EFFECT OF DRY SEASON SUPPLEMENTATION OF SANGA CATTLE IN ZAMBIA

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SUMMARY

Supplementation of lactating Sanga cows in central Zambia with low cost crop residues and urea-mineral licks resulted in significant increases in milk offtake (79%), total daily milk (86%), and daily liveweight gain of their calves (86%). At 1988 market prices the value of the additional milk (ZK54.00) and of liveweight of both cow and calf (ZK189.00) over the 13 weeks exceeded the estimated costs of inputs by ZK180.00.

INTRODUCTION

Traditionally managed indigenous breeds of cattle account for about 80% of the total cattle population in Zambia. The potential for increasing productivity of these animals using low cost inputs needs to be developed. Increased milk yields could provide regular cash income and, in the long term, increased cattle sales could provide a major source of the cash requirements of the farmer. The traditional cattle sector is generally a low-input/low-productivity system characterised by slow growth rates, late maturity, low calving rates and high calf mortality (FAO, 1982). These factors are in part attributed to poor nutrition.

In analysing the Borana pastoral system in Ethiopia, Cossins (1985) suggested that family income could be doubled if an improvement package was adopted. This study was carried out to investigate a low cost input system utilising maize stover as the major ingredient for improving production of traditionally managed lactating Sanga cows and their calves.

MATERIALS AND METHODS

The effect of dry season supplementation on milk offtake, total milk yield and calf growth was measured by comparing groups of 11 supplemented cow/calf pairs and 11 unsupplemented cow/calf pairs. Each group of cow/calf pairs was matched for liveweight, parity and pre-trial early lactation yields. Supplementation over a 13 week period consisted of access to maize stover and legume residues from a 15 acre field for about three hours each day plus 1 kg/cow/day each of maize bran and maize silage at night. The supplemented cows also consumed about 250 to 300 g/cow/day urea-mineral licks. The unsupplemented cows grazed unimproved grasslands in a Miombo woodland/Hyparrhenia grassland habitat during the day. Cows and calves were separated at night. Cows were weighed every 14 days to the nearest 5.0 kg. Milk let-down was stimulated by cow/calf contact at 06:00 hours each day prior to milking. Offtake was recorded daily. Calves were then allowed to suckle their dams throughout the day and also had access to the day time supplementation of crop residues. Total milk yield i.e.

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offtake plus that taken by the calf was estimated at 14 day intervals using the six hour milk oxytocin test (Lamond, Holmes and Haydock, 1964). Calves were weighed to an accuracy of 0-2 kg every 14 days.

RESULTS AND DISCUSSION

Mean values of average daily gain of suckling calves, daily milk offtake, 24 hour estimates of milk yields using a milk oxytocin test (Pegram, Smith, Franklin, Gallagher, Oosterwijk and Wilsmore, 1991) and change in dam weights are summarised in Table I. All parameters are significantly higher \((P < 0.001)\) in the supplemented group than in the unsupplemented group. During the 13 week period of the trial calves from supplemented dams gained 21.3 kg compared to 11.4 kg in the unsupplemented group. The supplemented cows produced an average additional 27 l of milk over the 13 week period.

The daily milk offtakes from supplemented and control cows in this study are very similar to those reported by Otchere (1986) for Bunaji cows in Nigeria. The increase in calf liveweight gain (LWG) in the Zambia supplemented Sanga group (86\%) was much greater than the increases for calf LWG recorded for Bunaji supplemented groups (21 to 43\%). However in Otchere’s study only cows received supplementation whereas in our study calves had access to crop residues during the day. In the Zambia trial supplemented cows produced an estimated 1.58 l/day more than unsupplemented cows. Of this increase, 0.40 l/day is offtake and the difference of 1.18 l/day should therefore be available to the calf. In this management system it has been shown that each litre of milk per day increases calf liveweight by about 51 g (FAO, 1988). Thus the overall increase in LWG due to additional milk should be 5.2 kg \((1.18 \times 0.051 \times 91)\) days. The residual increase in calf LWG of 5.4 kg is probably due directly to increased forage intake by the calf.

At local 1988 market prices in rural Zambia of ZK1.50/litre of milk and ZK6.00/kg liveweight, the estimated increased output per cow over 13 weeks was valued at ZK243-00 (milk ZK54-00, calf liveweight ZK64-00 and cow liveweight ZK125-00). The overall estimated cost of inputs was ZK63-00 per cow: feed ZK28-00, legume seed ZK9-00 and additional labour ZK26-00. The study has

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Supplemented group ((SG))</th>
<th>Unsupplemented group ((UG))</th>
<th>% Increase ((SG &gt; UG))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calf average daily gain (g)</td>
<td>253 ± 61</td>
<td>136 ± 53(^1)</td>
<td>86%</td>
</tr>
<tr>
<td>Daily milk offtake (ml)</td>
<td>893 ± 263</td>
<td>498 ± 210(^1)</td>
<td>79%</td>
</tr>
<tr>
<td>24-hour milk yields (l)</td>
<td>3.41 ± 0.73</td>
<td>1.83 ± 0.46(^1)</td>
<td>86%</td>
</tr>
<tr>
<td>Change in dam weight (kg)</td>
<td>+0.91 ± 13.2</td>
<td>−20.0 ± 8.7(^1)</td>
<td>23%</td>
</tr>
</tbody>
</table>

\(^1\) SG > UG: \(P < 0.001\).