Secale montanum (s. dalmaticum vis) - a new pasture species for the south eastern highlands

L.F. Myers, J.H.E. Mackay and R. Kirchner

CSIRO Division of Plant Industry Canberra

Four perennial grass species were tested under high winter-low summer stocking rates at Krawarree in the Upper Shoalhaven Valley (mean annual rainfall 785 mm) in a search for pastures to overcome the usual severe winter feed shortage (1). In the first year (1970) all pastures were grazed at 10 sheep/ha and there were no differences between treatments. In the second year (1971) winter stocking rates were raised to 20 sheep/ha (April to September inclusive). In that period rainfall was less than 40% of the 65 year mean and there were no effective rains for 16 weeks.

Table 1. Liveweight change (kg) and wool production (kg) of sheep grazing pastures with two different grasses. Krawarree 1969-1973

	Liveweight change				Wool (kg)		
	1971		1972				
	Winter	Summer	Winter	Summer	1971	1972	1973
Perennial rye	-8.7	14.1	1.9	7.3	5.9	4.6	5.8
Secale	-0.6	11.3	1.3	4.3	5.9	6.0	6.5
	P<0.05	N.S.	N.S.	N.S.	N.S.	P<.01	N.S.

The liveweight differences established in 1971 persisted until that flock of sheep were replaced in 1973. After $3^{1/2}$ years continuous grazing 7 plants/m^{-2} of Secale were present but most were seedlings. There were no plants in poorly drained areas.

Further development of Secale depended on satisfactory seed yields. Two attempts at seed increase and one by a commercial seed grower were unsuccessful because the rachis shatters as grain approaches maturity. Rachis shattering was reduced by crossing the original line with Secale cereale (Rye Corn) and backcrossing twice to the parent line. The final 11 family lines surviving were polycrossed for two generations (Polycross 2). Seed production of the polycross line is 75% of that of the parents but machine harvesting yielded 4 to 5 times as much seed under (difficult) commercial conditions. Vegetative yields at Krawarree were not significantly different (Table 2) but the original line was slightly more productive in Victoria (L. Hamilton, R. Hill - private communication).

Table 2. Vegetative yield (t DM/ha) of grasses sown 31/3/82 in a clover-grass pasture Krawarree N.S.W.

	Harvest data						
Species	22/9/82	14/2/83	1/6/83	10/8/83	12/10/83	14/12/83	Total
Secale parents	0.14	1.25	0.54	0.51	0.33	1.05	3.82
Secale polycross	0.22	1.47	0.45	0.55	0.31	0.71	3.71
Phalaris cv. Sirosa	0.07	0.22	0.18	0.29	0.18	0.29	1.23
Cocksfoot cv. Currie	0.02	0.13	0.15	0.14	0.17	0.40	1.01
L.S.D. (P<0.05)	0.03	0.34	0.18	0.16	N.S.	N.S.	

Secale seems best adapted to acid soils in areas where summer rainfall is sufficient to support white clover in most years. Its ability to maintain liveweight and wool growth in dry winters would be especially valuable in the South East Highlands where May to August are often the driest and least reliable months. Registration of the line as a cultivar is planned.

1. Wright L.G. and Neal Smith C.A. (1971). Aust. CSIRO Div. Plant Ind. Field Stn Rec. 10, 43-50.