

## Impact of grazing by sheep on subterranean clover cultivars

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In southern Australia subterranean clover pastures are normally grazed heavily during early and mid winter which is the main period of feed shortage. Therefore, the ability of different subterranean clover cultivars to recover from heavy grazing is important. While little is known about the differing responses of various subterranean clover cultivars to grazing (1) it is known that pasture production during winter is the main determinant of year-round carrying capacity of the sown pastures in southern Australia. This paper summarizes results of a short term experiment involving cultivars of subterranean clover grazed by sheep.

### Methods

The cultivars Yarloop, Trikkala, Clare, Mt. Barker and Larisa were sown 29 May, 1984 on a red brown earth soil at the Waite Institute. Sowing rates were adjusted to give 600 viable seeds/m<sup>2</sup>. Two drill plots (2.16 by 60m) of each cultivar were sown and the area fenced to allow stocking densities to be imposed on 30 Aug. 1984 (see Table 1) all cultivars were grazed together. The sheep were removed on 11 Oct. 1984. Open and closed quadrats (cages) were used to estimate the growth and availability of pasture (2). The first harvest (pre-grazing) was made on 30 Aug. 1984. Subsequent harvests were made every 21 days until 1 Nov. 1984. Seed was harvested in January 1985.

### Results and Discussion.

The early production of Yarloop on Aug.30,1984 was superior to the other cultivars: however, because of the earlier maturity and erect habit of both Yarloop and Clare they suffered most from heavy grazing and treading in late August and early September when soils were waterlogged. As a result, pasture availability of Yarloop and Clare on Nov.1 were significantly reduced compared to the other cultivars. Pasture availability on Nov.1 was significantly reduced only at the highest stocking density. The severe defoliation and treading damage to Yarloop and Clare was reflected in reduced seed yields (Table 1).

**Table 1. Seed production (kg/ha) Jan.8,1985 from five cultivars of subterranean clover grazed at three stocking densities<sup>†</sup> on red brown soil at Waite Institute, 1984.**

Cultivar (Cv)	Stocking density (S.d)		
	High	Medium	Low
Yarloop	51(3.922)	596(6.390)	1045(6.952)
Trikkala	333(5.807)	1432(7.267)	1268(7.145)
Clare	105(4.654)	1135(7.034)	1151(7.048)
Mt. Barker	455(6.120)	928(6.833)	1251(7.132)
Larisa	1019(6.927)	1089(6.993)	1100(7.003)

NB: Transformed logx data are given in brackets.

Interaction (logx transformed values) l.s.d P<0.01\*\* a)within S.d = 0.693,  
b)within Cv. = 0.599, c)Cv.x S.d = 0.631

<sup>†</sup> Low stocking density=16.7 sheep/ha; Med.=33.3 sheep/ha; High=50.0 sheep/ha.  
i.e 1, 2, & 3 sheep/plot respectively.

This research has shown that the grazing pressure of sheep in late winter can greatly influence growth and seed production of subterranean clover cultivars and thereby have longer-term effects on pasture composition.

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2. Mc Intyre, G.A. 1946. C.S.I.R. Bull. 201\_70-83.