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HEPATIC VITAMIN A RESERVES IN DROUGHT-STRICKEN
CATTLE

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SUMMARY

High vitamin A reserves (179-879 $\mu\text{g/g}$) were recorded in liver samples from beef cows in a terminal stage of under-nutrition brought on by drought conditions.

In simulated drought-feeding experiments with heifers (Ryley, Gartner, and Morris 1960), mean initial liver vitamin A reserves of 157 $\mu\text{g/g}$ decreased to a mean of 84 $\mu\text{g/g}$ after 6 months on rations containing virtually no carotene. In experiments with pregnant and lactating cattle (Ryley and Gartner 1962), mean initial liver vitamin A levels of 300 $\mu\text{g/g}$ decreased to a mean of 150 $\mu\text{g/g}$ under similar conditions. In these experiments there was a positive correlation between initial and final hepatic vitamin A reserves.

As no data were available on the vitamin A reserves of cattle under drought conditions in the field, this information was obtained during 1965 on grazing beef cows from drought-affected areas. No supplementary feeding was practised with the animals selected for sampling. Liver samples were only taken from animals in a terminal stage of under-nutrition. Results are given in Table 1.

All adult animals lost approximately 30-50% of their highest previously recorded body-weight and were too weak to move at time of slaughter. Their liver vitamin A reserves were normal and were higher than the values of 110-80 $\mu\text{g/g}$ found by North American workers in range Hereford cows in an average season (Wheeler *et al.* 1957). The high vitamin A reserves of drought-affected cattle in Queensland might be explained by high reserves of vitamin A in cattle prior to entering a drought. In this regard, Morris and Gartner (1966) have found that in Queensland the vitamin A reserves of steers off pasture prior to intensive finishing in yards are often seven times as high as levels reported from North America for similar cattle.

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TABLE 1
DESCRIPTION OF DROUGHT-STRIKEN COWS AND THEIR HEPATIC VITAMIN A RESERVES

Locality	Sampling Date	Body-weight (lb)	Highest Previously Recorded Body-weight (lb)	Age of Cow	Liver Vitamin A ($\mu\text{g/g}$)	Remarks*
Mackay	18.x.65	650†	1000†	Aged	253	Spayed
Millaroo	15.xi.65	600	1000 on 21.vi.65	4 years	262	Non-pregnant, 3-months-old calf
Millaroo	16.xi.65	660	1060 on 18.ii.65	4 years	253	6 months pregnant
Millaroo	16.xi.65	582	1052 on 5.iv.65	4 years	139	Non-pregnant, non-lactating
Millaroo	17.xi.65	430	930 on 11.v.65	4 years	107	Non-pregnant, 2-months-old calf
Millaroo	18.xi.65	520	905 on 22.vi.65	4 years	664	Non-pregnant, calved 6 weeks ago, calf dead
Millaroo	24.xi.65	576	800 on 18.ii.65	4 years	879	9 months pregnant
Millaroo	24.xi.65	256	282 on 12.viii.65	1 year	175	
Mackay	2.xii.65	600†	900†		438	Non-lactating
Mackay	2.xii.65	700†	1100†		242	Non-pregnant

*Animals sampled 2.xii.65 grazing little grass and some edible trees; all other animals grazing spear grass (*Heteropogon contortus*).

† Estimated.

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