SODIUM SUPPLEMENTATION OF STEERS GRAZING STYLOSANTHES-NATIVE
GRASS PASTURES IN NORTHERN AUSTRALIA

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Native grasses and introduced legumes growing in the tropics often have low
sodium contents (Hunter et al 1979), but the degree to which sodium deficiency
limits animal production in northern Australia is poorly documented. We present
data showing a dramatic production response to sodium supplementation.

A grazing study to evaluate low input management options in the semi-arid
tropics was established at a site 50 km S.W. of Katherine (132°E, 14°30'S) on an
infertile loamy-red earth soil (Gn2.14). Native grass pastures dominated by
Themeda triandra and Sehima nervosum were oversown with Stylosanthes spp. at two
fertility levels (nil fertilizer (noF) and 100 kg/ha of superphosphate at
establishment and 25 kg/ha annually (F)). There were three stocking rates at
each fertility level (0.45, 0.6 and 0.75 steers/ha for noF treatments and 0.6,
0.8 and 1.0 steers/ha for F treatments). The pastures were stocked in December
1975 with 18 month old Brahman x Shorthorn steers (mean initial liveweight 240
kg). The noF 0.6 and F 0.8 treatments were given ad libitum access to salt as a
compressed block from 2 March till 7 June 1978. The unprotected blocks were
weighed weekly to assess intake. Samples of pasture and drinking water were
analysed for sodium (Na) and bovine saliva samples for both Na and potassium
(K) (Murphy and Plasto 1973).

Table 1. The effects of fertilizer treatment and salt supplementation on the
mean liveweight gain (kg/hd/day) of steers from 2 March to 7 June 1978.

<table>
<thead>
<tr>
<th>Fertilizer treatment</th>
<th>No Fertilizer</th>
<th>Fertilizer</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stocking rate (beasts/ha)</td>
<td>0.45</td>
<td>0.6</td>
</tr>
<tr>
<td>Liveweight gain (kg/hd/d)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No salt</td>
<td>0.12</td>
<td>0.10</td>
</tr>
<tr>
<td>Salt</td>
<td>0.35</td>
<td>0.66</td>
</tr>
</tbody>
</table>

The mean liveweight gain of supplemented steers was 0.4 kg/day greater
(P<0.01) than for unsupplemented steers. The response occurred in both the noF
and F treatments, but gains were higher with fertilizer (Table 1). Saliva samples
taken before supplementation had a mean Na:K ratio of 0.2:1. By June, the Na:K
ratio of supplemented steers was 17:1 compared to 1.3:1 for the control group.
Salt intake, as measured by block disappearance, averaged 290 g/hd/day for the
first week of supplementation then declined to 200, 185 and 140 g/hd/day during
the next three week periods. The pastures contained less than 0.01% Na.

The liveweight response to sodium supplementation was nearly double that
obtained by Murphy and Plasto (1973) with cows, and Hunter et al (1979) with
steers and was consistent with the depleted sodium status of the cattle and the
deficiency of sodium in the diet.

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