

Pasture establishment using oats as a companion crop on the northern tablelands of N.S.W.

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The high cost of establishing pastures into prepared seedbeds can be largely recovered by sowing a companion crop such as oats. Our objective was to determine whether the early grazing and grain recovered from the crop can be justified in lieu of the potential long-term loss in pasture production due to competition at establishment.

The pasture was a mixture of phalaris, fescue, cocksfoot, lucerne, white and subterranean clovers. This was sown at Glen Innes on 8/5/76 at a rate of 13 kg ha⁻¹ either alone (P) or with Blackbutt oats at two sowing rates 50 (LO+P) and 100 (HO+P) kg ha⁻¹. The plots were grazed on 23/8/76 and 30/9/76 by sheep or cattle or were left ungrazed until the grain was harvested on 4/1/77. Thereafter, all plots were intermittently grazed. Four replicates were used in a split-plot design with method of grazing as the main plot treatment. Dry matter availability is shown in table 1.

TABLE 1. Dry matter available (kg ha⁻¹) of oats and pasture at each grazing.

Treatment	23/8/76		30/9/76		4/1/77	15/3/77	11/10/77	19/10/78
	Oats	Pasture	Oats	Pasture	Pasture	Pasture	Pasture	Pasture
P		-†		680a	3470a	1650a	1820a	1830a
LO+P	880a*	-	2420a	50b	380b	990b	2030a	1990a
HO+P	960a	-	2580a	80b	300b	1120b	1930a	2020a

* Within columns, values followed by the same letter do not differ ($P>0.05$). † Pasture availability was negligible.

During the establishment year, the companion crop provided substantially more dry matter than the pasture sown alone. However, the companion crop caused a ten-fold reduction in the quantity of pasture available at grain harvest in summer. The pasture sown with the companion crop then gradually recovered and by the following spring was as productive as the pasture sown alone. Grazing with either sheep or cattle during establishment did not affect subsequent pasture availability. Oat grain production was reduced from 2850 to 1440 kg ha⁻¹ by grazing ($P<0.01$).

It is concluded that the use of oats as a companion crop has a negligible long-term effect on pasture production under conditions of adequate moisture and soil fertility. In the short-term however, a companion crop transfers the unproductive establishment period from the initial winter to the following summer and autumn, when poorly established plants are most vulnerable to heat and moisture stress. Such effects could then carry over into the following winter period when pasture availability is most critical for animal production.