

Evaluation of tall fescue varieties on the Northern Tablelands of NSW

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Festuca arundinacea Schreb.(tall fescue) is widely adapted to the Northern Tablelands of NSW with the potential to be sown over a much wider area of the tablelands and slopes of NSW. Historically there have been a limited number of cultivars of tall fescue available to producers i.e. Demeter and AU Triumph. Today there are approximately 20 commercial cultivars including temperate (spring/summer active), Mediterranean (winter active) and safe endophyte varieties. This paper reports on the differences in seedling vigour, seasonal production and persistence of temperate and Mediterranean cultivars at one site on the Northern Tablelands of NSW.

Methods

The tall fescue evaluation trial was established in 2001 at the Centre for Perennial Grazing Systems, Glen Innes. The trial comprises 15 tall fescue cultivars (as listed in Table 1) by 3 replications. The trial was sown in May 2001 into a prepared seedbed at a rate of 12 kg/ha as a monoculture. Each plot is 2 m x 7 m. At sowing Granulock 15 (N: 14%, P: 11.5% & S: 10%) was applied at 150 kg/ha. The plots received 50 kg N/ha in the form of Urea twice a year (spring & autumn) and an annual topdressing of single superphosphate (P: 8.8% & S: 11%) at 150 kg/ha. All plots were sprayed once (August 2001) with Bromoxnil¹ to control broadleaf weeds during the establishment phase.

Establishment counts were taken 75 days after sowing and whole plant samples (20 plants/plot) were collected 120 days after sowing for assessment of vigour (shoot length, root length, number of tillers per plant and number of leaves on oldest tiller). The first dry matter yield assessment was conducted 6 months after sowing in November 2001. In this paper yield for the period November 2001 to November 2004 is reported. From each plot 4 quadrats (30 x 30 cm) were cut to ground level using hand shears. The samples were sorted

into "fescue" and "other" components, dried and weighed. Tall fescue yield was reported as kg DM/ha. After each yield assessment all plots were grazed by sheep and if required evened out using a sickle bar mower. Frequency counts were conducted twice a year (spring & autumn) since autumn 2002 in fixed quadrats to monitor plant persistence.

Results and Discussion

The tall fescue evaluation trial coincided (May 2001 to November 2004) with a severe drought with rainfall below the average in 31 out of 42 months.

Establishment among the tall fescue cultivars was significantly different ($P < 0.05$). Typhoon and the numbered lines 106 and 108 had the poorest establishment with 33, 41 and 56 plants/m² respectively. Resolute, Quantum and Dovey+Prosper, Prosper and Torpedo had the best establishment with 164, 152, 152, 149 and 139 plants/m² respectively (Table 1).

Tall fescue is known for its poor seedling vigour. In this trial the only seedling vigour character measured where there were significant differences between the cultivars was shoot length (Table 1). The shoot length of the Quantum plants was significantly ($P < 0.05$) longer than the other varieties.

The total yield among the 15 cultivars was significantly different ($P < 0.05$) as shown in Table 1. Total yield over the experimental period (November 2001 to November 2004) was greatest for Quantum (9860 kg DM/ha) followed by Dovey (9223 kg DM/ha). AU Triumph and Demeter had the 4th and 5th highest total yields. Torpedo and Advance had the lowest total yields (3744 and 3056 kg DM/ha) of the temperate varieties. The temperate varieties all followed a similar growth pattern with peaks over spring and summer, declining over autumn to a winter trough. The early dry matter production of Quantum and

Dovey was significantly higher ($P < 0.05$) than the other varieties (data not presented).

There was no significant difference among the Mediterranean varieties; Fraydo, Prosper and Resolute. On average the best performing temperate varieties produced more than twice the total yield of the Mediterranean varieties. This is not unexpected given the summer rainfall pattern of the Northern Tablelands. The Dovey+Prosper treatment; a mix of a temperate and a Mediterranean cultivar produced the 3rd highest total yield and was significantly higher ($P < 0.05$) than a number of the other varieties. However, Dovey accounts for much of this yield with few Prosper plants surviving in the plots.

Spring plant frequency for 2002, 2003 & 2004 is presented in Table 1. At November 2004 there were 5 varieties with a frequency greater than 70% (Quantum, Dovey, AGFRA 108, Demeter and AU

Triumph). The spring plant frequency of Quantum and Dovey was consistently high as well as the traditional varieties; Demeter and AU Triumph.

Conclusions

On the Northern Tablelands of NSW where the temperate types of tall fescue are well adapted relatively new varieties (post 1990) have been evaluated for establishment, seedling vigor, yield and persistence at Glen Innes. The varieties Quantum and Dovey showed significantly higher production than the traditional varieties of Demeter and AU Triumph but persistence over 3 years was comparable. The winter active Mediterranean varieties of tall fescue did not perform well in this evaluation and appear to have limited use on the Northern Tablelands. It is important to continue this evaluation to provide more long-term data on persistence as well as evaluate tall fescue over a wider range of geographical locations.