

Measuring Varietal Purity

Why measure varietal purity?

For seed to be classified as “good or certified seed” it must be able to pass a seed certification standard which determines whether the seed is true to varietal type..

How to measure varietal purity?

Measurements needed to determine varietal purity are the grain size and shape, 1000grain weight and the number of red grains in the sample

Grain size and shape

The grain size and shape (length-width ratio) is a very stable varietal property that can be used to measure the varietal purity of a sample. Comparing the length-width ratio of the sample with the published ratio for the variety indicates the varietal purity of the grain sample. Significant deviation indicates that the sample is impure – that is, it is either a different variety or a mixture of varieties

Scale (Length)	
1	Extra long (more than 7.5 mm)
3	Long (6.6 to 7.5 mm)
5	Medium (5.51 to 6.6 mm)
7	Short (5.5mm or less)

Scale	Shape	Ratio
1	Slender	Over 3.0
3	Medium	2.1 to 3.0
5	Bold	1.1 to 2.0
9	Round	Less than 1.1

Procedure

- Obtain a random sample from the seed batch.
- Collect twenty grains at random from this sample of seed
- Use a Vernier caliper or photographic enlarger to measure the dimensions of each of the twenty grains.

1000 grain weight.

Each variety has a published weight for 1000 grains. If the 1000-grain weight calculated from the sample departs from this, it may be an indication that the sample contains a mixture of varieties.

Procedure

- Select a random sample from the seed batch
- Count 1,000 **whole** grains from the sample.
- Weigh the 1,000 grains.

Red grains

A grain is considered to be red if more than 25% of its surface area is red colored or streaked.

Procedure

- Select a random sample of the milled rice. 25gm is a good sample size.
- Weigh the sample
- Select and separate the red grains from the sample. The red kernels are those that have 25% or more of the grain red as shown in the diagram below:
- Weigh the red grains separated from the sample
- Calculate the percentage of red grains in the sample using the formula:

$$\% \text{ red grains} = \frac{\text{Wt of red grains}[B]}{\text{Total weight of sample}[A]} \times 100$$

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