

CATTLE WEIGHT CHANGES ON PANGOLA/T.S. PASTURE AT B.R.F.

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INTRODUCTION

Pangola grass (*Digitaria decumbens*) was introduced to the Northern Territory during the late 1950s and was later included in some pasture species trials (J.D. Sturtz, pers. comm., 1981). Hendy (1971, 1972) looked at its productivity under different cutting and nitrogen fertilizer regimes. This demonstrated its persistence and productivity, and stimulated the planting of larger areas at Berrimah Research Farm (B.R.F.) so that animal production from a Pangola grass/legume pasture could be measured. This Technote reports the results of 2 years grazing at 3 stocking rates. The full final report of this trial can be found on D.P.P. file 79/325.

METHODS

Soil types in the area of the farm which was used comprised Koolpinyah yellow earth, Berrimah and Woolner (now Stuart) red earths, and some gravelly, skeletal soils (Forster 1971). Pangola grass was planted in the 1969/70 wet season. The legume component of the pasture comprised volunteer Townsville stylo (T.S.) (*Stylosanthes humilis*) which had been established in the area for several years. Single superphosphate was applied at a rate of 250 kg/ha in November 1970 and again at 125 kg/ha in October 1971.

The pastures had been ungrazed, but were mown to 10 cm, before grazing began on 18 December 1970.

Three paddocks of 0.6, 1.2 and 2.4 ha were each stocked with three 1/2 - 3/4 Brahman x Shorthorn yearlings, to give stocking rates of 5 head/ha (high), 2.5 head/ha (medium) and 1.25 head/ha (low). Heifers were used in year 1 (18 December 1970 - 2 December 1971) and steers in year 2 (2 December 1971 - 24 November 1972). Measurements were made of pasture production, botanical composition and quality, and cattle liveweight changes and faecal nitrogen.

RESULTS AND DISCUSSION

Pasture production

Dry matter cuts from exclosures indicated that the medium stocking rate paddock produced less pasture than the others, and all paddocks produced less in year 2. The high stocking rate could not be maintained and was terminated in early September of year 2 when dry matter ran out. Although ground cover at the medium level remained complete, a longer period of grazing would be necessary to prove the adequacy of this stocking rate. At the low stocking rate, pasture was under-utilized, so it is likely that the optimum stocking rate would have been between 1.25 and 2.5 head/ha. At Coastal Plains Research Station a Pangola/perennial stylo/Centro pasture has provided sufficient dry matter to support yearlings at 1.33 head/ha over a period of 6 years (Ford, Calder and Lemcke unpublished).

Botanical Composition of Pasture

The T.S. plants generally appeared yellowish and spindly, suggesting nutritional problems. The legume formed a significant proportion (>5%) of the pasture only during the wet season.

At the low stocking rate, competition by Pangola was too great to allow T.S. growth, while at the high rate, defoliation prevented most T.S. from seeding. Hendy (1971) noted that treatments involving either no cutting, or periodic low cutting, both reduced the T.S. component in a Pangola/T.S. pasture. The medium stocking rate appeared more suitable for maintenance of a productive T.S. component and this was indicated by higher germination counts of T.S. in the wet season following removal of the cattle. After only 2 years grazing, invasion by annual grasses and weeds, particularly *Sida* spp., had become an important problem at the high stocking rate. The other paddocks were less affected.

Animal Performance

Increasing the stocking rate delayed the start of the period of weight gain, reduced the rate of wet season weight gain and increased the rate of dry season weight loss (Fig. 1).

During the period of weight gain, weight changes averaged 0.40, 0.53 and 0.68 kg/head/day at the high, medium and low stocking rates respectively. Weight gains at all stocking rates continued until June each year, when selection of material of nutritional value adequate for maintenance was no longer possible. At this time pasture nitrogen levels had fallen to 0.3 - 0.5%, and faecal nitrogen to less than 1.3%, a level usually considered necessary for weight maintenance. Weight losses of 0.15 - 0.47 kg/head/day continued for 4 months or more until wet season rainfall occurred. Net liveweight gains (kg) were as follows:-

STOCKING RATE	YEAR 1		YEAR 2	
	LWG/HD	LWG/HA	LWG/HD	LWG/HA
High	56	280	terminated	
Medium	86	215	50	125
Low	132	165	102	128

CONCLUSIONS

Although the experiment was limited in duration and size, it did give an indication of the increase over established levels of animal production (both per head and per unit area), which could be achieved by pasture improvement in the coastal areas of the Territory.

Further significant improvements in animal performance, using introduced perennial grasses in these areas, can be achieved by combining them with more productive and perennial legumes, by the application of nitrogen and other fertilisers, and by the provision of dry season supplements to the cattle grazing them.

REFERENCES

- Forster, B.A., *Report on the Land Units of Berrimah Experiment Farm*. Land Conservation Section, Primary Industries Branch, N.T.A., Darwin, 1971.
- Hendy, K. (1971), 'The Performance of a Pangola grass/Townsville stylo Pasture Near Darwin', *J. Aust. Inst. Agric. Science*, 37 (1), 65-68.
- Hendy, K. (1972), 'The Response of a Pangola grass Pasture Near Darwin to the Wet Season Application of Nitrogen', *Trop. Grasslands*, 6 (1), 25-32.

FIG. 1 :- CUMULATIVE LIVEWIGHT GAIN/HEAD AND RAINFALL FOR YEARS 1 AND 2

