FACTORS WHICH AFFECT GUDALI AND WAKWA CALF WEIGHTS AT BIRTH AND WEANING ON THE ADAMA WA PLATEAU, CAMEROON

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SUMMARY

Birth and weaning data on zebu cattle (Gudali and Wakwa) of north Central Cameroon were analysed. Calf breed, sire and sex had significant effects (P < 0.01 or 0.001) on birth weight while parity and season of birth were not important. Calf breed, sex, season of birth and birth weight had significant effects (P < 0.05 or 0.01 or 0.001) on 8-month weaning weight. Sire and parity had no significant effects (P > 0.05) on weaning weight. Wakwa calves were heavier at birth (24.30 ± 0.42 versus 22.6 ± 0.56 kg) and weaning (158.32 ± 3.46 versus 148.77 ± 2.88 kg) than Gudali calves. An increase of 1 kg in birth weight led to an increase of 1.27 kg in weaning weight. Calves born at the end of the rainy season were heavier at birth, but were lighter at weaning than those born at the beginning of the rainy season. These results suggest that under extensive low input husbandry conditions calving should be programmed for the end of dry season/early rainy season (breeding during middle to end of the rainy season).

INTRODUCTION

Tropical cattle, particularly African, have not only been reported to have low reproduction rates, but also low growth rates evidenced by their older age at first calving (Oyedipe et al., 1982; Marchot, 1984; Mbah et al., 1987). Few attempts have been made to determine the factors influencing such low productivity. Factors affecting the reproductive performance of West African zebu have been reported (Oyedipe et al., 1982; Mbah et al., 1991). However, for these results to be useful the effects of the factors involved on calf growth must be evaluated (Oyedipe et al., 1982). Equally scarce information is available on factors affecting the growth of such cattle or their crosses with European types (Lhoste, 1968; Saint-Martin et al., 1988; Tawah et al., 1989; Tawah et al., 1991). All these reports have looked for factors affecting calf growth up to weaning. Weaning weight has a high relative economic importance to the farmer (Stonaker, 1973). Hence, knowledge of factors which influence weaning weights is important to allow proper adjustment of data for selection and maximisation of benefits accruing from the trait.

The objective of the study was to determine the factors which affect birth and weaning weights of Gudali and Wakwa cattle.

MATERIALS AND METHODS

Data on 2 zebu breeds of cattle, Gudali (Ngaoundere) and Wakwa (Brahman × Gudali crosses), collected by the Animal Research Centre, Wakwa, on animals of the Livestock Station (MINEPIA) at Wakwa from 1967 to 1988 were used. The Gudali

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### Table I

**Analysis of variance for factors affecting birth weight of Gudali and Wakwa calves**

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Mean square</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breed (B)</td>
<td>1</td>
<td>153.83(^2)</td>
</tr>
<tr>
<td>Sire (within breed)</td>
<td>35</td>
<td>14.86(^3)</td>
</tr>
<tr>
<td>Sex</td>
<td>1</td>
<td>42.36(^2)</td>
</tr>
<tr>
<td>Parity</td>
<td>6</td>
<td>8.17 ns</td>
</tr>
<tr>
<td>Season of birth(s)</td>
<td>6</td>
<td>3.73 ns</td>
</tr>
<tr>
<td>B * S</td>
<td>6</td>
<td>10.90(^4)</td>
</tr>
<tr>
<td>Residual</td>
<td>362</td>
<td>4.18</td>
</tr>
</tbody>
</table>

\(^1\)P < 0.05, \(^2\)P < 0.01, \(^3\)P < 0.001.

Grazing management was extensive on natural pastures growing on granitic and basaltic soils. These pastures included essentially *Hyparrhenia* sp. (most abundant), *Panicum maximum*, *Andropogon guyanensis* and *Pennisetum purpureum* (Piot and Rippstein, 1975). Feed supplements (cottonseed cake) and salt licks were given only in the dry season, while the calves grazed "standing hay".

The breeding of dams was year round, but was concentrated in the period June to February. Calves were weighed at birth and monthly thereafter. They ran with their dams on pasture until weaned at about 8 months of age. Health care included prophylaxis against ticks, rinderpest, pasteurellosis, anthrax, trypanosomosis ("eradicated" in 1981), and deworming. Watering was *ad libitum*. Weaning weights were adjusted to 8 months.

Least squares analysis of variance (Harvey, 1979) was used. The mathematical model used for birth weight included overall mean, breed, sire within breed, sex, breed by season of birth interaction and residual. For weaning weight the same model excluding the interaction but including regression on birth weight was used. The dry season period (October to March) was blocked as a season (there were few records) while each of the remaining months served as a calving season.

#### RESULTS

**Birth weight**

Factors which affect birth weight of Gudali and Wakwa calves are shown in Table I. Calf breed, sire and sex had significant effects (P < 0.01 or P < 0.001) on birth weight. The effect of parity approached significance (P < 0.1). Season/month of calf birth was not significant. However, breed by season interaction was important (P < 0.025).

Least squares means by breed, sex and parity are shown in Table II. Wakwa calves