Direct drilling ryegrass into kikuyu - effects of machine, sward preparation and timing

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In the Illawarra region of coastal N.S.W. tetraploid ryegrasses or oats are directly drilled into kikuyu pasture to boost winter production. The results are variable. The effects of sward preparation, machine and timing on yield of kikuyu and directly drilled ryegrass were investigated at Berry N.S.W. and the results are reported in this paper.

Methods

Lolium multiflorum Lam. c.v. Tama was sown with either a Duncan triple disk seeder or an Aitchison 'Seedmatic 1000' with inverted 'T' coulters, into permanent kikuyu (Pennisetum clandestinum Chiov.) pasture which was either slashed and the trash removed, sprayed with Sprayseed® at 4 L ha^{1} or sprayed with Roundup® at 1 L ha^{-1}. Roundup was applied one week prior to drilling, the other preparations were applied the day before.

The seeding rate was 30 kg ha^{-1} and Starter 15® (15%N, 13%P, 10%S) was applied at 190 kg ha^{-1} by hand on Aitchison plots and through the drill on Duncan plots. Drilling dates were 17 February, 17 March and 14 April 1982. The February sown plots were topdressed with 51 kg N ha^{-1} on 28 April and all plots received 51 kg N ha^{-1} on 1 September. Yield and botanical composition determinations were made from February sown plots on 7 April and all plots on 8 August, 13 October and 13 December.

Results and Discussion

The growing conditions were dry during early autumn but ideal in winter and early spring. Rain followed each sowing; 16 mm on 24 February, 8 mm on 17 March and 38 mm on 16-18 April. The kikuyu on Sprayseed and slashed plots recovered quickly after treatment and competed strongly with the ryegrass, compared with Roundup plots where it slowly died and recovered in late spring.

When the total kikuyu yield (kg D.M. ha^{-1}) was summed for the three harvests, the following significant ($P<0.05$) interaction between pre-treatment and sowing time was apparent (Refer TABLE 1).

TABLE 1:

Sowing Date	Slash	S/seed	Roundup
17 February	2684	2320	1557
17 March	2155	1599	1416
14 April	1296	881	2222
l.s.d.		419	

TABLE 2:

Components	Slash	S/seed	Roundup	l.s.d.
kikuyu	2045	1600	1732	242
ryegrass	2169	2673	4681	251
total	4214	4273	6413	412

Roundup was more effective and Sprayseed and slashing less effective on suppressing kikuyu when kikuyu was actively growing.

The significant ($P<0.05$) increase in total ryegrass and total yield (kg D.M. ha^{1}) where Roundup was used is shown in Table 2.

This experiment shows, in a similar way to experiments at Camden (1), that the application of Roundup was a superior sward preparation for direct drilling Tama into kikuyu than slashing or applying Sprayseed. Delaying the operation until April increased the yield contribution from kikuyu. The Duncan triple disc and the Aitchison tine machines were equally successful in sowing ryegrass in a kikuyu sward.

1. Hill, N.J. and Pearson, C.J. 1982. Proc. 2nd Aust. Agron. Conf.,Wagga: 172. R. Registered Trade Name.