

REGENERATION AND STORAGE OF VELVET TAMARIND (*Dialium ovoideum*) SEEDS

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INTRODUCTION

Fruits of *Dialium ovoideum*, commonly called “Gal siyambala” (S) or velvet tamarind (E) is a popular fruit. The powdery-spongy pulp that covers the seed has a sweet-sour taste. It is a large tree species native to Sri Lanka and grows mainly in monsoon forests in the dry and intermediate zones especially in Anuradhapura, Polonnaruwa, Matale, Kurunagala, Monaragala and Ampara districts (Ashton *et al.*, 1997, Macmillan, 1956). Flowers and fruits are produced annually. The crude harvesting methods currently adopted result in severe destruction of trees leading to delayed flowering and fruiting for several years. It is also observed that seed germination and survival of seedlings were poor in forest habitats. The present studies were conducted to develop the conservation and domestication of “Gal siyambala”.

MATERIALS AND METHODS

Following experiments were conducted using healthy, well-formed pods and seeds following Randomized Complete Block Design.

Effect of seed soaking and medium on seed germination

Three sets of seed samples were used for the experiments and each treatment contained 15 seeds. Two seed samples were soaked in water, one for 16h and the other for 72h. The other sample of seeds was untreated. Two media were tested, one was normal potting medium (mixture of cow dung: sand: topsoil at the ratio of 1:1:1) and the other was only sand. Seeds were sown on beds made up of these media at a depth of 1 cm and maintained under plant house conditions. Treatments were tested with 4 replicates. Data were collected on % germination, average days to germinate and the number of days taken for seedling emergence. Data were analyzed using SAS computer package.

Storage of pods and seeds and viability

Randomly selected healthy pods and seed samples were stored under refrigerator (4°C) and ambient temperature (26-30°C) conditions. Each treatment contained 15 seeds or pods and treatments tested using 4 replicates.

Rate of seed germination was tested monthly from samples taken from stored seeds and pods for one year. Data were analyzed using SAS computer package.

RESULTS AND DISCUSSION

Effect of seed soaking and medium on seed germination

Seed germination showed epigeal characteristics and leaves emerged 3-6 days after emergence of cotyledons. Data analysis revealed significantly higher rate of germination with untreated seeds on sand (48%) than on the potting medium (26%). Duration for germination and emergence of seedlings as well as interactions did not show significant difference between treatments (Table 01). The condition under sand created better aeration, drainage and root growth and may be the reasons for better performance. High moisture levels and compaction in the potting medium may have hindered germination.

Table 01. Germination of un-soaked seeds of *D. ovoideum* on tested media ($\alpha=0.05$).

<i>Tested media</i>	<i>Germination percentage (%)</i>	<i>Duration for germination (days)</i>	<i>Duration for seedling emergence (days)</i>
Potting medium	26.0 ^b	13.0 ^a	10.5 ^a
Sand medium	48.0 ^a	12.0 ^a	10.0 ^a

Means with the same letter in a column are not significantly different.

Un-treated seeds showed significantly higher germination percentage (57%) but duration for germination and emergence were also significantly higher (Table 02). Soaking in water for 16 or 72h was not effective to promote germination. Seeds of 16 hours soaking showed significantly lower duration for germination (10 days) than the unsoaked and 72h soaked seeds. Seeds soaked for 72h showed poor germination rate as well as higher duration for germination. Most of the soaked seeds samples deteriorated and rotted indicating higher susceptibility for microbial infections.

Table 2. Effects of treatments on germination of *D. ovoideum* seeds.

<i>Treatment</i>	<i>Germination Percentage (%)</i>	<i>Duration for germination (days)</i>	<i>Duration for emergence (days)</i>
Untreated seeds	57 ^a	14 ^b	10 ^a
Seeds soaked for 16h	32 ^b	10 ^a	09 ^a
Seeds soaked for 72h	22 ^b	14 ^b	11 ^a

Means with the same letter in a column are not significantly different at 5% probability level.

Storage of pod and seeds and germination ability

Percentage germination showed significant variation between treatments and storage periods (Table 3). Seeds stored under both ambient and refrigerated conditions showed satisfactory germination even after one year of storage.

Table 3. Germination of stored seeds of *D. ovoides*.

Treatments	% Germination	
	At one month storage	At 12 months storage
Pods stored at 4°C	55 ^a	52 ^a
Seeds stored at ambient conditions (26°-30°)	51 ^a	46 ^{ab}
Seeds stored at 4°C	52 ^a	42 ^b
Pods stored at ambient conditions (26°-30°)	51 ^a	28 ^c

Means with the same letter in a column are not significantly different.

However, pods stored under ambient conditions were subjected to fungal infection after 2-3 months period. Seeds of pods stored at 4°C showed significantly higher germination (52%) even after a year. These fruits remained in fresh condition, suitable for consumption which was an added advantage. Results also indicated loss of seed viability when pods were stored under ambient conditions. This may be related to fungal infections of the pulp of pods. These fungal infections eventually made the pulp unsuitable for consumption. These results indicate the possibility of using cold storage for *D. ovoides* fruits and seeds for more than one year and seed viability remained for more than one year under both refrigerated and ambient conditions.

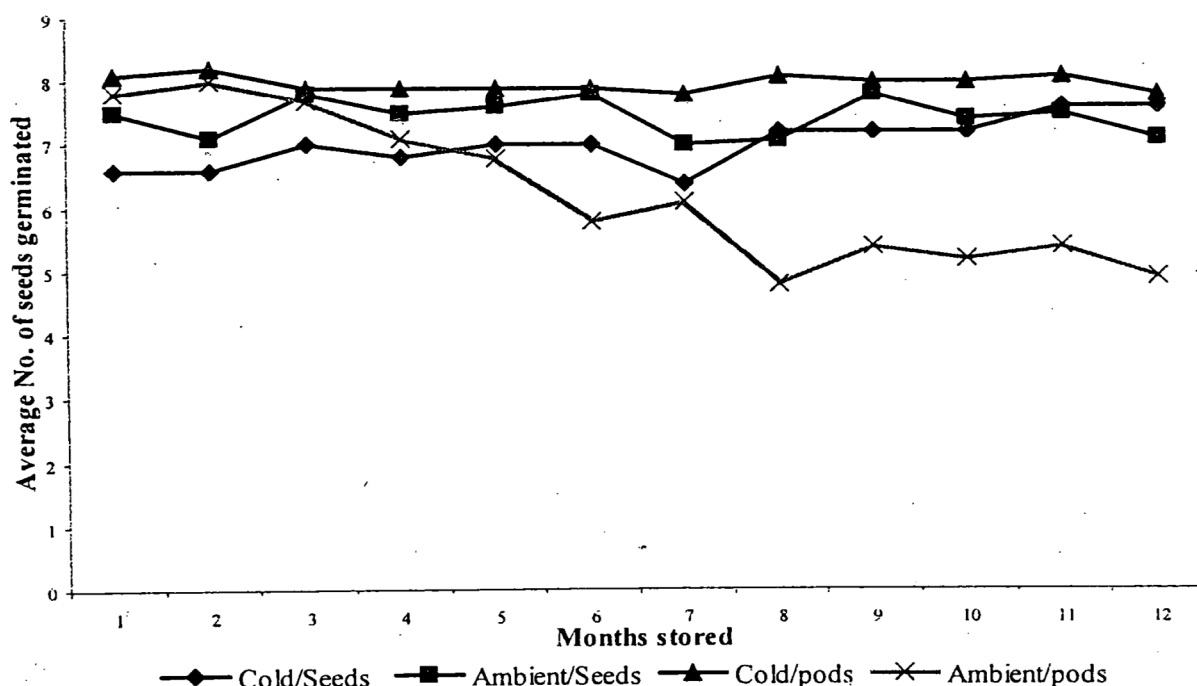


Figure 1. Monthly germination of stored seeds and pods.

CONCLUSIONS

Fresh seeds of velvet tamarind can be sown on sand for better germination. Fresh pods can be stored at 4°C to maintain seed viability for more than one year. Seeds of pods stored at 4°C for 12 months germinated satisfactorily (52%). Pods and seeds stored under ambient conditions lost their viability gradually with time.

REFERENCES

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