

Lucerne persistence under dryland grazing and haycutting

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Winter dormant (WD), semi-winter dormant (SWD), winter active (WA), and highly winter active (HWA) lucernes are now available for sowing on the Northern Slopes of New South Wales where they are mostly grown as a 3-4 year ley pasture in rotation with wheat. WA and HWA cultivars appear promising, but with narrow, erect crowns they may not persist under dryland conditions of harsh intermittent grazing (I) and periodic droughts.

An experiment was sown in September 1977 to assess the dry matter yield and persistence of 21 cultivars under dryland grazing and haycutting. Data from this experiment have been reported by (2) and (3) for three and four years, respectively, after treatments commenced. This paper reports the persistence of lucernes in different dormancy categories after six years.

Methods

Plots were either haycut or grazed at a rate of 85 sheep per ha. when all cultivars were at the one-tenth bloom stage or every six weeks whichever occurred first. The persistence of each cultivar was measured in the enclosed and grazed portions of each plot. using the method of (4). Cultivars were grouped into the following dormancy classes; WD (AS 49R, DeKalb Brand 167, Lahontan, Rioneer Brand 531, Rioneer Brand 545, Resistador II, WL 318); SWD (Amador, Condura 73 Brand, Falkiner, Hunter River, Lahontan Cycle 4); WA (AS 13R, DeKalb X502, WL 451, WL 512, Mesilla); HWA (CUF 101, Matador, Pioneer Brand 572, UC76E).

Results and Discussion

With grazing the frequencies of the WA and HWA lucernes were only significantly lower ($P < 0.05$) than those of the WD types in 1980 (Table 1). The persistence of the HWA and WA lucernes in the haycut plots was lower ($R < 0.05$) than that of the WD group in 1977, 1979 and 1981; the mean frequency of the HWA types was also lower ($P < 0.05$) than that of the WD lucernes in 1982.

Table 1. The plant frequency of lucernes in four dormancy categories for seven years.

Dec.	Grazed					Haycut				
	WD	SWD	WA	HWA	LSD P=0.05	WD	SWD	WA	HWA	LSD P=0.05
1977	70	67	68	70	ns [†]	77	66	71	70	5.4
1978	75	76	77	75	ns	86	83	84	82	ns
1979	76	72	72	72	ns	80	77	75	74	3.9
1980	43	38	30	20	10.2	68	67	64	55	ns
1981	11	12	11	9	ns	61	52	46	40	10.6
1982	11	11	9	9	ns	54	52	43	35	11.8
1983	10	10	8	8	ns	43	42	38	32	ns

[†]ns Not significant

Although the HWA lucernes tended to have a lower persistence than the WD and SWD groups the differences between the dormancy groups were not significant at the end of the experiment. Drought conditions were prevalent throughout the experiment and this combined with heavy grazing provided a severe test of the persistence of these lucernes. After six years of grazing the HWA lucernes persisted as well as the other dormancy categories indicating their suitability as pasture leys in cropping rotations on the Northern Slopes of New south Wales.

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