

# Seed Germination Dynamics of *Gymnema sylvestre* as Influenced by Sowing Media and Storage Period

K.K.I.U. Arunakumara and S. Subasinghe

Department of Crop Science  
Faculty of Agriculture  
University of Ruhuna  
Kamburupitiya, Sri Lanka

**ABSTRACT.** *Most medicinal plant species have become rare due to over exploitation from natural habitats. In general, a little emphasis has been placed on production of planting material for commercial cultivation of medicinal plant species. Gymnema sylvestre is one of the important medicinal plant species, which is rare in nature due to poor seed germination. Therefore, the current study was undertaken to assess the seed propagation of G. sylvestre.*

*Uniform, viable seeds were placed in Petri dishes filled with different media (i.e. sand, coir dust, top soil and 1:1:1 mixture of sand, top soil and coir dust) to study the effect of media on germination. A Petri dish with a moist filter paper was used as a control. Seeds were stored in an open container at room temperature (30°C) and germination was tested at 15-day intervals.*

*The highest germination (92%) was recorded in coir dust, followed by control (68%). Availability of enough moisture explained the higher germination recorded from coir dust media. There was no significant ( $P=0.05$ ) reduction in germination within first 2 months of storage. It can be concluded that, coir dust would be the best media for seed germination of G. sylvestre and seeds should not be stored more than two months to ensure higher germination.*

## INTRODUCTION

It is estimated that 70-80% of people worldwide rely heavily on traditional, largely herbal medicine; to meet their primary healthcare needs (Farnsworth and Soejarto, 1991). *G. sylvestre* is a rare medicinal plant and it has been used in treating diabetes for over the years. Thus, *G. sylvestre* has a high demand in the market, but no systematic cultivation is done. Under this background, the present investigation was carried out at aiming seed propagation of *G. sylvestre*.

## MATERIALS AND METHODS

The experiments were conducted at the Faculty of Agriculture, University of Ruhuna, Sri Lanka. In experiment 1, different potting media (sand, coir dust, top soil and 1: 1:1 sand, top soil and coir dust mixture alone with a control - filter paper) were used to determine the best sowing media for germination of *G. sylvestre*.

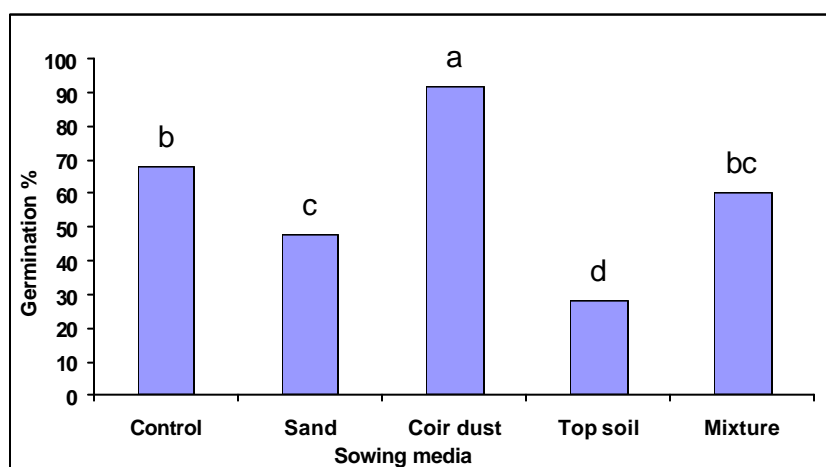
Seeds were planted in petri dishes filled with the different potting media and moistened the media and kept in the dark condition at room temperature (30°C) and germination was recorded daily.

In experiment 2, Fresh seeds were stored in an open container at room temperature (30°C) and germination was recorded for 15 days. Both experiments were

set up according to the Complete Randomized Design (CRD) with five replicates, each contained ten seeds. Results were confirmed by repeating the experiments twice.

## RESULTS AND DISCUSSION

Higher germination (92%) was observed in coir dust media, where some seeds started germination within two days, whereas most of the other seeds in other media took at least four days to start germination. The reason may be due to high water holding capacity of the media and thus availability of enough moisture explained the high germination percentage of seeds in the coir dust media (Fig. 1).

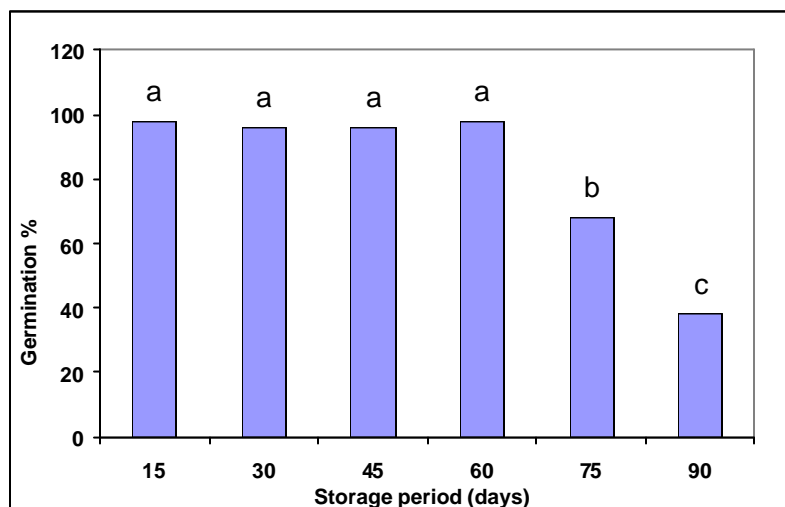


**Figure 1. Effect of sowing media on germination of *Gymnema sylvestre* seeds.**

Values with same letters are not significantly different at  $P=0.05$ .

The lowest germination percentage (28 %) was recorded in the top soil media because may be due to low moisture availability which retarded seed germination and consequently *G. sylvestre* is rare in nature. Sand, as a sowing media was also very poor in retaining water and as expected showed poor germination of seeds.

Seed viability can be maintained two months period under room temperature ( $30^{\circ}\text{C}$ ) and Seed germination percentages were 98, 96, 96 and 98 after 15, 30, 45 and 60 days of storage respectively, under room temperature. It was noted that after two months of storage, germination percentage decreased significantly ( $P=0.05$ ) and at the end of the third months, it was only 38% (Fig. 2).



**Figure 2.** Effect of storage period on germination of *Gymnema sylvestre* seeds. Values with same letters are not significantly different at  $P=0.05$ .

Poor germination and loss of viability within a short period of time may be the reason for low natural regeneration capacity of this species. Since *G. sylvestre* produces seeds once a year and seeds mature during the dry period of the year (January-February), the availability of moisture in the natural conditions is very low and thus natural regeneration may be more difficult.

## CONCLUSIONS

The best sowing media for *G. sylvestre* seeds was found to be coir dust, where seed germination was significantly ( $P=0.05$ ) highest (92%), compared to the other media tested. Seeds can be stored in normal condition for two months without losing germination.

## ACKNOWLEDGEMENTS

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## REFERENCES

- Farnsworth, N.R. and Soejarto, D.D. (1991). Global importance of medicinal plants. pp. 25-51. In: Akerele, O., Heywood, V. and Synge, H. (Ed). The conservation of medicinal plants, Cambridge University Press, Cambridge, UK.