

THE TROPICAL GRASSLAND SOCIETY OF AUSTRALIA FIELD DAY ON SEPTEMBER 21, 1973

PASTURE IMPROVEMENT OF SANDSTONE COUNTRY IN THE BEAUDESERT AREA

The field day was held at "The Overflow", a 2,200 ha property operated by Mr. M. Joyce. The main objective was to see pasture development on poor soils in a relatively low rainfall area of south-east Queensland. High animal production was demonstrated by Mr. Joyce on several improved pastures developed on both low lying and hilly areas of the property.

BACKGROUND TO THE ENVIRONMENT

"The Overflow" forms part of the Flinders land system, an area of predominantly hilly to steep terrain with mountainous outcrops. Localized areas of rolling terrain occur particularly in the central and southern areas. The soils are derived from sedimentary material of the Marburg and Bundamba sandstones and are predominantly hard setting duplex soils with yellow clay subsoil. Shallow lithosols and minimum reddish prairie soils also occur in the land system. Fairly uniform deep sands and siliceous sands formed on sandstone occur in the local district and are probably widespread on "The Overflow". In general the soils are fairly infertile with deficiencies of phosphorus and nitrogen. Molybdenum may be necessary for legume establishment, at least in some areas. Most soils have an adequate supply of potassium.

The vegetation is predominantly open eucalypt forest with small areas of closed forest. The rainfall of approximately 850 mm is much lower than on the coast where tropical pastures thrive. The lower reliability of spring rains in this district make early establishment of tropical pastures more difficult than on the coast. In this environment, where soil nitrogen levels are very low, the native blue couch competes very aggressively with the improved tropical grasses. As application of fertilizer nitrogen to stimulate tropical grass growth is not economically feasible for large scale development, it may be better to rely on tropical legumes and wait for the legumes to improve the nitrogen status of associated grasses over several years.

SCROBIC/SIRATRO PASTURE ON CREEK FLATS

Following the sowing of 0.4 ha of a scrobic/siratro pasture in 1962 the other 17 ha was sown in 1964 to 3.4 kg/ha of scrobic and 1.1 kg/ha of siratro. Following pre-cropping with winter and summer crops the pasture was sown but was virtually a complete failure for about eighteen months following a severe infestation of pig weed. To avoid these weed problems pre-cropping for pasture establishment has now been discontinued at "The Overflow" and good results have subsequently been obtained where virgin country was just cultivated and then sown, wet or dry.

The pasture finally developed an excellent stand of scrobic/siratro and has been heavily stocked over the past eight years at a rate equivalent to more than one beast per acre. Fertilizer applications were 500 kg/ha of molybdenised superphosphate in 1969 and 250 kg/ha of super in each of 1970 and 1971. Fertilizer was not applied before 1969 as pasture performance was excellent.

MIXED PASTURE FOR HAY

The pasture of 18 ha was sown in 1968 to a complex mixture of siratro, Hunter River lucerne, Cooper and Tinaroo glycines, medic, Ladino and Louisiana clovers, lotononis, Nandi and *Kazungula setarias* and scrobic. The sowing rate was 6.7 kg/ha for the legumes and 3.4 kg/ha for the grasses. This pasture was cut regularly for hay. Following heavy rains in April, 1971 the lucerne died and the paddock was ploughed

and resown to lucerne with some medic and ladino clover. *Setaria* was a problem in the hay making operation because it dried more slowly than the lucerne and clover; the paddock was thoroughly cultivated before resowing the lucerne in an attempt to eliminate the *setaria*.

However, following the cultivation there was a very large increase in the proportion of *setaria* so that the paddock became quite unsuitable for hay making operations and is now being heavily grazed. In this pasture the cattle have again shown a marked preference for the *scrobic* over all other pasture components. *Setaria* seems to be the least attractive species to the animals. The potential for hay production from this pasture (before the increase in *setaria*) can be seen from the production of 5,993 bales over a 16 week period commencing November 28th, 1969.

TOWNSVILLE STYLO PASTURE

This paddock of 26 ha was planted on 26th September, 1971 receiving 500 kg/ha of molybdenised superphosphate. The land was ploughed once with a one way plough and once with an offset disc and then sown directly on the dry seed bed. The mixture comprised .07 kg/ha *lotononis*, 2.2 kg/ha *scrobic*, 1.1 kg/ha green panic, 0.6 kg/ha *siratro*, 1.1 kg/ha Townsville stylo and 1.1 kg/ha of ladino clover. Following germinating showers there was a period of hot dry weather and *lotononis* failed to establish. Ladino also failed and green panic grew under the shade of trees but was very yellow and poorly grown in the open. Germination of *scrobic* was very poor but some plants established and should provide seed for further spread. *Siratro* established well and is well represented in the pasture. However, the outstanding success has been Townsville stylo which in 1972/3 was approximately a 66% solid ground cover. The paddock was grazed heavily immediately after establishment, encouraging the Townsville stylo to form a prostrate mat of growth. Although the paddock has been heavily stocked the cattle have done very well and would not eat supplementary licks when cattle on other parts of the property were consuming large amounts of licks.

Members expressed surprise at the highly productive Townsville stylo pasture and the excellent condition of stock because Townsville stylo has only been successful at one or two isolated sites south of Gympie. Although this pasture was only going into its third growing season an unfertilized area of Townsville stylo was still persisting at "The Overflow" 23 years after the original sowing.

WATTLE REGROWTH AND SOWN PASTURES

Although wattle was not a dominant component of the original vegetation it began to invade the cleared country on "The Overflow", gradually forming a dense wattle scrub. Normal control methods became uneconomical so wattle scrub was pulled down with bulldozers and the land cultivated prior to sowing tropical pasture mixtures. 52 ha were ploughed twice, in different directions, with an offset disc and planted. However, quite a lot of the wattle suckered and the paddock will be treated for wattle regrowth for the second time since the sowing in March, 1969. The other 96 ha were ploughed once with a one-way plough and once with the off-set disc and there have been no problems to date with wattle regrowth.

The 52 ha were sown to a complex mixture of Wimmera rye, *Kazungula setaria*, *scrobic*, prairie, green panic, molasses, *siratro*, *lotononis*, lucerne, glycine, Ladino clover and medic. *lotononis* and *siratro* have been outstanding. *Scrobic* density is high and the plants are kept grazed very short while *Kazungula setaria* is also persisting well. Some molasses has persisted but is not liked by the cattle and green panic has persisted without ever showing much vigour. All other species in the mixture have disappeared. Wimmera rye, molasses, glycine and medic were omitted from the sowing mixture for the 96 ha which were sown a year later. For unknown reasons the *scrobic* failed completely in this planting but the *lotononis* has been quite spectacular.

The 148 ha are grazed as a unit, with heavy grazing pressure interrupted by occasional short spells of a few weeks duration. At the present time there are 371 weaners on the pasture and these will be progressively replaced by breeders and calves so that the pasture will probably be carrying 300 cows and calves by the end of March. One of the best features of this pasture is the performance of the cattle on the lotononis during the winter.

It was noted that good animal production had been obtained from blue couch pastures at the C.S.I.R.O. Pasture Research Station at Samford. The reputation of lotononis for unreliability worried a number of members but on this hilly area of sandstone country the legume was very dense and still increasing after 3–4 years.