

RESIDUAL VALUE OF NITROGEN FERTILISER IN A GRAZING SYSTEM

W. K. EHRLICH and R. T. COWAN

Queensland Dept of Primary Industries, Mutdapilly Research Station, M/S 825, Ipswich, Qld 4305.

Nitrogen fertiliser increases the quality and quantity of tropical grass and milk yield of cows (Cowan *et al.* 1987). This experiment was conducted to assess the impact on milk and pasture yields of reducing the applied nitrogen level for pastures with a history of high nitrogen fertiliser inputs.

The experiment started in November 1989. Cows grazed **dryland Rhodes grass** (*Chloris gayana* cv. Callide) at 2 cows/ha in the summer and **dryland oats** (*Avena sativa*) at 2.5 cows/ha in the winter. Twenty multiparous Holstein-Friesians were allocated to 2 replicates of the following treatments; 150/150, 300/300, 300/150, 450/150 and 600/150. The first number of each pair refers to the rate of N (kg/ha) applied per year to Rhodes grass for 6 years before November 1989 and the second number to the rate of N applied per year subsequently. The nitrogen was applied in September, December and March. The oats were fertilised at 100 kg N/ha.year at planting. The data presented in Fig. 1 are for the summer growth period, January to April 1991 (the second year of the experiment). All cows received 5 kg cracked sorghum per day after morning milking.

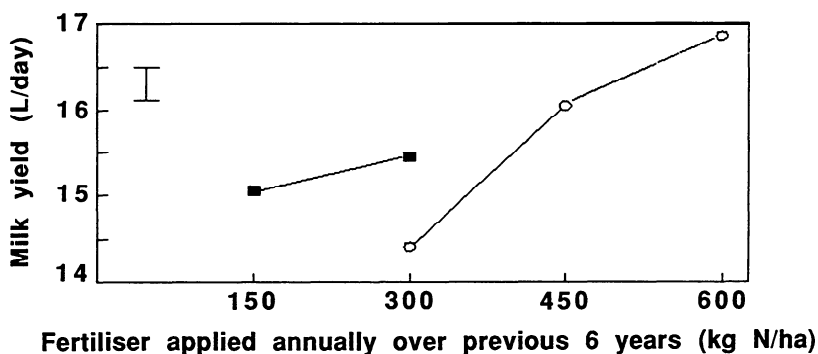


Fig. 1. Milk response in the second year of the experiment (■, previous fertiliser rate maintained; ○, previous rate reduced to 150 kg N/ha.year). Vertical bar is the s.e. of mean.

Milk yield was highest for treatments which had previously received 450 or 600 kg N/ha.year. Production for the 300/150 treatment was below that of the 300/300 and 150/150 treatments. Pasture yield also declined for the 300/150 treatment when compared to 300/300, averaging 3950 and 5000 kg DM/ha respectively. Yields were intermediate for 450/150 and 600/150 fertiliser treatments, averaging 4300 kg DM/ha. Leaf percentage in all pastures was low, in the range 11–18% DM. The results suggest there is a substantial residual effect of level of nitrogen fertiliser on pasture and milk yields.

COWAN, R. T., LOWE, K. F., UPTON, P. C. and BOWDLER, T. M. (1987). *Proc 4th AAAP An. Sci. Congress, Hamilton, N.Z.* p. 146.