

An evaluation of mowing trials

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It is convenient to assess the productivity of pasture by measuring the yield of herbage mown from ungrazed plots (M). Ungrazed trials are often used in the early stages of the evaluation of new species or cultivars and for measuring responses to fertilizer or pest control. This paper presents results from an experiment at Hamilton that was designed to examine the relationship between M and the productivity of grazed pasture (G).

Methods

The experiment was located on an area of perennial ryegrass/subterranean clover that had been shown to be responsive to superphosphate. The treatments comprised plots each stocked with eight Corriedale weaners at stocking rates (SR) of 10, 14 or 18 sheep/ha. Six plots at each SR were fertilized each autumn with superphosphate to apply phosphorus at the following rates: 0, 4, 16, 36, 64 or 100 kg/ha. M was measured by mowing herbage from two 12 m x 5 m enclosures per plot at frequencies of 4, 8 or 12 weeks. G was estimated each month at six sites per plot from the change in height of ungrazed pasture beneath a weighted disc (area 0.1 m², mass 3.0 kg). Pasture cages were used.

The position for measurement within each cage was defined with a wire pin. After the change in height was measured the cages were moved to sites where pasture availability was similar to the plot mean. The relationship between height and yield was obtained by cutting similar areas to ground level. The relationship between M and G between May to November was examined by linear regression.

Results and Discussion

The results for the first 2 years are shown in Table 1.

TABLE 1 : Parameters of regression equations of the form $G = a + bM$ relating the seasonal production of grazed pasture (G) to herbage mown from ungrazed plots (M) (units-tonnes/ha/season)

Year	Cutting frequency (weeks)	a	b [†]	Parameters r ²	RSD
1979	4	-0.83	1.87 (p)	0.67	0.90
	8	-1.71	1.74 (p)	0.87	0.50
	12	2.39	1.26 (p)	0.62	0.92
1980	4	-2.37	2.34 (x)	0.83	1.28
	8	-2.50	1.69 (y)	0.88	1.08
	12	-1.39	1.10 (z)	0.81	1.33

[†] 'b' values followed by the same superscript do not differ (P < 0.05)

Animal production was related to G; e.g. in 1979, over the 18 treatments, G between May and November was related to liveweight gain (LWG kg/ha) by the following equation: LWG = 6.3 + 0.236 G (RSD = 1.40 kg; r² = 0.86).

The results indicate that M can be used to predict G, but that care is necessary in interpreting a given response in M. During 1980, a change of 1.0 tonne/ha in M corresponded to changes in G from 1.10 to 2.34 tonne/ha depending on the frequency of cutting.