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1. Introduction

This handbook was developed by the AsureQuality Seed Laboratory NZ01 as a reference manual for all International Seed Testing Association (ISTA) authorised Seed Sampling Officers (SSOs), trained, licenced and audited under the control of the AsureQuality Seed Laboratory NZ01. Seed Sampling Officers include AsureQuality SSOs and industry staff with appropriate authorisation, as listed in their Seed Store’s Ministry for Primary Industries Approved Organisation (MAO) documented system.

The procedures described in this handbook are based on the ISTA International rules for seed testing (effective 1st January 2021) and must be followed when sampling Certified Seed for official certification. Of particular relevance is ISTA rules 2021: Chapter 2. Sampling’. The associated section within Chapter 2: Sampling is referenced throughout the handbook. In addition, the ISTA Seed Sampling Calculator (Online Tool Application) can be used to verify the seed species requirements.

ISTA recommends that the ISTA Rules be used by all seed testing laboratories (including non-ISTA accredited laboratories) when testing seed for trade transactions (exported and uncertified domestic) which do not require the use of an ISTA Certificate. This allows control of seed quality.

Careful sampling of a seed lot is essential to obtain a representative sample of suitable size for testing. The sample taken must accurately reflect the characteristics of the whole seed lot.

Any amendments to the ISTA Rules relating to authorized Seed Sampling will be updated in the Handbook annually and will be available through the AsureQuality website to ensure ongoing compliance. All authorised SSOs will be notified of Handbook updates.

2. Scope

The AsureQuality Seed Sampling Handbook, sections 1 to 14, apply to sampling of seed for official tests and certification provided by the AsureQuality Seed Laboratory NZ01 and other ISTA accredited laboratories in New Zealand. It is recommended that these instructions are followed for sampling of all seed lots even if an ISTA Certificate is not required.

Sections 15 to 19 provide information relating to requirements of the NZ MPI Seed Varietal Certification Standard and to Health tests. These requirements are not included in the AsureQuality Seed Laboratory NZ01 accreditation but are required for phytosanitary exports.

3. Definition of Terms

Also refer to ISTA rules 2021 Chapter 2, 2.2 Definitions.

Seed Lot: A seed lot is a specified quantity of seed that is physically and uniquely identifiable.

Homogeneous: A homogeneous seed lot is one which is adequately or practically uniform among its parts.

Heterogeneous: A heterogeneous seed lot is not adequately uniform.

Primary Samples: A small quantity of seed taken from a seed lot in one single sampling action.

Composite Sample: A sample, which comprises all the primary samples taken from a seed lot.

Submitted Sample: A sample submitted to the seed laboratory for testing. The sample may comprise either the whole of the composite sample or a divided subsample.

Seed Sampling Officer: An authorised Seed Sampler who has undergone the necessary training and been issued with an SSO licence number allowing sampling for testing purposes leading to the issuance of:

- Orange International Seed Lot Certificate (OIC)
- Seed Analysis Certificate

NOTE: To apply to become an authorised Seed Sampling Officer, contact the AsureQuality Seed Laboratory NZ01. Training dates are listed on the AsureQuality website. (Academy Training Courses).
4. Abbreviations

AQ: AsureQuality
ISTA: International Seed Testing Association
MD: Machine Dressed
MPI: Ministry for Primary Industries
ROP: Region of Production
SSO: Seed Sampling Officer
MAO: MPI Approved Organisation
SCB: Seed Certification Bureau

5. Sampling Equipment

Also refer to ISTA rules 2021 Chapter 2, 2.4 Apparatus.

**Nobbe Type Trier**: Used for sampling bags or sacks (refer to Figure 1 and Table 2 for Sampling Frequency in bags, section 7)

**Long Nobbe Trier**: (Approx.: 800mm long) can be used for sampling bulk bags and bulk bins where it is possible to sample through the liner wall (Refer to Figure 1 and Table 2 for Sampling Frequency in Bulk Bins, section 7).

**Sleeve Trier**: Used for sampling seed in bulk bags or bulk bins.

**Pelican Sampler**: Used to take samples from free-flowing seed streams.

**Sample container**: Sample containers used to collect primary samples, composite samples and during mixing and dividing must be clean and static free.

**Riffle Divider**: Used to prepare the submitted sample for testing by reducing the composite sample.

**Balances** (weighing scales): Used for ensuring samples for submission meet minimum sample weights.

**Automatic Sampler**: Used to mechanically sample through a cross section of the seed stream during processing. An Automatic Sampler will be approved provided installation and operation meet requirements.

**Seed sample envelope, calico bag, or approved moisture sample bag**: Used to send samples to the Official Seed Testing Laboratory.

**Seals**: Paper seal for envelopes or sequentially numbered metal seal (silver) for calico bags, attaching extra labels or relabelling.

**AgC10 Form** (Label and Seed Testing Application): Completed form to accompany sample sent to the AsureQuality Seed Laboratory NZ01.
5.1 Nobbe Trier

The Nobbe trier, photographed in Figure 1 and illustrated in Figure 2, is used for sampling most kinds of seeds from closed bags, or penetrable containers. It consists of a pointed tube, long enough to reach at least the centre of the bag, with an oval or rectangular hole or slot near (just behind) the pointed end of the trier.

Triers must be long enough so that the slot opening at the tip reaches at least the centre of the bag / bin.

Seed passes through the slot and down the tube and is collected in a suitable container.

As a general rule, the width of the hole or slot should be at least two (2) times the maximum diameter of the seed or other contaminants to be sampled.

**NOTE:** Seed Diameter is measured as the length of the seed.

The length of the hole should be between two (2) and five (5) times the width of the hole.

The minimum internal diameter of the Nobbe trier should be approximately:

- 6mm for white clover or similar
- 10mm for red clover, brassica or similar size seed
- 14mm for ryegrass and cereals (barley, wheat)
- 16mm oats
- 20mm for maize

The internal diameter of the tube should not be greater than five (5) times the maximum diameter of the seed to be sampled and should be wide enough to allow the smooth and free flow of seed and contaminants through the trier.

*Figure 1: A range of Nobbe Triers*

**NOTE:** For very large seed these dimensions may not be achievable for sampling in bags because the outside diameter of the trier would be too large. The key element in such cases is that the seed must be able to flow freely into the hole or slot in the trier.

*Figure 2: The Nobbe Trier*
5.2 Sleeve Trier

The sleeve trier is illustrated below in Figure 3 and can be used for most kinds of seed in open or sealed bags or bulk bins.

This trier consists of a hollow tube inside a closely fitting outer shell or sleeve which has a solid pointed end.

The tube and sleeve have open slots in their walls so that when the tube is turned until the slots in the tube and sleeve are aligned, seeds can flow into the cavity of the tube, and when the tube is given a half turn the openings are closed.

The tubes vary in length and diameter, being designed for different kinds of seed and various sizes of containers and are made with, or without partitions.

Figure 3: The Sleeve or Stick Sampler

(Image from ISTA Rules, 2004)

A: Schematic drawing of different types for opening and closing the chamber (a: twisting the tubes; b: longitudinal pushing the outer tube; c: longitudinal pulling the inner tube).

B: Schematic drawing of a whole stick that is opened and closed by twisting the tubes.

C: Different types of stick samplers

D: Sleeve trier with partitions for vertical use

E: Special receiving pan for emptying the sleeve trier

The sleeve trier must be long enough to reach the opposite wall of a container.

The conditions for the dimensions of the slots in relation to the size of the seed to be sampled are the same as for the opening in the Nobbe trier with the exception that the slots may be longer than five times the width.

The minimum inside diameter should be about 25mm for all species.

This trier may be used horizontally, diagonally or vertically. However, when used vertically or diagonally downwards the trier must either have partitions dividing the instrument into a number of compartments, otherwise the seed will drop into the sampler from the upper layers when the trier is opened leading to an over-representation of seed from these layers.

NOTE: The ISTA Rules were amended in 2012 to prevent the use of non-partitioned sleeve triers in a vertical or diagonally downwards direction. As a result of this change, non-partitioned sleeve triers may be used only in a horizontal direction. For this reason, it is recommended that partitions are fitted to all sleeve triers.
5.2 Sampling by Hand

In certain circumstances sampling by hand is sometimes the most satisfactory method e.g. Use for very chaffy seed as in the following examples: (Agrostis, Dactylis, Festuca, Lolium, Paspalum and Poa) or for non-flowing seed.

Sampling by hand is also the most suitable method for seed that may be damaged by the use of triers e.g. seed of large seeded legumes, seeds with wings or seed at low moisture content. It is also the only method applicable for sampling seed tapes and seed mats.

NOTE: Sampling by hand can be used for all species.

5.3 Pelican Sampler

A Pelican sampler, shown below in Figure 4, can be used to take samples from free-flowing vertical seed streams, e.g. at the end of a conveyor.

It consists of one or two handles attached to a frame which holds open the mouth of a narrow cloth bag.

The length of the frame must be greater than the cross section of the seed stream.

After use, care must be taken to remove any seeds that have lodged or been trapped in the bag.

*Figure 4: The Pelican Sampler* (from ISTA Rules, 2004)

A: A schematic drawing of the instrument.
B: Two different types of Pelican Sampler.
C: How to hold a Pelican Sampler for use.
6. Actions Before Sampling

*Also refer to ISTA rules 2021 Chapter 2, 2.5.1.1 Preparation of a seed lot and conditions for sampling*

1. Check the seed lot to ensure it is conveniently and safely accessible to enable correct sampling. Instruct the forklift driver to set out pallets, bins or bulk bags on to the seed store floor to gain safe access to sample all sides of the stack where possible. Do not climb stacks, or sample from a ladder as this may compromise the sample and is not safe working practice.

2. Check the outer bags are clean and free of contaminants and seed. Use an air gun or brush to remove any contamination.

3. Check the seed lot has been processed and all bags / bins are correctly labelled and sealed.

**NOTE 1:** MPI requires 30% of bag labels to be visible once stacked on pallets.

**NOTE 2:** All bulk bag labels must be visible.

4. Check documentation matches the bag tally and label reconciliation on the AgC10 label application and store inventory.

5. Check that the total weight does not exceed the maximum allowable seed lot size for international and national rules (*see Table 4, section 9.1*).

6. Check the AgC10 form to ensure it has been completed correctly. If the AgC10 form is incomplete or incorrect refer it back to the Seed Store Manager to rectify.

7. Check the seed lot is identified as follows for:
   - **Certified Seed** - Machine dressed labels with an allocated official MPI reference number are attached to each bag, or container. Check Certified Seed bags or containers are sealed with a single line of stitching through the label or with a metal seal.
   - **Non-Certified Seed** - Attached SCB - issued Uncertified labels and/or branding of the merchant’s reference number on each bag or container. Non-certified seed must have a single line of stitching to seal the bag or container.

**NOTE 3:** ‘Sealed’ means that the individual bags or containers are closed in such a way they cannot be opened to gain access to the seed and closed again without either destroying the seal or leaving evidence of tampering. If any problems or discrepancies are found do not sample the seed lot.

If any bags are missing labels **place the seed lot on hold**, check the inventory and carry out a label reconciliation, apply for replacement labels and attach prior to sampling being undertaken.

8. Ensure you have your Sample Logbook with you to record details of any samples taken. These details will be reviewed during sampling audits. Include the details identified in *Table 1*.

**Table 1. Required Sampling Logbook Information**

<table>
<thead>
<tr>
<th>Required Information</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Justin Salter</td>
</tr>
<tr>
<td>SSO No.</td>
<td>3627</td>
</tr>
<tr>
<td>Date</td>
<td>05.05.2021</td>
</tr>
<tr>
<td>Location</td>
<td>XX Seed Store,</td>
</tr>
<tr>
<td>Equipment ID</td>
<td>AQ PN 2 (trier)</td>
</tr>
<tr>
<td></td>
<td>AQ PN 20 (riffle divider)</td>
</tr>
<tr>
<td>Species</td>
<td>Pisum sativum</td>
</tr>
<tr>
<td>Variety</td>
<td>Massey</td>
</tr>
<tr>
<td>Official Ref. No.</td>
<td>202153087</td>
</tr>
<tr>
<td>Merchants Ref.</td>
<td>ASUR302</td>
</tr>
<tr>
<td>Label Type and Class</td>
<td>OECD – 1G</td>
</tr>
<tr>
<td>Official Sample</td>
<td>Yes</td>
</tr>
<tr>
<td>Sample Type</td>
<td>P+G, Moisture</td>
</tr>
<tr>
<td>Sample sent to</td>
<td>AsureQuality Seed Laboratory</td>
</tr>
<tr>
<td>Signature</td>
<td>JSalter</td>
</tr>
</tbody>
</table>
7. Intensity of Sampling

Also refer to ISTA rules 2021 Chapter 2, 2.5.1.2 Minimum Sampling intensity.

Prior to taking primary samples, establish the number of samples that need to be taken. The sampling frequencies outlined in Tables 2 and 3 below are to be used or can be calculated using the ISTA Sampling Calculator (refer to Figure 5).

Table 2: Sampling Frequency for Bags (i.e. Containers 15 kg to 100 kg capacity)

<table>
<thead>
<tr>
<th>Number of Containers</th>
<th>Sampling Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 4</td>
<td>3 primary samples from each container</td>
</tr>
<tr>
<td>5 – 8</td>
<td>2 primary samples from each container</td>
</tr>
<tr>
<td>9 – 15</td>
<td>1 primary sample from each container</td>
</tr>
<tr>
<td>16 - 30</td>
<td>15 primary samples, one each from 15 containers</td>
</tr>
<tr>
<td>31 - 59</td>
<td>20 primary samples, one each from 20 containers</td>
</tr>
<tr>
<td>60 or more</td>
<td>30 primary samples, one each from 30 containers</td>
</tr>
</tbody>
</table>

For containers holding less than 15 kg of seed, containers must be combined into sampling units not exceeding 100 kg. e.g. 20 containers of 5 kg, 33 containers of 3 kg or 100 containers of 1 kg. The sampling unit must be regarded as (Number of Containers) as described in Table 2:

Table 3: Sampling Frequency for Bulk Bins (i.e. Containers greater than 100 kg capacity) or when Manually Sampling from the Seed Stream

<table>
<thead>
<tr>
<th>Size of Lot</th>
<th>Sampling Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 500 kg</td>
<td>At least 5 primary samples</td>
</tr>
<tr>
<td>501 – 3,000 kg</td>
<td>1 primary sample for each 300 kg, but not less than 5</td>
</tr>
<tr>
<td>3001 – 20,000 kg</td>
<td>1 primary sample for each 500 kg, but not less than 10</td>
</tr>
<tr>
<td>20,001 kg &amp; above</td>
<td>1 primary sample for each 700 kg, but not less than 40</td>
</tr>
</tbody>
</table>

In all cases, when sampling a lot of up to 15 containers, for those containers selected for sampling, the same number of primary samples shall be taken from each container.

7.1 International Seed Testing Association (ISTA) Sampling Calculator

ISTA Bulking and Sampling Committee has created an ISTA Sampling Calculator, which can be installed as an application on a Desktop, Android or iOS device. This is a useful tool to help with seed sampling and can be accessed here: ISTA Sampling Calculator Application.
Figure 5: Instructions for ISTA Sampling Calculator Application Installation

Installation Instructions for ISTA Sampling Calculator:

1. Open Google Chrome ( Installing the App only works on Chrome at the moment. For other browsers, such as Firefox and Explorer, save the page as a bookmark)
2. Go to the website (https://sampling-calculator.seedtest.org)
3. Go to Settings (The three dots at the top right corner)
4. Click “Install ISTA Sampling Calculator”

Desktop

1. Open Google Chrome
2. Go to the website (https://sampling-calculator.seedtest.org)
3. Go to Settings (The three dots at the top right corner)
4. Tap “Add to Home Screen”, then tap “Add”

Android

1. Open Safari
2. Go to the website (https://sampling-calculator.seedtest.org)
3. Tap the Share button on Safari
4. Find “Add to Home Screen” by sliding to the right
5. Tap “Add to Home Screen”, then tap “Add” at the top right corner

The App provides samplers access to current ISTA rules and information for sampling of seed lots. The sampler enters variables relating to a particular seed lot and the calculator calculates the minimum number of primary samples required.

To use the calculator, open the link / Application
- type in the species e.g. Hordeum vulgare,
- click on Show Species Info - this will show details for Maximum lot weight, Minimum sample Weight, Minimum sample Moisture etc
- click on Containers - enter number of containers
- click on Treated/Untreated or Coated
- enter Number of Containers
- enter Container/bag Weight
- Total lot weight - if the lot size is exceeded, REFUSE SAMPLING appears below
- the calculator will state the Minimum Number of Primary Samples required
8. Taking Primary Samples

Also refer to ISTA rules 2021 Chapter 2, 2.5.1.3 Taking Primary Samples

Primary samples can be drawn using the following:

- Nobbe Trier
- Sleeve Trier
- Hand Sampling
- Automatic Sampler
- Manual sampling from the stream

8.1 Sampling with the Nobbe Trier

- Select the correct seed trier. (Check the trier has a Unique Number, either engraved, stamped, or with an identification sticker and is listed on the Seed Sampling Equipment Register. (Refer Section 16. Identification of Sampling Equipment).
- Check the trier is clean and fit for use.
- Insert the point of the trier gently into the side of the bag / bin with the slot facing down to prevent seed entering the trier.

**NOTE 1:** There should be a mark on the trier handle to show slot orientation.

- Angle the trier upwards at approximately 30° and push the trier up to the handle (this should place the slot in the centre of the bag / bin).
- Hold the sample container over the end of the trier then turn the trier half a turn (180°) so the slot is now facing upwards.
- Withdraw trier immediately at decreasing speed from the centre to the side of the bag ensuring that seed is running freely.
- Gently agitate the trier while it is being withdrawn to maintain an even flow of seed.
- Run the point of the trier over the hole a few times to pull the sack threads back together. If the bag fibres break or there are holes in paper bags, use sticky tape to repair the bags.

**NOTE 2:** Milking (or pushing trier in and out) is not permitted.

**NOTE 3:** If first attempt is not satisfactory, consider using another trier with a different slot size.

**NOTE 4:** If the bag is badly damaged during sampling, seed may be rebagged / relabelled under the supervision of the SSO. Ensure label reconciliation occurs.

*Figure 6: 25 kg bag positions for sampling*
• Take primary samples (sub-samples) alternately from top, middle and bottom of bag (Figure 6), and from different random positions in bulk bins. Start sampling the lower bags on pallets and work upwards to prevent contamination spilling into the sample container.
• Regularly check the primary samples to ensure homogeneity.
• If the sample does not appear uniform, stop sampling and notify the Seed Store Manager.
• Repeat until sufficient primary samples are obtained (see Tables 2 and 3 - section 7, or determine using the ISTA Sampling Calculator).
• Weigh the composite sample and check against Table 4: Standard Minimum Weights of Submitted Samples, (Section 9.1).

8.2 Sampling with the Sleeve Trier
• Check the sleeve trier has partitions between each opening of the sleeve trier.
• Check the sleeve trier is clean and free of seed or contaminants before sampling.
• Insert the trier vertically into the seed in the closed position at an angle between 0 – 90°.
• Open the trier then gently agitate to allow the compartments to fill.
• Close the trier, ensuring that the seeds are not damaged and withdraw.
• Transfer the primary samples into a clean, anti-static container (e.g. seed pan or a clean piece of paper) to form a composite sample.
• Repeat until sufficient primary samples are obtained (see Table 3).

NOTE: When holding the trier be careful where you place your fingers to prevent injury when rotating and closing.
8.3 Sampling Using the Hand Method

- Check that the sample collection container is clean and anti-static.
- Primary samples are taken by removing handfuls of seed from random positions and depths within the open bag. This position should be varied between bags.
- Prior to sampling ensure sleeve is rolled up and hands are clean.
- Insert the open hand into the bag of seed to the required position then close and withdraw the hand, taking care to keep fingers tightly closed about the seeds so none escape (as shown in Figure 7).
- Empty hand into the seed collection container.
- Brush hand down thoroughly into the sample collection container between primary samples.
- To ensure that lower layers of bags or bins are effectively sampled, it may be necessary to request that some bags be partially emptied, then refilled.
- Repeat until sufficient primary samples are obtained (see Table 2, section 7).

Figure 7: Hand Sampling

(from ISTA Handbook on Seed Sampling, 2004)

How to sample by hand.

A: Push the open hand into the container to the required position.
B: Close the hand with the seeds inside.
C: Withdraw the hand, taking great care that fingers remain tightly closed around the seeds so none may escape.
D: In case of treated seeds use appropriate gloves.
8.4 **Sampling Using an Automatic Sampler**

Primary samples may be taken automatically from the seed stream during processing. This is an effective and efficient way of sampling. Drawing samples at regular intervals from the seed stream generally results in a better representation of the seed lot than can be achieved by random sampling.

The Automatic sampler must be approved for use by the AsureQuality Seed Laboratory NZ01 (ISTA accredited for Automatic Sampling) and MPI.

ISTA have provided a technical guideline: Protocol for the Approval of Automatic Seed Samplers.

A copy of the protocol can be requested from the AsureQuality Seed Laboratory NZ01.

8.5 **Sampling Seed Manually from the Seed Stream**

Use for any seed where the seed stream is uniform and continuous.

Ensure that the catching container and sample collection container are clean.

Primary samples can be removed from the seed stream by the use of a Pelican sampler or a suitable deep container which is wider than the cross-section of the seed stream but with a narrow opening and wider base, so that seeds entering the sampler do not bounce out.

Move the catching container completely through the seed stream in one continuous motion at a constant speed.

Primary samples should be drawn at regular intervals during processing to ensure that the entire seed lot is represented.

For further training or information on manual sampling seed from the seed stream contact the AsureQuality Seed Laboratory.
9. Preparing the Submitted Sample

Also refer to ISTA rules 2021 Chapter 2, 2.5.2 Procedures for obtaining the submitted and working sample.

After drawing the appropriate number of primary samples, the composite sample is often too large to be sent directly to the AsureQuality Seed Laboratory NZ01 and needs to be reduced (refer to Figure 8). A composite sample can be reduced in size to give a submitted sample by using a riffle divider, refer to Figure 9.

- Check the weight of the composite sample prior to mixing and dividing.

**Figure 8: Reducing Sample Size**

9.1 Setting up the Riffle Divider

- Check the riffle divider is calibrated. Keep a record for all SSO staff that use the divider and associated calibration records (refer Calibration of the riffle divider, section 12).
- Check the divider is on a firm and level surface. (Use a spirit level to check)
- Check the divider and all four containers for cleanliness, and clean if required with a soft brush or air hose. Care should be taken to dislodge any matter trapped on the upper chute mountings.
- Place a seed pan under each of the two outlets.
- Pour the entire composite sample evenly into the seed pan so that when the sample is tipped into the hopper, all the chutes receive an even amount of seed. The chutes must be wide enough to allow the smooth and free flow of seed and contaminants.

**NOTE:** The riffle divider must have a minimum of 10 chutes.

- Once the seed pans are full, replace with empty seed pans.
- Seed pans may be tipped simultaneously or alternately into the hopper at an even rate. Care is needed to ensure that the seed is evenly distributed.
- Repeat procedure once more for free running seeds and twice more for chaffy seeds.
- Set the contents of one seed pan aside.
- Place empty seed pans under each outlet, then feed the contents of the other full seed pans into the hopper.
- Repeat this operation until the appropriate sample size of the submitted sample is obtained. Weigh the sample (refer to Table 4: Standard Minimum Weight of Submitted Samples). For health test samples, refer to Table 6 (section 19).
- Package the sample in an approved sample packet or calico bag and discard the excess seed.
Figure 9: Riffle Divider and Seed Pans

Table 4: Standard Minimum Weights of Submitted Samples

<table>
<thead>
<tr>
<th>Common Name</th>
<th>Species</th>
<th>Minimum Sample Weight (g)</th>
<th>Maximum Lot Size (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acacia</td>
<td>Acacia spp</td>
<td>70</td>
<td>1000</td>
</tr>
<tr>
<td>Asparagus</td>
<td>Asparagus officinalis</td>
<td>1000</td>
<td>20000</td>
</tr>
<tr>
<td>Browntop</td>
<td>Agrostis spp</td>
<td>5</td>
<td>10000</td>
</tr>
<tr>
<td>Barley</td>
<td>Hordeum vulgare L. subsp. vulgare</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Beet</td>
<td>Beta vulgaris</td>
<td>500</td>
<td>20000</td>
</tr>
<tr>
<td>Black Mustard</td>
<td>Brassica nigra</td>
<td>40</td>
<td>10000</td>
</tr>
<tr>
<td>Borage</td>
<td>Borago officinalis</td>
<td>450</td>
<td>10000</td>
</tr>
<tr>
<td>Broad Bean</td>
<td>Vicia faba</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Buckwheat</td>
<td>Fagopyrum esculentum</td>
<td>600</td>
<td>10000</td>
</tr>
<tr>
<td>Canary Grass</td>
<td>Phalaris canariensis</td>
<td>200</td>
<td>10000</td>
</tr>
<tr>
<td>Capsicum</td>
<td>Capsicum sp</td>
<td>150</td>
<td>10000</td>
</tr>
<tr>
<td>Carrot</td>
<td>Daucus carota</td>
<td>30</td>
<td>10000</td>
</tr>
<tr>
<td>Celery</td>
<td>Apium graveolens</td>
<td>10</td>
<td>10000</td>
</tr>
<tr>
<td>Chewing Fescue</td>
<td>Festuca rubra</td>
<td>30</td>
<td>10000</td>
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<tr>
<td>Chicory</td>
<td>Cichorium intybus</td>
<td>50</td>
<td>10000</td>
</tr>
<tr>
<td>Clover – Alsike</td>
<td>Trifolium hybridum</td>
<td>20</td>
<td>10000</td>
</tr>
<tr>
<td>Clover – Red</td>
<td>Trifolium pratense</td>
<td>50</td>
<td>10000</td>
</tr>
<tr>
<td>Clover – Subterranean</td>
<td>Trifolium subterraneum</td>
<td>250</td>
<td>10000</td>
</tr>
<tr>
<td>Clover – Strawberry</td>
<td>Trifolium fragiferum</td>
<td>40</td>
<td>10000</td>
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<tr>
<td>Clover – Suckling</td>
<td>Trifolium dubium</td>
<td>20</td>
<td>10000</td>
</tr>
<tr>
<td>Clover – White</td>
<td>Trifolium repens</td>
<td>20</td>
<td>10000</td>
</tr>
<tr>
<td>Cockfoot</td>
<td>Dactylis glomerata</td>
<td>30</td>
<td>10000</td>
</tr>
<tr>
<td>Common Vetch</td>
<td>Vicia sativa</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Coriander</td>
<td>Coriandrium sativum</td>
<td>400</td>
<td>10000</td>
</tr>
<tr>
<td>Crested Dogstail</td>
<td>Cynosurus cristatus</td>
<td>20</td>
<td>10000</td>
</tr>
<tr>
<td>Eucalyptus</td>
<td>Eucalyptus bridgesiana</td>
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<td>1000</td>
</tr>
<tr>
<td></td>
<td>Eucalyptus cinerea</td>
<td>30</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>Corymbia citriodora</td>
<td>40</td>
<td>1000</td>
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<tr>
<td>Eucalyptus</td>
<td>Eucalyptus globulus</td>
<td>60</td>
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<td></td>
<td>Eucalyptus gunni</td>
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<td>Eucalyptus nitens</td>
<td>30</td>
<td>1000</td>
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<td></td>
<td>Eucalyptus pauciflora</td>
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<td>1000</td>
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<td>Evening Primrose</td>
<td>Oenothera biennis</td>
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<td>10000</td>
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<td>Festulolium</td>
<td>xFestulolium</td>
<td>60</td>
<td>10000</td>
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<tr>
<td>Kale</td>
<td>Brassica oleracea</td>
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<tr>
<td>Kentucky Bluegrass</td>
<td>Poa pratensis</td>
<td>5</td>
<td>10000</td>
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<tr>
<td>Kidney or Haricot Bean</td>
<td>Phaseolus vulgaris</td>
<td>1000</td>
<td>30000</td>
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<td>Leek</td>
<td>Allium porrum</td>
<td>70</td>
<td>10000</td>
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<td>Common Name</td>
<td>Species</td>
<td>Minimum Sample Weight (g)</td>
<td>Maximum Lot Size (Kg)</td>
</tr>
<tr>
<td>--------------</td>
<td>----------------------------------------</td>
<td>---------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Lentils</td>
<td>Lens culinaris</td>
<td>600</td>
<td>30000</td>
</tr>
<tr>
<td>Linseed</td>
<td>Linum usitatissimum</td>
<td>150</td>
<td>10000</td>
</tr>
<tr>
<td>Lotus</td>
<td>Lotus corniculatus / Lotus tenuis</td>
<td>30</td>
<td>10000</td>
</tr>
<tr>
<td></td>
<td>Lotus uliginosus</td>
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<tr>
<td>Lucerne</td>
<td>Medicago sativa</td>
<td>50</td>
<td>10000</td>
</tr>
<tr>
<td>Lupin</td>
<td>Lupinus spp</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Maize</td>
<td>Zea mays</td>
<td>1000</td>
<td>40000</td>
</tr>
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<td>Meadow Fescue</td>
<td>Festuca pratensis</td>
<td>50</td>
<td>10000</td>
</tr>
<tr>
<td>Mustard</td>
<td>Sinapis alba</td>
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<td>10000</td>
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<td>Oat</td>
<td>Avena sativa</td>
<td>1000</td>
<td>30000</td>
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<td>Onion</td>
<td>Allium cepa</td>
<td>80</td>
<td>10000</td>
</tr>
<tr>
<td>Origanum</td>
<td>Origanum vulgare</td>
<td>5</td>
<td>10000</td>
</tr>
<tr>
<td>Paspalum</td>
<td>Paspalum dilatatum</td>
<td>50</td>
<td>10000</td>
</tr>
<tr>
<td>Pea</td>
<td>Pisum sativum</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Phacelia</td>
<td>Phacelia tanacetifolia</td>
<td>50</td>
<td>10000</td>
</tr>
<tr>
<td>Phalaris</td>
<td>Phalaris aquatica</td>
<td>40</td>
<td>10000</td>
</tr>
<tr>
<td>Plantain</td>
<td>Plantago lanceolata</td>
<td>60</td>
<td>10000</td>
</tr>
<tr>
<td>Prairie Grass</td>
<td>Bromus catharticus</td>
<td>200</td>
<td>10000</td>
</tr>
<tr>
<td>Pumpkin, Squash</td>
<td>Cucurbita maxima</td>
<td>1000</td>
<td>20000</td>
</tr>
<tr>
<td>Radish</td>
<td>Raphanus sativus</td>
<td>300</td>
<td>10000</td>
</tr>
<tr>
<td>Rape</td>
<td>Brassica napus</td>
<td>100</td>
<td>10000</td>
</tr>
<tr>
<td>Ryecorn</td>
<td>Secale cereale</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Ryegrass</td>
<td>Lolium spp</td>
<td>60</td>
<td>10000</td>
</tr>
<tr>
<td>Sainfoin</td>
<td>Onobrychis vicifolia</td>
<td>600 (fruit) 400 (seed)</td>
<td>10000</td>
</tr>
<tr>
<td>Sheeps Burnett</td>
<td>Sanguisorba minor</td>
<td>250</td>
<td>10000</td>
</tr>
<tr>
<td>Soybean</td>
<td>Glycine max</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Sulla</td>
<td>Hedysarum coronarium</td>
<td>300 (fruit) 120 (seed)</td>
<td>10000</td>
</tr>
<tr>
<td>Swede</td>
<td>Brassica napus var napobrassica</td>
<td>100</td>
<td>10000</td>
</tr>
<tr>
<td>Tall Fescue</td>
<td>Festuca arundinacea</td>
<td>60*</td>
<td>10000</td>
</tr>
<tr>
<td>Timothy</td>
<td>Phleum pratense</td>
<td>10</td>
<td>10000</td>
</tr>
<tr>
<td>Triticale</td>
<td>xTriticosecale</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Turnip</td>
<td>Brassica rapa</td>
<td>70</td>
<td>10000</td>
</tr>
<tr>
<td>Wheat</td>
<td>Triticum aestivum subsp. aestivum</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Wheat – Durum</td>
<td>Triticum turgidium L. subsp. durum</td>
<td>1000</td>
<td>30000</td>
</tr>
<tr>
<td>Yarrow</td>
<td>Achillea millefolium</td>
<td>5</td>
<td>10000</td>
</tr>
<tr>
<td>Yorkshire Fog</td>
<td>Holcus lanatus</td>
<td>10</td>
<td>10000</td>
</tr>
</tbody>
</table>

Minimum sample size is based on ISTA Rules. Table 2C Part 1, 2 & 3, 2021 Current Edition.

**NOTE 1:** There is a 5% Tolerance for Maximum Lot Size

**NOTE 2:** If the Species is not on the list above contact the AsureQuality Seed Laboratory NZ01 for guidance, or use the ISTA Sampling Calculator

**NOTE 3:** Seed Stores must be MPI approved to assemble herbage (Poaceae) seed lots up to 25000 kg

**NOTE 4:** Cereal seed lots for domestic purpose only are limited to a lot size of 40000 kg and are ineligible for the issuance of an Orange International Seed Certificate
10. Submission of Samples to the AsureQuality Seed Laboratory NZ01

- Complete the AgC10 form, listing all relevant information such as seedline details, tests required, the total weight of the seed lot, and number and type of containers e.g. Bags/Bins/Bulk.
- Complete the “Sampling Officer” section on the AgC10 form by printing your name, signing the form, recording your SSO licence number, and recording the date of sampling. Complete the same details on the sample envelope, calico bag or approved moisture bag.
- After preparing the submitted sample, check the details on the AgC10 form are correct and match the details on the sample packet and MD label.
- Seal the sample before dispatch by placing a MPI sticker seal over the fold in the top of the packet or tie/stitch calico or polypropylene bags and seal with metal tags. If necessary, tape the bottom corners of paper packets to guard against accidental spillage.
- Enclose completed AgC10 form(s) with the samples and dispatch promptly (within one or two days of sampling) to the AsureQuality Seed Laboratory NZ01:

  **Postal Address**  
  AsureQuality Seed Laboratory  
  PO Box 609  
  Palmerston North 4440

  **Courier Address**  
  AsureQuality Seed Laboratory  
  Batchelor House  
  Tennent Drive  
  Palmerston North 4472

**NOTE**: The current version of the AgC10 can be downloaded from the AsureQuality website: [AgC10 form]
10.1 Samples for Moisture Testing

Also refer to ISTA rules 2021 Chapter 2, 2.5.1.5.2 Obtaining the submitted sample for determination of moisture content, Chapter 9, Table 9A Part 1. Determination of moisture content and ISTA Sampling Calculator

Samples for moisture testing must be submitted in validated sealed moisture proof bags. The correct validated bags are obtained from the AsureQuality Seed Laboratory NZ01 and are identified by the batch number on the outer bag packaging.

**NOTE 1:** When a moisture sample is requested the Moisture sample, Purity and Germination samples can be acquired from the same composite sample, all testing required must be clearly identified on the AgC10 form.

The minimum sample weights for Moisture Determination are:

- 100gms for species requiring grinding *(refer to Table 5 and NOTE 3)*
- 50gms for all other species

**Table 5: Species Requiring Grinding for Accurate Determination of Moisture Content**

<table>
<thead>
<tr>
<th>Scientific Name:</th>
<th>Common Name:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avena spp</td>
<td>Oat</td>
</tr>
<tr>
<td>Hordeum vulgare L. subsp. vulgare</td>
<td>Barley</td>
</tr>
<tr>
<td>Phaseolus spp.</td>
<td>Bean</td>
</tr>
<tr>
<td>Pisum sativum</td>
<td>Pea</td>
</tr>
<tr>
<td>Secale cereale</td>
<td>Rye corn</td>
</tr>
<tr>
<td>Sorghum spp.</td>
<td>Sorghum</td>
</tr>
<tr>
<td>Triticum spp.</td>
<td>Wheat</td>
</tr>
<tr>
<td>X Triticosecale</td>
<td>Triticale</td>
</tr>
<tr>
<td>Zea mays</td>
<td>Maize/Corn</td>
</tr>
</tbody>
</table>

To obtain the submitted sample for moisture content determination (testing) subsamples must be taken in the following way:

- First mix the composite sample
- Then take a minimum of three samples from different positions and combine them to create the subsample for moisture of the required size. Use a spoon or scoop to avoid handling the seed.

**NOTE 2:** The subsample for moisture must be taken as soon as possible to avoid changes in moisture content.

**NOTE 3:** Do not fill the approved moisture bag over halfway. Moisture samples requiring grinding need to be thoroughly mixed by the laboratory staff prior to the sample being ground.

- Immediately expel the air and wrap.
- Seal the ziplock bag, or for the Fisherbrand bag fold the top 3 times and bend over wire ends.
- Ensure sample is placed into a second validated polythene bags (double bagged) before despatch to prevent moisture loss.
- Seal the outer bag with an official MPI sticker seal.
- Attach the moisture sample to the sample packet with a rubber band to ensure samples are kept together.
- Note on the AgC10 form and sample packet that a moisture test is required.

Label the moisture sample bag appropriately with the following details:

- MPI Reference Number
- SSO Licence Number
- Merchants Reference
- Date
- SSO Signature

Forward without delay to the AsureQuality Seed Laboratory NZ01.
10.2 Sealing Sample Packets

Figure 10: Examples of Correctly Sealed Sample Packets

10.3 Samples of Chemically Treated Seed

- When samples are being prepared with the riffle divider, wear a disposable face mask (covering mouth and nose), safety glasses and disposable gloves.
- Place the submitted sample in a plastic bag, seal with a rubber band and place inside an outer cloth bag or sample packet before dispatch.
- Record the chemical treatment and active ingredient used (e.g. Vitaflo: Carboxin and Thiram) clearly on the sample packet, plastic bag and on the calico bag.
- Write the chemical treatment in the comments section of the AgC10 form.
11. Maintenance and Cleaning of Triers and Sampling Equipment

- Check all manual sampling equipment prior to use. This includes triers, sample containers, riffle divider.
- Check tools are clean, dry and free from seed, chaffy matter, dust, chemical residues and extraneous matter which could cause cross contamination of the sample.
- Clean equipment with an air gun or brush. If washing is required (e.g. if residue from treated seed remains), use warm water and detergent or methylated spirits with a narrow bottle brush for triers. Ensure equipment is completely dry before use.
- Ensure triers are clean and polished on inner and outer surface to allow seed to run freely and to aid penetration of sacks.
- Smooth rough edges of triers with fine sandpaper, check the points of sleeve triers.
- Confirm that the riffle divider pans and composite sample collection containers are metal or antistatic plastic to prevent electrostatic adhesion of chaffy matter.
- Set the riffle divider up on a permanent bench in a clean and dry area, place a cover over the divider when not in use to reduce dust.
- Check the riffle divider with a spirit level and adjust by using a packing wedge under the legs if required.
- Check the divider and seed pans are in good repair with no sharp/rough edges or dents/deformations that could cause bias during mixing.
- Riffle dividers must be cleaned between seed lots.
- If sampling using an automatic sampler; ensure annual maintenance schedule is current and sampler is cleaned down between seed lots.

**NOTE 1:** Riffle dividers require annual calibration as listed in section 12 and calibration records must be kept.

**NOTE 2:** If an automatically sampled seed lot is not sampled at the programmed frequency, or if the resulting seed weight is greater or less than expected, manually resample the seed lot and carry out remediation.
12. Calibration of the Riffle Divider

Individuals are calibrated to riffle dividers using either of the following two methods. Calibration of individuals should be carried out annually. SSOs must provide records of calibration and registered equipment during sampling audits. Demonstration of sample reduction may also be assessed.

**Method 1 (provided by the ISTA Bulking and Sampling Committee)**

**Equipment required:**
- ✓ Riffle Divider
- ✓ 2.5mm Sieve for separating clover seed
- ✓ 2.5mm Sieve for separating clover seed
- ✓ Seed Tray
- ✓ Calibrated Scales to measure 0.1 gram
- ✓ Tweezers
- ✓ Calculator
- ✓ Wheat 800 grams
- ✓ Red Clover 200 grams

- Follow section 9.1 Setting up the Riffle Divider
- Mix the 1000g sample by running it 3 times through the riffle divider.
- Divide the sample 3 times giving a subsample of around 125g, weigh and record.
- Separate the wheat and red clover seeds in the subsample using a 2.5 mm sieve.
- Pick out by hand any remaining misplaced red clover seeds.
- Weigh the wheat and red clover fractions (one decimal place)
- Pour all seed back in the original sample and mix the sample.
- Repeat steps 2-6 until a total of 10 repetitions have been completed.
- Calculate the percentage red clover seed in each repetition.
- Calculate the average percentage red clover.
- Check the tolerance.

<table>
<thead>
<tr>
<th>Repetition</th>
<th>Weight in grams</th>
<th>% Red clover</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Subsample</td>
<td>Red clover</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td></td>
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<tr>
<td>4</td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
</tr>
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<td>6</td>
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<td>8</td>
<td></td>
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<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Average percentage red clover: _____
Tolerance red clover: 20 % ± 2 %

SSO Name:_______
SSO Number:_______
Signature:_________
Date:_____________

Keep this record for audit purposes
**Method 2** *(presented at the ISTA Sampling Workshop, Ashburton, Sept 2016)*

**Equipment required:**
- ✓ Riffle Divider
- ✓ Seed Tray
- ✓ Calibrated Scales to measure 0.1 gram
- ✓ Tweezers
- ✓ Calculator
- ✓ Pure wheat seed 1000 grams
- ✓ Buckwheat 40 seeds

**NOTE 1:** Other seed of similar size can be used e.g. 1 kg wheat and 40 coloured wheat, 1 kg maize/corn and 40 coloured corn seeds.

- Follow section 9.1 Setting up the Riffle Divider.
- Combine wheat and buckwheat sample and record the total sample weight (starting weight – first calibration table)
- Mix the wheat and buckwheat sample once through the divider
- Tip the seed back through the divider and split into two samples
- Weigh the A and B samples separately and record this on the first calibration table.
- Add A + B, record this weight. If there is a difference of more than 2g when compared with the starting weight, too much seed is being lost. Check positions of pans to ensure minimal loss.
- Search both samples of wheat and count the buckwheat seeds found on each side, record buckwheat count on second calibration table.
- Remove the buckwheat and weigh the two pans of wheat, record on first calibration table
- Add the buckwheat back to the 1 kg wheat sample
- Repeat step 1 to 6: 10 times, record each time
- Determine the difference in weight of each wheat sample
- Check the number of buckwheat seeds in sample 1 = that in sample 2
- Check the tolerance for both sample weight and the number of other seed count.

**NOTE 2:** Tolerance is set by the AsureQuality Seed Laboratory

**NOTE 3:** Complete both charts ‘Weight per side’ and ‘Other seed count per side’. Keep these records for audit purposes.
Method 2. Calibration of Riffle Divider using 1kg of Wheat and 40 Buckwheat Seeds

Divider ID ____________  Date ____________

Weight per side (allowed difference 5% of combined Side A + Side B weight)

<table>
<thead>
<tr>
<th>Repetition</th>
<th>Starting weight (g)</th>
<th>Weight Side A (g)</th>
<th>Weight Side B (g)</th>
<th>Combined A+B weight (g)</th>
<th>Is starting weight &amp; combined A+B weight within 2g?</th>
<th>Difference of weights Side A-B (g)</th>
<th>Allowed difference +/-5% of combined weight (A+B)</th>
<th>Within allowed range?</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
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</tr>
<tr>
<td>3</td>
<td></td>
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</tr>
<tr>
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<td></td>
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</tr>
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<td>5</td>
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<td></td>
<td></td>
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<td></td>
</tr>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>

Combined maximum within 2g?  Yes / No  Values within allowed range=__________________
### Other seed count per side (40 added expected 20 per side, allowed range 12 to 28)

<table>
<thead>
<tr>
<th>Repetition</th>
<th>Other seed number Side A</th>
<th>Other seed number Side B</th>
<th>Combined A+B count</th>
<th>Does Side A + Side B count equal 40?</th>
<th>Within allowed range?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
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<td>7</td>
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<td>9</td>
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<tr>
<td>10</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Combined A+B OK?  Yes/NO  Values within allowed range=______________

If 8/10 values are within the allowed range for both weights and numbers the divider can be approved for use.

Decision for Divider:  Approved / Not Approved

Approved By: SSO Name____________________  SSO Number____________________  Date____________________
13. Identification of Sampling Equipment

All seed sampling equipment must have a unique identification number. For example, use abbreviated MAO Seed Store name and sequential number &/or letter pattern (MSS 1A, MSS 1B, MSS 2). This includes seed triers, riffle dividers, pelican samplers, automatic sampler, and balances used to prepare seed samples.

A seed sampling equipment register has to be maintained by the MAO seed store recording the equipment identification numbers used by the ISTA seed samplers.

A current copy of the seed sampling equipment register is to be emailed (annually) to the AsureQuality Seed Laboratory NZ01 (seedlab@asurequality.com). Equipment used during seed sample is to be recorded on the AgC10 form. For example the Trier ID used when drawing a manual sample and, when applicable, how the sample was reduced e.g. Riffle Divider ID. Equipment used during sampling and the associated Equipment Register will be reviewed during seed sampling audits. Obsolete sampling equipment is to be removed from service and labelled “Do Not Use”.

The minimum requirements for the Seed Sampling Equipment Register are:

- Equipment Type (Model)
- Equipment ID
- Equipment Location/Store
- Seed Sampler Name and SSO licence number
- Calibration/Maintenance (riffle divider / balances)
14. Ordering Sampling Supplies

Seed sampling supplies can be ordered from the AsureQuality Seed Laboratory NZ01 at Palmerston North. The approved order form is found on the AsureQuality website:


Figure 10: Supplies available to order:

- Calico Bags
- Metal Clips
- Moisture Bags
- New Moisture Bags
- AgC11 Sample Packet
- MPI AgC11 Sticker Seals

Please complete the Supplies Order Form and email to the AsureQuality Seed Laboratory NZ01 located in Palmerston North for processing and dispatch. Please note that charges do apply for all these approved seed sampling products. Seed for Certification Testing will only be accepted where approved supplies have been used.

NOTE: Both original and new moisture bags may be used for submission of a moisture sample, however, only the new bags are available for order.

Please send your completed order form via email to: seed@asurequality.com

When ordering supplies please ensure you complete the order form with as much detail as possible to ensure you receive your supplies with minimum delays. Please note the supplies are in pre-packaged quantities and cannot be altered.

Orders will be processed and dispatched within 48 hours of being received.
ORDER FORM
Seed Varietal Certification Sampling Supplies

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Units per Pack</th>
<th>Packs Required</th>
<th>Price per Pack</th>
<th>Total ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calico Sample Bag (3 pound wt)</td>
<td>10</td>
<td></td>
<td>$12.00</td>
<td></td>
</tr>
<tr>
<td>Metal Clip Seals - Sequentially Numbered</td>
<td>200</td>
<td></td>
<td>$41.40</td>
<td></td>
</tr>
<tr>
<td>MPI AgC11 Sticker Seals (500 per roll)</td>
<td>1 Roll</td>
<td></td>
<td>$57.50</td>
<td></td>
</tr>
<tr>
<td>AgC11 Sample Packets</td>
<td>10</td>
<td></td>
<td>$6.30</td>
<td></td>
</tr>
<tr>
<td>Laboratory Approved Moisture Bags 180 x 255 Small</td>
<td>25</td>
<td></td>
<td>$2.90</td>
<td></td>
</tr>
</tbody>
</table>

Total

Send your completed order form to:

seed@asurequality.com

All enquiries regarding supplies please contact Seed Certification Bureau (06) 351 7962

Office Use Only

Courier Tracking Number Date
Dispatched
Metal Clip Seal Number Range

NOTE: Prices exclude GST
15. General Guidance

The flow diagram below (Figure 11) specifically relates to seed sampling and testing in New Zealand. Phytosanitary requirements are additional to this. The information in sections 15 – 19 provide guidance to authorised SSOs to ensure that they work within the requirements of the NZ MPI Seed Varietal Certification Standard.

Figure 11. Chain of Custody for Seed Sampling and Testing in New Zealand
16. Storage of Machine Dressed Certified Seed in Bulk

When sampled manually from the stream, or by an automatic sampler, seed can be stored in either bags or in bulk and then re-bagged at a later date.

Acceptable forms of bulk storage include:

- Bulk Bags with top ties sealed.
- Metal bins with tight fitting lids.
- Wooden boxes/bins with a clean internal liner and cap. Take all due care to ensure that the internal liner and cap are not compromised during stacking. If practical, place a hard board between boxes/bins.
- Storage silos which are self-emptying from the bottom.

**NOTE:** All bulk containers must have MD certification labels attached at all times. A seal must be attached to the lid and outside of the container. This must be described in your MPI approved procedures.
17. Splitting of Seed Lots

Splitting of seed lots of high-grade seed can only be performed by an authorised SSO. A bag of seed can be broken down to one or more bags.

Ensure the area in the store for the splitting operation is:

- Well lit
- Away from other seed which could cause contamination problems
- Located on a clean floor area
- Equipped with accurate (calibrated) scales
- Equipped with new sacks (hessian, polypropylene or paper)
- Equipped with plain buff blank labels

**NOTE:** Pay special attention to weights and keeping the seed free from contamination. Re-label a split seed lot as follows:

**17.1 For OECD labelled Seed lots**
- Apply to Seed Certification Bureau on an AgC10 form for new MD labels with the new correct weight in kg for each bag and attach/sew these onto the sacks.
- Do not deface/write on labels.
- Label details can be written on each bag as per the OECD Rules and Regulations 2021, section 10.1, page 155: [OECD Rules and Regulations 2021](#).

**17.2 For NZ domestic Seed Lots Only - 3 options**
- Apply to Seed Certification Bureau on an AgC10 form for new MD labels with the new correct weight in kg for each bag and attach/sew these onto the sacks
  - OR
  - Copy seed lot information from the original label (with all the label details) onto a plain buff labels and attach/sew these onto the sacks,
  - OR
  - Photocopy the original MD label, write on the copy the correct weight, SSO licence number, signature and date.

**NOTE:** This practice is only acceptable for split seed lots.

- Check the information is correct on the splitting labels.
- Record splitting of the seed lot in one of the following; a splitting logbook, store inventory, page 2 of the AgC10 form, or computer file
18. Rebagging/Relabelling of Seed Lots

Seed lots that have been dressed/cleaned in bulk and officially sampled and tested may be re-bagged into smaller bags / containers prior to sale or export without further sampling or testing provided this is carried out under supervision of an authorised SSO.

The process must be documented in the Seed Processor’s MPI approved procedures.

- Request new labels from the Seed Certification Bureau (SCB).
- Maintain traceability and uniformity of the seed lot throughout the process.
- Resample for testing any seed that has undergone further processing or cleaning through the seed cleaning machine
- To prevent double stitching of the bag during relabelling, thread the string end through the label hole and secure with a numbered metal clasp seal.

**NOTE 1:** Damaged labels (e.g. torn or damaged during application) can also be replaced. Request replacement labels by applying to SCB on an AgC10 form for rebagging / relabelling.

- Record all unused and damaged labels in your Label Destruction log.

**NOTE 2:** All excess labels need to be destroyed and reconciled.

- When rebagging / relabelling into a different Seed Scheme (e.g. NZ to OECD), fill in a label invalidation / withdrawal form and send this with a copy of the new AgC10 label request to the SCB. Alternatively, complete a new AgC10 form on eSeedCert and follow up with a manual submission of an invalidation / withdrawal form. This needs to be carried out for both full and partial seed lot rebagging / relabelling.

18.1 Label Weights

For New Zealand domestic labels printed weights on the label can be specified as:

- Bulk
- Actual Weight in kg or Pounds
- Blank (No Weight listed)

For OECD labels the printed weight must be the actual weight of the bag/container.

For AOSCA labels the printed weight must be the actual weight of the bag/container.
19. Samples for Disease and Pathogen Health Testing

* Not included in AsureQuality Seed Laboratory ISTA accreditation

Seed Samples for health testing can be sent direct to the AsureQuality Plant Health Laboratory. The submission form is in the link below or available on the AsureQuality website.


- Check Table 6 to determine the amount of seed to sample
- Have an authorized Seed Sampling Officer sample the seed lot
- Wrap the sample and seal inside polythene or paper bags before dispatch to prevent infected dust contamination from one sample to another.
- Note on the Sample Submission form and sample packet what test is required.
- Ensure this sample is kept separate from other samples being sent for routine testing.
- Dispatch samples for health testing to the AsureQuality Plant Health laboratory Lincoln University

<table>
<thead>
<tr>
<th>Postal Address</th>
<th>Courier Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>AsureQuality Ltd</td>
<td>AsureQuality Ltd</td>
</tr>
<tr>
<td>PO Box 85006</td>
<td>South Drive</td>
</tr>
<tr>
<td>Lincoln University</td>
<td>Lincoln University</td>
</tr>
<tr>
<td>Lincoln 7647</td>
<td>Lincoln 7674</td>
</tr>
</tbody>
</table>

19.1 Process for Sampling for a Pea Seed Borne Mosaic Virus (PSbMV) Test

- Obtain an official seed sample of the parent line as requested.
- Forward the sample with completed submission form to AsureQuality Plant Health Laboratory for PSbMV analysis
- Record on the sample packet and AgC10 form/submission form under “Other Instructions/ Seed Treatment/ Health Tests” that a PSbMV test is required.
- Upon receipt of the test result, ensure that it is negative for PSbMV before designating the parent seed line as stock seed.

Table 6: Special Minimum Weights for Submitted Samples for Health Test

<table>
<thead>
<tr>
<th>Seed type</th>
<th>Test</th>
<th>Sample Size</th>
<th>Max lot Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pea</td>
<td>Bacterial Blight (Pseudomonas syringae pv. pisi)</td>
<td>1.0 kg</td>
<td>30,000 kg</td>
</tr>
<tr>
<td></td>
<td>Ascochyta spp.</td>
<td>0.5 kg</td>
<td>30,000 kg</td>
</tr>
<tr>
<td></td>
<td>Pea Seedborne Mosaic Virus (PSbMV)</td>
<td>0.5 kg</td>
<td>30,000 kg</td>
</tr>
<tr>
<td></td>
<td>Combination of any three above</td>
<td>1.5 kg</td>
<td>30,000 kg</td>
</tr>
<tr>
<td></td>
<td>India Compliance</td>
<td>1.0 kg</td>
<td>30,000 kg</td>
</tr>
<tr>
<td>Wheat/ Barley/ Oats/ Rye</td>
<td>Fusarium spp.</td>
<td>1.0 kg</td>
<td>30,000 kg</td>
</tr>
<tr>
<td>Clover</td>
<td>Covers all export test requirements</td>
<td>50 g</td>
<td>10,000 kg</td>
</tr>
<tr>
<td>Grasses</td>
<td>Covers all export test requirements</td>
<td>100 g</td>
<td>10,000 kg</td>
</tr>
<tr>
<td>Maize</td>
<td>Sphacelotheca reiliana</td>
<td>1.0 kg</td>
<td>40,000 kg</td>
</tr>
</tbody>
</table>
For seed lots requiring health testing for export certification, the submitted seed sample must have been drawn by an authorised seed sampling officer or MPI approved Phytosanitary Inspector and the sampler details must be clearly identified on the form.

Sample sizes depend on the type of seed and the test required.

If the minimum sample size for the disease or pathogen test is not listed, please enquire with the AsureQuality Plant Health Laboratory.

**NOTE:** If a purity and germination test is also required, send additional seed for each test, as specified in *Table 4: Standard Minimum Weight of Submitted Samples (section 9.1).*

### 19.2 Hand Halving Method for Health Test Samples

*Also refer to ISTA rules 2021 Chapter 2, 2.5.2.2.4 The hand halving method.*

Hand halving is a suitable method for reduction of samples for seed health tests. This reduces the potential for cross contamination from pathogens present on sampling equipment.

1. Pour the seed evenly onto a smooth clean surface.
2. Thoroughly mix the seed into a mound with a flat edged spatula.
3. Divide the mound into half and then halve each half again, giving four portions. Each of the four portions is halved again giving eight portions, which should be arranged in two rows of four (*refer to Figure 12).*
4. Combine and retain alternate portions: e.g. combine the first and third portions in the first row with the second and fourth in the second row. Remove the remaining four portions.
5. Repeat steps 1, 2, and 3 using the retained portions from step 3 until the required submitted sample weight is obtained.

*Figure 12: Portions of Seed in Hand Halving Process*

```
A  B  A  B
B  A  B  A
```

Retain B piles, discard A piles.
Helping Aotearoa shape a better food world