

What is a germination test?

A germination test determines the percentage of seeds that are alive in any seed lot. The level of germination in association with seed vigor provides a very good estimate of the potential field performance. While the speed of germination varies slightly across varieties, seeds should absorb moisture within 2 days and produce a root and the first leaf within 4 days. At this point, the seed is considered to have germinated.

Why is measuring germination important?

A germination test is often the only test a farmer can conduct on the seed to determine if it is suitable for planting. When seed is stored in traditional open systems, the germination rate of most rice seed begins to deteriorate rapidly after 6 months. Also, many varieties have a dormancy period immediately after harvest that can last for 1-2 months. By knowing the germination rate, farmers can adjust their planting rates to attain the desired plant population in the field.

How to measure germination?

Sampling

To obtain a random sample for testing, it is always best to take samples from different parts of the bag or container. If the seed to be tested is contained in more than one bag, a sample must be taken from several bags. A good rule of thumb for determining how many bags to sample is to take samples from a number of bags that represents the square root of the lot size. For example, if the lot contains nine bags, then sample at least three bags. If the lot contains 100 bags, then get sample from at least 10 bags.

Equipment

To conduct this test, you will need the following:

- Waterproof tray. A flat-sided water bottle cut in half lengthwise makes a good tray.
- Water-absorbent material. Tissues or cotton wool are ideal.
- Seeds
- Water supply

Procedure

- Place the water-absorbent material inside the waterproof tray.
- Take random samples from each seed lot and mix those in a container
- Take at least three seed samples from the mixed grain.
- Count out 100 seeds from each sample and place on absorbent material inside the tray.
- Carefully saturate the absorbent material
- For each of 10 days, check to see that the absorbent material remains moist and record the number of germinated seeds.
- Compute germination test for five 5 days and for ten 10 days.
- While calculating the germination rate, one should take root and shoot length. There shouldn't be any water soaked lesion and infection in the root and shoot because, these seedling may not establish in the main field.

The rate of germination is an indicator of vigor. Rapid seed germination increases the chance of the seed establishing in the field.

Calculating the germination rate

Germination rate is the average number of seeds that germinate over the 5- and 10- day periods.

For example, If 86 seeds germinated in a tray of 100 seeds after 10 days, then,

$$\text{Germination \%} = \frac{\text{Number of seeds that germinated}}{\text{Number of seeds on the tray}} \times 100$$

$$10\text{-day germination (\%)} = \frac{86}{100} \times 100 = 86\%$$

