

## FIELD MEETING IN THE HARRISVILLE AND KALBAR DISTRICTS OF SOUTH-EAST QUEENSLAND ON OCTOBER 16, 1975

### TROPICAL AND TEMPERATE PASTURE SYSTEMS FOR BEEF AND DAIRY PRODUCTION

The sub-tropical environment offers a number of pastoral developmental options which involve the integration of tropical and temperate pastures in various livestock production systems. Visits to four properties provided an opportunity to evaluate a number of these different pasture systems in dairy and beef enterprises.

#### BEEF PROPERTY OF MR. P. HAYES, WILSONS PLAINS

##### *Soil Conservation*

From the alluvial flats the land slopes up into low hills not exceeding 300 metres elevation. This comprises the Kengoon-Fraser soil unit and is subject to severe erosion if soil conservation measures are not adopted following cultivation. Wherever possible natural waterways are incorporated in the conservation plan to avoid the instability associated with the construction of artificial waterways. A strip of about 20 m is left untouched on either side of the waterway as this soil type has a tendency to cut away. While the primary purpose of the contour banks is to prevent soil erosion, these banks in association with cultivations and planting on the contour also serve to conserve moisture in what can often be a very dry district.

Timber clearing is another important aspect in this hilly country where subsoil water movement can give rise to soaks lower down the slope.

##### *Sown Pastures*

The original pastures were developed some eight years previously on old cultivation areas and were therefore sown on fully prepared seedbeds. Subsequent plantings have involved less detailed preparation—more trees have been left, the area contoured, and cultivation restricted to one good ripping with one or two discings. Most pastures have been planted in October/November but occasionally planting has been delayed until February/March. The pasture mixtures are broadcast with a fertilizer spinner and immediately rolled. Fertilizer mixtures based on superphosphate are applied sparingly ( $125\text{-}190\text{ kg ha}^{-1}$ ) after the pasture has established but some paddocks have grown well without any fertilizer application. Mixtures in the original pastures contained green panic, setaria, Siratro, glycine, desmodium and lucerne. Desmodium and setaria have not been productive and lucerne has been discarded following some early losses of cattle with bloat. Present mixtures comprise  $7\text{ kg ha}^{-1}$  green panic,  $3.4\text{ kg ha}^{-1}$  Siratro and  $1\text{ kg ha}^{-1}$  glycine. The soils on these slopes are generally not suitable for good growth of glycine.

The pastures are not grazed in the establishment year until the green panic has seeded but the pasture is then grazed off fairly quickly to achieve maximum utilisation before the winter frosts. A continuous grazing system is used and established pastures carry a beast to 0.6 ha quite comfortably. Ticks are still a problem in the improved pastures and dipping is necessary.

#### DAIRY FARM OF MR. P. WADLEY, MILORA

The major requirement on Mr. Wadley's farm is for an adequate supply of green feed during the winter months to ensure maximum milk production during the quota period of April, May, June and July. The pasture inspected was sown in August 1974 to  $5.6\text{ kg ha}^{-1}$  of ryegrass,  $3.4\text{ kg ha}^{-1}$  Demeter fescue,  $1.1\text{ kg ha}^{-1}$  Narok setaria and  $3.4\text{ kg ha}^{-1}$  white clover. A storage dam was constructed to supply water

for irrigation with application by means of a travelling irrigator. 500 kg ha<sup>-1</sup> super and 125 kg ha<sup>-1</sup> urea was applied at planting with a further 250 kg ha<sup>-1</sup> urea applied to October 1975. Lucerne was another possibility for this pasture and would probably have been better suited to the irrigation constraints imposed by labour shortage and dam storage capacity, but the production from lucerne is not sufficient during the winter—early spring period. Phalaris has gone out of favour in the district because cattle prefer rye grass and white clover. However, *Phalaris* species being tested at Gatton have shown promise with better summer growth than the original Australian cultivar, and their animal acceptability is reported to be also improved.

The 13 ha of pasture is irrigated in a week and the 150 cows are turned into the pasture about three weeks later for four or five days grazing. Milk production from this mixed herd (predominantly Friesian) averages 10.5 litres per cow per day with 3-4 kg of concentrates being fed to each cow in the stalls during quota periods. The pasture components are eaten readily with no palatability problems from the fescue. Anti-bloat is fed to the cows when the pasture becomes clover dominant. The use of fertilizer nitrogen in autumn and spring was suggested as a management tool to promote grass growth and hence prevent the invasion of weeds such as thistle. Release of nitrogen from white clover comes when most of the planted species are not growing so that the native grasses and weeds tend to use this released nitrogen. Where adequate water is available for summer irrigation the Demeter fescue and Narok setaria components of the pasture make useful summer growth.

#### DAIRY FARM OF MR. C. MILES, HARRISVILLE

On this 32 ha farm some 24 ha are devoted to intensively managed irrigated pasture. 60-75 cows are milked throughout the year with supplementary feed supplied from hay grown on the farm together with purchases of 1300 bales of hay and over 800 bags of barley.

Excellent results have been achieved with a seed mixture of 3.4 kg ha<sup>-1</sup> white clover, 1.1 kg ha<sup>-1</sup> Louisiana, 2.2 kg ha<sup>-1</sup> red clover, 3.4 kg ha<sup>-1</sup> rye grass, 2.2 kg ha<sup>-1</sup> lucerne and some prairie grass. Pasture management is directed towards keeping pastures short and actively growing with high clover and low weed contents. Land which has been in pasture for five years is broken up before the end of December and worked through until autumn when oats are planted. Further cultivation after the oats gives successful weed control for the pasture planting the following autumn. 250 kg ha<sup>-1</sup> super is applied to the pastures in spring with a further 250 kg ha<sup>-1</sup> super and 125 kg ha<sup>-1</sup> potash in autumn. A short rotation is employed to keep the pasture short and leafy. During periods of rapid pasture growth it may be necessary to skip over sections of long pasture and cut them for hay. Bloat oil is sprayed on the pasture every morning before grazing and barley straw is supplied in a hay rack; up to 10 bales per day are eaten.

Continuous calving is necessary to satisfy the requirements of a fairly high milk quota. Over the year the 90 cows milked produced some 259,680 litres. Assuming an average lactation of 292 days, production per cow was 9.9 litres per day. The top two or three cows produce up to 29 litres and the better cows some 18-22 litres per day. Only very limited amounts of concentrates are fed prior to calving but up to 4.5 kg of grain a day is fed to the best cows during the quota period in winter. Apart from the winter months, concentrates have to be fed during periods of sustained wet weather when the pastures cannot be grazed. The high quality of the pastures has been demonstrated by sustained high milk production in August following early cessation of concentrate feeding. Although no precise figures were available on the cost of production of milk from the farm it was pointed out that variable costs amounted to some 3.1 cents per litre or only about 20% of the cost margin return.

The cows are sprayed regularly for ticks with a small mist sprayer but the intensive management system with closely controlled rotation of pasture is probably

a major factor in the successful control of the tick. Under more extensive management systems it was suggested that this type of spray unit would not be suitable for tick control.

#### "KENGOON"—STUD BEEF ENTERPRISE OF MR. W. H. KING, KALBAR

Irrigated temperate pastures of clovers and prairie grass with Hunter River lucerne are grown on the flats and more recently tropical pastures of glycine, Green-leaf desmodium, Siratro, green panic and kikuyu have been developed on the slopes. Two noteworthy features of these tropical pastures were the excellent colour of the green panic in the absence of nitrogen fertilizer and the high density of trees retained over the sown pasture area. Medics, vetch and Japanese lespedeza were other species thought to have a useful role in complementing the existing pasture mixtures. Excellent growth for hay or forage chopping had been obtained by ripping pasture on the flats and sowing with 11 kg ha<sup>-1</sup> black barley and 5.6 kg ha<sup>-1</sup> New Zealand ryegrass. Although kikuyu grows very well on the flats and is easier to manage it was suggested that some 450 kg ha<sup>-1</sup> N would have to be applied to the kikuyu to obtain an equivalent protein yield to that of the barley/ryegrass/temperate legume mixture. X

Stud cattle of Hereford and Poll Hereford, Droughtmaster and Afrikander breeds are bred at "Kengoon". These cattle have been bred for northern conditions and their suitability for these environments has been demonstrated by their good performance over the years at "Torsdale". In some of the harsher western and northern environments the Afrikander and Droughtmaster have done extremely well and their cost of production has been low.

While the Hereford cattle have done well in northern conditions it was not claimed that these cattle were inherently tick resistant. Rather, their good performance was seen to result from careful management of cattle and pastures so that tick infestations were minimized. Close management of pasture rotation and pasture spelling for tick control was obviously much easier on small highly improved properties but many of the larger northern properties had started programs of closer subdivisional fencing before the slump in the beef prices restricted budgets. However, with high labour costs the tight budgetary situation did favour the use of lanes and small paddocks for low labour inputs in cattle management. Cancer eye represented a significant problem for Hereford cattle in the north and selection for pigmentation around the eye helped to reduce the incidence of eye cancer.

At "Kengoon" the younger weaners are drenched to control internal parasites and thereafter drenching is repeated three weeks after rain or whenever they look wormy up until about 20 months of age. Experience with the different breeds at "Kengoon" agrees with C.S.I.R.O. tests at Belmont where the Brahman and Afrikander breeds have better internal parasite resistance than the British breeds.