

# Faecal seeding, drought, and seed survival in dung

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## Introduction

Faecal seeding is a natural process whereby seeds are ingested by animals and dispersed in their dung in a viable state. There is an acknowledged interest in this process as a low-cost method of introducing and establishing pasture legumes in Northern Australia. Faecal seeding has been successful in regions with lighter textured soils, with considerable areas of *Stylosanthes* established following inclusion in supplements (Rains 2005; Gardener *et al.* 1993). However, the semiarid regions of Northern Australia with heavier textured soils are frequently deficient in high-protein sown legumes, with a lack of appropriate species and unsuitable terrain for conventional means of sowing seeds. This study focuses on *Desmanthus*, a legume species more suited to these regions, and aims to identify whether the germination rates are impacted by long dry periods after faecal seeding.

## Methods

Phase 1: July 2014. Progardes *Desmanthus* cv JCU 2 hard seed was added to molasses supplements for cows as part of routine management at James Cook University. Their dung pats were collected (n=12) from the paddock 48 hours later, sun dried, and stored on trays in an open shed at ambient temperatures for 9 years (simulated drought).

Phase 2: April, 2023. One half of each dung pat was kept intact on the trays for an outdoor germination trial whilst the other half was soaked in water and the seeds recovered for a germination test in a controlled laboratory environment. A fresh sample of *Desmanthus* cv JCU 2 seed (control and scarified) was also germinated in the lab for comparison.

## Results

There was an average of 288 seeds recovered from each dung pat (range 32-1102) with an average germination of 1.6 seeds (range 0-12) per dung pat in the trays. The germination rates in the laboratory were the highest for the digested seeds from 2014 at 84% compared to the fresh seeds germinated as a control, as seen in Table 1.

**Table 1: Laboratory germination rates of recovered 2014 seeds and fresh seeds for comparison.**

	<b>2014 seeds</b>	<b>Fresh control</b>	<b>Fresh scarified</b>
<b>Germination rates</b>	84%	10%	71%

## Discussion and conclusion

This study demonstrates the viability and longevity of hard seed *Desmanthus* after passing through the digestive tract of cattle. Improved germination rates were observed with the digested seeds compared to both the fresh control and fresh scarified seeds. The seeds' ability to sit in a dormant state allows them to survive an extended dry period of 9 years and germinate when conditions improve. This confirms the potential of faecal seeding legumes for commercial producers in the appropriate regions of Northern Australia.

## References

- Gardener *et al.* (1993) *Journal of Applied Ecology*. 30, 1, pp63-74.  
Rains, J. (2005) *Tropical Grasslands*. 39,4, p225.

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