

## Germination improvement in teak (*Tectona grandis* Linn. f.) through forced ageing

India is one of the major teak-producing countries having a natural zone of distribution of teak mostly confined to the peninsular region below 24°N latitude<sup>1</sup>. It is commercially valued for its wood quality in the world due to the presence of fine grains, its strength, durability, and resistance to insects. It is also used in construction, plywood and furniture industries. Teak is mostly seed propagated. The problems in teak germination are multifarious. The nature of barriers which prevent seed germination can be physiological, physical or morphological, i.e. the presence of germination inhibitors in the felty mesocarp—physiological barrier<sup>2</sup>, thick and hard endocarp—physical barrier<sup>3</sup>, and the requirement of after-ripening associated with hormone imbalance in seeds—morphological barrier<sup>4</sup> which results in only the old drupes showing moderate germination<sup>5</sup>. Accelerated forced ageing is one of the stress tests for seed vigour (AOSA)<sup>6</sup>. Its utility in predicting seed storability has been demonstrated with agronomic crop seeds<sup>7</sup> but its applicability in improving tree seed germination has not been investigated. Bonner<sup>8</sup> used it to study seed lot vigour in *Quercus falcata*, and Pitel<sup>9</sup> studied some of the biochemical changes

(isozymes, amino acids and proteins) during accelerated ageing of *Pinus banksiana* and *Quercus rubra* seeds. Germination of fresh teak drupes (fruit with seed) is relatively low (8–10%) when compared to 2–3 year stored drupes (25–35%). The objective of the present study is to determine the applicability of the accelerated/forced ageing technique for improving the germination, and seedling vigour of teak drupes.

During the month of December 1996, ten-month-old drupes were accelerated/forced-aged by placing them in an ageing chamber maintained at 100% relative humidity and 40°C up to 15 days (Figure 1). The drupes were sampled from fifth day onwards at daily intervals and allowed to germinate in sand in earthen pots exposed to sunlight. A total of 300 drupes were used for each testing ten times with 30 drupes each. Germination count was made on day 28 (ISTA)<sup>10</sup>. The results revealed that the drupes which were aged for 13 days, recorded 53% germination which was 35% more than the non-aged control drupes.

In other treatments the germination ranged between 24 and 43%, but shorter or longer duration of ageing did not confer better effects. Further, forced

ageing enabled early germination (within 15 days) associated with more number of seedlings/100 drupes (64 seedlings) and better seedling vigour. The observed improvement in germination might be due to hastening the ageing process of the drupes. The results of our study could be used for commercial seedling production within a minimum period of time.

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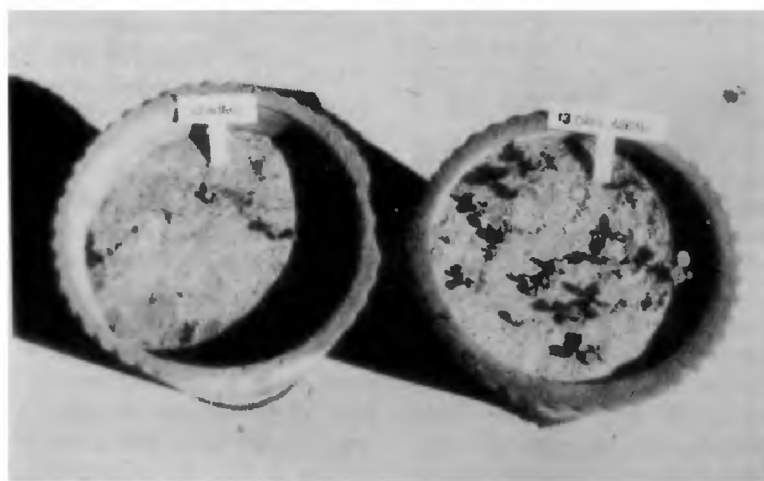


Figure 1. Effect of accelerated ageing on germination of 10-month-old teak drupes.