

Improving germination of tropical grasses with new seed-coating technology

LEONARD SONG AND I. KALMS
Heritage Seeds Pty Ltd, Toowoomba,
Queensland, Australia

Introduction

Tropical grasses are the most important component of improved pastures for the grazing industry of northern Australia. However, it is difficult to obtain good establishment because of the physical characteristics of the seeds and their low germination.

Most tropical grasses have small, light seeds, with some species having fluffy seeds, making planting difficult. Seeds of most grasses show dormancy for several months after harvest; this results in poor germination in the field and slows establishment.

Seeds of USA buffel (*Cenchrus ciliaris*), setaria (*Setaria sphacelata*) cv. Splenda, Gatton panic (*Panicum maximum*), Sabi urochloa (*Urochloa mosambicensis*) and Signal grass (*Bracharia decumbens*) are frequently reported with 5–20% germination in laboratory tests, and much lower in field plantings. Despite this dormancy, their viabilities can remain at 70–90%, as detected by Tetrazolium test. Thus, there is potential to improve germination by reducing dormancy.

Previous work with seed-coating chemicals, and the techniques employed, have greatly improved seed handling, especially for planting. This paper reports the development of a successful seed-coating process that improves germination in 4 of the species mentioned.

Materials and methods

Low-germination seed lines of USA buffel, Splenda setaria, Sabi urochloa and Gatton panic were coated with Heritage Seeds' formulated

substances, and germination rates compared with those of uncoated or bare seeds. For each comparison, 100 seeds were placed in potting mix media, with 10 replications, and kept in a glasshouse at 20–30°C with regular watering. Germination was rated after 48 days.

Results

The seed-coating treatment produced significantly improved germination over uncoated seeds for all grass species. The most dramatic impact was on USA buffel, where germination percentage was more than doubled.

Table 1. Germination percentages of uncoated and coated seeds (after 48 d).

Species	Uncoated	Coated	Improvement over uncoated (P=0.05)	LSD
USA buffel	26.6	61.8	+35.2	3.1
Splenda setaria	13.8	25.9	+12.1	2.5
Sabi urochloa	8.4	21.6	+13.2	2.3
Gatton panic	9.8	35.0	+25.2	3.4

Discussion

The improved germination is, we believe, due to the breaking of seed dormancy in these species. Further work is being planned for other tropical and temperate species with germination problems.

Poor establishment is a major risk factor in sowing pastures in tropical and subtropical Australia, and we consider that this technology can significantly reduce this impediment to the wider adoption of pasture improvement.

This new seed-coating technology will be marketed by Heritage Seeds under the AgriCOTE DORM-BREAKER brand name.