

The effect of grazing on grain yield of winter barley in Tasmania

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It was shown recently (1) that with the correct management and choice of cultivar it may be possible to graze barley without significant loss in grain yield. This experiment examined the effect of grazing treatments on the forage and grain yield of the new winter barley cultivar Ulandra with or without nitrogen to assist crop recovery.

Methods

The barley cultivar Ulandra (W3076) was sown on 0.8 ha of basalt soil at Thirlstane (NW Tasmania) on 25/4/1988, resulting in an establishment of 108 plants/m². Three replicates of the following four treatments were used: (i) control (no grazing); (ii) early grazing (102 days after sowing); (iii) late grazing (145 days after sowing), and (iv) early and late grazing [a combination of grazing treatments (ii) and (iii)]. Each plot measured 40 m x 10 m. Angus cattle grazed the plots, the plants being grazed to a height of about 4 cm, as quickly as possible. Plots were split for nitrogen application, 0 or 50 kg N/ha, immediately following the completion of the second grazing.

Results and discussion

Table 1. Dry matter production (t/ha) before grazing; amount removed by grazing, and effect of nitrogen (0 or 50 kg N/ha) on maximum dry matter and grain yield (t/ha).

Treatment	1st grazing		2nd Grazing		Max d.m.		Grain yield	
	before	removed	before	removed	0 N	50 N	0 N	50 N
(i) Control	1.6	0	5.7	0	15.6	19.2	6.2	7.2
(ii) Early grazing	1.6	1.0	1.6	0	11.4	16.7	5.6	6.3
(iii) Late grazing	1.5	0	4.3	2.3	10.3	9.3	5.2	5.4
(iv) Early and late grazing	1.7	1.1	1.4	0.5	9.8	8.6	5.0	4.3

The least amount of dry matter was removed by the early grazing and the most by the single late grazing, which removed most of the early formed ear initials. Nitrogen compensated for the loss of dry matter following early grazing, there being little difference in the maximum dry matter or grain yield from that of the nil N control. Nitrogen had no effect on late or twice grazed treatments, where maximum dry matter and final grain yield were greatly reduced. Grazing reduced final plant height by 15-20 cm. As the control treatment lodged, particularly with N application, the reduction in plant height could be considered an advantage.

In terms of grain yield, an early grazing carried out before the shoot apex starts to rise above grazing level has minimal effect on the crop and may have the advantage of reduced lodging. An early grazing followed by a late grazing should not reduce yield any more than a single late grazing and would have the advantage of distributing available feed more evenly over the late winter-early spring period.

1. Abdul-Rahman, M.S., Mendham, N.J. and Yates, J.J. (1987). Proceedings of the 4th Agronomy Conference, p. 234.