



The Republic of the Union of Myanmar
Ministry of Agriculture, Livestock and Irrigation
Department of Agriculture



GUIDELINES FOR POST CONTROL TEST

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1 Purpose of the guidelines

These guidelines provides the detailed steps and methods to conduct the ‘Post control test’ in Myanmar. The guidelines also include the post control test reporting format and decision making matrix for recommendation measures. Authorised staff or authorised seed inspectors will develop the post-control test report based on these guidelines. The recommendation from the post control test results will be used by Seed Division, Department of Agriculture (DOA), Ministry of Agriculture, Livestock and Irrigation (MOALI) to make their decision on the recommendation.

2 Users of the guidelines

These guidelines will be used by MOALI and its ‘authorised personnel’ or ‘authorised seed inspectors’ to carry out the post control test in Myanmar.

3 Seed business and seed users

The **seed business** includes any person, organisation, public or private entity involved in seed production, processing, storage, packaging, re-packaging, selling, distribution, importation, or exportation in Myanmar. The **seed users** include farmers or any other person who purchases seed from the seed business.

4 Post control test

The post control test is a process applied to variety verification of certified seed¹ which is not further multiplied for seed production². Post-control tests answer two questions about certified seed that has already been sold to farmers and planted and will not be further multiplied: (i) Does the varietal identity conform to that stated on the label? (ii) Does the sample conform to the published standards for varietal purity? The post control test, therefore, is used to ensure verify that the characteristics of varieties have remained unchanged in the process of seed multiplication. It is also used to evaluate the actual percentage of varietal purity of the sample tested in the ‘post control test plots’. The post control test is also known as the grow out test.

5 Post control testing location

The Seed Division of DOA, MOALI is the responsible authority to identify and select the specific place to develop as centralise post control test location for Myanmar.

¹ Certified seed applies to both open pollinated varieties (OPV) and hybrid.

² Organisation for Economic Co-operation and Development (OECD) Seed Schemes: Rules and Regulations, 2019

6 Methodology for post control test

6.1 Criteria for the post control test

The Seed Division, DOA, MOALI will prepare a post control test based upon feedbacks made by the seed users and other sources. A post control test can take place at seed businesses in Myanmar (as described in section 4) where seed users have made a complaint about the poor quality of seed.

Determining whether to carry out a post control test should be based on the risk measures as given in Box 1. The first step should be to acquire specific information on seed quality issues from the seed users about the places from where the seed with poor quality was purchased. Based on this information, the Seed Division, DOA should prepare the list of ‘specific crops’ and ‘seed businesses’ to be prioritised for post control test.

Box 1: Risk measures under the scope of the post control test

- Varietal admixtures
- Poor varietal purity
- Wrong/ unregistered variety in seed bags or seed packets

6.2 Collecting data on the post control test

The risk measures and seed users’ complaints can be compiled from the following two sources:

a. **Reassignment of the Farmers’ Call Centre:** These guidelines propose the reassignment of the Farmers’ Call Centre which is already functional at Nay Pyi Taw and is tasked to cater to questions of farmers. This Farmers’ Call Centre number can also be used to register any feedback regarding seed quality from any farmers. There will be a structured questionnaire designed to acquire the farmers feedback data on seed quality and this data will be used to populate the risk based inspections. This information would be entered in a system and would be available for review by the Seed Division, DOA to develop a post control test plan.

There will be a disclaimer statement read to the farmers giving the feedback stating that he/she is fully responsible for the feedback he/she is giving about a certain seed source. The feedback originator has to furnish contact details for later verification of claim

Table 1. Farmers' Call Centre feedback form on seed quality

SN	Information	Risk measures
1	Date (day/month/year)	<<automatic>>
2	Name of crop	
3	Name of variety	
4	Nature of dissatisfaction	
	a) Variety mixtures	
	b) Poor varietal purity	
	c) Wrong/ unregistered variety in seed bags or seed packets	
5	Source of seed (seed shops, seed farms, seed companies, seed growers, seed wholesaler, seed distributors, others)	
6	Address of the seed source (name, township, region)	
7	Name of feedback provider	
8	Details address of feedback provider (Village, Township, House no)	
9	NRC number of feedback provider	

b. **Data on feedback already with the Township or District DOA and Seed Division:** The District and Township DOA/Extension will have feedback data already as they are in the process of regular engagement with the farmers and other stakeholders. This data be entered into a similar questionnaire to the Farmers call centre questionnaire at the township or district. The data source could be from Seed Division and Seed Laboratory data. These information also needs to be accessed by seed inspector to make the final post control test plan.

6.3 Development of annual post control test

By end of every month, seed inspectors should compile the feedbacks from the Farmers call centre server in Nay Pyi Taw and Township/ District DOA offices. The crops and varieties which have been receiving most negative feedbacks should be prioritised for post control test by the Seed Division, DOA. The seed inspectors should conduct the post control test at the seed businesses of the selected crop and varieties as finalised by Seed Division, DOA. The post control test should be carried out on an annual basis, with information as given in Table 2.

Table 2. Annual post control test plan

SN	Crop name	Variety name	Seed business name and address	Nature of risk a)Variety admixtures, b)Poor varietal purity, c) Wrong/ unregistered variety in seed bags or seed packets	Post control inspection plan (month)	Remarks

6.4 Traceability of original seed producers or providers

In following cases, post control inspectors need to identify (trace-back) the original seed providers:

- Seed sold by seed shop or seed business that has one of the quality issues as mentioned in the Box 1. But seed shop or seed business was not involved in seed production of that specific crop or variety seed.
- Seed sold by seed shops or seed business that has one of the quality issues as mentioned in the Box 1. But seed shops or seed business purchased that seed from other wholesalers or seed distributors or seed producers.

In above situation, post control test should be done with original seed suppliers premises such as warehouse or seed storing place.

6.5 Unavailability of seed samples during the post control test

In the situation when sufficient volume of seed samples as described in Table 3 is not available for post control testing, such seed business should be separately recorded in post control test database. They should be inspected as most priority in next season before the start of seed sales season.

6.6 Seed sampling procedures for post control test

Seed inspector should use given seed sampling guidelines for the specific crops for the post control test. See the seed sample weight that needs to be submitted to the testing centre for the post control test (Grow Out Test) in Table 3.

Table 3. Seed sampling weight (submitted sample weight) for post control test

SN	Crops	Seed sample weight (gm)
A	Cereals crops	
1	Rice / paddy	500
2	Maize	1000
3	Wheat, Barley, Oats	500
4	Small millets	100
5	Sorghum	500
B	Pulses and Oil seed crops	
6	Black gram, Cowpea	1000
7	Green gram, Pigeon pea, Horse gram	500
8	Groundnut	1000
9	Soybean	1000
10	Chickpea	1000
11	Sesame	100
12	Sunflower (hybrid and OP)	1000
C	Industrial crops	
13	Cotton (hybrid and OP)	1000
14	Jute	100
15	Hemp	600
D	Root tuber crops	
16	Seed potato, sweet potato and other vegetatively propagating crops.	250 tubers /planting stakes / roots / corms
E	Vegetables	
17	Bitter gourd	1000
18	Squash	1000
19	Bottle gourd	1000
20	Pumpkin	1000
21	Ridge-gourd	1000
22	Watermelon	1000
23	Okra	1000
24	Melon	500
25	Cucumber	500
26	Radish	500
27	Capsicum	100
28	Chilli	100
29	Cauliflower	100
30	Brinjal	100
31	Cabbage	100
32	Onion	100

33	Tomato-bushy	100
34	Tomato-intermediate	100
35	Tomato-cherry	100
36	Carrot	100
37	Garden Pea	1000

6.6.1 Sampling procedures

Different types of samples are normally drawn by a seed inspector (full details in Annex 3), but we are mainly concerned here with the ‘submitted sample for post control test’. There may be three situations, as explained below, in which the sampling needs to be done for the post control test.

- a. Seeds are in bags of 15-80 kg
- b. Seeds are kept in bulk on the floor or in large bins
- c. Seeds are already packed in 10-100 gram pouches.

We need to be concerned about whether the lot number (sometimes called the batch number) is mentioned or not. Seeds that are packed are normally identified by lot numbers, which primarily comes from the production location. A same variety (or hybrid) can belong to 2 separate lots if the production plots were separated by >50 m. The number is assigned by the seed certification agency (normally) or the seed company production staff.

6.6.1.1 Sampling from seeds in bags of 15-80 kg

When seeds are in bags, the minimum number of samples that needs to be drawn is given in the below Table 4. This means the minimum number of times we need to insert the sampling trier inside the bags and pull a primary sample. These are then mixed, halved and bagged as ‘submitted sample’. (see Annex 3 for more details.)

Table 4. Sampling from seeds are in bags of 15-80 kg

Lot composition	Primary samples need to be taken
1-4 containers	3 samples from each container/ bag
5-8 containers	2 samples from each container/ bag
9-15 containers	1 sample from each container/ bag
16-30 containers	15 samples from the seed lot in total
31-59 containers	20 samples from the seed lot in total
More than 60 containers	30 samples from the seed lot in total

6.6.1.2 Sampling from seed kept in bulk on the floor or in large bins

Table 5. Sampling from seed kept in bulk on the floor or in large bins

Lot size	Minimum number of primary samples to be taken
Up to 500 kg	At least 5 samples
501 -3,000 kg	1 sample for each 300kg, but not less than 5
3001-20,000 kg	1 sample for each 500kg, but not less than 10
20,001 kg and above	sample for each 700kg, but not less than 40

Table 5. shows the minimum amount of primary samples that need to be collected when the seeds are stored in bulk (not in any divided containers).

6.6.1.3 Sampling seeds that are already packed in 10-100 gram pouches.

For seed that is already packed in smaller pouches/ containers, we need to make sure to sample from each lot. There may be many lots of seeds of the same crop and same variety. Check the lot number and sample from each lot. The quantity should be same as stated in table no 3. Normally vegetable seeds are packed in pouches of 10g (chilli, hybrid tomato etc.) or 50-100g (cucurbits, melons, okra etc.). Collect the requisite number of pouches per lot. For example, if the seeds are packed in 50g packets in onion, select any two packets (50x2 = 100g) as a sample to be send for the post control tests, as table 3 says we need 100g seeds for onion. In this way the samples can be drawn from seeds that are already packed.

6.6.2 Sample handling

The samples that are drawn from bags and bulk need to be mixed and divided. All the primary samples from the bags or bulk are mixed on a polyethylene (or canvas) sheet, mixed well and hand halved (or divided by a soil type divider) and brought to the approximate submitted sample size (Table 3).

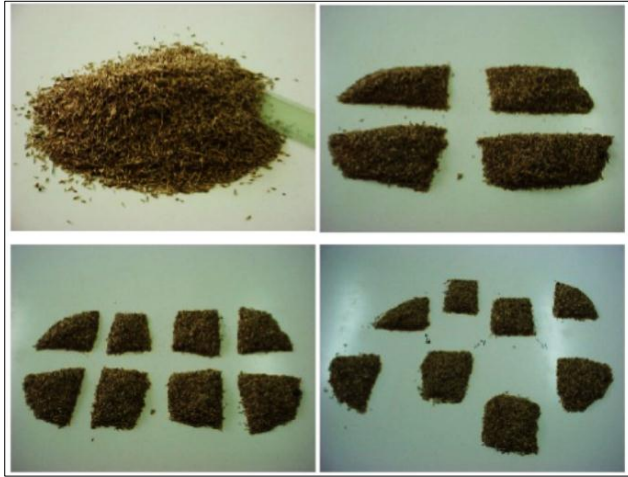


Fig 1: Hand halving method (Image courtesy FAO)³



Fig 2 A Soil Divider (Image Pfeuffer GmbH)⁴

6.7 Field preparation of the post control test (Grow Out Test)

The number of seeds required for raising the crop to obtain the required number of plants will depend on the germination percentage of the seed sample and hence the seed rate should be adjusted accordingly. Table 6 guidelines should be used to prepare the field for the Grow Out Test (GOT).

Table 6. Number of plants required per sample for grow out test

Maximum permissible off types (%)	Minimum varietal Purity (%)	Number of plants required per sample
0.10	99.9	4,000
0.20	99.8	2,000
0.30	99.7	1,350
0.50	99.5	800
1.00 and above	99.0 and below	400

This step is extremely important as far as statistical errors are concerned. The plant population that MUST be maintained is totally dependent on the level of varietal purity that is allowed by the Seed Law of Myanmar. As a rule of thumb, we need to maintain more population if the varietal purity standards are very high; if we miss a single off type, the consequences are severe. We must therefore maintain a high population to avoid missing any off type.

To achieve the accuracy and reproducibility of the grow out test results, the procedures provided below must be followed:

³ SEEDS TOOLKIT; Module 3: Seed quality assurance. FAO and Africa seeds. Rome 2018: ISBN 978-92-5-130951-3 (FAO)

⁴ Image from <https://www.pfeuffer.com/product/riffelprobenteiler>

6.7.1 Location of the grow out test

The grow out test shall be conducted in specified areas recommended for the cultivar / hybrid or in off-season nurseries by Seed Division, DOA.

6.7.2 Standard sample (control)

The standard sample of a cultivar (control) will be the official standard against which all other samples of the seed of the cultivar will be judged. Whenever a variety/hybrid is put up for registration, a standard sample is submitted along-with the traits data. This sample is for reference and this sample can be used for conducting post control tests (or Grow Out Tests)

All standard samples must be obtained from the originating plant breeder / breeding institute and be stored under controlled temperature and humidity conditions so as to use it each year to sow control plots for cultivars under test. These samples must be stored under low humidity and low temperatures so that they can maintain viability for longer periods. Preferably first dried well and stored under cool conditions.

Whenever the quantity of the standard sample is being depleted or it is losing viability, it needs to be replaced, so the original breeder/company is notified to submit another fresh sample. However, before replacing the new sample with the old, one round of field comparison is conducted to ascertain that these two varieties are the same.

6.7.3 Method of raising the crop

Standard and recommended agronomic / cultural practices such as field preparation, size of the plot, row length, distance between the rows, distance between the plants, irrigation and fertilization, etc., in respect of the specific crop shall be followed both for the sample in question and its control (standard sample).

The germination percentage of the sample(s) in question and the standard sample must be determined to adjust the seed rate. The sowing should be done by dibbling or small plot drill. The seed drill must be carefully checked to ensure its cleanliness. Subsequent thinning is not recommended. The samples of the same cultivars must be sown in succession and the standard samples are sown at suitable intervals (one standard sample for every ten sample to be tested).

The size of the plot, row length and spacing shall differ according to the crop. Recommended specification for the above variables are provided in Table 6a and Table 6b mentioned below, which can suitably be modified if considered essential.

Table-6(a). Recommended row length, distances, spacing for field crops and pulses

SN	Crop	Row length (m)	Plant to plant spacing (cm)	Space between rows (cm)	Space between plots (cm)
1	Paddy/ rice				
	a) very early to medium b) late and very late	6 6	15 25	20 30	45 60
2	Wheat, barley oats	6	2	25	50
3	Pea, cowpea	6	10	45	90
4	Chickpea, green gram, black gram	6	10	30	60
5	Maize	10	25	60	90
6	Hybrid cotton	5	10	45	45
7	Pearl millet	6	10	60	90
8	Sorghum	6	10	45	60

Table-6(b). Recommended row length, distances, seed rates spacing for vegetable crops

SN	Crop	Row length (m)	Space between rows (cm)	Plant to plant spacing (cm)	No of seeds/gm (approx.)	Seed Rate (g/acre)
1	Bitter gourd	5-8 m	150	30	6	900-1000
2	Bottle gourd	5-8 m	250	60	7	500-600
3	Cabbage	5-8 m	45	30	275	100-130
4	Carrot	5-8 m	30	5	575	1500-2000
5	Cauliflower	5-8 m	45	30	225	100-130
6	Cucumber	5-8 m	120	45	33	300-400
7	Brinjal	5-8 m	90	60	225	60-80
8	Melon	5-8 m	180	60	30	150-200
9	Okra	5-8 m	60	30	15	2000-2500
10	Onion	5-8 m	15	8	300	1400-1800
11	Chilli	5-8 m	60	45	200	100-120
12	Capsicum	5-8 m	60	45	160	120-150
13	Pumpkin	5-8 m	250	60	10	400-500
14	Radish	5-8 m	30	15	100	1200-1500
15	Ridge gourd	5-8 m	180	60	10	450-500
16	Squash	5-8 m	120	60	6.5	1000-1200
17	Tomato-bushy	5-8 m	60	45	300	60-80
18	Tomato-intermediate	5-8 m	120	45	300	60-80
19	Tomato-cherry	5-8 m	100	45	450	50-60
20	Watermelon	5-8 m	160	60	10	450-500

The field plots should be grown in two replicates to guard against failure in one part of the field and to reduce environmental and soil fertility variations.

6.7.4 Methods for taking observations

Grow-out test plots must be examined throughout the growing season with emphasis on the vegetative growth stage, flowering and full maturity depending on the variety. All plants must be examined keeping in view the distinguishing characters described for the cultivars both in the test crop as well as the control. Pay attention to purity and presence of seed borne diseases (as required).

While taking the observations, the plants showing deviations in characters against the control should be tagged and examined carefully at a later stage to confirm whether they are off-types or not. The number of the total plants and the off-type plants found should be recorded.

If necessary (in case of doubt), some plants may be visibly tagged so that they can be observed at a later stage. The data about the observation must be recorded in the form in Annex 1.

6.7.5 Calculation and interpretation of the results

The following formula must be used to calculate the final varietal purity percentage.

$$\frac{(Total\ population - Total\ offtypes)}{Total\ Population} \times 100\% = Varietal\ Purity\ \%$$

The percentage of other cultivars, species or off types found must be calculated up to the first decimal place when interpreting the results.

7 Reporting of post control test results

The results of the grow out test shall be reported as percentage of other species, cultivars or off type plants. If the sample is found to be a cultivar other than stated by the sender, the results shall be reported as such. If plants of other cultivars are more than 10 per cent, the report shall state that the sample consists of a mixture of different cultivars.

If nothing worthy of special comment is found, the report shall state that the results of the grow out test of the sample in question revealed nothing to indicate that the name of the cultivar or species stated by the sender is incorrect.

The post control test centre should use the reporting format as included in Annex 1.

8 Decision making matrix

The decision-making matrix provides a clear guidance to take decision upon what kind of measures should be taken after the reports of the post control are declared. Based on the following situations of post control test results, the Seed Division, DOA can propose recommendation measures, fines/penalties, or suspension of licences as shown in table 7.

8.1 Decision making based on post control test

Table 7. Decision making based on post control test results

SN	Results of the field grow out test	Recommendation
1	Sample is >10% mix with another variety	Suspend the licence for that specific variety for the concerned seed business
2	Sample is not at all conforming to the labelled variety	Suspend the licence for that specific variety for the concerned seed business
3	Sample fails in the minimum quality standards	Provide warning, conduct post-control in next season until the quality status has been improved

8.2 Penalty clauses

The Seed Division, DOA can decide to define penalty clauses for the infringement of the rules of selling and distribution of sub-standard quality seeds as per the Seed Law (2015) and Regulations relating to Seed Law (2016).

9 Annexes

9.1 Annex 1: Format of post control test report

Ministry of Agriculture, Livestock and Irrigation
Department of Agriculture, Seed Division
FORMAT OF POST CONTROL TEST REPORT

Reference

Name of seed business :.....

Seed Inspectors name:

Township: District.....

Crop : Variety.....

Lot number (or other identifier):

Date of field receipt of sample: Date of Sowing

Post control test location name		Plot no	
		Plot Area (m ²)	
No of rows		Row length (m)	
Plant population		No of plants observed	
Date		No of offtypes	
Date		No of offtypes	
Date		No of offtypes	
		# Total no of offtypes	
		Total obnoxious plants	
Varietal purity (Standard, %)		*Varietal Purity observed (%)	
Name of field assessor		Signature of assessor	
Name of Authorized personnel and designation		Signature of Authorized personnel	

$$* \frac{(Total\ population - Total\ offtypes)}{Total\ Population} \times 100\% = Varietal\ Purity\ \%$$

Sum of the observations made on different dates. This is because some traits may be visible later than the others

9.2 Annex 2: Format for sample list

Ministry of Agriculture, Livestock and Irrigation

Department of Agriculture, Seed Division

FORMAT OF POST CONTROL SAMPLE LIST

Reference

Name of seed business :.....

Name of owner of seed business:

Address of seed business:

Telephone number :

Seed and Seedling License number :

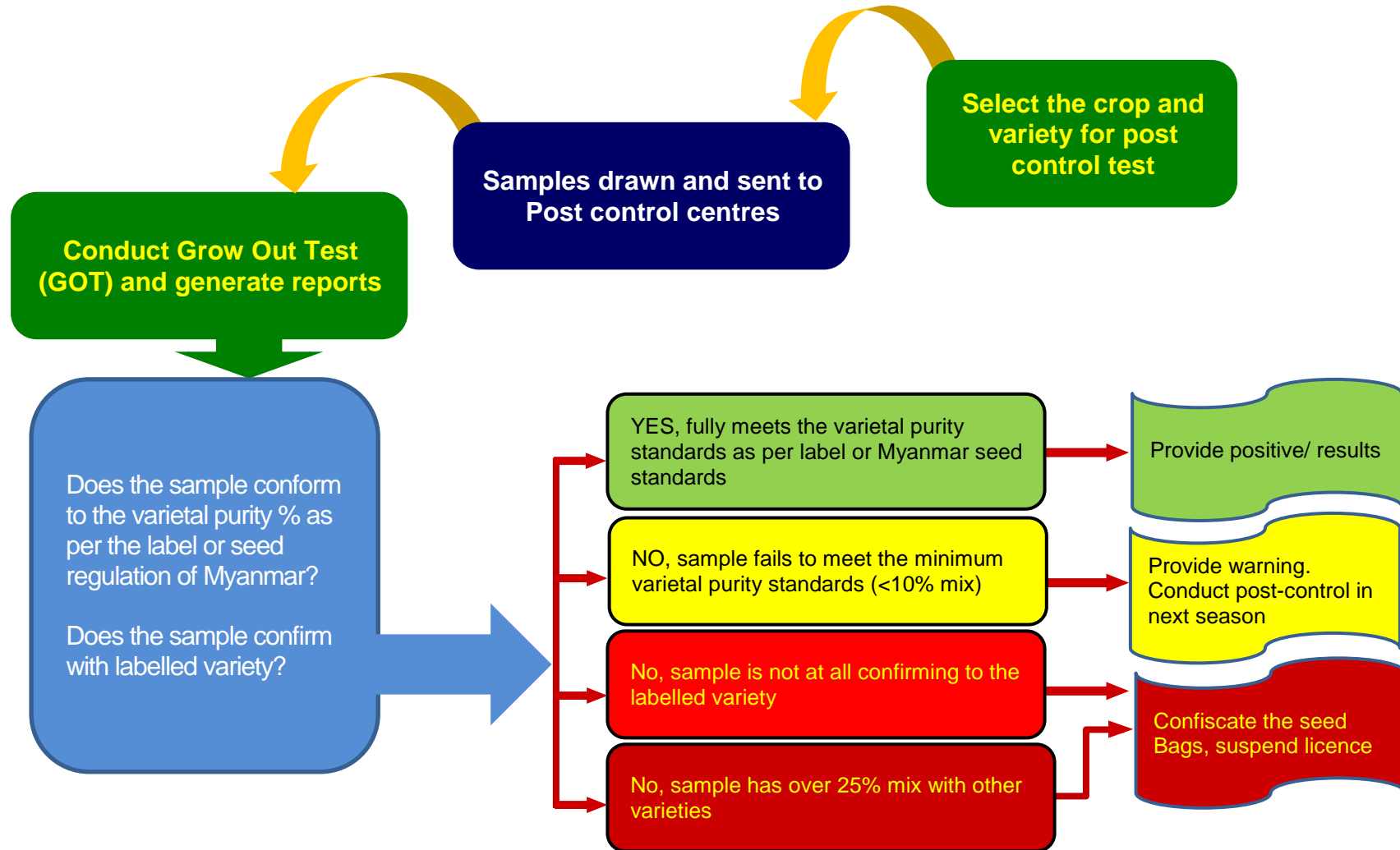
Date of sampling:

SN	Crop	Variety	Lot no/Batch no	Remarks

Name of seed inspector:

Signature of seed inspector:

9.3 Annex 3: Flow chart post control test process



9.4 Annex 4: Seed sampling basics

Methods and Types of Seed Sampling

Objectives

1. Sampling is done to get a uniform and representative sample from a seed lot. The size of the submitted sample required for testing is small as compared to the size of the lot; therefore, care must be taken to ensure that the submitted sample represents the lot of the seed to be tested.
2. Hence it is essential that the samples be prepared in accordance to ISTA rules, to ensure that the small size sample should represent truly and in the same proportion all constituents of the seed lot.

Definition of samples

The seed lots received by laboratory for analysis and testing are given an accession number of each variety for future reference. A seed lot to be sampled must not be heterogeneous i.e. the primary samples drawn from the lot should be similar in constitution. If there is any evidence of heterogeneity, test of the primary samples drawn, as defined by ISTA rules, further sampling and testing from the seed lot should not be continued.

Seed lot: Seed lot is a specified quantity of the seed of one cultivar of known origin as physically identifiable.

Methods of sampling

1. Hand sampling

This is followed for sampling the non-free-flowing seeds or chaffy and fuzzy seeds such as cotton, tomato, grass seeds etc. In this method, it is very difficult to take samples from the deeper layers of bag. To overcome this, bags are emptied completely or partly and then seed samples are taken. While removing the samples from the containers, care should be taken to close the fingers tightly so that no seeds escape.

2. Sampling with triers/probe

By using appropriate triers, samples can be taken from bags or from bulk. The triers are used for taking free flowing seed samples.



a) Bin samplers

Used for drawing samples from the lots stored in the bins.

b) Nobbe trier

The name was given after the father of seed testing Fredrick Nobbe. This trier is made in different dimensions to suit various kinds of seeds. It has a pointed tube long enough to reach the centre of the bag with an oval slot near the pointed end. The length is very small. This is suitable for sampling seeds in bag not in bulk.

c) Sleeve type triers or stick triers

This is the most commonly used trier for sampling. There are two types: 1. With compartments; 2. without compartments. This trier consists of a hollow brass tube inside with a closely fitting outer sleeve or jacket which has a solid pointed end. Both the inner tube as well as the outer tube have been provided with openings or slots on their walls. When the inner tube is turned, the slots in the tube and the sleeve are in line. The inner tube may or may not have partitions.

This trier may be used horizontally or vertically. It is diagonally inserted at an angle of 30°C in the closed position till it reaches the centre of the bag. Then the slots are opened by giving a half turn in clockwise direction, and the trier is gently agitated with inward push and jerk, so that the seeds fill each compartment through the openings from different layers of the bag. It is then closed, withdrawn, and emptied in a plastic bucket.

Sleeve type triers

This trier is used for drawing seed samples from the seed lots packed in bags or in containers. This trier should not be used because it is not long enough to take representative portion of the sample from the individual container.

Method of preparing composite samples

- When the primary samples appear uniform they are combined and thoroughly mixed to form the composite sample.
- From the composite sample, the submitted sample of requisite weight or more is obtained either by repeated halving or by abstracting and subsequently combining small random portions.

Types of sampling

i. Primary sample

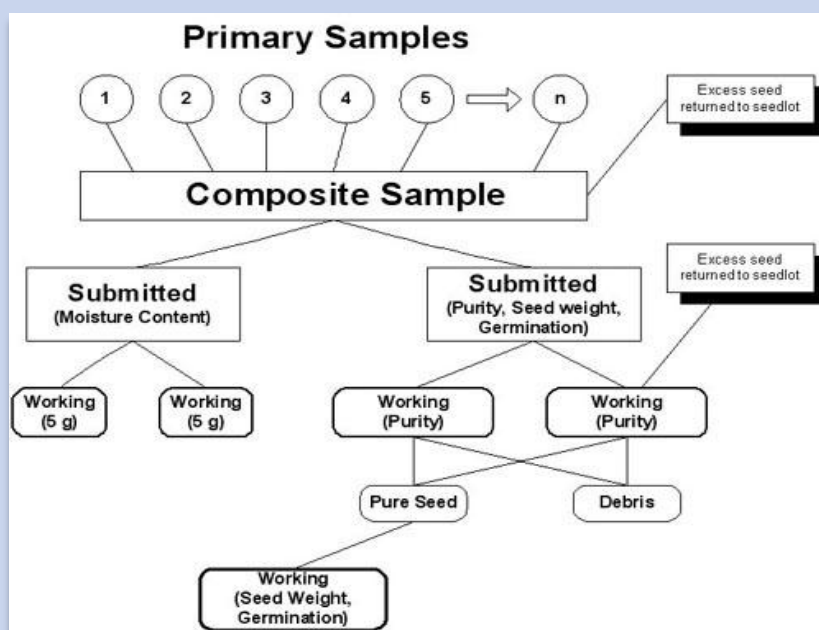
Each probe or handful of sample taken either in bag or in bulk is called primary sample.

ii. Composite sample

All the primary samples drawn are combined together in suitable container to form a composite sample.

iii. Submitted sample

When the composite sample is properly reduced to the required size that to be submitted to the seed testing laboratory, it is called submitted sample. Submitted sample of requisite weight or more is obtained by repeated halving or by abstracting and subsequently combining small random portions.



iv. Working sample

It is the reduced sample with required weight obtained from the submitted sample after repeated mixing and dividing with which the seed quality tests are conducted in seed testing laboratory.

The maximum quantity of seeds that can qualify to be a “Lot” is also determined by ISTA. This is based on statistics that how much seeds can be sampled from a given quantity and the sample will be a true representative of the mother “lot”. The following table shows the quantities.

Seed Size/ Species	Maximum quantity per lot
Larger than wheat and paddy	20,000 kg
Smaller than wheat and paddy	10,000 kg
Maize	40,000 kg

Sampling intensity

It is the amount of sample that needs to be drawn from the mother seed “lot”. This lot can be kept packed in small packets, bags, bins or even in bulk. ISTA has prescribed procedures on how much “primary” sample needs to be drawn and how many of containers needs to be sampled if seeds are packed in many bins or bags. The intensity of sampling should be maintained in accordance to the rules described by ISTA. When seeds are stored in bags or other containers of similar capacity that are uniform in size.

a. For seed lots in bags (or container of similar capacity that are uniform in size)

Lot composition	Primary samples need to be taken
1-4 Containers	3 samples from each container/ bag
5-8 Containers	2 samples from each container/ bag
9-15 Containers	1 sample from each container/ bag
16-30 Containers	15 samples from the seed lot in total
31-59 Containers	20 samples from the seed lot in total
>60 Containers	30 samples from the seed lot in total

b. For seeds in bulk. Containers more than 100 kg

Lot size	Minimum number of primary samples to be taken
Up to 500 kg	At least 5 samples
501 -3,000 kg	1 sample for each 300kg, but not less than 5
3001-20,000 kg	1 sample for each 500kg, but not less than 10
20,001 and above	1 sample for each 700kg, but not less than 40

Instructions for sending samples

- A prerequisite in sampling is that the seed lot received in containers / bags must be properly sealed and marked for identification with a single lot designation.
- At the time of sampling, all the samples drawn must bear identification corresponding to that of the lot certificate.
- The sampler should seal or supervise the sealing of the sample container / bags after drawing the sample.
- After taking samples which may be more than required for seed testing purpose, a thorough mixing of the samples must be done.
- Divide samples using a seed divider. The required amount should only be submitted to the seed testing laboratory with a proper identification mark.
- If a mechanical divider is not available at the spot, a representative sample should be obtained by putting the entire quantity of seed on a clean floor, mixing properly and halving the sample until the desired quantity is obtained.
- For moisture determination, 100g of seeds is needed for species which need grinding; 50g for all other species. The sample should be submitted in an air-tight container (e.g. polythene bags of 700 gauge or glass bottle with a tight cap) to the laboratory.

Quantity and dispatch of sample for testing

Weight of submitted sample

The minimum weight for submitted samples for various tests are as follows.

1. Moisture test

100 g for those species that have to be ground (to test moisture) and 50 g for all other species.

2. For verification of species and cultivar

Dispatch of submitted sample

1. Each submitted sample should be sealed and marked.
2. The label should contain all the necessary details such as variety, class of seed, quantity in the lot, to whom it belongs, the name of the producer, any seed treatment, date of harvesting and threshing if known, sampled by, date of sampling and the kind of tests required.

3. After marking the sample, it should be packed so as to prevent damage during transit. For a germination test, the sample should preferably be packed in a cloth bag; for moisture content determination, the sample should be packed separately in moisture proof containers.

4. Samples should be dispatched by the sampler to the seed testing laboratory without delay.

For other tests, such as purity and count of other species

Crop	Size of seed lot (Kg)	Size of submitted sample (g)	Size of working Sample for purity analysis(g)	Sample count of other species(g)
Rice	20,000	400	40	400
Wheat	20,000	1000	120	1000
Maize	40,000	1000	900	1000
Sorghum	10,000	900	90	900
Pearl millet	10,000	150	15	150
Red-gram	20,000	1000	300	1000
Green-gram	20,000	1000	120	1000
Black-gram	20,000	1000	150	1000
Chick pea	20,000	1000	1000	1000
Cowpea	20,000	1000	400	1000
Soybean	20,000	1000	500	1000
Groundnut(pods)	20,000	1000	1000	1000
Groundnut(kernels)	20,000	1000	600	1000
Gingelly	10,000	70	7	70
Sunflower(OP)	20,000	1000	250	1000
Sunflower(hybrid)	20,000	1000	125	250
Cotton (OP) with lint	20,000	1000	350	1000
Cotton delinted(variety)	20,000	350	35	350
Cotton (hybrid) with lint	20,000	350	35	350
Cotton delinted (hybrid)	20,000	250	25	250
Brinjal/ egg plant	10,000	150	15	150
Chillies	10,000	150	15	150
Bhendi	10,000	150	15	150
Tomato(OP)	10,000	70	7	70
Tomato(hybrid)	10,000	7	7	7
Cabbage	10,000	100	10	100
Cauliflower	10,000	100	10	100
Knolkhol	10,000	100	10	100