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PI-002

PI-002

Inspection Procedure

Sampling Grains and Field Crops, their Residues and Associated Small Organisms

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TABLE OF CONTENTS

Forward 3
 Contact 3
 Review 3
 Endorsement 3
 Amendment Record 3
 Distribution 4

INTRODUCTION 4

1.0 SCOPE 4

2.0 REFERENCES 5

3.0 DEFINITIONS 6

4.0 SAMPLING EQUIPMENT AND PROCEDURES 7
 4.1 Small visible organisms 8
 4.2 Products Stored in Bins - Drop Samples 9
 4.3 Products Stored in Bins - Top Samples 9
 4.4 Products Stored in Bins - Running Samples 10
 Procedures 10
 4.5 Residues in Areas other than Bins 11
 4.6 Handling Samples and Recording the Sampling Process 12
 4.7 Controlling Documentation 13

Appendix A: Example of Hand Scoop 14

Forward

Contact

The contact for the review will be an officer of the Grains and Field Crops Section (GFCS) of the Plant Health Division (PHD) as assigned by the National Manager of this section.

Review

This PI-002 has been jointly developed by the Canadian Food Inspection Agency (CFIA) and the Canadian Grain Commission (CGC). As per the requirement of the Memorandum of Understanding between these two organizations, the PHD of the CFIA shall review PI-002 jointly with CGC. This procedure will be reviewed every second year or earlier, if required. The next revision date shall be June 30, 2008.

Endorsement

This PI-002 is hereby approved:

Quality System Document Committee Representative, PHD, CFIA

Date

Greg Stubbings, Director, PHD, CFIA

Date

Amendment Record

Amendments to this document will be given consecutive numbers. Insert all amendments, remove obsolete pages and ensure the record below is completed.

Number of amendment:	Amended by:	Date of submission for approval of amendment:	Summary of amendment and number of amended section(s) or page(s):
1	Wendy Asbil		Reformatting and clarification of scope; removal of irrelevant sections

Distribution

The CFIA maintains, issues and distributes copies of this PI-002. The latest PI-002 will also be available on the CFIA internal* and external** Websites. The office of the Director of the PHD keeps a controlled copy of this PI-002.

* CFIA internal website address: <http://merlin/english/plaveg/grains/mane.asp>

** CFIA external Website address
<http://www.inspection.gc.ca/english/plaveg/grains/pi-002/pi-002e.shtml>.

INTRODUCTION

Some Canadian facilities directly export grains and field crops. Exported grains and field crops may have to be certified free from quarantine pests, as per the requirements of plant health authorities in the importing countries. The CFIA provides this required certification by way of a phytosanitary certificate based on inspections of facilities, stored products and conveyances. These inspections include taking samples of residues, visible organisms and stored products for detecting pests. This PI-002 specifies the procedures that inspectors must follow to collect and handle samples taken during the inspection. The CFIA will periodically audit inspectors against this PI-002 using PI-004.

1.0 SCOPE

This PI-002 specifies the procedures that inspectors must follow to collect and handle samples taken during the inspection of facilities that handle grains and field crops for export. These include, but are not restricted to:

- terminal elevators
- transfer elevators
- other elevators
- malting plants
- pellet plants

This PI-002 **shall not** be used to sample in:

- mills
- carriers of grains and field crops (e.g. ships, railcars, trucks)
- facilities exporting hay
- bagged products

This PI-002 does not specify the general roles and responsibilities of inspectors. These roles and responsibilities shall be outlined in documents such as memoranda of understanding, internal work plans, or other agreements between the CFIA and inspectors.

2.0 REFERENCES

The legislative documents listed herein are available at the Canadian Justice Department website (<http://Canada.justice.gc.ca>).

Canada Grain Act, 1970-71-72, c. 7, s.1., R.S., 1985, c. G-10.

Canadian Food Inspection Agency Fees Notice, Canada Gazette, Part 1 (05/13/2000)

Plant Protection Regulations, SOR/95-212.

Plant Protection Act, S.C. 1990, C.22.

Food and Agriculture Organization of the United Nations (FAO), 1992. International Plant Protection Convention (IPPC) (AGPP/PQ/92/1). FAO, Rome. 17 pages.

R-001: Grains, Field Crops, and their Exporting Facilities. PHD, CFIA.

Agriculture and Agri-Food Canada (AAFC) and the CGC, 1994. Memorandum of Understanding between the CGC and the Department of Agriculture (Food Production and Inspection Branch) Concerning the Sampling and Inspection of Grain and Grain Handling Facilities to Meet Phytosanitary Export Market Requirements. AAFC, Ottawa, 6 pages.

PI-004: Auditing the Inspection of Facilities that Export Grains and Field Crops. PHD, CFIA.

PI-003: Detecting and Identifying Small Organisms Associated with Grains and Field Crops. PHD, CFIA

PI-001: Inspecting Facilities that Export Grains and Field Crops. PHD, CFIA

ISO, 1986. ISO 6639/2: Cereals and Pulses -- Determination of Hidden Insect Infestation -- Part 2: Sampling. First Edition. ISO/TC 34, Agricultural Food Products, Switzerland, 4 pages.

3.0 DEFINITIONS

For the purpose of this PI-002, the following definitions apply.

Carrier	A vehicle that is used to carry grains and field crops. Carriers include trucks, railcars, ships, lakers and airplanes.
Drop sample	A sample obtained from the bottom of a storage bin. Though not very representative, this sample provides an indication of the condition of the product.
Facilities that export grains and field crops	Means facilities that directly export grains and field crops , including elevators as defined in the <i>Canada Grain Act</i> , other elevators, malting plants, pellet plants and other facilities.
Grains and field crops	Seeds and products of oilseeds (e.g. canola, soybeans), pulses (e.g. dried peas, lentils), grains (e.g. wheat, oats, corn), forages (e.g. alfalfa, timothy), and fibre crops (e.g hemp). See R-001 for a longer list of crop examples.
Inspectors	Includes the inspectors of the CFIA and any other inspector authorized to inspect on behalf of the CFIA.
Pest	Any thing that is injurious or potentially injurious, whether directly or indirectly, to plants or to products or by-products of plants and includes any plant prescribed as a pest. See also 3.3.
Phytosanitary Certificate	See Part IV, Section 55.1 of the <i>Plant Protection Regulations</i> for complete definition. Briefly, it is a document, issued by an inspector designated under the <i>Plant Protection Act</i> , that attests to the phytosanitary status of any thing exported from Canada.
Post-treatment sample	A sample taken to assess the effectiveness of a treatment (e.g. fumigation). It is preferably a running sample.
Primary elevator (as defined under the <i>Canada Grain Act</i>)	An elevator the principal use of which is the receiving of grain directly from producers for storage or forwarding or both.
Process elevator (as defined under the <i>Canada Grain Act</i>)	An elevator the principal use of which is the receiving and storing of grain for direct manufacture or processing into other products.
Quarantine pest	A pest of potential national economic importance to the country endangered thereby and not yet present there, or present but not widely distributed and being actively controlled.

Residue or perimeter sample	A sample of the residues found in a facility. Although this is a non-random, biased sample it is the most practical approach to take during the inspection of facilities.
Running sample	A sample taken off a belt during the turning process. This is a representative sample of the product mass under investigation.
Sample	A part of a large entity such as a shipment of grain or other products.
Sampling process	The complete operation from the time the samples are taken from a mass to the final analysis.
Small organisms	Small living beings. Includes insects, mites, bacteria and fungi.
Terminal elevator (as defined under the <i>Canada Grain Act</i>)	An elevator the principal uses of which are the receiving of grain on or after the official inspection and official weighing of the grain and the cleaning, storing and treating of the grain before it is moved forward.
Transfer elevator (as defined under the <i>Canada Grain Act</i>)	An elevator in <ul style="list-style-type: none"> • the Western Division or the Eastern Division the principal use of which is the transfer of grain that has been officially inspected and weighed at another elevator • an elevator in the Eastern Division the principle uses of which are the transfer of grain that has been officially inspected and officially weighed at another elevator and the receiving, cleaning and storing of eastern or foreign grain.
Top sample	A sample of the surface of the product mass taken by accessing the top of a bin.

Refer to R-001 for more terms used to describe grains, field crops and exporting facilities.

4.0 SAMPLING EQUIPMENT AND PROCEDURES

Inspectors shall sample small organisms, grains and field crops and their residues present in facilities or vehicles, as specified in Sections 4.1, 4.2, 4.3 or 4.4 as applicable. Note that inspectors shall always respect the requirements specified in Sections 4.6 and 4.7.

The objective of sampling is to provide evidence to the CFIA that facilities or stored products meet the requirements of the CFIA, regarding pests.

For fees associated with sampling, CFIA inspectors shall refer to Part 12 of the *Canadian Food*

Inspection Agency Fees Notice.

(http://www.inspection.gc.ca/english/reg/cfiaacia/feesfraais/part_12e.shtml). Inspectors shall only take post-fumigation samples after obtaining certification from the pest control officer that the products to be sampled are free from fumigants and safe to handle.

Note that the sampling schemes described in this PI-002 do not necessarily enable insect populations to be measured precisely but have been designed to give maximum information in a practical manner.

For the purpose of this PI-002, standard equipment definitions are as follows:

Cylindrical sampler	divided bulk probe approximately 1 to 3 m long by 4 cm in diameter with about 3 slots of which each is approximately 8 cm long by 2 cm wide
Small plastic bags	approximately 2.5 kg capacity; measure approximately 40-45 cm long by 5-6 cm wide by 0.15 cm thick
Large bags	bags large enough to contain and transport many of the small plastic bags of samples
Tray	a metal pan large enough to collect a 1 kg sample and that will not break under pressure

4.1 Small visible organisms

Equipment Required

Small containers (e.g. metal or plastic containers with screw-top); labels; a pencil.
All equipment shall be clean (i.e. free of products and organisms previously sampled).

Procedures

Collect small visible organisms with your hands. Put the small organisms in containers, using one container per species (or apparent species), and close the containers. Label and handle the container as specified in Section 4.6.

4.2 Products Stored in Bins - Drop Samples

Equipment Required

A tray; small plastic bags; large bags

All equipment shall be clean (i.e. free of products and organisms previously sample).

Procedures

- a. Select the bins to sample ensuring that:
 - at least 15% of the bins in the facility are sampled per inspection;
 - each bin of the facility is sampled at least once a year (preferably alternating valves);
 - there is a minimum interference with the operation of the facility (i.e. try to limit the sampling to one or two belts per inspection);
 - bins designated as “identity preserved” are not sampled (i.e. do not break the CGC seals).

- b. For each bin selected, do as follows:
 - locate the bottom valve (or try hole) of the bin;
 - ensure that the respective belt is locked before sampling;
 - if sampling from the valve, position the tray on the belt under the spout, open the valve, let the bin content flow onto the tray and, when at least 1 kg is on the tray, close the valve;
 - if sampling from the try hole, position the tray against the try hole, open the valve, let the bin content flow onto the tray, and, when at least 1 kg is on the tray, close the valve.

- c. Put at least 1 kilogram of the bin content in a plastic bag. Close, label and handle the bag as specified in Section 4.6.

4.3 Products Stored in Bins - Top Samples

Equipment Required

A cylindrical sampler or an electrically operated suction sampler*; small plastic bags; large bags.

All equipment shall be clean (i.e. free of products and organisms previously sampled).

- * The Probovac probe draws a grain sample from the bin through suction in a double walled pipe; this unit is effective to a depth of about 40 feet and a representative sample can be obtained from the center of the grain mass. Probovacs may be used, if available, to determine if heating or pest infestations occur within the bin.

Procedures

- a. Select the bins to sample ensuring that:
 - at least 15% of the bins in the facility are sampled per inspection;
 - each bin of the facility is sampled at least once a year;
 - there is a minimum interference with the operation of the facility (i.e. try to limit the sampling to one or two belts per inspection);
 - bins designated as “identity preserved” are not sampled (i.e. do not break the CGC seals).

- b. For each bin selected, do as follows:
 - locate the bin top and have the top cover of the bin removed;
 - probe the bin content.

- c. Put at least 1 kilogram of the bin content in a plastic bag. Close, label and handle the bag as specified in Section 4.6.

4.4 Products Stored in Bins - Running Samples

Equipment Required

A hand scoop (see Appendix A for example); a pail; small plastic bags; large bags.
All equipment shall be clean (i.e. free of products and organisms previously sampled).

Procedures

- a. Select the bins to sample ensuring that:
 - at least 15% of the bins in the facility are sampled per inspection;
 - each bin of the facility is sampled at least once a year;
 - there is a minimum interference with the operation of the facility (i.e. try to limit the sampling to one or two belts per inspection);
 - bins designated as “identity preserved” are not sampled (i.e. do not break the CGC seals).

- b. For each bin selected, do as follows:
 - locate the belt on which the bin content will be transported to the other bin;
 - advise the manager of the facility to turn the bin product;
 - as the product is flowing on the belt, take several samples off the belt with a hand scoop;

- put the samples in a pail;
 - mix the contents of the pail.
- c. Put at least 1 kilogram of the pail contents in a plastic bag. Close, label and handle the bag as specified in Section 4.6.

4.5 Residues in Areas other than Bins

Equipment Required

A hand scoop (see Appendix A for example) or scraper for residues*; small plastic bags; large bags.

All equipment shall be clean (i.e. free of products and organisms previously sampled).

- * A scoop is used when there are sufficient amounts of residues available. A scraper is used to gather the required amount of residues for the sample when grain residues are sparse.

Procedures

- a. Select sampling locations throughout the facility.* There is no minimum or maximum number of samples to take per facility for residues but at least one sample per location (floor or identifiable area) should be taken, if residues are present. Inspectors may take a composite sample of the residues found in a location only if the residues are sparse.**
- * To select locations, review the previous inspection report of the facility and evaluate locations while walking through the facility. Take samples in locations where there are visible signs of insect activity or residues suspected to be infested with insects. Suspect residues include spilled grain, out of condition grain and grain dust, which can be found in pits, legs, belts, structure edges, walls, window frames, etc.
- ** If composite samples are taken and if pest insects are found in these samples, inspectors shall return to the facility and take additional samples to specifically locate the infestation. Composite samples for residues are taken by mixing the samples from different areas in the same bag.
- b. Collect the residues with a scoop or scraper for each location selected.
- c. For each location (i.e., floor or identifiable area), put at least 1 kilogram of the residues (if less than 1 kilogram then use all available residues) in a plastic bag. Close, label and handle the bag as specified in Section 4.6.

4.6 Handling Samples and Recording the Sampling Process

- a. At all times, inspectors shall keep the integrity of samples by avoiding cross-contamination of pests from and to the surrounding environment. Inspectors shall maintain the identity of samples until the results of the analyses are obtained and recorded in writing.
- b. At the facility, once a sample is collected and put in a bag, inspectors shall close the bag/container by knotting the neck of the bag or tightening the screw-top. Bags/containers shall be labeled legibly to indicate the name of the establishment, the location (i.e. floor level, drier, bin, etc.), the area within the location (e.g. bin or leg number), the date, the collector's name, and remarks (if applicable), in sufficient detail. The label will allow the trace back from the sample to the sampling location when necessary.
- c. At the facility, inspectors shall place each enclosed and labeled sample in a larger bag to protect the smaller bags and facilitate transportation. Do not carry any other articles in the bag. Inspectors shall bring the samples to the laboratory for analysis.
- d. During the transportation to the laboratory, the samples must be protected from direct exposure to sunlight and extremes of temperature and relative humidity. If a courier is used, similar precautions must be taken to avoid inadvertent damage by the courier.
- e. At the laboratory, inspectors shall track the samples by using either a log book or written notes kept in a file to record the sampling process. If notes are kept, they shall be dated and initialed by the individual who wrote them.

For each sample received at the laboratory, the following information shall easily be found by auditors:

- assigned tracking number (if a log book is used);
- the information on the label of each sample;
- the date the sample was received at the laboratory;
- the name of the individual who received the sample;
- the analysis results (i.e. list of species and quantities);
- the date of analysis;
- the analyst's name.

Samples or organisms sent to another laboratory (e.g. the Center for Plant Quarantine Pests, (CPQP)) for subsequent analysis shall also be recorded in writing as such and the results of that analysis shall be recorded in writing upon reception.

- f. At the laboratory, store and analyze the samples in an area restricted to authorized staff. The samples shall be stored in a manner to avoid cross-contamination of pests.

4.7 Controlling Documentation

Access to sampling records shall be limited to authorized staff.

APPENDIX A: Example of Hand Scoop

