11. TESTING OF COATED SEED

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11.1 Coated seed is a seed unit covered with any substance which changes the size, shape, or weight of the original seed. Seeds coated with ingredients such as, but not limited to, rhizobia, dyes, and pesticides are excluded.

11.2 Sampling

(A) Size of lot: The maximum number of seeds that a lot may contain is 1,000,000,000 except that the weight of the lot, including the coating material may not exceed 42,000 kg (40,000 kg plus 5%).

(B) Sampling intensity: Sampling of the lot should be done according to the intensity appropriate to the particular lot as described in Chapter 2 on sampling.

Samples of coated seed shall be sent to the laboratory in moisture proof containers in such a manner to avoid damage to the pellets during handling and transport.

(C) Sampling in the Laboratory

Table 11.1 Sample sizes of pelleted seed

<table>
<thead>
<tr>
<th>Determination</th>
<th>Submitted samples not less than Number</th>
<th>Working samples not less than Pellets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Purity Analysis including verification of species</td>
<td>7500</td>
<td>2500</td>
</tr>
<tr>
<td>2. Weight determination</td>
<td>7500</td>
<td>Pure pellet fraction</td>
</tr>
<tr>
<td>3. Germination</td>
<td>7500</td>
<td>400</td>
</tr>
<tr>
<td>4. Determination of other seeds</td>
<td>10,000</td>
<td>7500</td>
</tr>
<tr>
<td>5. Size grading</td>
<td>10,000</td>
<td>2000</td>
</tr>
</tbody>
</table>
Obtaining the working sample: Any one of the dividers prescribed in Chapter 2 which has proved to be suitable for pellets may be used. The distance of fall must never be more than 250 mm and should not damage the coated units.

11.3 Purity Analysis

A purity analysis in the strict sense *(i.e. of the seeds inside the pellets)* is not obligatory. The working sample is separated into the following four component parts: pure coated seed, uncoated seed (including the kind under consideration), inert matter and uncoated weed seed. The percentage of each part is determined by weight.

If requested by the sender a purity test on depelleted seeds may be carried out as far as possible in accordance with Chapter 4.

**(A) Pure coated seed** shall include: (a) entire coated units regardless of whether or not they contain a seed, (b) broken and damaged coated units in which more than half the surface of the seed is covered by coating material, except when it can be seen that, either the seed is not of the species stated by the sender, or there is no seed present.

**(B) Uncoated crop seed** shall include: (a) free seed of any crop species, (b) broken coated units containing a crop seed that is recognizably not of the species stated by the sender, (c) broken coated units of the species stated when the coating material covers half or less of the surface of the seed.

**(C) Inert matter** shall include: (a) loose pelleting material, (b) broken pellets in which it is obvious that there is no seed, (c) any other material defined as inert matter (Refer Chapter 4).

**(D) Uncoated weed seed**; (a) free seeds of any weed species, (b) broken coated units containing a weed seed.

**Procedure**

The working sample after weighing shall be separated into its component parts as explained above. After separation, each component part shall be weighed in grammes to the minimum number of decimal places necessary to calculate the percentage to one decimal place. The percentage of Pure Pellets, uncoated seed and
inert matter shall be reported together with the kind of inert matter and the names of each species of uncoated seed found in the analysis.

**Verification of species**

In order to check that the seed in the pellets is substantially of the species stated by the sender, it is obligatory to remove the pelleting material from 100 pellets taken from the pure pellet fraction of a purity test and determine the species of each seed. The coating material may be washed off or removed in the dry state. The name and number of seeds of each species found shall be reported.

**Purity test for decoated seeds**

When a purity test on decoated seeds is to be undertaken at the request of the sender the working sample is decoated by shaking in fine mesh sieves/immersed in water. A sieve of 1.00 mm mesh above a sieve of 0.5 mm is recommended. The coating material is dispensed in the water and the remaining seed material is dried over night on filter paper and then in an air oven at the temperature prescribed in Chapter 7 (Moisture determination) for the species under test. After drying, the material must be subjected to a purity analysis in accordance with Chapter 4 (Purity analysis). The decoated seeds should be separated into the following:

(i) Pure seed
(ii) Other crop seed
(iii) Inert matter
(iv) Weed seed
(v) Coating material

The decoated seed shall be separated into the first four components in accordance with the purity analysis components. The weight of the coating material component is determined by substrating the sum of the weights of the other four components from the original weight of the working sample. The percentage shall be calculated of all the five components based on the original weight of the working sample.
Noxious weed seed

A noxious weed seed examination shall be made by examining approximately 25,000 units which have been decoated.

Identification and cultivar determination

The determination shall be carried out only at the request of the sender. Verification of kind of seed under consideration shall be made on 100 coated units, taken from the pure coated unit components of the purity separation. Before examination, the coating material shall be removed by washing or other appropriate method. The name and number of each kind found shall be reported. For cultivar determination, a minimum of 400 coated units shall be examined in accordance with Chapter 6.

11.4 The Germination Test

Germination tests shall be made with pellets from the pure coated fraction of a purity test. The pellets shall be placed on the substrate in the condition in which they are received without rinsing or soaking.

An additional germination test on de-pelleted pure seeds shall be carried out at the request of the sender. In this case the pellets shall be taken from the “pure pellets fraction” of the purity test and the coating material removed in such a way as not to affect the germination capacity of the seeds.

Working sample: The working sample shall be 400 pellets in replicates of 100.

Materials

If the substrates mentioned in Chapter 5 (Germination testing) are unsatisfactory, pleated filter paper shall be used and the test carried out in closed germination boxes. The paper should have a weight of 100-120 g per square meter and a water absorption of 220-240%. The pleated filter papers are enveloped by cover strips, of weight 70 g per square meter, and water absorption of 220-240%. The pleated filter paper is enveloped by cover strips of weight 70g/m and water absorption of 220-240%. The water supply may be varied according to the pelleting material and the kind of seed so as to achieve optimum conditions for germination. If the coating material adheres to the cotyledons water may be sprayed cautiously on to the seedlings at the time of counting.
Duration of Test

The testing period may be extended beyond prescribed period given in Chapter 5. However, slow germination may be an indication that test conditions are not optimum and a germination test of de-pelleted seeds may be made as a check.

Seedling evaluation and expression of result

Evaluation of seedlings as normal, abnormal shall be in accordance with Chapter 5. Abnormality may be due to the pelleting material and when this is suspected a retest shall be carried out in soil of good quality in accordance with Chapter 5.

A pellet is regarded as having germinated if it produces at least one normal seedling of the species stated by the sender. Pellets producing two or more such seedlings are counted and their number reported.

Pellets producing seedlings that are obviously do not belong to the species stated by the sender are not counted as having germinated but their number shall be reported separately.

Reporting results

The percentage of pellets with normal seedlings, with abnormal seedlings and without seedlings shall be reported on the Analysis Certificate. The testing method and duration of test must be indicated.

11.5 Weight Determination and Size Grading

Weight determination

Weight determination shall be made from the pure pellet fraction in accordance with Chapter 8.

Size grading

Size grading shall be carried out on a sample, weighing at least 250 g, which should be sent in an airtight container. Two working samples of about 50 g + 5 g each are used. Each sample is subjected to a screening analysis. The following round hole screens must be used.
— One screen with a hole diameter 0.25 mm smaller than the lower nominal value of the seed size.

— One set of screens which divides the stated seed size range into quarter-millimetre fractions.

— One screen with a hole diameter 0.25 mm larger than the upper nominal value of the seed size.

The screening fractions are weighed up to two decimal places. The weights of the fractions are expressed as percentages of the total weight. The average of the two determinations should be reported provided the difference between the sums of percentage within the nominal grading limits does not exceed 1.5%. If this tolerance exceeds, a further sample of 50 g should be analysed. In each case the average of two screening analyses falling within the permitted tolerance, should be shown on the Analysis Certificate.

11.6 Reporting Results

The analysis certificates for pelleted seeds should be clearly marked in the space following the heading ANALYSIS RESULTS with the words PELLETED SEEDS.