

PASTURE BASED SYSTEMS FOR MILK PRODUCTION IN THE TROPICS

R. G. WALKER, R. I. KNIGHT, B. LEHMANN, and R. T. COWAN

QDPI, Kairi Research Station, PO Box 27, Kairi, Qld 4872.

Production per cow on subtropical dairy farms has increased by 80% in the last 10 years, though there are still concerns with the ability of feeding programs to maintain milk composition and yield throughout the year. Studies have been done on the effects of components of feeding programs on milk yield, but it has been difficult to apply this knowledge to annual feeding programs.

In this project annual feeding programs, selected as being technologically and economically sound, are being evaluated for their efficacy in maintaining milk yield and composition. The experiment is a half replicate of a 23 factorial, with the factors being, (i) summer pasture type, either N fertilised tropical grass (300 kg N/ha, 2.3 cows/ha) or tropical grass-legume pasture (1.3 cows/ha), (ii) winter pasture stocking rate (SR) on irrigated ryegrass, either low SR (4.5 cows/ha) or high SR (7.7 cows/ha), and (iii) level of meal feeding, either 1 or 2 t per cow per lactation. There are 16 cows in each treatment, with half calving in summer and half in autumn. The treatment herds are:-

(RED) Summer N fertilised grass, low SR in winter, and 1 t meal, **farmlet** area 10.5 ha.

(BLUE) Summer N fertilised grass, high SR in winter, and 2 t meal, **farmlet** area 9.1 ha.

(GREEN) Summer grass-legume pasture, high SR in winter and 1 t meal, **farmlet** area 14.4 ha.

(WHITE) Summer grass-legume pasture, low SR in winter, and 2 t meal, **farmlet** area 15.8 ha.

Results from the last completed lactation of each herd in this trial (Table 1), have shown high levels of milk production and satisfactory milk composition for all herds. The levels of production from forage in this trial, after allowing for concentrate inputs, range from 4360 to 5931 L/cow.year. These levels are higher than previous trial work on components of feed systems would indicate. Davison *et al.* (1985), reported fat corrected milk yields of 2930 L/cow.year from unsupplemented cows grazing nitrogen fertilised pastures on this site.

Table 1. Annual milk yield and composition of the treatment herds

Herd	Summer calving period					Autumn calving period				
	Milk (L)	Fat (kg)	Fat (%)	Protein (kg)	Protein (%)	Milk (L)	Fat (kg)	Fat (%)	Protein (kg)	Protein (%)
RED	6128	248	4.06	199	3.25	6870	259	3.77	222	3.24
BLUE	7080	242	3.42	218	3.08	6760	262	3.88	219	3.24
GREEN	7131	267	3.75	225	3.16	6417	240	3.74	201	3.14
WHITE	7390	275	3.73	228	3.09	7184	270	3.77	228	3.18

The high production can be attributed to the development of feeding programs that have combined appropriate summer and winter pastures with concentrate feeding to enable cows to be well fed through the year. Using local fertiliser, meal and other costs the GREEN herd had the lowest costs of production, and the highest gross margins per cow. The BLUE herd had the highest production and gross margin per hectare. The WHITE herd had the highest production per cow. Costs of production from each **farmlet** were comparable with costs from the local dairy industry.

DAVISON, T. M., COWAN, R. T. and SHEPHERD, R. K. (1985). *Aust. J. Exp. Agric.* 25: 515-23.