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Table 1: Yield of alfalfa on the Marringhurst sandy loam soil as influenced by method and rate of P and K fertilization.

P	K	Placement	Harvest 1	Harvest 2	Harvest 3	Total
-kg ha ⁻¹ -			-----kg ha ⁻¹ -----			
0	0	Broadcast	5431	4823	2329	12583
0	0	Knifed	4662	4627	2416	11704
0	50	Broadcast	5146	4850	2492	12488
0	50	Knifed	4925	5041	2245	12211
0	100	Broadcast	5971	5366	2392	13728
0	100	Knifed	4630	4877	2592	12099
20	0	Broadcast	4460	4230	2157	10847
20	0	Knifed	4012	4740	2554	11306
20	50	Broadcast	6169	5023	2246	13437
20	50	Knifed	4623	5704	2606	12932
20	100	Broadcast	5507	4789	2507	12802
20	100	Knifed	4814	4966	2435	12215
40	0	Broadcast	4884	4654	2112	11650
40	0	Knifed	4743	4612	2570	11925
40	50	Broadcast	5452	5115	2387	12954
40	50	Knifed	4221	4400	2143	10765
40	100	Broadcast	5844	4673	2614	13131
40	100	Knifed	4766	4886	2285	11936
80	0	Broadcast	5369	4451	2523	12343
80	0	Knifed	4907	4993	2509	12409
80	50	Broadcast	5564	5128	2270	12962
80	50	Knifed	4996	5226	2716	12938
80	100	Broadcast	5381	4943	2211	12535
80	100	Knifed	4503	4786	2571	11861

Table 2: Statistical analysis of yield on Marringhurst sandy loam using GLM.

Source	DF	Pr>F			
		Harvest 1	Harvest 2	Harvest 3	Total
P	3	ns	ns	ns	ns
K	2	ns	0.0305	ns	0.0443
P*K	6	ns	ns	ns	ns
Place	1	0.0001	ns	ns	0.0275
P*Place	3	ns	ns	ns	ns
K*Place	2	ns	ns	ns	ns
P*K*Place	6	ns	ns	ns	ns
Rep	3	0.0001	ns	ns	0.0038
MSE	69	602157	393691	140,118	1683252

On the clay loam soil, dry matter yield at the first and second harvests were not significantly influenced by fertilization (Tables 3 and 4). By the third harvest, yield was increased with application of P at 20 kg ha⁻¹ and increased further with the application of 40 or 80 kg P ha⁻¹. In the clay soil, the banding operation did not depress yield as strongly as it did in the sandy soil. Total dry matter yield through the season was only significantly

increased by the application of 80 kg P ha⁻¹ although total dry matter yield was numerically greater with each increment of P. The highest total yields were obtained when both P and K were applied at moderate to high levels. Application of fertilizer was most successful in promoting higher yield at the third harvest.

Table 3: Yield of alfalfa on the Newdale clay loam soil as influenced by method and rate of P and K fertilization.

P	K	Placement	Harvest 1	Harvest 2	Harvest 3	Total
-kg ha ⁻¹ -			-----kg ha ⁻¹ -----			
0	0	Broadcast	1243	1372	883	3498
0	0	Knifed	983	1317	743	3043
0	25	Broadcast	977	1017	537	2532
0	25	Knifed	1152	1308	914	3375
0	50	Broadcast	1317	1350	883	3550
0	50	Knifed	1137	1124	797	3058
20	0	Broadcast	1200	1189	888	3277
20	0	Knifed	1043	1399	992	3434
20	25	Broadcast	1242	869	1076	3186
20	25	Knifed	888	1106	808	2801
20	50	Broadcast	884	1351	881	3116
20	50	Knifed	1322	1618	1192	4132
40	0	Broadcast	1175	1393	960	3528
40	0	Knifed	1077	1343	1175	3594
40	25	Broadcast	1517	1207	1280	4003
40	25	Knifed	1362	1324	1230	3917
40	50	Broadcast	1149	1404	1192	3746
40	50	Knifed	977	1254	1047	3278
80	0	Broadcast	939	1209	983	3131
80	0	Knifed	950	1305	1152	3407
80	25	Broadcast	1195	1547	1383	4124
80	25	Knifed	1156	15998	1299	4052
80	50	Broadcast	1403	1652	1513	4567
80	50	Knifed	1006	1581	1299	3887

Table 4: Statistical analysis of yield on Newdale clay loam soil using GLM.

Source	DF	Pr>F			Total
		Harvest 1	Harvest 2	Harvest 3	
P	3	ns	ns	0.0001	0.0096
K	2	ns	ns	ns	ns
P*K	6	ns	ns	ns	ns
Place	1	0.0942	ns	ns	ns
P*Place	3	ns	ns	ns	ns
K*Place	2	ns	ns	ns	ns
P*K*Place	6	0.0508	ns	0.0746	ns
Rep	3	0.0001	0.0761	0.0001	0.0001
MSE	69	238254	166068	73828	579449

CONCLUSIONS:

Banding fertilizer disrupted the alfalfa stand in the sandy loam soil, which generally reduced yield in banded compared to broadcast fertilizer treatments at the first harvest. By the third harvest, differences were not significant, however, the total dry matter production over the season was still lower in the banded as compared to the broadcast treatments. In the clay loam soil, differences between banding and broadcast treatments were less than in the sandy loam soil and were not significant. The sandy loam soil showed increased total dry matter yield with application of K, but not with application of P. The clay loam soil showed increased yield with application of P, but not with application of K. Fertilizer applications were effective in maintaining yield later in the season than in the unfertilized plots.