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Short Communication

Effect of seed size and weight on seed germination of Alangium lamarckii, Akola, India

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Abstract

The present study was undertaken to examine the effect of seed size and weight on seed germination of Alangium lamarckii Thwaites. The data revealed that the large size seeds gave maximum (76.00%) germination followed by medium size (74.00%) and small size seeds characterized by low germination percentage (59.00%). It is evident that the germination percentage significantly declined with reduction in size and weight of the seeds.

Keywords: Seed size and weight, seed germination, Akola.

Introduction

Alangium lamarckii Thwaites is generally known as Akola belongs to the Family Alangiaceae (old Family- Cornaceae). It is a small deciduous rambling shrub or small moderate tree with grey bark. Normally it attains the height about 3-10 meter and girth up to 0.50 meter which grows in the greater parts of India. It is a common tree found in almost every corner of Chhattisgarh[1]. Akola holds a reputed position as medicine in different systems of medicine in India.

The seed size is a considerable and significant factor in the germination and early stage of plant growth[2,3]. Different size of seeds having different levels of starch and other food storage may be one factor which influences the expression of germination and growth of the plants[4].

The main purpose of seed grading is to understand the better physiological quality of the seed lot. Grading of seed based upon their size and weight is a common practice in a majority of plant species as it has been found to regulate the germination and subsequent seedling growth in many species. It is considered necessary to know the effect of seed size and weight in the seed germination, so as to get healthy seedling of plant species for a purpose of transplantation in the field. Hence, an attempt has been to analyze the effect of size and weight of seed on seed germination of this plant species. The works on this aspect has been carried out by great number of workers[5-15].

Material and Methods

To study the effect of seed size and weight on seed germination of Alangium lamarckii, the cleaned and fresh seeds were then brought in laboratory. They were grouped into three categories consisting of (i) Large (ii) Medium (iii) and Small size based on the length, width and weight of seeds as presented in table-1. Seed weights were taken by using the electronic balance and size (Length and width) was measured using vernier calipers. The seeds of each category were sown in well prepared nursery beds. After starting the seed germination, the seed germination data was recorded the date of first emergence up to final germination.

Results and Discussion

Seed size and weight affect the seed germination invariably. The germination studies were conducted with three classes of seed size significantly affected germination response under normal condition in laboratory/ seed bed. The results presented in table-2 and figure-1 as affected by the seed size that revealed the large size seeds gave maximum (76%) germination followed by medium size (74%) and small size seeds characterized by low germination percentage (59%). Days taken to initiate and complete the germination of seeds varied in different seed sizes. The minimum emergence time taken 11 to 20 days by small sized seed, 11 to 18 days by medium sized seeds and 10 to 18 days by large sized seeds.

It is evident from table-2 that the germination percentage significantly declined with reduction in size and weight of the seeds. The observed results with regard to seed germination are in concurrence with increase in germination with increase in seed size and weight have reported in tree species like Hardwickia binata [13] and Abies pindrow [16]. The similar results have been observed in Pongamia pinnata seed germination[5]. In contrast to the present studies, the higher germination with heavy seeds of various trees have been reported by[11,15,17,18,19]. However, smaller size seeds germinated better in Cassia fistula L., Cassia hybrida L.,

Acacia holosericea L. and Acacia concinna[20]. Heavy and large seed contains more food reserves than smaller ones, which is helpful in germination by providing more energy[21].

Table -1
Seed size and weight of Alangium lamarckii

Size group	Length (cm.)	Breadth (Cm.)	Weight (gm.)
Small	≤ 10mm	≤ 7.5mm	≤ 0.500gm
Medium	11mm-15mm	7.6-10mm	0.501-1.000gm
Large	≥ 16mm	≥ 10mm	≥ 1.000gms

Table-2
Effect of seed size and weight on seed germination of Alangium lamarckii

Size group	Initiation of germination (Days)	Completion of Germination (Days)	Germination (%)
Small	11	20	59.00%
Medium	11	18	74.00%
Large	10	18	76.00%

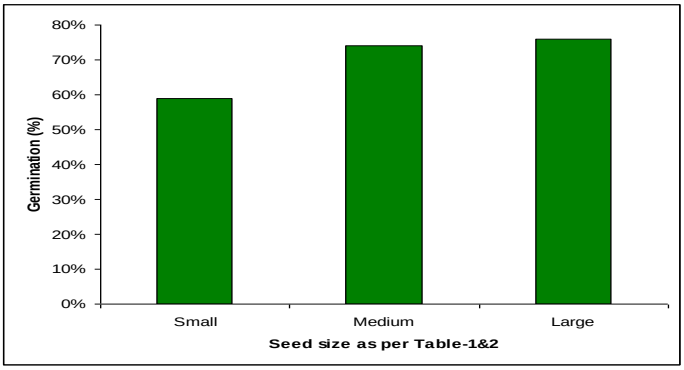

Figure-1
Effect of seed size and weight on seed germination of Alangium lamarckii

Conclusion

From the present work it can be concluded that the size and weight of seeds significantly affect the seed germination. The large size seeds showed better germination as compared to medium and small size seeds. Thus the size and weight of seeds may be helpful to improve the seed germination of Alangium lamarckii.

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