

DRYLAND LEGUME TRIAL

Hay yields and composition determinations were taken at two different times during the 1970 growing season from legume plantings seeded in 1967. The trial consists of 9 varieties of alfalfa, Eski sainfoin and Emerald crown vetch. Alfalfas were well established and clipped for a single yield determination in 1968. The sainfoin was clipped only in 1969 and in 1970. A single cutting of the crown vetch corresponding to the second cutting of the other legumes was included in 1970 although the stand was extremely poor and represents data from only two replications. At the present time it does not appear that the stand will become permanently established.

Yield data from the 1970 cuttings showed total average production to be slightly greater than that reported in 1969 for the same trial. The 1970 data are shown in Table 1. Ladak alfalfa was the highest producer at 8175 lbs/acre in 1970, followed closely in order by Roamer, Teton, Travois, and Vernal at 8122, 7553, 7356, and 7025 lbs/acre, respectively. Ladak and Roamer alfalfa were also the two highest producers in the 1969 season. The lowest yielding alfalfa in 1970 was Fremont at 5714 lbs/acre, while Eski sainfoin was the lowest yielding legume at 4709 lbs/acre (Table 1). In general, all yields reported were considered high for legumes grown under dryland conditions. Excellent spring and summer moisture all years of the study coupled with a soil high in inherent production potential, and additional runoff water from adjacent cropland has resulted in above average yields normally obtained for legumes in this area.

The three-year average hay yield and composition data are given in Table 2. A first alfalfa clipping was taken all years of the study but a second clipping was made only in 1969 and 1970. The 3-year average data show that Roamer alfalfa has yielded the most hay with an average yield of 7243 lbs/acre followed closely by Ladak at 7198 lbs/acre (Table 2). Travois, Teton, Vernal, and Norseman showed average total yields of 6766, 6602, and 5734 lbs/acre, respectively. The greatest yield for all of the legumes was observed at the first yield clipping with a general reduction of approximately 1000 pounds at the second cutting. Weed growth was appreciable in the 1968 season but has continued to decline through the 1970

season. While some weed growth has been observed over all years during the first production clipping, the second cutting has been nearly totally free of weed growth.

The alfalfa stands have not appreciably deteriorated over the 3-year study period. Heavy early spring and summer water runoff from areas adjacent to the trial may perhaps have contributed to the maintenance of a good stand and resulted in somewhat higher yields than reported elsewhere for this area. However, the proportionate differences in varietal yields under dryland conditions are amply demonstrated and will be helpful in determining which varieties may be recommended for planting in western North Dakota and surrounding states and provinces.

Table 1. Hay yields (dry weight-lbs/acre) and composition from two cuttings in 1970 of legume plots seeded in 1967.

Variety	First clipping			Second clipping			Average total yield		
	Legume	Weeds	Total	Legume	Weeds	Total	Legume	Weeds	Total
Ladak	5632	0	5632	2543	0	2543	8175	0	8175
Roamer	5540	0	5540	2582	0	2582	8122	0	8122
Teton	4998	5	5003	2550	0	2550	7548	5	7553
Travois	5171	11	5182	2174	0	2174	7345	11	7356
Vernal	5109	0	5109	1916	0	1916	7025	0	7025
Norseman	4557	0	4557	1912	0	1912	6469	0	6469
Ranger	4431	0	4431	1918	0	1918	6349	0	6349
Dawson	4397	19	4416	1698	0	1698	6095	19	6114
Fremont	3978	0	3978	1736	0	1736	5714	0	5714
Eski sainfoin ^{1/}	3636	49	3685	924	100	1024 ^{2/}	4560	149	4709
Emerald crown vetch ^{1/}				610	157	766 ^{2/}			
AVERAGE YIELD	4868	4	4872	2114	0	2114	6982	4	6986

^{1/} Not included in total average.
^{2/} Average of two replications.

Table 2. Three-year average (1968-1970) hay yields (dry weight-lbs/acre) and composition from legume plots seeded in 1967.

Variety	Average 1st clipping			Average 2nd clipping			Average total yield		
	Legume	Weeds	Total	Legume	Weeds	Total	Legume	Weeds	Total
Roamer	3976	157	4133	3110	0	3110	7086	157	7243
Ladak	3984	193	4177	3021	0	3021	7005	193	7198
Travois	3847	123	3970	2796	0	2796	6643	123	6766
Teton	3550	155	3705	2897	0	2897	6447	155	6602
Norseman	3155	160	3315	2419	0	2419	5574	160	5734
Vernal	3263	93	3356	2378	0	2378	5641	93	5734
Ranger	2958	128	3086	2349	0	2349	5307	128	5435
Dawson	2920	162	3082	2146	0	2146	5066	162	5228
Fremont	2755	210	2965	2129	0	2129	4884	210	5094
Eski sainfoin	2668	39	2707 ^{2/}	1235	54	1289	3903	93	3996
Emerald crown vetch									
AVERAGE YIELD^{3/}	3379	153	3532	2583	0	2583	5962	153	6115

^{1/} Second clipping, 1969-1970 averages only.
^{2/} 1969-1970 average only.
^{3/} Emerald crown vetch and Eski sainfoin omitted.