

SCHEDULE 5

Regulation 3(1), 7(1) and (2) and 10(5)

PART I

SAMPLING OF SEED LOTS

1. A sample shall be obtained from the seed lot by taking primary samples at random from different positions in the lot and combining them to form a composite sample. The composite sample may be submitted for testing intact but if the composite sample is too large it may be reduced in weight by using an approved seed sample divider, to give the submitted sample.

Primary sample size

2. At each position of sampling of a seed lot, primary samples of approximately equal size shall be taken.

Condition of the Seed Lot

3. The seed lot to be sampled shall have been subject to appropriate mixing and blending techniques so that it is as uniform as practicable. There shall be no documentary or other evidence of heterogeneity. If a seed lot is presented for sampling in more than one container, the container shall be of the same size and type and contain approximately the same weight of seed.

Sampling from Sacks

4. When the seed lot is in sacks or similar sized containers each containing more than 15 kg of seed and not more than 100 kg of seed, the minimum number of containers to be sampled shall be in accordance with the following table:—

NUMBER OF CONTAINERS IN THE LOT	MINIMUM NUMBER OF CONTAINERS TO BE SAMPLED
1-5	Sample each container and always take at least five primary samples
6-30	Sample five containers or at least one in every three containers, whichever is the greater
31-400	Sample 10 containers or at least one in every five containers, whichever is the greater
401 or more	Sample 80 containers or at least one in every seven containers, whichever is the greater

5. The containers to be sampled shall be selected at random and primary samples drawn from the top, middle and the bottom of containers, but not necessarily from more than one position in any container. The position from which the seed is taken shall be varied from container to container.

Sampling from small containers

6. For sampling seed lots in containers holding 15 kg of seed or less, a 100 kg weight of seed shall be taken as the basic unit and the small containers shall be combined to form sampling units not exceeding this weight (eg six packages of 15 kg, 20 packages of 5 kg). For sampling purposes each unit shall be regarded as one container and the sampling procedures prescribed in paragraphs 4 and 5 above shall be used.

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7. When seed is in moisture-proof containers the opened or pierced containers shall be adequately closed or the residues from sampling transferred to new containers. When seeds are in very small packets (100 g or less) each packet may be considered as a primary sample and sufficient shall be taken at random to obtain a submitted sample of the minimum size prescribed in Part II of this Schedule.

Sampling from large containers or seed in bulk

8. For the sampling of containers holding more than 100 kg of seed, and for the sampling of seed in bulk, primary samples shall be taken from different horizontal and vertical positions selected at random and the following shall be regarded as the minimum requirement:—

LOT WEIGHT	NUMBER OF PRIMARY SAMPLES TO BE TAKEN
up to 500 kg	at least five primary samples
501-3000 kg	one primary sample for each 300 kg but not less than five
3001-20,000 kg	one primary sample for each 500 kg but not less than 10
20,001 kg and above	one primary sample for each 700 kg but not less than 40

Sampling from a seed stream

9. Samples may be drawn from a seed stream during processing using an automatic sampling device, which shall uniformly sample the entire cross-section of the seed stream when a sample is taken. Portions of seed shall be taken at regular intervals throughout the processing of the lot using the same sampling intensity as for seed in bulk (see paragraph 8 above).

Sampling Instruments

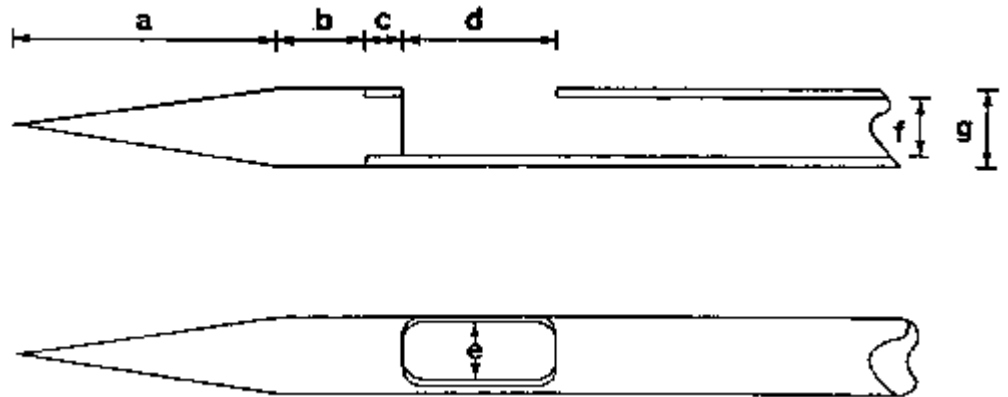
10. Sampling instruments shall be capable of sampling all parts of the seed lot. Where it is not practicable to use one of the instruments or methods described in this Schedule other instruments or methods may be used at the discretion of the Minister.

11. The instrument used for drawing primary samples shall be one of those described below as appropriate to the location of the seeds, or any other suitable instrument for the time being approved by the Minister.

Dynamic Spear Sampler

- (a) This instrument may be used, in accordance with the methods described in paragraph 12(a) below, for sampling seeds in sacks or small containers. It shall be a hollow, cylindrical, solid pointed metal spear or trier which shall be long enough to reach beyond the middle of the sack from the side and shall have an aperture so positioned that portions of seed of equal volume are removed from each part of the sack through which it travels.

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Dimensions (mm)

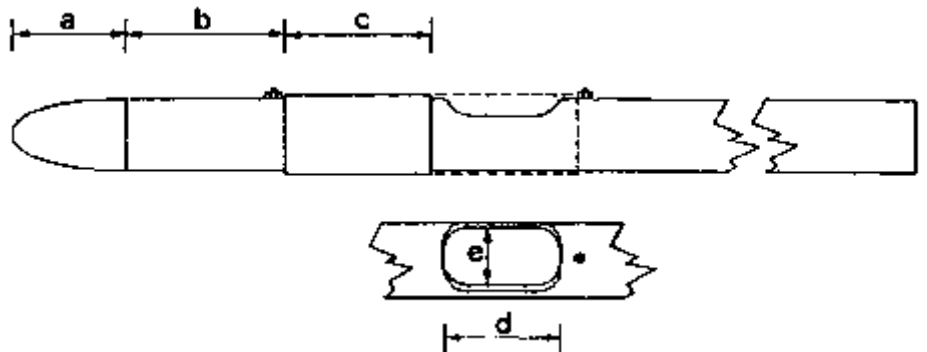
	Point	Shoulder	Boss	Aperture Length	Aperture Width	Bore	Outside Diameter
	(a)	(b)	(c)	(d)	(e)	(f)	(g)
For sampling: All kinds other than							
maize	85	12	10	33	11	13	15
All kinds	82	12	13	40	15	17	19

Stick Samplers

(b) These instruments shall have an aperture or apertures which shall be of sufficient size to allow the unrestricted entry of seeds or other particles and which shall be capable of being opened and closed during the sampling procedure as appropriate to the method of use described in paragraph 12(b).

(i) Single chamber type

This instrument may be used for sampling seeds in open sacks, in large containers or in bulk.



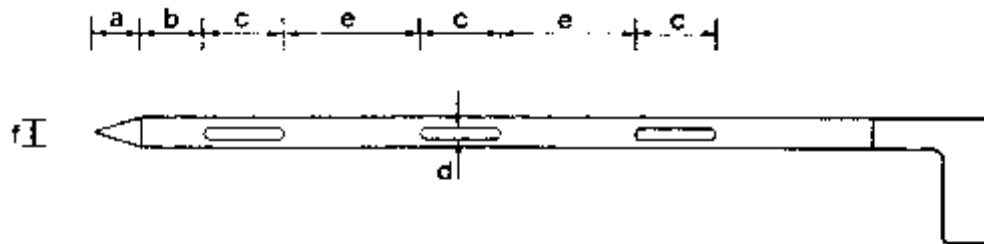
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Point	Shoulder (a)	Sliding Sleeve (b)	Aperture Length (c)	Aperture Width (d)	Bore (e)	(f)
For sampling:						
Seeds in sacks	55	25	75	50	22	25
Seeds in large containers or in bulk	100	390	63	50	22	30

(ii) Multi-chamber type

This instrument may be used to sample seeds in sacks or, subject to the requirements of paragraph 10 above, any other containers. The apertures shall open into chambers that shall be separated from one another by transverse partitions. The contents of each chamber shall be regarded as a primary sample.



Dimensions (mm)

	Point (a)	Shoulder (b)	Aperture Length (c)	Aperture Width (d)	Aperture Separation (e)	Bore (f)
For sampling:						
All kinds	60	50	100	15	110	25

Cargo Sampler

(c) This instrument shall only be used, in accordance with the method described in paragraph 12(c) below, for sampling seed in large containers or bulk and shall only be used in the vertical position.

Seed Stream Samplers

(d) Seed stream samplers shall uniformly sample the cross section of the seed stream without any loss of the seeds that enter the sampler, in accordance with the method described in paragraph 12(d) below. Timing devices shall be attached so that the frequency and duration of sampling can be adjusted to meet the requirements of paragraph 9.

Methods of use

12. All instruments shall be clean before use. The methods of using these instruments shall be as follows:—

Dynamic Spear Sampler

(a) These samplers may be used in two ways as appropriate to their length.

Method 1 (For instruments in which the aperture reaches only to the centre of the sack or small container).

The instrument shall be inserted into the sack in an upward direction at an angle of approximately 30° to the horizontal with its aperture downwards until the aperture reaches the centre of the sack or container. The instrument shall be lightly tapped to remove any seed taken in and then rotated to bring the aperture uppermost. It shall be withdrawn immediately with a vibratory or oscillatory motion and at a decreasing speed so that the quantity of seed obtained from successive locations increases progressively from the centre to the side of the sack. Seed passing through the instrument shall be collected in a clean container.

Method 2 (For instruments in which the aperture reaches to the far side of a sack of small container).

A longer instrument shall be inserted in the manner described in method 1 above until its aperture reaches almost to the far side of the sack or container. It shall be tapped and rotated in the manner described above and then withdrawn at a uniform speed. Seed passing through the instrument shall be collected in a clean container.

Stick Sampler

(b) (i) **Single Chamber Type**

- (a) The sleeve shall move freely.
- (b) The instrument shall be inserted vertically downwards till the aperture reaches the appropriate primary sampling position ensuring that the sleeve covers the aperture as it enters the seed.
- (c) The instrument shall be withdrawn sufficiently to uncover the aperture.
- (d) The instrument shall be left in position until the primary sample has been collected.
- (e) The instrument shall be withdrawn and the contents emptied into a clean container.

(ii) **Multi Chamber Type**

- (a) The apertures shall be closed before insertion.
- (b) The instrument shall be inserted diagonally into sacks or vertically into large containers so that all apertures are fully covered.
- (c) The apertures shall be opened.
- (d) The instrument shall be agitated so that seed enters.
- (e) The apertures shall be closed gently to ensure that trapped seed is not broken or damaged.
- (f) The instrument shall be withdrawn and if the chambers are full the contents shall be emptied onto a clean surface or into a clean container.
- (g) If all the chambers are not full, the contents shall be discarded and procedures a-f shall be repeated.

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Cargo Sampler

- (c) (a) The lid shall open and close easily.
- (b) The instrument shall be inserted with the lid closed to the appropriate primary sampling position which shall be at least 300 mm below the surface of the seed.
- (c) The handle shall be raised sufficiently to open the lid.
- (d) The instrument shall be left in position until the primary sample has been collected.
- (e) The instrument shall be withdrawn and the contents shall be emptied into a clean container.

Seed Stream Samplers

- (d) Such instruments shall be required to take the number of primary samples necessary for the weight of lot being sampled, the primary samples being taken from the lot at regular intervals and the resultant composite sample being of a weight not less than that prescribed in Part II below and not greater than can conveniently be reduced by means of one of the methods of sample reduction described in paragraph 14 below. They shall be installed in such a way that the composite sample shall be readily identifiable with the seed lot from which it was taken.

Obtaining submitted sample-composite sample division instruments

13. Provided the composite sample is of at least the minimum weight prescribed in Part II below for a submitted sample for a particular kind of seed, it may be used as the submitted sample. Where the composite sample exceeds the weight prescribed for the submitted sample, any of the following instruments may be used to obtain the submitted sample. Other instruments and methods may be used at the discretion of the Minister.

Rifle Divider

- (a) The rifle divider shall consist of a rectangular hopper leading to a series of evenly spaced chutes, arranged so that seed is distributed equally on two sides. There shall be a minimum of 18 chutes, each discharging in the opposite direction to its immediate neighbour.
Three (or more) metal collecting vessels (pans) of sufficient depth to prevent seed bouncing out shall be used.

Centrifugal Divider

- (b) The centrifugal divider shall consist of a hopper from which seed flows on to a shallow cup which is then rotated by an electric motor. The seed shall be distributed by centrifugal force onto a stationary baffle which divides it into two equal parts which are then discharged through separate spouts.
Four metal collecting vessels (pans) of sufficient depth to prevent seed bouncing out shall be used.

Methods of Use

14. The method of using these instruments shall be as follows:—

Rifle Divider

- (a) (a) The divider shall be placed on a firm level surface.
- (b) The divider and pans shall be clean.

Sample Mixing

- (c) An empty pan shall be placed on each side of the divider to receive the discharge from the chutes.
- (d) The entire composite sample shall be poured evenly into the other pan(s).
- (e) The seed shall then be poured from the pan(s) evenly along the entire length of the hopper.
- (f) The two pans into which the seed has passed shall then be replaced with empty pans.
- (g) Procedures e and f shall then be repeated twice to mix the sample thoroughly.

Sample Reduction

- (h) Before reduction, the composite samples shall have been thoroughly mixed using procedures c-g. The contents of one of the two receiving pans shall then be set aside. If the seed in the second pan is of at least the minimum weight prescribed in Part II below for a submitted sample of a particular kind of seed, it may be used as the submitted sample. If the weight of seed in the second pan is greater than the appropriate minimum weight prescribed in Part II below for a submitted sample, it may be reduced using the following procedures i-k.
- (i) An empty pan shall be placed on each side of the divider to receive the discharge from the chutes.
- (j) The contents of the second pan shall be poured evenly along the entire length of the hopper.
- (k) The contents of one of the two pans into which the seed has passed shall then be set aside. If the weight of seed in the other pan is still greater than the appropriate minimum weight prescribed in Part II below for the submitted sample, it may be submitted intact or it may be reduced further using procedures i-k.
- (l) If the weight of seed in either of the two pans at either h or k is less than the appropriate minimum weight prescribed in Part II below for a submitted sample, the following procedures m-q shall be used.
- (m) An empty pan shall be placed on each side of the divider to receive the discharge from the chutes.
- (n) The contents of one of the pans shall be set aside. The contents of the other pan shall be poured evenly along the entire length of the hopper.
- (o) One receiving pan and its contents shall then be removed and replaced with an empty pan. The other pan, with its contents, shall be left in place.
- (p) The contents of the pan removed at o. shall be poured evenly along the entire length of the hopper so that two subsamples of different weight shall be produced.
- (q) Procedures o and p above when repeated, constitute the process of continuous halving, and shall be repeated using whichever subsample is appropriate until sufficient seed is obtained in one pan, which when added to the seed set aside in n produces a submitted sample of at least the appropriate minimum weight prescribed in Part II below.

Obtaining more than one submitted sample

- (r) Two submitted samples shall be obtained from a composite sample by first obtaining a sample of at least twice the appropriate minimum weight prescribed in Part II below for a submitted sample, using procedures c-g, and h-q as appropriate, and then dividing in into two parts by passing it once through the divider.
- (s) When three submitted samples are required from one composite sample, one sample of at least the appropriate minimum weight prescribed in Part II below for a submitted sample, shall be extracted using procedures c-g and h-q as appropriate. All portions of seed which have been

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set aside shall then be recombined and the residue of the composite sample so obtained shall be subject to the procedure at r above.

Centrifugal Divider

- (b) (a) The divider shall be levelled prior to use.
- (b) The divider and pans shall be clean.

Sample Mixing

- (c) An empty pan shall be placed under each spout of the divider.
- (d) The entire composite sample shall be poured into the centre of the hopper.
- (e) The motor shall be operated so that the seed passes into the pans.
- (f) The motor shall be switched off.
- (g) The two pans containing seed shall be removed and replaced by empty ones.
- (h) The contents of both pans removed at g shall be poured together into the centre of the hopper, the seed being allowed to blend as it flows in. Procedures e, f and g shall be repeated.
- (i) Procedure h shall be repeated to mix the sample thoroughly.

Sample Reduction

- (j) Before reduction, the composite sample shall have been thoroughly mixed using procedures c-i. The contents of one of the two receiving pans shall be set aside. If the seed in the second pan is of at least the minimum weight prescribed in Part II below for a submitted sample of a particular kind of seed, it may be used as the submitted sample. If the weight of seed in the second pan is greater than the appropriate minimum weight prescribed in Part II below for a submitted sample, it may be reduced using the following procedures (k-m).
- (k) Empty pans shall be placed under the spouts.
- (l) The contents of the second pan shall be poured into the hopper and procedures e and f shall be repeated.
- (m) The contents of one of the two pans into which the seed has passed shall then be set aside. If the weight of seed in the other pan is still greater than the appropriate minimum weight prescribed in Part II below for a submitted sample, it may be submitted intact or it may be reduced further using procedures k-m.
- (n) If the weight of seed in either of the two pans at either j or m is less than the appropriate minimum weight prescribed in Part II below for a submitted sample, the following procedures (o-s) shall be used.
- (o) Empty pans shall be placed under the spouts.
- (p) The contents of one of the pans shall be set aside. The contents of the other pan shall be poured into the centre of the hopper and procedures e and f shall be repeated.
- (q) One receiving pan and its contents shall then be removed and replaced with an empty pan. The other pan, with its contents, shall be left in place.
- (r) The contents of the pan removed at q shall be poured into the centre of the hopper and procedures e and f shall be repeated so that two subsamples of different weight shall be produced.
- (s) Procedures q and r above, when repeated, constitute the process of continuous halving, and shall be repeated using whichever subsample is appropriate until sufficient seed is obtained in one pan, which when added to the seed set aside at p produces a submitted sample of at least the appropriate minimum weight prescribed in Part II below.

Obtaining more than one submitted sample

- (t) Two submitted samples shall be obtained from a composite sample by first obtaining a sample of at least twice the appropriate minimum weight prescribed in Part II below for a submitted sample, using procedures c-i and j-s as appropriate, and then dividing it into two parts by passing it once through the divider.
- (u) When three submitted samples are required from one composite sample, one sample, of at least the appropriate minimum weight prescribed in Part II below for a submitted sample, shall be extracted using procedures c-i and j-s as appropriate. All portions of seed which have been set aside shall then be recombined and the residue of the composite sample so obtained shall be subject to procedure t above.

Moisture Samples

15. Primary samples of seed for moisture tests shall be drawn in such a way as to minimise exposure to the atmosphere. The composite sample so collected shall be submitted intact to the seed testing station in an airtight container. It shall not be passed through a seed divider. Seed for moisture tests shall be kept separate from seed on which other determinations are to be made.

PART II

Maximum weight of a seed lot and minimum weight of a submitted sample

The maximum weight of a seed lot (or a weight which does not exceed that indicated by more than 5 per cent) and the minimum weight of a submitted sample shall be as indicated below:—

- (a) The maximum weight of a seed lot shall be 40 tonnes for maize and 25 tonnes for other kinds. The maximum weight of a seed lot of a mixture of seeds to which regulation 5(2)(a) and (b) applies shall be 25 tonnes.
- (b) The minimum weight of a submitted sample shall be 1 kg or, for inbred lines of maize, 250 g.
- (c) The minimum weight of a submitted sample for a moisture test shall be 100 g.