Biochemical Observations on the Productivity of Sheep Given Copper Supplements in North-West Queensland

BY

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(Summary)

COPPER deficiency of sheep is endemic in pastoral Queensland where the majority of soils are alkaline but contain adequate copper. The copper status of sheep on a property in the Richmond district in North-West Queensland was studied during 1953, 1954 and 1955. Biochemical observations were made on the effects of supplementation by the oral administration of copper sulphate solutions to give a dose rate of 200 mg. Cu. once a month and once every 6 months and by the parenteral administration of copper glycinate in dose rates between 20 and 30 mgm. of Cu. given at 6-monthly intervals.

The natural pastures predominant in the area had a low copper status; their molybdenum and inorganic sulphate contents were high, particularly in the autumn and early winter when herbaceous species predominated.

Both oral and subcutaneous treatments built up fairly satisfactory liver copper reserves, but lambs from ewes in all groups had inadequate copper reserves when 3 months of age.

Ewes, whose copper status was adequate as the result of frequent drenching with copper sulphate solutions cut l/2 lb. more greasy wool than the controls and. their fleeces showed less evidence of copper deficiency. Ewes that reared lambs had a lower live weight and cut lighter fleeces than those that did not lamb. Otherwise no differences occurred between live weight gains or wool cuts of the sheep. Lambing performances were the same in all groups.

DISCUSSION OF PAPERS BY MR. SUTHERLAND, DR. HARVEY AND MR. MOULE.

Mr. STRUTT: (1) Were estimates of the Cu. level taken on some of the cattle which were showing signs of scouring and emaciation but were not included in the experiment?

(2) What was the reason for the cattle in the experiment refusing to eat the herbage in the paddocks which were available during the winter, i.e., the period when they lost weight?

ANS.: (1) Yes, biopsies were made and the cattle were low in copper status.

(2) No explanation could be given.

Mr. ROBERTS: Could Mr. Sutherland say what the weight gain would have been during the winter had the cattle not suffered loss of appetite?

ANS.: Cattle on natural pasture in Queensland do not gain weight during the winter. However, when they do gain in September, it is very rapid - of the order of 2 lb./head/day.

Miss TURNER (to Mr. Moule): Was there any estimate of the cost of the copper supplementation?

ANS.: The cost was low after the Cu. status had been raised - monthly administration was more expensive. Materials were cheap but labour costs were high. It is essential to lift Cu. status in ewes early in life and the status could then be maintained by treatment at strategic times when stock were mustered for other purposes.

Mr. VASEY (to Dr. Harvey): Has the potash status of unpalatable winter herbage been investigated?

ANS.: Soil potash was regarded as satisfactory but the herbage potash was not determined. I agree that this point would be important.