions 01/12/88". (Qld. Dept Primary Industries:
Townsville).
Appendix 1. Herd management descriptions

Females
- Age at first joining: 2 years
- Branding rates: 3 y.o. (80%); 4 y.o. (70%);
- (calves/cows mated) 5 to 9 y.o. (87%); Av. 82%
- Death rates: calves to 2 y.o. (2%); 3 y.o. (7%);
- 4 to 9 y.o. (4%)
- Culling policy: 3 y.o. (not weaned a calf)
- 9 y.o. cast for age

Steers
- Death rates: calves to 18 months (2%);
- 2 to 4.5 y.o. (1%)

Bulls
- Age at first joining: 2 years
- Culling policy: 7 years (cast for age)
- Bull/cow ratio: 4%
- Replacement bulls/total bulls per yr: 13%
- Homebred bulls: 12%
- Death rate: 2%

Husbandry costs of $5/hd were assumed and herd capital was costed at 18%.

Appendix 2. Assumed sale prices

<table>
<thead>
<tr>
<th>Age of Beef</th>
<th>Live weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steers aged 6 months</td>
<td>$230</td>
</tr>
<tr>
<td>Steers aged 18 months</td>
<td>$380</td>
</tr>
<tr>
<td>Steers aged 2.5 years</td>
<td>$475</td>
</tr>
<tr>
<td>Bullocks aged 3.5 and 4.5 years</td>
<td>$630</td>
</tr>
<tr>
<td>Heifers aged 6 months</td>
<td>$160</td>
</tr>
<tr>
<td>Heifers aged 2 years</td>
<td>$230</td>
</tr>
<tr>
<td>Cows aged 3 years</td>
<td>$310</td>
</tr>
<tr>
<td>Cows aged 4 years and older</td>
<td>$310</td>
</tr>
</tbody>
</table>

* Sale price is net of selling and freight costs.