

Algorithm for developing suitable germination test procedures for species for which no information is available

Step 1

- Determine if seed coats are impermeable by checking imbibition of seeds placed on moist filter paper overnight. If seeds have not imbibed water, scarify the seed coats using a scalpel blade and observe again after 12 hours. Proceed to germination when seeds have imbibed the water.

Step 2

- If the first step does not result in full germination and if the accessions are of temperate origin, test at constant temperatures of 15°C and 20°C. For accessions of tropical origin, use constant temperatures of 20°C and 25°C.
- If the accession origin is unknown or doubtful, test at 15°, 20° and 25°C.
- In all cases, apply light for 12 hours per day.

Step 3

- If the second step has not resulted in full germination, test a further sample of seeds in alternating temperatures 25°/10°C (12 hours and 12 hours) for accessions of temperate origin and 35°/20°C (12hours and 12hours) for accessions of tropical origin.
- If light is applied for 12 hours per day, it should coincide with the upper temperature cycle.
- If the accession's origin is unknown or doubtful, test a sample of seeds at each temperature.

Step 4

- If the third step has not resulted in full germination, add 0.1-0.2% potassium nitrate (KNO₃) to the test substrate in the most successful temperature regime determined in steps 2 and 3.

Step 5

- If the fourth step has not resulted in full germination, pre-chill the seeds at 2°C to 6°C for eight weeks and test for germination in the most successful regime determined in steps two through four.

Step 6

- If full germination is not obtained, estimate viability using the tetrazolium test described below. The results of this test will indicate if the failure to achieve full germination is due to the presence of dead seeds.
- If the tetrazolium test indicates that dormancy is not broken and seeds are viable, try other dormancy-breaking treatments such as Gibberellic acid (GA₃) or pre-heating at 40°C for three to seven days.