

## Effect of season and sowing method on pasture establishment on the northern tablelands

G.W. Charles<sup>1</sup>, G.J. Blair<sup>1</sup> and A.C. Andrews<sup>2</sup>.

<sup>1</sup> Dept. of Agronomy and Soil Science, University of New England.

<sup>2</sup> Faculty of Agriculture, Hawkesbury Agricultural College.

During the 1979 to 1982 drought, the introduced grass component was lost from many improved pastures on the Northern Tablelands of N.S.W. Direct drilling allows the reintroduction of the grass component into these pastures without removing the residual perennial component. Strategies for direct drilling of tall fescue (*Festuca arundinacea* Schreb.), the most frequently sown species in this region, are poorly defined. Hill & Pearson (1) suggested that fescue may be unsuitable for direct drilling due to slow establishment.

### Methods

At Armidale in 1985, four sowing methods (as outlined in the table below), were compared at two times of sowing (May 13 and September 9), using Demeter fescue and Haifa white clover at 8.2 and 1.9 kg ha<sup>-2</sup> respectively. Ground cover was reduced to 2 cm and Spray seed applied at 31 ha<sup>-1</sup> prior to sowing. Molybdenum single superphosphate was applied at 125 kg ha<sup>-1</sup> at sowing. Detailed measurements of environmental conditions were taken in conjunction with this trial to assess via computer modelling, the options available over a wider range of seasonal conditions.

### Results and Discussion

Monthly rainfall totals for 1985 were above average in June, July, August, and December and below average in May and November.

The data are summarised below. No significant differences ( $P>0.05$ ) were found between the cultivated and direct drill treatments although in the spring sowing plant count, the inverted 'T' boot had significantly ( $P<0.05$ ) more plants than the triple disc. The data shows a 3 to 5 fold difference in the number of established fescue seedlings from spring sowing compared to autumn sowing, and correspondingly higher fescue yields. This was related to seedling death of autumn sown seedlings during cold conditions in early seedling establishment, as well as higher levels of competition. In a second trial sown in 1986, when very dry conditions followed both autumn and spring sowings, the advantage of spring sowing was not apparent. A high level of naturalized white clover seedlings prevented monitoring of the sown clover population.

Sowing Method	Plant count m <sup>-2</sup>		Yield of Fescue t DM ha <sup>-1</sup>	
	Autumn <sup>A</sup>	Spring <sup>B</sup>	Autumn <sup>A</sup>	Spring <sup>B</sup>
Cultivated	19.3 <sup>aC</sup>	55.3 <sup>ab</sup>	0.25 <sup>a</sup>	0.49 <sup>a</sup>
Direct drill-triple disc	12.0 <sup>a</sup>	37.0 <sup>b</sup>	0.15 <sup>a</sup>	0.40 <sup>a</sup>
Direct drill-inverted 'T'boot	16.5 <sup>a</sup>	79.1 <sup>a</sup>	0.23 <sup>a</sup>	0.70 <sup>a</sup>
Aerial	2.3 <sup>b</sup>	6.7 <sup>c</sup>	0.01 <sup>b</sup>	0.06 <sup>b</sup>

<sup>A</sup> Observation on Feb. 8, 1986, 270 days after sowing.

<sup>B</sup> Observation on Feb. 8, 1986, 150 days after sowing.

<sup>C</sup> Values within columns followed by the same letter are not significantly different ( $P>0.05$ ) by Duncans multiple range test.

The results show that Demeter fescue can be successfully direct drilled, although the slow seedling growth rates and hence, poor competitive ability under cold conditions strongly influence the appropriate sowing time. Where an early autumn break does not occur, early spring sowing may give better establishment than late autumn. Current trials, using the same range of sowing treatments, compare the affect of herbicide and grazing to minimize the effect of annual weed competition.

1. Hill, N.J. and Pearson, C.J. 1982. Proc. 2nd Aust. Agron. Conf. p.172.