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# Effect of sowing Depth on Seed germination of *Butea frondosa* (Roxb.)

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## Abstract

*An attempt has been made to analyze the effect of sowing depth of soil on seed germination of Butea frondosa. The results reveals that the seed sown at 2 cm depth of soil gave better seed germination followed by D2 (2cm) depth of soil. A gradual decrease in the percentage of seed germination was found with an increase of depth of sowing. It is very clear that seeds of Butea frondosa should be sown at 2 cm depth of soil to obtain the maximum seedling of Butea frondosa.*

**Keywords:** Butea frondosa, sowing, depth, soil, seed, germination.

## Introduction

*Butea frondosa (Roxb)* is one of the most important species in the Bundelkhand region of India. It is locally known as Palas (dhak) which belong to the family *Fabaceae (Leguminosae)*. It is moderate sized deciduous tree constituting the maximum part of vegetation in Bundelkhand region of India. The plants are widely used for fuel wood.The leaves of *Butea frondosa* are being used as dining plates in rural areas of Bundelkhand region of India. It is used as indigenous medicine by the people of village community. The roots of this plant are also used roundworm, constipation and taken in diarrhea and dysentery.

The seed germination of many tree species are affected by several climate and edaphic factors like temperature, light, soil depth etc. The depth of sowing is one of the most important factors which influence on the seed germination of many plant species. The work on this aspect has been made by great number of researchers in the past like[1-11]. Unfortunately, no work has been conducted by any researchers in the seed germination of *Butea frondosa*. Hence,an attempt has been made to study the impact of sowing depth of soil on seed germination of *Butea frondosa*(Roxb).

## Material and Method

To study the effect of sowing depth on seed germination of *Butea frondosa* was studied at Banguwan nursery. The seed were sown in perforated polythene bags at different depth of soil ie. 1 cm (D1), 2 cm (D2), 3 cm (D3), 4 cm (D4), 5 cm (D5) and 10 cm (D6). The hundred seeds of *Butea* were sown in each polythene bag randomly. Four replicates were used for each treatment. After sowing of seed they were covered with the soil of same composition to the level of required thickness for each treatment. Regularly watering was done to maintain the proper moisture content. During the experiments number of days taken for the emergence of first seedling and completion of germination were recorded in all the treatments. At the end of experiment the germination percentage in each case was calculated.

## Results and Discussion

The results regarding the effect of sowing depth on seed germination of *Butea frondosa* have beenpresented in table-1 and figure-1. The perusal of data revealed that D1 (69.25%), D2 (86.25%), D3 (79.5%), D4 (69.5%) and D5 (59.25%). No germination was found in D6 depth of sowing. The germination percentage was varied from 59.25 to 69.25. The germination percentage and number of days for emergence of first seedling and number of days for completion of germination for each treatment were statistically measured.

**Table-1**
**Effect of soil depth on seed germination of *Butea frondosa***

| SN | Treatment | Depth of sowing (cm) | No. of days for emergence of first seedlings | No. of days for completion of seedlings | Germination percentage % AV±SE |
|---|---|---|---|---|---|
| 1 | D1 | 01 | 05 | 09 | 69.25±0.5 |
| 2 | D2 | 02 | 06 | 11 | 86.25±0.5 |
| 3 | D3 | 03 | 05 | 10 | 79.5±2.62 |
| 4 | D4 | 04 | 08 | 15 | 69.5±2.63 |
| 5 | D5 | 05 | 09 | 18 | 59.25±2.62 |
| 6 | D6 | 10 | 00 | 00 | 00.0±00.0 |

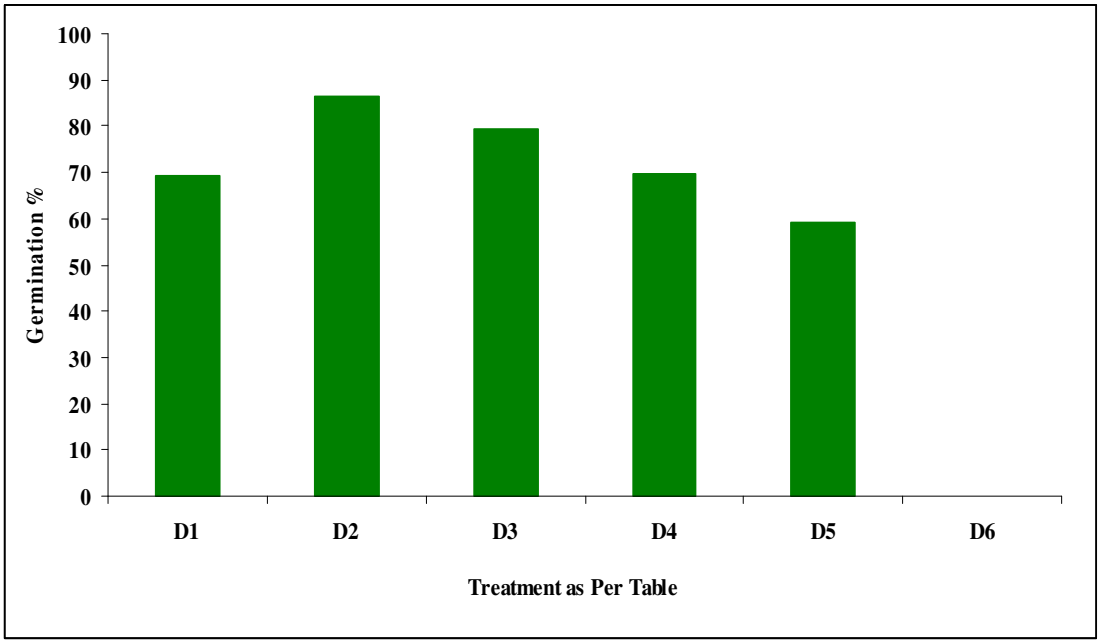


**Figure-1**
**Showing the effect of soil depth on seed germination of *Butea frondosa***

The germination percentage increased as the depth of sowing increased from D1 to D2 whereas, a gradual decrease in it was found with an increase in depth of sowing. The minimum and maximum days required for emergence of first seedling were 5 to 9 for D1 to D5 treatment respectively and this period follows the trend of increase with increase in depth of soil, similarly the number of days for completion of germination was found to increase with increase in depth of sowing. The minimum and maximum days for completion of germination were recorded from 9 to 18 for D1 to D5 depth of soil respectively. At the depth of D6, no seed germination was found.

The above results enable to conclude that the *Butea* seeds should be sown at 2 cm. depths for better results. The germination of seeds of this species is not possible at the depth of 10 cm. The similar results are found in *Acacia catechu* and *Cassia fistula* at 2 cm. depth of soil[12]. The earlier seed germination was found in*Sterculia urens* at 2 cm. depth of soil[13]. The germination percentage significantly decreased in *Alangium lamarckii* with the increase in depth of soil[14].

## Conclusion

On the basis of forgoing discussion it can be concluded that the depth of sowing greatly influence the seed germination of *Butea frondosa*. The seed sown at 2 cm depth of soil gave better seed germination than other sowing depth of soil. Thus, the study suggested that the seeds of *Butea frondosa* should be sown at 2 cm depth of soil to obtain maximum seedlings.

## References

**1.** Singh R.V. and Virendra Singh, Germination of Silver fir (*Abies pindrow SPACH*) as effected by depth of sowing, *Indian Journal of forestry*, **7(4),** 328-329 **(1984)**

**2.** Lal H., Nautiyal M. C. and Sharma R.M., Walnut seed germination : Effect of planting depth and seed position in soil, *Progressive Horti*., **16**, 6-8 **(1984)**

**3.** Kumar Devendra and Mishra Dhruv kumar, Effect of seed orientation and sowing depth on germination and seedling performance of Neem (*Azadirachta indica A. JUSS*) seeds, *Ann. For*., **15(2)**, 311–321 **(2007)**

**4.** Mertia R.S., Sinha N.K., Santra Priyabrata and Singh Daleep, Influence of seed size and sowing depth on emergence and growth performance of *Salvadora oleoides* in the Indian Thar Desert, *Indian Forester,* **138(7),** 646–651 **(2012)**

**5.** Shivaa M.K., Vanangamudi K. and Mani G., Effect of orientation and sowing depth on seed germination and seedling vigour of Neem, *My Forest,* **39(3)**, 257-260 **(2003)**

**6.** Chandra J.P. and Atma Ram, Studies on depth of sowing deodar seed, *Indian Forester,* **106(12),** 882–855, **(1980)**

**7.** Singh R.V., Chandra J.P. and Sharma S.N., Effect of depth of sowing on germination of kail seeds, *Indian Forester,* **99,** 367–371 **(1973)**

**8.** Poonammal N.R., Antony K.A. and Arjunan M.C., Seed polymorphism, seed germination and seedling biomass in *Syzium cumini (L), Trop. For.,* **8,** 155–159 **(1992)**

**9.** Mutha Neetu Burman, Uday, Harsh L.N. and Tiwari J.C., Effect of sowing depth on germination and seedling

quality of *Prosopis juliflora, Journal of tree science,* **14**, 41–43 **(1995)**

**10.** Shivaa M.K., Vanangamudi K. and Mani G., Effect of orientation and sowing depth on seed germination and seedling vigour of Neem, *My Forest*, **39(3),** 257–260 **(2003)**

**11.** Nagarajan M. And Mertia R.S., Effefct of seed size and sowing depth on germination and seedling growth of *colophospermum mopane (Kirk Ex Benth), Indian Forester*, **132(8),** 1007–1112 **(2006)**

**12.** Agrawal R.P., Bajpai S.P. and Tiwari Pradeep, Effect of depth of sowing on growth and survival of ten species of forest tree, *Journal Trop. Forestry*, **12**, 151-155 **(1996)**

**13.** Pande A.K. and Khatoon Sayeeda, Effect of orientation of seed placement and depth of sowing on seedling emergence in *Sterculia urens* Roxb, *Indian Forester*, **125**, 720–724 **(1999)**

**14.** Ahirwar J.R., Effect of sowing depth on seed germination of *Alangium lamarckii* Thwaites, **137(12),** 1464-1465, **(2011)**