

Seed size influencing seed quality in few tree crops

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SUMMARY

Investigations were made in amla, jamun, ber and tamarind to standardize the best sieve size for grading. The results revealed that size grading of amla, jamun, ber and tamarind through 8/64", 20/64", 24/64" and 23/64" round perforated metal sieve, respectively, recorded the highest seed recovery in addition to the higher seed and 100 seed weight and other seedling quality characters.

Key words : Arid zone tree crops, Seed size, Size grading.

Size grading is an integral part of post harvest operations to enhance the planting value of the seed lots. Size grading that entitled to remove the empty, immature, broken and insect damaged seeds (Bonner and Switzer, 1971) is done mainly based on size of the seed. Hence, studies on this aspect are very many aimed at understanding vigour and field establishment. In order to obtain precise information on the influence of seed size on germinability and vigour in few tree crops of semi-arid region, the studies were carried out at the Tamil Nadu Agricultural University, Department of Seed Science and Technology, Coimbatore (11°02' N; 76°57' E; 426 M above sea level).

MATERIALS AND METHODS

Four major arid zone tree crops viz., amla (*Emblica officinalis* Gaertn), jamun (*Syzygium cuminii* Skeels), ber (*Zizyphus mauritiana* Lamk) and tamarind (*Tamarindus indica* Linn) were collected fresh and they were graded using the following sieves (A) and the seeds obtained in each sieve as retained (R) and they passed through the last sieve (P) was indicated as given below (B).

recovery percentage. The 100 seed weight in different size grades was recorded. The germination potential of all tree crops was evaluated as per the ISTA (1999) using four hundred seeds in sand media. The germination test was terminated at 20, 40, 40 and 21 days after sowing in amla, jamun, ber and tamarind, respectively and with the use of normal seedling vigour parameters viz., root length (cm), shoot length (cm), hypocotyls length (cm) in tamarind, drymatter production (mg 10 seedlings⁻¹) and vigour index were taken. The data gathered were analyzed statistically as per Panse and Sukhatame (1978).

RESULTS AND DISCUSSION

In all the four tree crops highly significant variations were observed for all the observed seed and seedling quality characters including seed recovery. Irrespective of the tree crops studied, seed weight was associated positively with seed size. Increase in seed weight corresponding to its size was also reported in *Albizia lebbeck* (Roy, 1985), in *Azadirachta indica* (Oboho and Ali, 1985) in *Holoptelia integrifolia* (Prasad and Jalil, 1991), in *Santalum album* (Sindhuvendren et al., 1991),

Tree crops	Size of round perforated sieve size (A)	Size grades obtained (B)
Amla	10/64", 9/64", 8/64", 7/64"	10R, 9R, 8R, 7R & 7P
Jamun	26/64", 24/64", 22/64", 20/64", 18/64"	26R, 24R, 22R, 20R, 18R & 18P
Ber	28/64", 26/64", 24/64", 22/64"	28R, 26R, 24R, 22R & 22P
Tamarind	27/64", 25/64", 23/64", 21/64"	27R, 25R, 23R & 21R

In the above four tree crops, the seeds recovered in each one of the sieves were weighed and expressed as

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in *Syzygium cuminii* (Ponnammal et al., 1992) and in *Zizyphus mauritiana* (Chundawat, 1990). According to Hatcher and Purvis (1945) and Malam (1968) the seed weight was a positive correlate of the embryo weight and they found a linear relationship with the amount of reserve material present in the seed. In the majority of crops higher germination and vigour of the larger seeds of the tree crops in the present study could be related to the "Initial Capital" theory of Ashby (1936) attributing an initial