CONTROL OF YOUNG GORSE PLANTS BY GRAZING

M.J. HARTLEY

Agricultural Research Division, MAF, Private Bag, Palmerston North

SUMMARY

Young gorse (*Ulex europaeus*) plants can be controlled by sheep grazing and this trial was conducted to see how long grazing of young gorse plants could be delayed before control was lost. Autumn germinated gorse seedlings were eradicated by a first grazing as late as the following January. First grazing as late as April also gave good control providing grazing was repeated. The potential for gorse seedling control by strategically timed grazing by breeding ewes is discussed.

INTRODUCTION

Previous work measuring the survival of 4-6 month old gorse seedlings under grazing in the spring has shown that the mortality of seedlings was often over 99% and that some control could be achieved by grazing as late as January (Hartley and Phung 1979; Hartley *et al* 1980).

Because of feed surpluses in the spring and the management requirements for ewes and lambs, it is often difficult to graze gorse country sufficiently hard in the spring to control gorse seedlings. The trial described here was designed to examine the effects of delayed grazing on the survival of young gorse plants.

METHOD

The trial was conducted on a flat river terrace on Tokomaru silt loam on the Hauorongo Research Area near Palmerston North in a paddock adjacent to the earlier trials cited. The paddock was in established perennial ryegrass (*Lolium perenne*)/ white clover (*Trifolium repens*) pasture under intensive sheep grazing.

Gorse seedlings were collected from newly cleared gorse country in autumn 1980 and planted in seed boxes. The seedlings had nodulated when collected.

In early October 1980 healthy gorse seedlings were selected from the seed boxes and transplanted 1m apart in rows 1.85m apart in blocks of 20 (5 plants x 4 rows). Forty blocks were planted and fenced to exclude grazing animals. Pasture was mown between the rows and hand cut around the gorse plants to prevent the plants being smothered.

Grazing commenced in mid December. At each grazing a large mob of sheep (500-1000/ha) was allowed access to the adjacent paddock and four blocks of 20 plants, for 1-2 days. Grazing was repeated at approximately monthly intervals (longer in the winter) and each time all previously grazed blocks were re-grazed together with four new blocks. The last blocks were not grazed until January 1982, 15 months after transplanting, when the gorse was about 20 months old. All gorse plants were counted and heights measured before grazing and between each grazing.

Two supplementary trials to see the effects of excluding stock for periods were conducted on natural gorse populations in the same district, one on Hauorongo and one on Kahuterawa Rd. Areas of pasture on hill sides subject to re-establishment of gorse were fenced to exclude grazing for periods and matched plots, open to grazing, marked. Plots were closed in November for periods of 4-11 months and the number of new gorse plants counted at the end of each period.

RESULTS

The grazing dates, mean gorse heights before and after first grazing and gorse survival are shown in Table 1. The December and January grazings demolished all the gorse but through February and March about half the plants survived their first grazing.

Proc. 35th N.Z. Weed and Pest Control Conf.

TABLE 1: Dates of first grazing, gorse height before and after first grazing and percentage survival.

Date	Mean ht (cm) before grazing	Mean ht (cm) after grazing	% surviving	
			1st graze	Final graze (20.4.82)
17.12.80	11	-	0	0
20. 1.81	21	-	0	0
25. 2.81	31	15	48	3
1. 4.81	29	10	59	1
5. 5.81	32	19	78	9
30. 6.81	32	24	90	37
9. 9.81	33	32	99	53
12.10.81	37	31	100	62
24.11.81	40	39	96	69
6. 1.82	57	56	94	78

This coincided with the termination of the first season's growth period as shown by plant height. Gorse survival rose steadily throughout the winter as the plants became tougher (as shown by the post-grazing mean height). Gorse plants that were grazed were usually chewed off at the lower half of the stem or pulled up, leaving broken roots exposed. Some were broken at ground level.

A considerable number of plants that were recorded as surviving their initial grazing succumbed to repeated grazing, especially following first grazing in February, April and May (Fig. 1). Even following a first grazing in September and October where all 'survived', numbers declined with later grazings. Some of this apparent delayed action kill may be an artefact as plants were recorded 'live' if only a green stump were left. Some of these may have died without further grazing but most attempted to regrow and the soft shoots were readily stripped by sheep at the next grazing. The data in Fig. 1 has been extrapolated to show the maximum likely final survival.

Fig. 1: Gorse plant survival before grazing and decline in survival with each grazing following 10 initial grazing dates between 17.12.80 and 6.1.82.

TABLE 2: Mean numbers of gorse plant/20m² plot following periods of grazing or non-grazing.

Hauorongo			
Period 25.11.80-2.4.81	No./plot	Period 2.4.81-29.10.81	No./plot
Ungrazed (10 plots)	7.2	Ungrazed (5 plots)	8.6
		Grazed (5 plots)	3.0
Grazed (10 plots)	0.9	Grazed (10 plots)	0.7
LSD 5%	5.2		6.3
Kahuterawa Rd			
Period 13.11.80-4.9.81			
		Ungrazed (12 plots)	23.0
		Grazed (12 plots)	11.7
		LSD 5%	9.2

The supplementary trial at Hauorongo showed that spelling pasture over the summer increased gorse survival significantly (Table 2). Though numbers were reduced by subsequent grazing the results suggest December-February to be a fairly critical time for gorse control. The trial at Kahuterawa Rd was less intensively grazed and the gorse control less good. However, grazing still reduced the number of gorse plants significantly.

DISCUSSION

There are practical difficulties in applying intensive grazing for weed control, in the spring, in a normal farm situation. Ewes with lambs at foot cannot be grazed hard without adversely affecting lamb performance. However, after weaning, in November-December, the ewes can be hard mob stocked for two months before flushing in February. After tupping, in March-April, ewes can be forced to graze hard again through May and June. The gorse survival study reported here suggests that good control of gorse seedlings could be obtained by hard grazing in December-January especially where this is followed by a further hard grazing which could be May-June. It should, therefore, be possible to control gorse with a breeding flock by hard mob stocking the ewes after weaning and after tupping.

The main trial reported here was mob stocked very intensively for short periods. The auxiliary trial at Hauorongo was grazed equally hard but by a few sheep over long periods (several weeks). The grazing at Kahuterawa Rd was less controlled and less intensive than on the other sites. The results would suggest that hard grazing is needed for gorse control but that this can be done by a lot of sheep in a few days or a moderate number of sheep over several weeks. From stock condition point of view a large mob for a few days would be best so that the animals are kept hungry enough to eat gorse for only 1-2 days at a session. One to two days 'starvation' would have negligible effect on ruminant condition.

ACKNOWLEDGEMENTS

I would like to thank Dr A.I Popay for consultation in planning this work, D.K. Edmonds, H.T. Phung, P. Sanders and L.A. Lyttle for help with gorse planting and measurements and D.P. Meade for fencing and stock work.

REFERENCES

- Hartley, M.J., Edmonds, D.K., Phung, Hong Thai, Popay, A.I. and Sanders, P., 1980. The survival of gorse seedlings under grazing, treading and mowing. *Proc. 33rd N.Z. Weed and Pest Control Conf.* 161-164.
- Hartley, M.J. and Phung, Hong Thai, 1979. Effect of pasture species and grazing on survival of seedlings gorse. *Proc 32nd N.Z. Weed and Pest Control Conf.* 297-302.