

GRAZING UNDER COCONUTS IN THE MOROBE DISTRICT

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ABSTRACT.

In the Morobe District near Lae about 2,300 head of cattle are being grazed under coconuts on native pastures dominated by Paspalum conjugatum and Calopogonium mucunoides. On all properties some pasture improvement has been carried out. Grasses tried include Brachiaria mutica, B. Ruziziensis, Pennisetum purpureum, Panicum maximum, Panicum maximum var. trichoglume. Legumes planted were Centrosema pubescens, Dolichos lablab, Leucaena leucocephala, Phaseolus atropurpureus, and Pueraria phaseoloides. In general fertilizer has not been applied to pastures. Carrying capacity on most properties was in the vicinity of one beast per acre. Cattle carried in nearly all cases were Brahman crosses with about 50 per cent. Brahman blood. Cost of fencing varied from \$500 per mile to \$217 per mile depending on materials used.

INTRODUCTION.

A major factor in the cost of copra production in the Territory is the control of grass in plantations. One possible means of reducing this cost is the conversion of excess grass into a saleable product in the form of beef. To achieve this, however, extra capital expenditure is required to provide fencing, watering points, stock yards and breeding cattle. Whether such expenditure would be economically justified would depend on the circumstances of a particular property, taking into account the expected saving in labour costs, the extra revenue from cattle sales, and the cost of equipping the beef cattle enterprise.

In this article the experiences of a number of copra/cattle producers in the Morobe District are described, so that other copra producers may consider this form of dual enterprise. Near Lae there is a ready market through the Lae Abattoir or in sales to newly developing cattle projects. In other districts which do not have such ready access to markets, growing of beef could also be considered as a replacement for tinned meat or fish in labour rations.

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At present about 2,300 head of cattle are being grazed under coconuts near Lae. The properties concerned vary in area from 350 acres to 2,500 acres; not all are fully planted to coconuts or fully stocked with cattle. Rainfall varies from more than 200 in. per annum at Singaua on the coast east of Lae, to 55 in. per annum at Maralumi, 35 miles to the north-west of Lae in the Markham Valley.

In general most of the properties are situated on soils derived from unsorted river alluvials; they may vary within very short distances from reasonably deep fine loam to gravelly loam.

NATURALIZED GRASSES AND LEGUMES.

On all properties near the coast *Calopogonium mucunoides* and *Paspalum conjugatum* are dominant in natural pastures. At Maralumi, *Paspalum conjugatum* and *Imperata cylindrica* were originally present under coconuts, but they have now been almost entirely replaced by improved pasture species.

INTRODUCED PASTURE SPECIES.

All properties have undertaken some pasture improvement. Grass species which have proved most suitable on the coast under coconuts are *Brachiaria mutica* (Para), *Pennisetum purpureum* (Elephant), and *Panicum maximum* (Guinea). At Malahang it was found that Elephant and Guinea could be utilized more fully if cut and

fed rather than grazed, as the large bulk of material produced made complete utilization by the grazing animals difficult. This problem may have been overcome by the use of smaller paddocks to allow a greater stocking density at the time of grazing. Similar problems with Elephant grass were encountered at Narakapor. At Maralumi, *Panicum maximum* var. *trichoglume* (Green Panic) has persisted satisfactorily under coconuts. *Brachairia ruziziensis* is proving satisfactory at Narakapor.

In all cases Elephant, *B. ruziziensis* and Para grass were established from cuttings. Guinea and Green Panic were established from seed sown at $1\frac{1}{2}$ to 2 lb. per acre.

Improved legumes which have been sown under coconuts include *Centrosema pubescens* (Centro), *Dolichos lablab* (Dolichos), *Leucaena leucocephala* (Leucaena), *Phaseolus atropurpureus* (Siratro), and *Pueraria phaseoloides* (Puerio).

All legumes were planted from seed. At Narakapor, *Dolichos lablab* was overgrazed and did not recover. However with good grazing management on another nearby property (not under coconuts), it persisted for two years. At Maralumi, Centro after some years became infected with *Centrosema* mosaic virus and disappeared from pastures. On the same property, a pure stand of Puerio under coconuts failed to persist under grazing.

At Malahang the manager was not satisfied with the growth of forage on Leucaena in pastures. This was probably due to two factors—firstly the high palatability of Leucaena leading to its being grazed in preference to other species present and secondly large paddock size leading to low stocking density which did not allow sufficient time between grazings for the Leucaena to recover fully. At Narakapor, where paddock sizes are smaller, the manager was quite satisfied with the performance of Leucaena interplanted in hedges between coconuts.

FERTILIZER USAGE.

On most properties no fertilizer has been applied to pastures. At Malahang and Singaua, sulphur at the rate of two lb. of elemental sulphur per palm, has been applied to coconuts.

At Malahang, applications of one cwt. of sulphate of ammonia per acre have been made and the manager was of the opinion that cattle selectively grazed fertilized areas.

Visual responses were observed for two to three months after application. As the manager did not consider the property fully stocked, he thought that the practice was not at present warranted.

CARRYING CAPACITY.

On all properties, the carrying capacity under coconuts was high; on most, it was estimated as being better than a beast to the acre.

At Malahang, 750 head were carried on 1,000 acres. The manager considered the property was understocked. A stocking rate of a beast to the acre was possible on both native and improved pastures under coconuts but better weight gains were obtained from improved pastures.

At Singaua, 600 head were carried on 800 acres. At Awilunga grazing was also available on open pastures. The owner considered that the pastures under coconuts, which were mainly native species, would carry a beast to the acre. At Narakapor 140 head were being carried on 130 acres. At Maralumi, which has an annual rainfall of 55 in. per annum, and which is nearly all planted to improved species, a beast per acre was carried on legume/grass mixtures and a beast to two acres on pure legume stands.

GRAZING MANAGEMENT.

Grazing management techniques varied from property to property and with pasture types. Some properties set-stocked native pasture, but most employed some degree of rotational grazing. Cycles varied from one week on-eight weeks off to four weeks on-six weeks off. All properties reported that under the grazing regime employed, improved species persisted with the exception of *Dolichos* and Puerio, as mentioned above.

WEED SPECIES.

All properties had some problems with weeds. On the coast the most important weed in pastures were ferns. At Singaua in badly infested paddocks, up to eighty per cent. of the vegetation comprised ferns. On this property, some measure of control was obtained by rolling. To be

effective this needed to be repeated before the regrowth of ferns had reached more than two feet in height. Several rollings close together were more effective than when they were spread over a longer period.

Other weeds that were a problem were *Cenchrus echinatus*, *Digitaria insularis*, *Mimosa invisa*, *M. pudica*, *Sida cordifolia*, *S. rhombifolia*, *Solanum torvum*, *Stachytarpheta* sp., and *Urena lobata*.

FENCING.

Cost of fencing varied considerably with the type of fence constructed. The average price for a four-strand barbed wire and steel picket fence was \$500 per mile. If bush posts cut on the property were used, this fell to \$360 per mile.

On one property, high tensile three-strand barbed wire was being used for internal subdivision and the cost of this was \$300 per mile.

The cheapest form of fencing was provided by the use of living posts and barbed wire, which was estimated to cost \$256 per mile for four-strand boundary fencing and \$217 per mile for three-strand internal subdivision. In this system, green stakes of *Erythrina* sp. were planted on the fence line and the wire nailed to the

posts. As the posts often failed to strike and subsequently needed to be replaced, this system was regarded as being inefficient on the property where it was used.

TYPE OF CATTLE.

The most interesting feature of the cattle carried on all these properties was the predominance of Brahman crosses. The average percentage of Brahman blood was 50 per cent. on all properties. The British breed side of the cross was Angus, Red Poll or Shorthorn.

CONCLUSION.

In the Morobe District, several copra producers successfully run cattle on their properties as a dual enterprise. Apart from diversification of production, this system is attractive because of reduced labour costs for control of grass in plantations. It could be considered as a sideline for plantations which have ready access to main centre abattoirs, for sale of livestock for cattle projects, or for replacement of meat in labour rations in remote areas.

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