

**OFFICIAL SEED TESTING STATION
SEED TESTING LABORATORY, KEDL0100**

Standard Operating Procedure

Seed Sampling

SOP/MET/01

Revision number 12

Issue date: 16th January 2020

**STANDARD OPERATING PROCEDURE FOR SEED
SAMPLING**

SOP/MET/01

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1.0 Purpose:

- 1.1 To document a system for obtaining a seed sample from a seed lot which is of a size suitable for tests, in which the probability of a constituent being present is determined only by its level of occurrence in the seed lot.

2.0 Scope:

- 2.1 From seed lot identification to obtaining submitted to the seed testing laboratory.

3.0 Definitions and acronyms:

- 3.1 *KEPHIS*: Kenya Plant Health Inspectorate Service (Official Seed Certifying Agent-SCA).
- 3.2 *KEPHIS Technical Administration*: Database point
- 3.3 *ISTA*: International Seed Testing Association.
- 3.4 *Seed Sampler*: A person trained and experienced in seed sampling who is licensed by a seed laboratory to obtain seed samples for submission to a seed laboratory.
- 3.5 *Work Order*: Official KEPHIS document issued to a seed sampler to commence seed processing inspection and sampling.
- 3.5.1. *Continuous Work Order*: Official KEPHIS document issued to a seed sampler after the original work order is closed. It allows seed processing to resume or continue.
- 3.6 *Seed processing*: Means all those treatments that the seed is subjected to other than testing, between harvesting and sale
- 3.7. *List of Approved Fields*: It is a comprehensive list issued by KEPHIS (from Technical Administration data base) to a seed sampler detailing crops and fields, which had been approved during field inspections.
- 3.8. *Notice to Import/Export (Form SR 14)*: Official KEPHIS document filled by seed merchants notifying KEPHIS that they intend to either import or export seed into or outside the country. It is after this that a Seed import Permit is issued.



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- 3.9. *Seed Import Permit (Form SR 15)*: Official KEPHIS document issued to registered seed merchants in order to facilitate the importation of seeds into the country. Such seeds are accompanied by a phytosanitary certificate and ISTA certificate.
- 3.10. *Phytosanitary certificate*: Official document that accompanies seeds from a country of origin indicating their health status.
- 3.11. *Registered seed merchant*: A person or firm or institution officially recognized by KEPHIS as suitable to produce process or sell seed.
- 3.12. *Seed lot*: A specified quantity of seed that is physically and uniquely identifiable.
- 3.13. *Official seed sample*: Means a seed sample taken in accordance with the current ISTA Rules by an authorized seed sampler.
- 3.14. *Primary sample*: A portion of seed taken from a seed lot in one single sampling action.
- 3.15. *Composite sample*: The sample obtained by mixing all primary samples from a seed lot.
- 3.16. *Submitted sample*: the sample that is submitted to the seed testing laboratory and may comprise either the whole of the composite sample or a sub-sample thereof. The submitted sample may be divided into sub-samples packed in different materials meeting conditions for specific tests such as moisture or health.
- 3.17. *Duplicate sample*: this is another sample obtained for submission from the same composite sample and marked “duplicate sample”
- 3.18. *Sealed*: sealed means that a container in which seed is held is closed in such a way, that it cannot be opened to gain access to the seed without either destroying the seal or leaving evidence of tampering. This definition includes both the seed lot and the submitted sample.
- 3.19. *Sample letter (Form SR 9)*: Official KEPHIS document indicates the details of the lot sampled, date of sampling and specifies the tests that need to be carried out. It is filled in quadruplicate.
- 3.20. *Sample dispatch Form/Sheet*: This is a list that accompanies a group of submitted samples to the seed testing laboratory. The number of submitted samples enclosed are listed on it.



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- 3.21. *Marked/labeled seed:* marked/labeled seed means that there a unique identification mark on the container, which defines the seed lot to which the container belongs. All containers must bear the same unique seed lot designation. Marking of all samples obtained from the seed lot must always ensure an unambiguous link between the seed lot and the samples.
- 3.22. A subplot is a portion of not less than 20% of the seed lot.(Each container of a subplot must be marked with the identification of the seed lot).

Procedure for sampling seed-lots

4.1. Sampling of locally produced seeds

- 4.1.1. Seed merchant requests for a work order/continuous work order to commence processing and subsequently sampling of the lot.
- 4.1.2. Work order/ continuous work order requested by the merchant is issued by KEPHIS to the seed sampler, basing on a list of approved seed fields.
- 4.1.3. Seed Sampler verifies/confirms the details of the seed lot on the work order and on the list of approved fields and will use it together with the sampling checklist to identify the seed lot.
- 4.1.4. When the request conforms to details, proceed to 4.4.

4.2. Sampling of imported seeds

- 4.2.1. Seed merchant requests for sampling
- 4.2.2. Seed sampler confirms the details of the seed lot against the Notice to Import (Form SR 14), Seed Import Permit (Form SR 15), ISTA certificate and Phytosanitary certificate from the country of origin.
- 4.2.3. When the request conforms to details, proceed to 4.4.

4.3. Re-sampling of both locally produced and imported seeds

- 4.3.1. Seed merchant requests for re-sampling.
- 4.3.2. Seed sampler confirms the details of the seed lot against the seed testing records of the previous sampling.
- 4.3.3. When the request conforms to details, proceed to 4.4.



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4.4. Seed lot identification and sampling

- 4.4.1 Seed sampler checks physically the seed lots (location, accessibility, homogeneity, packaging, weights) and will approve or reject sampling as per the sampling checklist Appendix S2.
- 4.4.2. A seed sampler chooses appropriate sampling triers, determines sampling intensity for the approved seed lots. The choice of sampling device depends on the nature of seed to be sampled and the packaging used (open or closed containers). Sampling intensity is determined by the size of the seed lot (Refer to Appendix S3), capacity of the sampling trier making sure that the minimum sampling intensity as per ISTA rules is met.
- 4.4.3. A seed sampler will then draw primary samples from the approved seed lots.
- 4.4.5. A seed sampler then seals the sampled lot. For locally produced seeds in open containers, containers are stitched with a single thread and appropriately sealed to ensure that the containers cannot be opened without damaging the seal. For sampling and re-sampling closed containers, seal by sealing tape with KEPHIS logo.
- 4.4.6. A seed sampler obtains a composite sample by combining the primary samples.
- 4.4.7. Seed sampler reduces the composite sample to obtain the submitted sample using a sample divider as described in Appendix S1 (a). In case of seed health samples, non-flowing or chaffy seed reduce the sample by hand as described in clause 4.5. Incase of samples for determination of moisture content, obtain submitted sample as described in clause 4.6. The minimum submitted sample weight shall be as indicated in column 3 of table 2A of the current ISTA Rules except for samples for determination of moisture content where for species that must be ground (see Table 9A of ISTA Rules) the weight is 100g and 50g for all other species.
- 4.4.8. A seed sampler fills Form SR 9 in Quadruplicate (Original white copy is sent with the submitted sample to seed testing laboratory, duplicate pink copy is sent to the seed merchant, triplicate green copy send to KEPHIS technical administration and the quadruplicate- book copy.
- 4.4.9. A seed sampler puts the submitted sample in paper sample bags, then into cloth sample bags and fastens the sample bag tightly with a suitable bag fastening rope to prevent any tampering. A finger and thumb seal is then put in place to enclose the lose end of the fastening rope and then pressed to lock in place.
- 4.4.10. Seed sampler records details of the samples in the Sample dispatch Form (FRM/STL/54) in duplicate, an original copy which accompanies the submitted seed sample and post control samples and the duplicate copy remains in the file at the sampling point.
- 4.4.11. A seed sampler puts submitted sample in delivery bag(s)/ container enclosing a copy of sample dispatch form and closes it.



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4.4.11. The samples in the delivery bag/ container are dispatched to the seed-testing laboratory immediately by KEPHIS vehicles or by Courier Services (contracted).

4.5 Procedure for sampling by hand

- 4.1 Take primary samples from top, middle and bottom layers of the container.
- 4.2 Dip open hand into the containers to the appropriate depth. If necessary, empty seeds in upper layers in another clean container first to access lower layers.
- 4.3 Close and withdraw the hand, taking great care that the fingers remain tightly closed about the seeds so none may escape
- 4.4 Empty the sampled seeds (primary samples) into a compositing container.
- 4.5 Repeat steps 2 to 4 until the required composite sample is obtained.

NB: Sampling by hand is restricted to the following genera of chaffy seeds; *Agrimonia*, *Andropogon*, *Anthoxanthum*, *Arrhenatherum*, *Astrebula*, *Beckmannia*, *Bouteloua*, *Brachiaria*, *Briza*, *Cenchrus*, *Chloris*, *Dichanthium*, *Digitaria*, *Echinochloa*, *Erharta*, *Elymus*, *Eragrostis*, *Gomphrena*, *Gossypium* (linted seed only), *Melinis*, *Oryza*, *Pennisetum* (non-glaucum), *Psathyrostachys*, *Pseudoroegneria*, *Scabiosa*, *Sorghastrum*, *Stylosanthes* (non guianensis), *Trisetum*- and to the following genera of easily damaged fragile seeds; *Arachis*, *Glycine* and *Phaseolus*

and to the following genera and species of tree and shrub seeds; *Acer*, *Aesculus*, *Ailanthus*, *Castanea*, *Cedrela*, *Corylus*, *Fagus*, *Fraxinus*, *Juglans*, *Liriodendron*, *Pinus cembra*, *Pinus pinea*, *Platanus*, *Populus*, *Quercus*, *Salix*, *Tectona*, *Ulmus*. The hand halving method can also be used with the species where all other dividing methods are extremely difficult or impossible to use. For all other species it can be used only to obtain working samples in the laboratory for seed health tests

4.6 Procedure for sampling for moisture testing

- 4.6.1 Mix the composite sample by passing it through the sample dividing equipment once.
- 4.6.2 Take a minimum of three samples from different positions of the composite sample with a spoon of the correct size in relation to the moisture proof sample container to avoid



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seed spillage. (The seed must not be exposed to the air during sample reduction for more than 30s).

4.6.3 Combine them to create the required size of submitted sample. 100g for species that must be ground and 50g for all other species. (refer to clause 2.5.4.5 of the current ISTA Rules)

4.6.4 Put the submitted samples in a moisture proof container from which as much air as possible is excluded and then seal.

4.6.5 Dispatch the submitted sample to the laboratory as soon as possible to avoid changes in moisture content.

5.0 Procedure for Sampling for seed Health samples

5.1 All equipment used for sampling including triers, buckets and other tools must be thoroughly cleaned before each use and before changing from one lot to another.

5.2 Sampling equipment with residues of extraneous matter could cause cross-contamination of other seed lots.

5.3 The equipment should be free from seed, diseased bodies, spores, inert foreign bodies and chemical residues such as seed treatments.

5.4 Cleaning methods to be used includes; cleaning with hand or dish soap, citric acid, alcohol or water and compressed air.

6.0 Procedure for labelling and sealing of seed lots

5.1 A seed merchant request for a work order and sampling

5.2 Work order is issued, basing on a list of approved fields

5.3 Seed sampler then identifies the lot in packages

5.4 Seed sampler draws samples from the approved seed lots

5.5 The sampled lots are sewn and a label and an appropriate seal is put at the loose ends of the string so that the containers cannot be opened without damaging the label and the seal.

6.0 Check Sampling Criteria

6.1 Introduction

The objective of check sampling is to monitor the seed samplers in accordance with SOP/GEN/07. All samplers are employees of the Kenya government. However, monitoring is done to all samplers to check on their conformity to sampling requirements.



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6.2 Procedure

- a) Check sampling is a repeat sampling done by a senior or experienced seed sampler to a lot that has just been officially sampled by a KEPHIS seed inspector/sampler being monitored.
- b) Check sampling should be done immediately or within the same day after the first sampling provided there is no movement or tampering of lot.
- c) Check sampling is done to all samplers- once a year for experienced staff and twice a year for new. However check sampling does not apply to automatic sampling.
- d) Check sampling will be as per the Standard sampling procedure SOP/MET/01 current revision.
- e) The check sample and the initial sample shall be tested and results compared to decide whether the sampler is within tolerance (SOP/GEN/07)

6.3 Results

- a) The official seed-testing laboratory shall compare the seed samples drawn by the approved samplers with those of the same seed lot drawn by senior or experienced sampler.
- b) If the results of check sampling are out of tolerance, frequencies of check sampling are increased by one within the next year otherwise will be referred for re-training

7.0 Associated documents and records

7.1 Request for work orders

7.2 Work order (*Form SR8*)

7.3 List of approved feed fields

7.4 Request for Sampling/Sealing/Testing of Seed for Certification (*Form SR 9*).

7.5 Request for re-sampling

7.6 Import documents (seed import permit, Phytosanitary and ISTA certificates).



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8.0 References.

- 8.1 International Rules for Seed Testing (current Edition ISTA Rules).
- 8.2 ISTA Seed Sampling and Testing Laboratory Accreditation Standard (current edition)
- 8.3 Seeds and Plant Varieties Act – Chapter 326 laws of Kenya.
- 8.4 Technical administration's database.
- 8.5 List of approved fields.
- 8.6 Dispatch book



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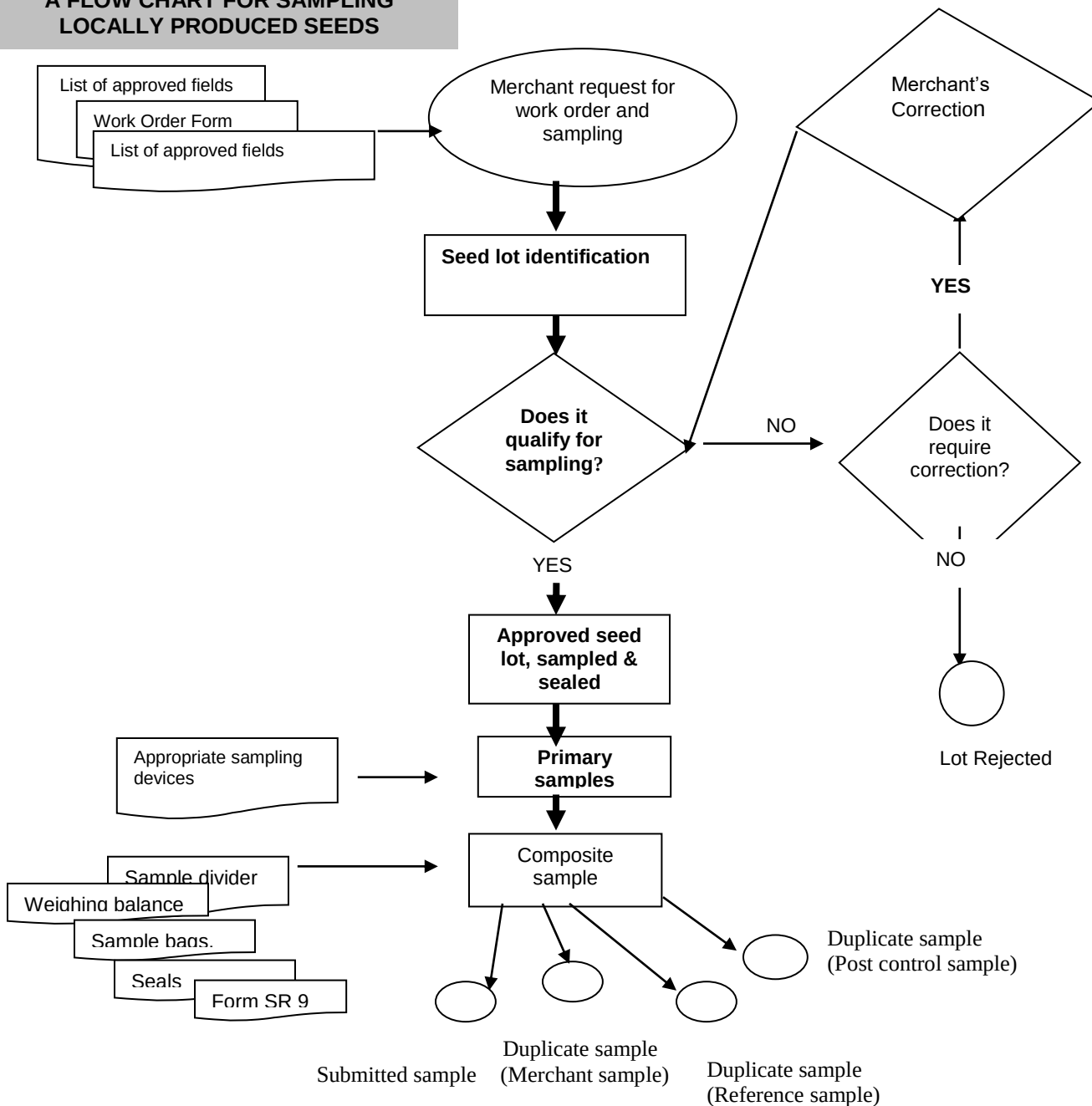
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9.0 Flowcharts

A FLOW CHART FOR SAMPLING LOCALLY PRODUCED SEEDS



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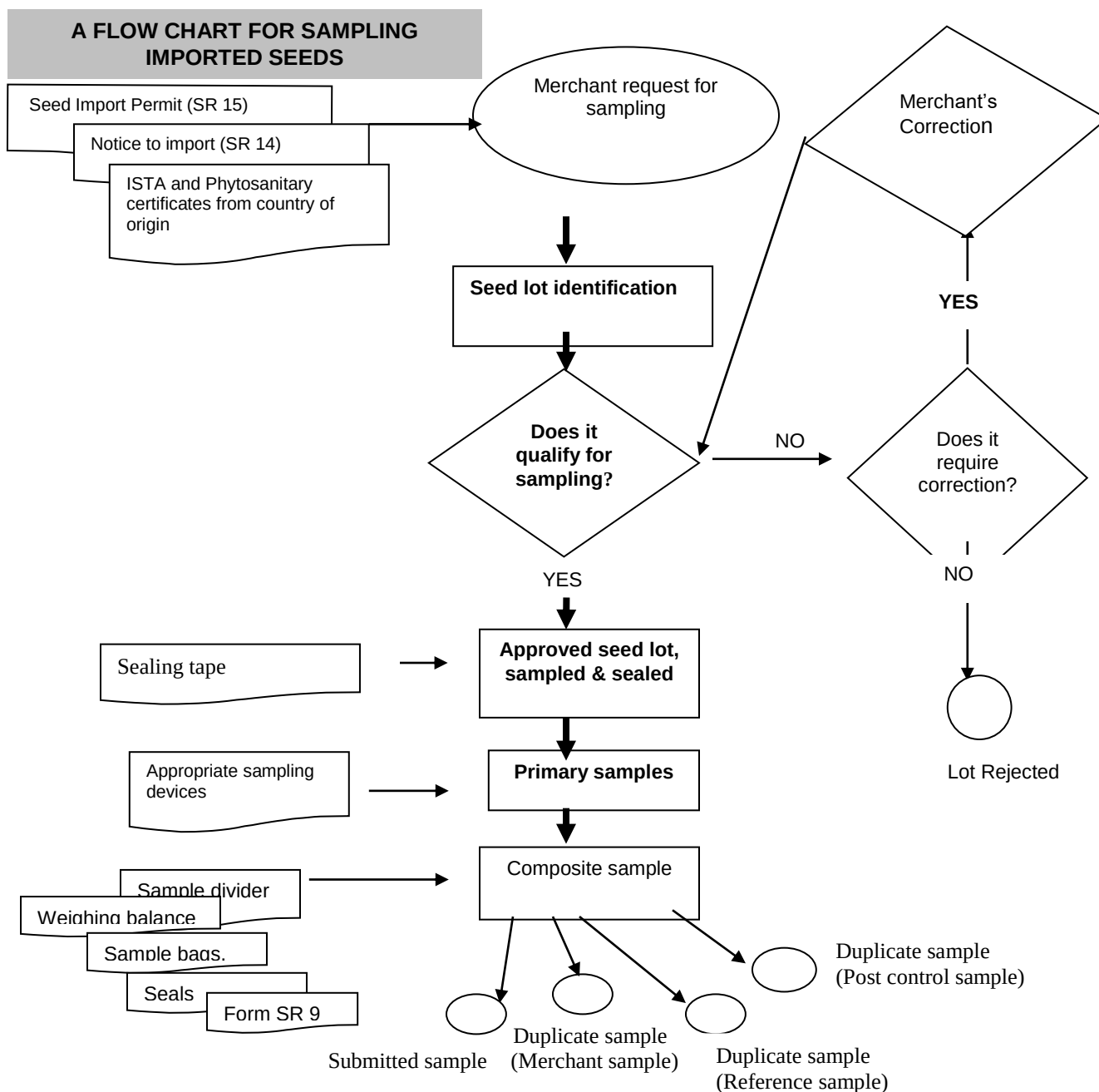
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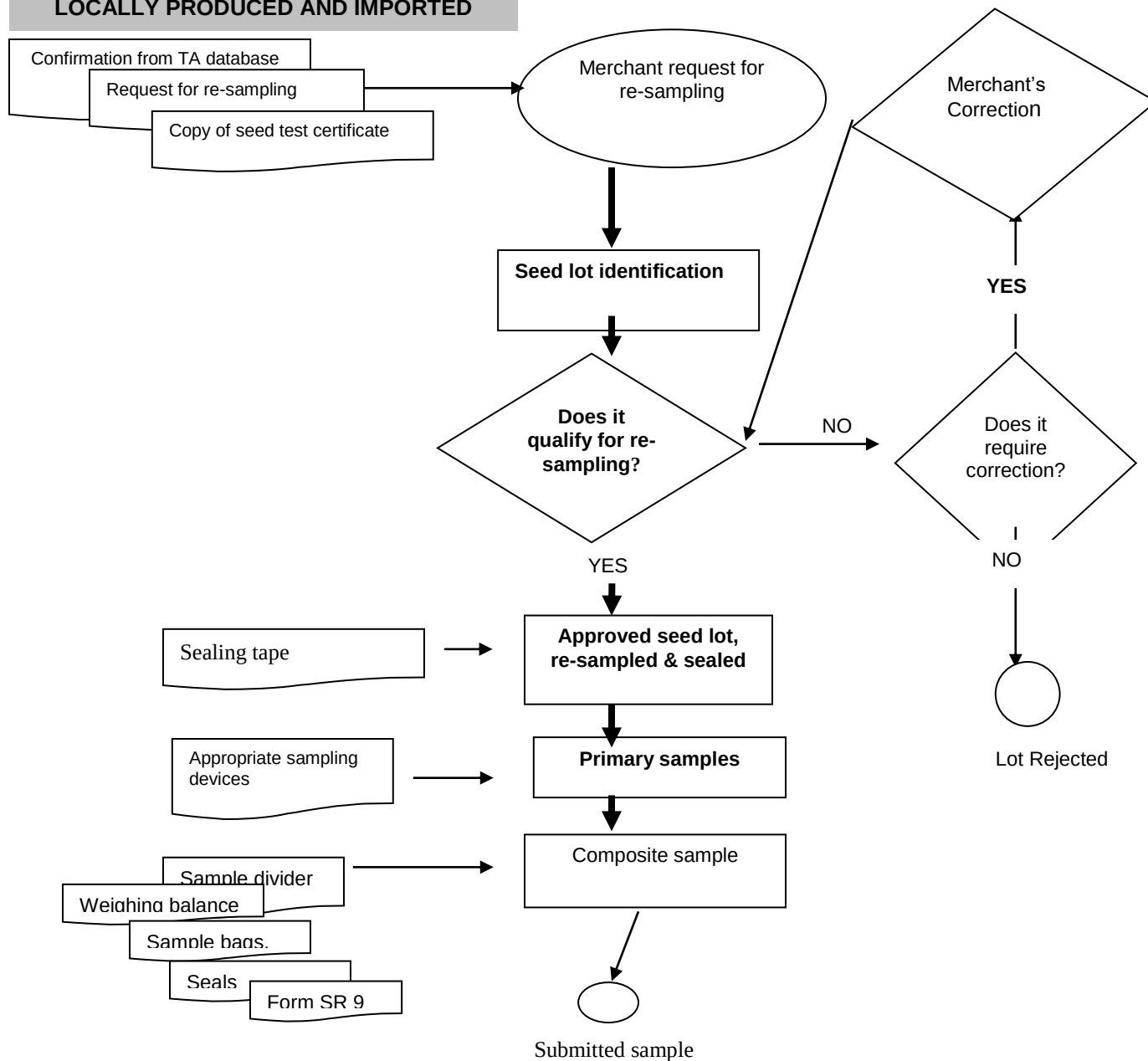
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**A FLOW CHART FOR RE-SAMPLING
LOCALLY PRODUCED AND IMPORTED**



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Appendices

Appendix S1: Operation instructions on equipment used in seed sampling

- a) Soil divider
- b) Nobbe trier
- c) Sampling stick (sleeve type)
- d) Top Loading balance (Kern 572-49; 12100g)

Appendix S2: Sampling checklist

Appendix S3: Sampling intensities

Appendix S4: Forms in sampling

- i) Calibration of soil divider by weight (FORM.FRM/STL/20A)
- ii) Balance calibration (FORM.FRM/STL/19)
- iii) KEPHIS work order (FORM: SR8C)
- iv) Request for sampling/sealing/Testing of seed Certification (FORM SR9)
- v) Notice to import/Export (FORM SR 14)

