

SEED ENTERPRISE MANAGEMENT INSTITUTE (SEMI)
Seed Quality Assurance, Management and Control Processes
24th April – 6th May 2017

Seed Enterprises Management Institute
Seed Sampling Procedures
University of Nairobi



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Sampling Definitions

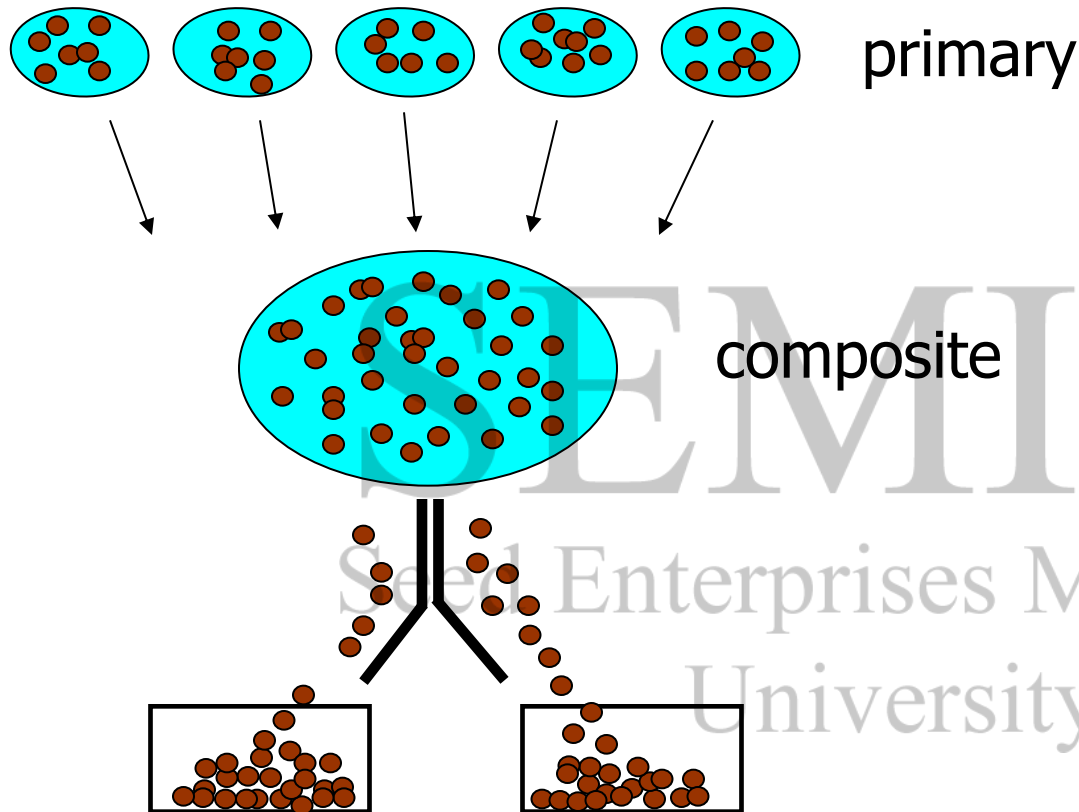
- ❑ Seed lot - specified quantity of seed that is physically and uniquely identifiable (ISTA). A definite quantity of seed identified by a lot number or other mark, every portion or bag of which is uniform within recognized tolerances for the factors which appear in the labeling (AASCO).
- ❑ Primary sample - portion taken from the seed lot during a single sampling action.
- ❑ Composite sample - Formed by combining and mixing all primary samples.

Seed Sampling Procedures

- ❑ Sub-sample- portion of a sample obtained by reducing (dividing) a sample.
- ❑ Duplicate sample - another sample obtained for submission from the same composite sample and marked “Duplicate sample”.
- ❑ Working sample - the whole of the submitted sample or a sub-sample thereof, on which a quality test is made and must be at least the weight prescribed by ISTA for the particular test.

Seed Sampling Procedures

Samples - primary, composite, submitted, working



- Composite – combine all primary samples.
- Mix and sub-divide to get submitted (secondary) sample.
- Submitted sample may be further subdivided - working sample.

Considerations in seed sampling

- ❑ Seed lot to be sampled has to be uniform and representative in terms of composition and size of containers and has to be arranged in such a way in order for the sampler to have access to each and every container
- ❑ The sample itself is well mixed in the lab before portions are examined for purity, germination, and other testing.

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- ❑ Heavy seeds tend to settle to the bottom of the sample bag, while lighter seeds tend to be at the top. This can be dealt with by passing seed through a laboratory divider or mixing the seed by hand, whether a purity analysis was requested or not.

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- ❑ The seed lot shall not exceed the quantity indicated in the ISTA Rules, subject to a tolerance of 5%.

Consignments that exceed these maximum sizes shall be sub-divided into separate, identifiable seed lots which do not exceed the maximum seed lot size.

- ❑ Sampling intensity is based on size of the seed lot and it refers to the minimum number of bags or containers of seed that should be sampled from a specific seed lot.

Seed Sampling Procedures

For seed lots in bags or containers that are of uniform size and are 15-100kg, the following is the minimum requirement:

- ❑ 1-4 containers, take 3 primary samples from each container.
- ❑ 5-8 containers, take 2 primary samples from each container.
- ❑ 9-15 containers, take 1 primary sample from each container.

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- ❑ 16-30 containers, take 15 primary samples in total from the seed lot.
- ❑ 31-59 containers, take 20 primary samples in total from the seed lot
- ❑ 60 or more containers, take 30 primary samples in total from the seed lot

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Seed Sampling Procedures

- ❑ For seed lots in containers smaller than 15kg , containers shall be combined into sampling units not exceeding 100kg, e.g. 20 containers of 5kg, 33 containers of 3kg or 100 containers of 1kg.
- ❑ For sampling purposes, each unit is regarded as one container and the sampling intensity prescribes for big containers will apply

Sampling methods

Non-mechanical methods

i) Spoon method - Used for obtaining seed for seed health testing; otherwise restricted to species smaller than wheat

- Mix seed and pour evenly over tray. Using spoon and spatula, remove small portions of seeds from not less than five random places.

- Take sufficient seed to constitute a sub-sample of required size.

ii) Modified halving method

- A grid of equal-sized cells, open at the top and alternate cells with no bottom, set on a tray.
- Seeds are mixed and poured evenly over grid. Grid is lifted and about half the sample remains on the tray.
- Sample is successively halved until sufficient quantities of seeds are obtained.

Mechanical dividers

- i) Conical (Boerner) - Not motorized. Suitable for most kinds of seed (including chaffy); Not suitable for “stemmy” samples.
- ii) Soil (Riffle): Not motorized. Better suited than Boerner for grasses and other species that may arrive to the Lab as a mass of florets and plant parts.

iii) Centrifugal (Gamet): Motorized. Especially useful for chaffy seed, but may clog due to a smaller throat than the Riffle divider.

iv) Rotary Divider

v) Variable Sample Divider

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Conical



Riffle



Centrifugal



Riffle

Procedure for sampling

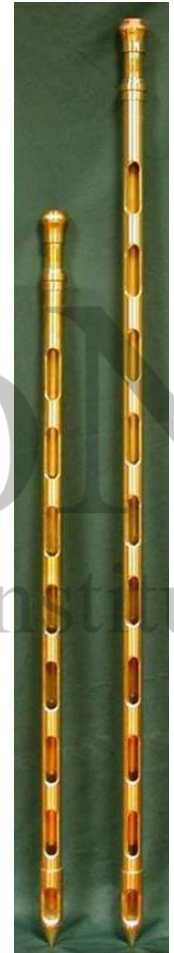
- ❑ Primary samples must be of approximately equal size regardless of the method
- ❑ When seed lot is in containers or bags, the bags to be sampled shall be selected at random throughout the seed lot and the primary samples shall be drawn alternatively from the top, middle and bottom.
- ❑ When the seed lot is in bulk, the primary samples shall be drawn from random positions & depths, using a sleeve trier.

Seed Sampling Procedures

- ❑ In case of chaffy seeds such as most pasture grasses that are not free flowing, the primary samples may be drawn by hand. Groundnuts, soybeans, fussy cotton, beans and similar crops may also be drawn by hand to avoid damage to the seed.
- ❑ All primary samples are then thoroughly mixed into a composite sample from which a submitted sample can be drawn.

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Sampling Probes

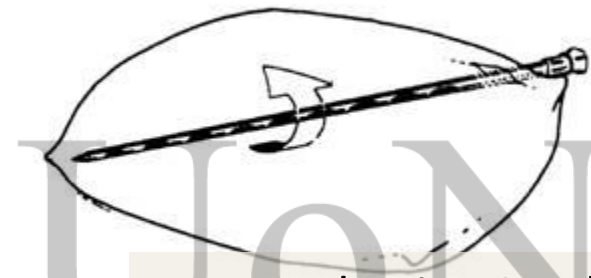


Sampling Seed Bags

- Probes must reach diagonally across bag
- Short Triers are not advised if not possible to access all parts of the bag

Sampling Procedure:

- Insert probe diagonally at corner
- Keep slots down and closed initially
- Rotate the probe up and twist to fill chambers
- Close chambers and extract the probe
- Seed tumbles out of the mouth of the probe
- Repeat until sufficient sample is obtained



Free Flowing Seed



Prairie Grass Seed

How Many Traditional Bags to Probe?

AOSA recommendation:

5 bags plus 10% of total number, maximum of 30 bags

Total Bag Qty	7	10	23	50	100	200	300	400
Sample Qty	6	6	7	10	15	25	30	30

ISTA recommendation (containers < 100 Kg):

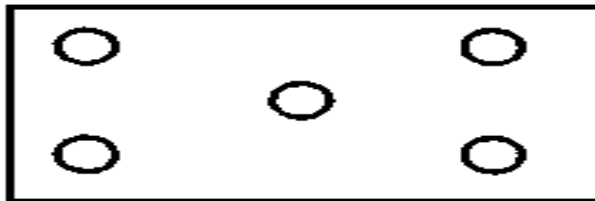
Total Bag Qty	1-4	5-8	9-15	16-30	31-59	60+
Sample Qty	3/bag	2/bag	1/bag	15	20	30

GIPSA recommendation:

36 bags to test for most lots under 10,000

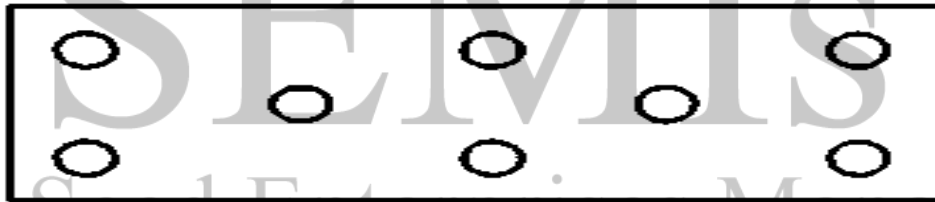
Bulk sampling plan

**Lots up to 15 t:
Five sampling points middle and 500mm from sides**

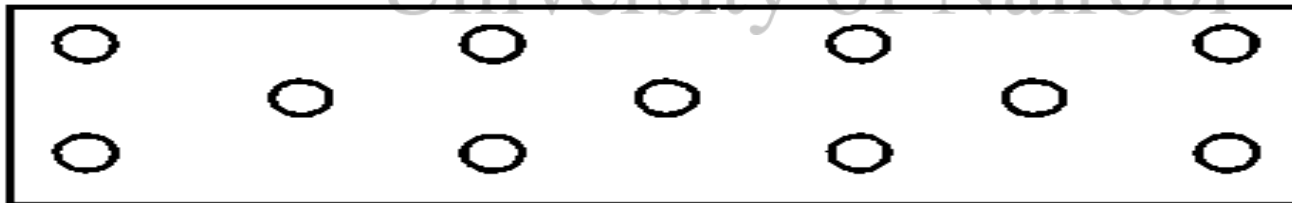


(Wagon truck or hold of ship viewed from above)

**Lots from 15 to 30 t:
Eight sampling points**



**Lots from 30 to 50 t:
Eleven sampling points**



A photograph of five ears of corn with different colors: white, red, yellow, and orange. The corn is arranged in a row, with some ears partially overlapping. The background is green grass and leaves.

THANK YOU FOR THE
AUDIENCE

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