NATIVE SPECIES:

Sowing depth and emergence of seedlings of *Microlaena stipoides*

R D B Whalley and D J Beckers

Department of Botany, University of New England, Armidale NSW 2351

Successful establishment technology is critical for the development of a grass seed industry for alternative grasses. Unless seed buyers have this critical information and can be reasonably sure that establishment will be successful, then there will be no market for seed of new species.

Microlaena stipoides has relatively large seeds compared with many other native and introduced grasses and there is a general association between large seeds and the ability to emerge from deep sowings (Watt and Whalley 1982). This attribute could be an advantage in certain environments because seeds which are deeper in the soil have more time to germinate following rain and a greater chance that their radicles will keep ahead of the drying front than those nearer the surface.

The aim of this experiment was to determine the optimum depth of sowing for several accessions of *M. stipoides* in the glasshouse and the interaction among accession, depth of sowing, soil type and watering regime.

Methods

Spikelets of four accessions of *M. stipoides* (Acc. 17 -Shannon, Acc. 25, Acc. 39 -Wakefield, and Acc. 703 -Griffin) were sown in a basaltic and a sedimentary soil and watered every 2nd day, 4th day and 6th day in a glasshouse experiment. The spikelets were sown at five depths - 5 mm, 15 mm, 25 mm, 50 mm and 100 mm in polystyrene boxes with four replications. Emerged seedlings were marked every day with a coloured pin or a toothpick.

Results and Discussion

There was no emergence from 100 mm and so this depth was excluded from the results. There was a strong interaction between depth of planting, soil type and watering treatment.

The highest emergence (95%) occurred with 5 mm sowing depth in the sedimentary soil with watering every two days. On the other hand, the surface of the self-mulching basaltic soil dried out between waterings when watered every six days and no emergence occurred from 5 mm. The general trend in this soil at 5 mm and 15 mm was the less frequent the watering, the lower the emergence but at 25 mm and 50 mm watering did not affect emergence. The same trend occurred for the sedimentary soil but the decrease in emergence with lower watering frequency was much less at 5 mm and did not occur at 15 mm.

Averaged over all watering treatments and accessions, depth had no effect on emergence to 25 mm for the sedimentary soil while the greatest emergence occurred from 25 mm for the basaltic soil. There were minor differences in emergence among accessions from the different depths but these differences were small compared with the other effects.

Conclusion

These results would suggest that *M. stipoides* can be sown up to 25 mm for satisfactory emergence and that there are complex relationships among soil type, sowing depth and watering regime. However, subsequent field experience has shown that 10-15 mm gives more consistent and satisfactory results.

Reference

Watt, L.A. and Whalley, R.D.B. (1982). Effect of sowing depth and seedling morphology on establishment of grass seedlings on cracking black earths. *Australian Rangeland Journal*, 4:52-60.