

Poster papers

Prilled lime added to the seed – effects on pasture establishment vary with season

MR Norton^A

^A NSW DPI, Agricultural Institute PMB, Wagga Wagga, NSW, 2650, Australia:
mark.norton@dpi.nsw.gov.au

Introduction

When sowing pasture legumes on acidic soils the standard recommendation is to inoculate with rhizobium and lime pellet. The current trials investigated whether placing lime in close proximity to the germinating seed of a perennial grass (*Phalaris aquatica*) would assist establishment.

Two series of trials were conducted on the Southern Tablelands, near Murrumbateman, over three consecutive years with sowings from 2011 to 2013 to investigate the effects on phalaris establishment of various rates of prilled lime applied to the seed at sowing and also spread onto the soil surface.

Methods

The trials were sown on adjoining paddocks. The site of the first series of trials had a history of lime application in the early 1980s sufficient to raise the 0–10 cm soil profile to a pH (CaCl₂) of 5.5, which had since dropped to 5.1. The adjoining paddock, which hosted the second series of trials, had no lime history and a pH of 4.2.

In the first year (2011) at both sites, prilled lime was applied at the rate of nil, 200 and 500 kg/ha at sowing and placed in close contact with the seed. In the second and third years an extra treatment was added where prilled lime at 2.5 t/ha was applied to the surface across both sites.

Establishment was measured by counting the frequency of a rooted crown of phalaris in a fixed quadrat at the end of the first autumn and the first summer following sowing.

Results

The effects of prilled lime on grass establishment varied from year to year, with no effect in the trials sown in 2011 or 2012. Rainfall recorded during the 7 month period from October to April of 2011/12 (531 mm) was much wetter than average (369 mm) while the same period of 2012/13 was much drier (277 mm). In contrast, this period of 2013/14 received an amount (386 mm), which was much closer to the mean rainfall for the period.

On the site which had previously received lime in the 1980s, the application of any of the 3 rates of lime with the seed produced a significantly greater density of pasture grass, 43–46% of quadrats with grass present compared with just 17% of quadrats on those plots which did not receive any lime.

Conclusions

Future research should consider whether higher plant densities can be achieved by lower rates of applied lime, given that it is unlikely that farmers would apply rates greater than 100 kg/ha with the seed. It would also be worthwhile to explore how lime assists establishment and whether the improved plant establishment is associated with greater root growth.

While prilled lime is more expensive than F70 lime, it allows farmers the flexibility of spreading the lime themselves, whether with the seed at sowing or directly broadcast onto the soil surface. In addition prilled lime can also be applied to steeper landscapes than the F70 product. It is therefore likely that it will become more widely available in the future.

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