



DEPARTMENT OF AGRICULTURE, SOUTH AUSTRALIA

Agronomy Branch Report

SEED INSPECTION HANDBOOK

Prepared by: D.C. Ragless, Senior Seed
Production Adviser

&

R.M. Kain, Senior Technical Officer
(Laboratory).

Report No. 45

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- CONTENTS -

	<u>Page</u>
1. INTRODUCTION	1
2. AUTHORITY OF SEED INSPECTORS	1
3. EQUIPMENT & SUPPLIES	1
4. SAMPLING	2
5. SAMPLING EQUIPMENT & TECHNIQUES	3
6. SAMPLES FOR TESTING	5
7. SIZE OF SAMPLES	5
8. INSPECTION PROCEDURES	7
9. SAFETY	7
10. PUBLIC RELATIONS	8
11. ACKNOWLEDGMENT	9

SEED INSPECTION HANDBOOK

1. INTRODUCTION:

The objective of seed inspection is to determine if seed being marketed complies with the requirements of the Agricultural Seeds Act, 1938-57 in relation to physical purity, germination and weed seed content and the Weeds Act, 1956-69 for freedom from declared weed seeds.

Seed inspection and sampling is the first step in assessing seed quality and in the enforcement of standards required by seed and weed laws.

The accuracy of any tests or laboratory analyses and therefore the effectiveness with which the seed or weed laws are enforced, depends entirely on how well the initial inspection and sampling is carried out.

Thus the seed inspector is a most important link in seed and weed law enforcement. Everything else that must be done depends on how well he has done his job. This handbook is designed for use on the job to help him do his job better.

2. AUTHORITY OF SEED INSPECTORS:

An inspector is provided with authority:-

2.1 Under the Agricultural Seeds Act, 1938-57 to inspect and take samples of seed for sowing, which is held, displayed or in transit, and apparently for sale (payment or tender of the ordinary market price for samples must be made, if demanded).

2.2 Under the Weeds Act, 1956-69 to examine seeds to determine the presence or otherwise of declared weed seeds.

The inspector should exercise care to determine that the seed being inspected is in fact subject to the laws under which he has authority to act.

3. EQUIPMENT & SUPPLIES:

A seed inspector should be provided with certain items of equipment in order to do a satisfactory job.

A check list of the more essential types of equipment and supplies is listed below:-

3.1 Equipment

Multi-section stick trier or probe, a S.A. "Torpedo" sampler and a "Nobbe" trier
Multi-section soil divider
Sampling bags and bucket
Stapling pliers, sewing needle and twine
Seals and pressure sensitive tape
Flashlight, hand lens, clip board
Three-corner pouring tray and funnel
Plastic gloves
Cloth or plastic sheet

3.2 Supplies

Identification and/or authority card
Seed sample envelopes and bags
Inspection report forms
Appropriate marking equipment
Labels
Copies of Agricultural Seeds Act and Weeds Act and Regulations.

4. SAMPLING:

The object of sampling is to obtain a representative sample from each seed lot subject to inspection.

4.1 Before starting to sample, determine the lot identification and the number of bags of that lot actually on hand to determine the number of bags to be sampled.

The rules for sampling prescribe the following:-

<u>No. of Bags or Other Containers in the Bulk</u>	<u>Minimum No. of Bags or Other Containers to be Sampled</u>
1 - 5 inclusive	Each bag or container
6 - 30 inclusive	1 in 3 selected at random, and not less than 5
Over 30	1 in 5 selected at random, and not less than 10

Samples should be drawn from unopened bags when available. It may be necessary to open bags for sampling purposes. Samples may be drawn from open bags if the identity of the seed has been preserved and unopened bags are not available.

When sampling open bags, probe the lower portions of the bag - seed near the opening may have been contaminated by customers or others.

Check the name of the kind and the lot number of each bag before probing to avoid mixing lots.

4.2 When sampling from bulk lines, the minimum sampling intensity shall be:-

Up to 50 kg.	At least 3 primary samples
51 - 500 kg.	At least 5 primary samples
501 - 3,000 kg.	One primary sample for each 300 kg, but not less than 5
3001 - 20,000 kg.	One primary sample for each 500 kg, but not less than 10

4.3 The maximum size of a bulk which may be represented by a single sample is:-

20,000 kilograms (44,000 lbs.) for seeds the size of wheat, or larger

10,000 kilograms (22,000 lbs.) for seeds smaller than wheat.

5. SAMPLING EQUIPMENT & TECHNIQUES:

5.1 Free flowing seed - the multi-section stick trier is used for sampling free flowing seed from bags (open or closed), containers, or bulk lines.

It is inserted diagonally across the bag, container or bulk in the closed position, with the slots upper-most.

After opening it should be vibrated to fill with seed and again closed, extreme care being exercised not to use undue pressure which may crack or break seed.

The closed trier is withdrawn and the seed (a "primary sample") is placed in a sampling bag or bucket.

When sampling seed in closed bags, care should be exercised not to tear bags, or to push the trier through the opposite side. When possible, insert the trier where the seed exerts the least pressure on the bag.

Holes in loosely woven cloth bags may be closed by stroking the point of the trier across the hole in several directions. Holes in closely woven cloth, paper or polythene may be closed with pressure sensitive tape, after brushing clean of dust.

5.2 Non-free flowing seed (grasses, etc.)

5.2.1 A "Nobbe" trier is used to sample non-free flowing seeds from closed bags.

This instrument should be inserted across the bag, pointing upwards at an angle of about 30° and with the hole downwards, until the hole reaches the centre of the bag.

The trier is then rotated to bring the hole uppermost, and withdrawn at once with a vibratory motion, and at a decreasing speed.

The hole should be closed by stroking or with pressure sensitive tape.

The "Nobbe" trier should not be used for open bags or for seed in bulk.

5.2.2 A S.A. "Torpedo" sampler is used to sample non-free flowing seed from open bags, containers or bulk.

The closed sampler is thrust into the seed to the required position, opened, vibrated and withdrawn. The seed (a "primary sample") is emptied into a sampling bag or bucket.

5.2.3 Samples may be taken by hand only if the use of approved-type tools is impracticable. When withdrawing the hand great care should be taken to keep the fingers tightly closed about the seed so that none escapes. If necessary, in order to adequately sample from lower levels in containers, empty part of the contents into another sack or container.

Important: The short "thief" trier does not meet requirements and will not take a satisfactory representative sample for testing.

6. SAMPLES FOR TESTING:

Where the quantity drawn from the bulk is larger than the amount required to be sent for test, the portions which make up the bulk sample should be put together in a clean receptacle and thoroughly mixed.

The final sample to be sent for test should be obtained by using a soil divider, or by employing the "halving method" - that is by dividing the total sample into two equal parts, rejecting one, re-mixing the other and dividing again into two equal parts and so on until the amount required is obtained.

The sample should be sealed and forwarded immediately for testing.

When sampling for inspection under requirements of the Seeds Act, it is necessary to obtain and seal two further samples - one to be held by the inspector and one to be handed to the owner of the seed.

7. SIZE OF SAMPLES:

The weight of a sample for test must not be less than the prescribed weight:-

<u>Kind of Seed</u>	<u>Minimum Weight of Sample for Test</u>
Tomato	15 grams
Bent grass, blue grasses, couch grass, cluster clover, shaftal clover, suckling clover, white clover, evening primrose, celery	25 "
Chewings fescue, cocksfoot, trefoil, carrot, lettuce	30 "
Perennial veldt grass, phalaris, strawberry clover, parsley	40 "
Paspalum, Tall fescue (Demeter), Bokhara clover, red clover, black medic, lucerne, chicory	50 "
Ryegrass, Japanese millet, rose clover, crimson clover, barrel medics, burr medic, gama medic, Harbinger medic, Tornafield medic, onion, turnip	80 "
Serradella, Brussel sprouts, cabbage, cauliflower, kale, parsnip, rape, swede	100 "
French millet (Panicum), flax, linseed, cucumber, rock melon	150 "
Canary grass, mustard	200 "
Sudan grass, subterranean clover, spinach	250 "
Radish	300 "
Snail medic	400 "
Beet	500 "
Buckwheat	600 "
Sorghum	900 "
Barley, oats, rye, wheat, safflower, sunflower, lupins, maize, broad beans, French beans, marrow, peas, pumpkin, squash, sweetcorn, trombone, water melon	1,000 "

With small lines of valuable seed (e.g. vegetables), the above quantities may be reduced, but additional care should be exercised to ensure that samples are representative of the bulk.

A germination test can be carried out on smaller samples, but any purity or weed seed test can be regarded as a guide only.

When seed is sold in small parcels or packets of 100 grams or less, three or more unopened packets should be taken to provide the sample.

8. INSPECTION PROCEDURES.

In addition to obtaining the sample, information must be obtained regarding the marking and identification of the seed lot, number of bags and labelling (if any).

This information is to be recorded on the inspector's report form and a copy enclosed with the sample.

Samples must be clearly marked and numbered for identification purposes, sealed, and immediately forwarded to the seed testing laboratory.

Samples should not be retained for extended periods - particularly in motor cars during hot weather.

If sampling for seed certification purposes, for Orange International certificates, or for other purposes, appropriate information must be recorded and a copy included with the sample which must be sealed.

9. SAFETY*:

Seed inspection is not without its hazards and the following precautions should be observed:-

9.1 Do not attempt to climb high piles of seed without a ladder. Obtain permission of management to use its equipment.

9.2 Do not work around bags piled in such a manner they are likely to fall.

9.3 Do not attempt to move piles of bags on your own to gain access. (Ask the dealer to move them).

9.4 Do not attempt to work in places where lighting is inadequate.

9.5 Be on the lookout for obstructions, elevator shafts and other such hazards.

9.6 Be on the lookout for electrical hazards.

- 9.7 Exercise care in handling treated seed. Use gloves, wash hands, avoid breathing dust and fumes as much as possible.
- 9.8 Do not enter warehouses which are being fumigated.
- 9.9 Always inform the management of your presence and where you plan to work.

10. PUBLIC RELATIONS*:

A seed inspector has authority to sample seed and enforce the law with or without the good will of those being protected and regulated. It has been well established, however, that the job is infinitely easier for the inspector and more effectively accomplished if an effort is made to obtain and maintain this good will. Public relations are an important part of the inspector's job. The following checklist is provided so he can periodically assess his relations with the public and thereby improve them:-

- 10.1 Do you answer the telephone cordially?
- 10.2 Do you write friendly letters?
- 10.3 Is your personal appearance and your mode of transportation such as not to detract from your position?
- 10.4 Do you greet people cordially when entering their establishment?
- 10.5 Do you make your presence known to the owner or management of the business?
- 10.6 Do you request assistance of dealers in your inspection work when it is most convenient?
- 10.7 Do you avoid wasting time visiting at length with manager or employees?
- 10.8 Do you have an identification card to prove your authority to sample seed, inspect records, etc.?
- 10.9 Do you thank people who freely co-operate and assist you in your work?
- 10.10 Do you avoid making remarks, about seed sampled elsewhere, other seedsmen or officials?
- 10.11 Do you avoid parking in customer parking areas?

- 10.12 Do you answer questions on the seed law raised by seedsmen or find the answer for them as soon as possible?
- 10.13 Do you comply as soon as possible with all requests and special assistance on urgent problems received from seedsmen directly or through your headquarters office?
- 10.14 Do you keep informed on new developments in the seed trade and know the reasons for new regulations?
- 10.15 Do you seek advice from better informed persons?
- 10.16 Do you follow up on actions requested of seedsmen to see that they are completed?
- 10.17 Do you comply to the letter with instructions received from your supervisor and suggest means of improvement in your work?
- 10.18 Do you conduct yourself properly in your off-duty hours so as not to reflect upon your position?
- 10.19 Do you analyse complaints on your work immediately and, when justified, revise procedures to eliminate future complaints?
- 10.20 Would you like to be treated in the same manner as you have treated any particular seedsman if your positions were reversed?

11. ACKNOWLEDGEMENT:

*Extracts from "Handbook for Seed Inspectors" issued by the Association of American Seed Control Officials.