

Effects of defoliation on subterranean clover seed production

C.R. Stockdale and K.B. Kelly

Kyabram Research Institute, Kyabram, Victoria 3620

Subterranean clover (*Trifolium subterraneum*) is an important pasture legume on irrigated dairy farms in northern Victoria. It is desirable that subterranean clover pastures be self-regenerating. An experiment in 1987 assessed the effects of defoliation on the seeding characteristics of an irrigated subterranean clover pasture.

Methods

Four frequencies of defoliation (4,6,9 and 12 weeks) at two intensities were compared in a randomised block design (four replicates). Intensity of defoliation was varied by altering the height of the cutter bar of an autoscythe from ground level to about 5 cm above ground level. The pasture was sown in 1983 and was mainly subterranean clover (cvv. Trikkala (90%) and Clare (10%)). Initial irrigation was in late February and the final irrigation, mid-October. Final harvest was on 13 November. At this time, four 4 dm² quadrats were taken from each plot to assess the effects of treatment on seed production.

Table 1. Characteristics of the seed remaining after the final harvest in November. Values with similar letters do not differ significantly ($P < 0.05$).

Frequency of defoliation (weeks)	Above-ground seed			Below-ground seed		
	Seeds /dm ²	Weight (kg/ha)	wt/seed (mg)	Seeds /dm ²	Weight (kg/ha)	wt/seed (mg)
Defoliation to ground level						
4	285a	150a	5.3ab	565a	384ab	6.3b
6	443a	206ab	4.6a	549a	331a	6.1a
9	458a	273b	6.0bc	818b	558b	6.3b
12	420a	281b	6.7c	603ab	404ab	6.7ab
Defoliation to 5cm above ground level						
4	430x	267x	6.2x	480x	329x	6.9x
6	520y	313x	6.0x	682xy	506xy	7.4xy
9	658yz	486y	7.4y	753y	583y	7.8y
12	705z	532y	7.5y	1000z	781z	7.3y
LSD ($P=0.05$)	173.7	112.3	0.81	239.4	139.3	0.62

Results and discussion

Defoliation had a major influence on the capacity of subterranean clover to set seed (Table 1). Defoliating to ground level reduced seed size and seed yield. In addition, the higher the cutting level, the more obvious the effects of frequency of defoliation. Yields and size of seed both increased markedly in above- and below-ground samples as the defoliation interval was extended.

In practical terms, short, intensive, defoliation intervals have the potential to prejudice the continued regeneration of a subterranean clover pasture. Furthermore, practices which defoliate to ground level, such as hay making, can have a similar effect regardless of defoliation interval, because large quantities of seed can be removed.