Purity Analysis of the Supplied Seed Sample

Mirza Hasanuzzaman, PhD
Professor
Department of Agronomy
Sher-e-Bangla Agricultural University
E-mail: mhzsauag@yahoo.com

Seed Purity

Purity may be defined as the principle kind of seed present in a seed lot. The quality is considered superior, if pure seed percentage is above 98, and the other species seeds and inert matter percentage as low as possible (below 0.1 percent).

Purity Analysis

It is the test which is done with the object of determining the composition by weight of the sample being tested, and by inference, the composition of the seed lot. The quality of seed lot is judged by the relative percentage of various components.

Components of Purity Analysis

1. Pure crop seed
2. Other seed (Other crop seed and Weed seed)
3. Inert matter

Pure seed

The pure seed refers to the species under consideration. In addition to mature, undamaged seed, it includes undersized, shriveled, immature and germinated seeds as well, provided they can be definitely identified as the species under consideration. However, if the seed is immature, shriveled, cracked, undersized, diseased, sprouted or germinated, mechanically damaged, broken provided it more than half of the original size is regarded as pure seed unless transformed into fungal sclerotia, smut balls or nematode galls. However, seeds of the Fabaceae (Leguminosae), Brassicaceae (Cruciferae) and Coniferae with the seed coats entirely removed are regarded as inert matter.

Other seed

Other seeds shall include seed units of any plant species other than that of pure seed.

Some seed structures have been described as inert matter in pure seed section; the same rule shall be applied for other seed. For example, a seed unit of other seed which is less than one half found in the test shall be considered as inert matter.

Inert matter

Inert matter shall include seed units and all other matters and structures not defined as pure seed or other seed, as follows:

i) Seed units in it is readily apparent that no seed is present. Florets of some species with a caryopsis less than minimum size (less than one third);

ii) Pieces or broken or damaged seed units half or less than half of the original size. Seeds of Fabaceae, Brassicaceae and Coniferae with the seed coat entirely removed;

iii) In leguminosae separated cotyledons are regarded as inert matter, irrespective of whether or not the radicle- plumule, axis and/or more than half of the testa is attached.

iv) Unattached sterile florets, empty glumes, lemmas, paleas, chaff, stems, leaves, cone, scales, wings, flowers, nematodes, galls, fungal bodies such as ergot, sclerotia and smut balls, soil, stones and all other non- seed materials.

Objectives of Purity Analysis:

1. To identify the different components present in a seed lot.
2. To determine the percentage of components by weight of the seed sample.
3. It helps to determine real value / pure live of seed i.e., RVS/PLS and seed rate.
4. It helps to ascertain the markert value of the seed for sale.

Materials Required

Seed sample, balance, forceps, Petri dish, purity working board/white offset paper and diaphanoscope.

Procedures

1. The submitted sample was reduced in size by a gamete seed divider to sufficient size for analysis. This size is usually based on appropriate weight of 2500 seeds and is referred to as the working sample.

2. The working sample was weighted and recorded the exact weight in gram to the minimum of decimal places necessary to calculate the percentage of its components to one decimal place is indicated below.

Wt. of working sample (g)	No. of decimal place
Less than 1.0000	4
1.0000 to 9.999	3
10.000 to 99.99	2
100.00 to 999.9	1
1000	0

3. The working sample was placed on the working board/ white offset paper. Then sample was separated into four component, pure seed, other crop seed, weed seed and inert matter.
4. The individual components were weighted to the appropriate number of decimal places.

Experimental Data:

Weight of total working sample (W) =
Weight of pure seed (W_1) =
Weight of other seed (W_2) =
Weight of inert matter (W_3) =
Weight of all components (W_4) = $W_1 + W_2 + W_3$

5. Calculation of the results were done in the following way-

% of the pure seed $= \frac{W_1}{W_4} \times 100$ =

% of other seed $= \frac{W_2}{W_4} \times 100$ =

% of inert matter $= \frac{W2}{W4} \times 100$ =

6. The results of purity analysis are given to one decimal place and the percentage of all components must be rounded. Components of less than 0.05% shall be reported as trace.

Percentage of any crop seed from other crop seed components is found 5% or more will be considered as second pure seed.

Precautions:

1. Weight of components should be taken rapidly without loss of time to overcome variation of weight that may be due to moisture component change in sample.
2. Consideration of decimal places should be followed according to the standard rule thus care should be taken during weighing of working sample and, different components.
3. The sample should not be less than 0.5 g and more than 1000 g.

Rounding procedure

Add together the percentages of all fractions. Fractions that are to be reported as a "trace" are excluded from this calculation; the other fractions shall then together total 100.0%. If the sum does not equal 100.0% (either 99.9 or 100.1) then add or subtract 0.1% from the largest value (normally the pure seed fraction).

Note: If a correction of more than 0.1% is necessary, check for a calculation error.