

SAMPLING POLICY AND PROCEDURES

1. SCOPE

This document outlines the regulations, policy and procedures governing sampling of fish and fish products subject to inspection by the Canadian Food Inspection Agency (CFIA).

2. AUTHORITIES

Fish Inspection Act (FIA), R.S.C. 1970, c. F.-12
Fish Inspection Regulations (FIR), C.R.C., c.802, Part I, General.

Consumer Packaging and Labelling Act (CPLA), 1970-71-72, c.41, s.1.
Consumer Packaging and Labelling Regulations (CPLR)

Food and Drug Act (FD and A), C.R.C. c. 869
Food and Drug Regulations (FD and R)

Weights and Measures Act (WMA), C.R.C. c. 1605
Weights and Measures Regulations (WMR)

Part 1, sect.3.i (FIA)

The governor in council may, for the purpose of regulating the export or import of fish and containers make regulations [,] i) prescribing the manner in which samples of any fish can be taken.

Part 1, sect.4.1.c (FIA)

Subject to subsection (1.1), an inspector may at any time [,] c) take any samples for inspection.

Section 3 (FIR)

Subject to subsection (2), these regulations apply only in respect of fish and containers intended for export or import.

Section 4 (FIR)

All fish are subject to inspection and an inspector may take samples of fish free of charge for the purpose of inspection.

Section 5 (FIR)

The owner of fish or a person acting on his behalf shall make readily accessible to an inspector any fish or containers for which inspection or reinspection is required under these regulations. All fish are subject to inspection and an inspector may take samples of fish free of charge for the purpose of inspection.

3. DEFINITIONS

Aseptic Sampling - sampling performed using sterile apparatus and methodologies to prevent microbiological contamination of the sample.

Attribute Sampling Plan - the decision to accept or reject a lot is dependent on the number of sample units which have or do not have a particular attribute, property or characteristic.

Container - any type of receptacle, package, wrapper, or confining band used in packing or marketing fish.

Consumer - the final user of a product.

Cull - removal of non-compliant units from a lot.

Destructive Inspection - an inspection in which the container or product is destroyed, modified or rendered unusable.

Inspector - a person designated as an Inspector pursuant to Section 17 of the Fish Inspection Act.

Lot - with respect to fish, other than fresh fish, means a shipment or part of a shipment of fish that is of the same species, is processed in the same manner by the same producer, is packaged in the same size of container and bears the same label. A lot of fresh fish refers to a shipment or part of a shipment of fish which has been processed in the same manner by the same producer in a 24-hour period. For fresh fish, the lot may contain more than one species of fish.

Lot size - the number of units of product in a lot.

Non-destructive Inspection - an inspection in which the container is not destroyed.

Pre-packaged product - any product packaged in a container in such a manner that it is ordinarily sold to, or used or purchased by a consumer without being re-packaged.

Random Sample - one in which all elements in the lot have an equal and independent chance of being included in the sample.

Representative Sample - one in which the sample units selected for the sample exhibit all the attributes of the lot proportionately.

Sample - a collection of one or more sample units selected from a lot for inspection. The sample comprises all of the sample units drawn for examination or testing purposes from a particular lot.

Sampling Plan - specifies the number of sample units required to make an accurate inspection decision (acceptance or rejection) on a lot. The number of sample units required may depend upon the net weight of the units, the number of units in the lot, and the type of hazard associated with the inspection analysis being performed.

Sample Size (n) - the number of sample units comprising the total sample drawn from a lot or production.

Sample Unit - one of a number of individual containers, or a portion of a fish or primary container examined or evaluated as a single unit.

4. POLICY

4.1 General

Only samples drawn in accordance with current, approved procedures by CFIA inspectors or other authorized personnel will be acceptable for Agency evaluation.

Any intervention or interference during sampling must be noted and reported because it may invalidate sampling.

A lot shall not consist of more than one species of fish with the exception of lots comprised of fresh fish.

Sample continuity is essential. Samples should be assigned a unique number, labeled with all pertinent information, and logged for

continuity purposes.

The integrity and condition of samples must be protected to ensure proper evaluation of the sample. Analyses will not be performed on product which has been compromised (damaged or deteriorated) in a manner which would result in an improper evaluation.

The selection of a sample for inspection should result in an official Inspection Report being issued to the owner or representative of the lot upon completion of the inspection.

4.2 **Sampling Plans and Inspection Levels**

Sampling plans are necessary to query one or more characteristics of a lot because not every unit in a large lot can be inspected. Sampling plans are designed to ensure defensible, statistically valid decision making regarding the acceptance or rejection of a lot.

For **sensory, chemical indicator, package integrity and net content** analyses, CFIA has adopted the FAO (Food and Agriculture Organization of the United Nations)/WHO (World Health Organization) Codex Alimentarius Sampling Plans for Prepackaged Foods (CAC/RM 42-1969). See Appendix A for details.

Selection of the appropriate Inspection Level is dependent on the current stage of inspection. Inspection Level I is chosen when the quality of the lot is not in question as in initial inspections. Inspection Level II is used when the quality of goods is in question and a referee method is required for the examination or re-examination of the lot (re-inspection). **An increased number of sample units affords greater protection against the inherent risk associated with sampling.**

The sampling plan for **Container Integrity** analysis was adopted from the Visual Inspection Protocol (VIP) developed by the Department of Fisheries and Oceans, Agriculture and Agri-Food Canada, and Health Canada.

The sampling plan for **microbiology and chemistry** was adopted from the International Commission on Microbiological Specifications for Foods (ICMFS).

5. PROCEDURES

The purpose of this section is to assist the inspector in the tasks of lot identification, equipment selection, sample selection, sample unit determination, sample storage and transportation, and sample labelling. The concepts of sample integrity and continuity are also addressed in the following sections.

5.1 Required Equipment

Use equipment, materials and apparatus which are appropriate for maintaining the condition of the sample in sample collection.

When drawing samples, ensure there is no potential for cross-contamination from equipment, materials and apparatus (e.g., aseptic for micro).

List of suggested equipment, materials and apparatus:

- forms as appropriate (master carton label report, Fish Inspection Worksheet, Visual Can Inspection Worksheet, Permission to Move Fish Under Detention form)
- Notice of Detention/Notice of Release/Held tags
- inspector notebook
- hand coverings (plastic gloves, rubber gloves)
- safety boots and rubber boots (for plant inspections), hard hat, coveralls, hairnet
- adhesive CFIA tape and clear adhesive tape
- utility knife
- marker
- hand towels
- plastic bags (various sizes), tags and labels
- flashlight
- thermometer
- sanitizer and saw
- cooler and ice packs

5.2 Locating and Identifying the Lot

Ensure all containers of product are available and accessible for sampling. Where applicable, obtain the following information prior to inspection to ensure the correct lot is being sampled:

- reason for inspection (e.g., initial inspection)
- location of the lot
- name and address of agent/owner
- lot size (number of cases, containers per case)
- lot codes and their interpretation
- brand name
- product type and style of pack
- container type and unit weight
- processing establishment
- country of origin or destination
- requirements for importing country when an export certificate is being issued.

5.3 Defining the Lot

Define the lot in accordance with the definition given in Section 3.0.

When dealing with fish or fish products which possess the same label, but are packaged in different styles (e.g., different sauces) consider the different styles to be of one lot.

5.4 Defining a Sample Unit

Define the sample unit according to the following instructions:

- a) When a lot consists of pre-packaged product, each package and the package thereof constitutes a sample unit.
- b) For fresh and frozen groundfish block and groundfish fillet or fresh and frozen finfish, the sample unit shall consist of a container of fish and the contents thereof.
- c) Use one of the following three approaches when sampling from **bulk packages**:
 - i) the sample shall consist of the bulk package and the contents thereof;
 - ii) for fresh or individually frozen whole or dressed finfish or fresh or individually frozen finfish fillets, the individual fish or fillet may be considered as a representative sub-sample;

iii) for scenarios other than described in section ii), a 1 kg sub-sample of product obtained from the bulk pack may be considered a representative sample.

Note: Refer to the sampling section of the individual product standard for further guidance.

- d) In lots consisting of salt or pickled fish packed in boxes or barrels, the container constitutes the sample unit. Inspect the entire contents of the container.
- e) When a lot of fresh fish consists of more than one species, all of the sample units used to form a sample shall consist of one species type.
- f) When inspecting large fish, each fish constitutes a sample unit. When an inspector has confidence a representative sub-sample may be obtained from a large, whole fish, the sub-sample becomes the sample unit. The sub-sample must be obtained in a manner which does not compromise the integrity of the sample.

To obtain a representative sub-sample from large, whole fish for chemical and microbiological analysis, take three 1" slices from each of the following areas: 1) behind the pectoral fins, 2) halfway between the first slice and the vent, and 3) behind the vent. These three slices form the sample unit, representing the large fish.

When sampling for sensory analysis, the three slice method described above is recommended. If in the inspector's view, fewer or more slices are required to make an accurate decision on the quality of the lot, the inspector may exercise his/her discretion to decide what constitutes a representative sample unit for that fish. If the inspector decides only one slice is required as a representative sub-sample from the fish, the one slice should not be taken from behind the vent because this slice does not usually exhibit signs of early decomposition.

5.5 Determining the Number of Sample Units Required

Determine the number of sample units required. The sample units needed for other analyses may be drawn from the units selected for sensory evaluation.

When a sample unit is drawn for more than one analysis, ensure the sample unit is of sufficient mass to perform all of the required analyses.

When microbiological analysis is required, submit the samples to the microbiological section for analysis first to ensure the integrity of the sample is not jeopardized.

For export certificates, there may be instances where the number of sample units required may be specified. Follow the directions associated with the export certificate.

5.5.1 Sensory, Net Content and Package Integrity

The sampling plan for these analyses is the Codex Alimentarius Sampling Plan for Pre-packaged Foods (CAC/RM 42-1969) found in Annex A. Decide which inspection level is appropriate (Level I for initial inspections and Level II for re-inspections).

Using the parameters of net weight per sample unit and the lot size (see Annex A), determine the number of sample units required for inspection. Note that the Sampling Plan in Annex A applies to destructive and non-destructive sampling for net content.

5.5.2 Container Integrity

When sampling, if any wet, stained or damaged cases are detected, stop sampling. Detain the entire lot until the source of the problem is determined. Once corrective action is taken, resume sampling.

If at any time during sampling, a leaker, swollen can or flipper is found, discontinue sampling until the lot has been evaluated to determine if the defect(s) is(are) due to under-processing or post-process contamination.

Initial Inspection

- ! Draw 200 sample units from a minimum of 40 cases with no more than 5 sample units being selected from each case.
- ! For lots with less than 200 sample units, inspect all units. Record the total number of containers on the report form.

Re-inspection

- ! Select a minimum of 250 cases. Draw 1250 cans from the cases but do not select more than 5 cans from one case.
- ! When there are fewer than 1250 units, examine each unit and record the number on the report form.

5.5.3 Sampling for Microbiological Analysis

5.5.3.1 General Procedures

It is essential that all samples accurately reflect microbiological conditions at the time that sampling is performed. To maintain sample integrity, follow the procedures listed below.

- ! Procure the samples aseptically so as to not contaminate the sample.
- ! Draw **five** sample units (minimum of 250 g per unit) per lot unless otherwise specified.

5.5.3.2 Sampling Running Water

- ! Collect the five sample units of water in clean containers of suitable size. Use a container with 100 to 200 mL capacity for routine water analysis.
- ! To obtain a representative sample from a tap, open the tap fully and allow the water to run for 2 or 3 minutes or a sufficient time to permit clearing of the service line.
- ! Leave sufficient head space in the water sampling container so the sample can be adequately mixed by shaking.

5.5.3.3 Procuring Ice Samples

- ! Take five sample units of ice from the ice storage area in sterile plastic jars or bags. Maintain the frozen state of the ice.

5.5.3.4 Sampling Raw Shellfish

- ! Examine samples of shellstock, shucked unfrozen shellfish, and live shellfish within 24 hours after collection. When analysis is unavoidably delayed beyond 24 hours, report the actual time elapsed between collection and analysis.

- ! Use heavy plastic bags (6 mil gauge) for shellstock collection to ensure that shells do not puncture the plastic and compromise the sample integrity.
- ! Take 5 units of 12-18 shellfish per unit. This number should ensure the selection of 10 sound animals suitable for shucking. Ensure the shellfish yield approximately 200 g of meats and shell liquor.
- ! Aseptically transfer the shellfish to the sample jar with sterile forceps or alternatively, samples of the final product may be taken in the packing cans or containers.
- ! Consumer packages are acceptable for examination.

5.5.4 Sampling for Chemical Analysis

5.5.4.1 General Sampling

- ! See Annex B for descriptions of chemical analyses.
- ! Chemical analyses require five sample units for initial inspection. For re-inspections, a sample size of ten units is required. For re-inspections of chemical indices analysis, use Inspection Level II of the sampling plan given in Annex A.
- ! Perform chemical analyses on edible tissue.
- ! Sample units chosen for chemical analysis should not undergo any adulteration (such as rinsing with water) which may change the chemistry results.
- ! All chemical analyses are performed on the edible portion of the product.

5.5.4.2 Additive and Proximate Analysis

- ! Draw five sample units each consisting of a minimum of 100 g. For sample units which are less than 100 g, submit all of the available sample for analysis.

5.5.4.3 Product Safety Parameters and Drug Residues

- ! Draw five sample units each consisting of a minimum of 200 g.
- ! When sampling for drug residue analysis, sample 5 entire fish or full fillet.
- ! Ensure that samples submitted for drug residue analysis are not exposed to areas or equipment where medicated feed has been stored or used.

5.5.4.4 Chemical Contaminants

- ! For lots which contain fish or fish products of similar size, draw five sample units each consisting of a minimum of 100 g.
Mercury: For lots which contain fish or fish products of varying sizes, draw five units which represent the size distribution in the lot.

5.5.4.5 Chemical Indicators

- ! The sampling plan for chemical indicators is analogous with that for sensory evaluation (Annex A). After performing the sensory evaluation, forward what remains of the sample to the chemistry laboratory immediately.

5.5.4.6 Other Chemical Testing

- ! For species identification testing, draw a minimum of **five** individual fish or fillets. Store the fish or fillets in five individual containers.
- ! For other types of chemistry sampling, draw five units of 100 g.

5.5.5 Sampling for Shellfish Toxin Analysis

5.5.5.1 Import and QMP samples

- ! Take 5 units of 12-18 shellfish per unit. This number should ensure the selection of 10 sound animals suitable for shucking. Ensure the shellfish yield approximately 200 g of meats and shell liquor.
- ! When sampling geoducks (*Panope generosa*), take three animals. Analysis is conducted on the viscera of the three animals.
- ! When sampling crabs, take three animals. Analysis is conducted on the viscera of the three animals.

5.5.5.2 Molluscan Shellfish Monitoring Program

- ! Take 1 unit of 12-18 shellfish. This number should ensure selection of 10 sound animals suitable for shucking. Ensure the shellfish yield approximately 200 g of meats and shell liquor.

5.6 Selecting Sample Units

Select a systematic random sample from the lot. Please refer to Annex C for further instruction. When an inspector thinks it is not possible to draw a true random sample, the inspector may draw a representative sample from the lot.

5.7 Labelling Samples

- a) Record details of sampling in a notebook (i.e., lot location, no. of samples drawn, unique identification no., time of sampling, codes drawn).
- b) Ensure all samples are accompanied by a completed sample information form. Include the following information where appropriate:
 - type of analysis required (sulphite, net weight, etc.)
 - country of origin
 - collection date and time
 - packer and packer code
 - shipment identification number
 - held tag number (if product is detained)
 - lot size and unit weight
 - samplers's name
 - lake code (body of water and landmarks), statistical area and sub-area
 - length and weight of fish (contaminant sampling)
 - number of units sampled
 - plant name and registration number
 - harvest site (shellfish samples)
 - harvest date (shellfish samples)
 - processing date
 - species and product type
 - farm and pen information (farmed fish)
 - inspection status and type (Alert, QMPR, random, etc.)
 - name of importer
 - analyses required for export certificate
 - cost recoverable (yes/no)
- c) Include any other relevant information when requesting **chemistry** analyses which would assist in performing the analysis or assessing the results, such as:

- i) for packaged fish, a copy of the label;
 - ii) observations of abnormal odours, taste, colours, or texture; and
 - iii) for species identification, the common name as labeled on the package of the product and the suspected substituted species.
- d) Mark or tag all samples using waterproof markers for identification purposes. In the case of large whole fish, tag each fish. Include the sample sheet in a separate plastic bag with the sample. Mark pre-packaged products as soon as the unit is drawn.
- e) Analyze the samples as soon as is practical after collection.

5.8 Sample Storage and Transportation

5.8.1 Special considerations regarding sample **shipping** and **storing**:

a) **Microbiology**

- i) Until the sample is analyzed, maintain the sample under conditions which will preserve the original bacterial flora as completely as possible. Maintain the sample at a maximum of 5 degrees Celsius. In some instances, samples must be frozen. Do not freeze samples unless the laboratory has been consulted. Freezing is undesirable because bacterial numbers may decrease in the sample.
- ii) Fresh samples must be refrigerated (5 degrees Celsius) until analyzed. When storing samples, remember that analysis of unfrozen product should take place within 24h of sampling. Note the time of sampling and the time of analysis. Reports must state whether or not the samples have been frozen.
- iii) Refrigerate (do not freeze) samples of shucked or live **shellfish** immediately after collection by packing in crushed ice and keeping them in ice until examined. The shellfish must not come into direct contact with ice. Care must be taken with these samples to minimize cold shock by insulating these samples from direct contact with refrigerant while still ensuring samples are chilled. For

example, frozen ice packs can be placed below and above the samples with insulating layers of newsprint or other food-quality insulating material placed between the refrigerant and the sample.

- iv) **Water samples:** The bacterial examination of impure water and sea water samples must begin within six hours of collection. The storage of water samples should not exceed 24 hours. Should this time limit be exceeded, record the actual time between sampling and analysis.

b) **Proximate analysis and chemical indicators**

Curtailling bacterial growth and limiting autolytic spoilage is facilitated through temperature control. Keep the product at a temperature below $-20\text{ }^{\circ}\text{C}$ where possible. Do not leave thawed samples on bench for any long period of time. The growth of bacteria in the sample may influence the analysis of the product. For **proximate analysis**, prevent the dehydration of the sample.

5.8.2 Sample Storage

Ensure that the integrity of the sample is maintained by proper storage. Maintain the state of the sample.

- a) Keep frozen samples in a freezer (at $-18\text{ }^{\circ}\text{C}$) or in a carton/cooler with ice packs and ship the sample as quickly as possible to ensure that the sample remains in the frozen state.
- b) Store unfrozen samples at refrigeration temperatures (below $5\text{ }^{\circ}\text{C}$). When the time of storage is lengthy, it may be necessary to freeze the samples.
- c) Keep cans at ambient room temperature.

5.8.3 Sample Shipping or Delivery

Samplers may have to ship samples to another location for testing or the samples may be delivered to other inspection personnel at the same location. When providing samples to other inspection staff at the same location, ensure the other staff are notified (with a hard copy of the sample sheet) and information regarding the location of the sample (freezer, cooler, etc.) when the sample is delivered.

When **shipping** a sample:

- a) make arrangements with receiving person at the laboratory prior to shipping the sample;
- b) address the shipment to the person and include the person's phone number;
- c) ensure perishable samples are properly marked for handling by the carrier;
- d) advise the laboratory of the estimated arrival time of the sample and the carrier information. If the inspector is not able to contact the laboratory or if the microbiology sample delivery cannot be completed within 24 hours, he/she should consider the merits of sampling at another time; and
- e) take special precautions when transporting samples of canned product that are obviously swollen or under pressure. Place swollen cans in plastic bags and transport inside a box or cooler.

5.9 Receipt by Laboratory

Log in the samples upon arrival at the laboratory, noting the time received and the condition at the time of receipt (i.e., physical damage, temperature). If the condition compromises the sample integrity, the sample may be rejected.

Check the sample information form to ensure all pertinent information has been included. If the form contains insufficient information, contact the inspector for the missing information (additions to be dated and initialed).

6. SAMPLING FOR EXTERNAL ORGANIZATIONS

Fish Inspection personnel may receive requests to perform sampling for external groups or organizations (e.g., provincial governments, other federal government departments). In these instances, the external organizations may have sampling policy and procedures that differ from those specified in this document. Please follow the procedures

specified by the organization requesting the sample when it is for their purposes.

7. **ANNEXES**

Annex A - Sampling Plans

Annex B - Categorization of Chemical Analyses

Annex C - Systematic Random Sampling

ANNEX A**SAMPLING PLAN
(Inspection Level I)**

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)
4,800 or less	6
4,801 - 24,000	13
24,001 - 48,000	21
48,001 - 84,000	29
84,001 - 144,000	48
144,001 - 240,000	84
more than 240,000	126

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
2,400 or less	6
2,401 - 15,000	13
15,001 - 24,000	21
24,001 - 42,000	29
42,001 - 72,000	48
72,001 - 120,000	84
more than 120,000	126

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
600 or less	6
601 - 2,000	13
2,001 - 7,200	21
7,201 - 15,000	29
15,001 - 24,000	48
24,001 - 42,000	84
more than 42,000	126

SAMPLING PLAN
(Inspection Level II)

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)
4,800 or less	13
4,801 - 24,000	21
24,001 - 48,000	29
48,001 - 84,000	48
84,001 - 144,000	84
144,001 - 240,000	126
more than 240,000	200

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
2,400 or less	13
2,401 - 15,000	21
15,001 - 24,000	29
24,001 - 42,000	48
42,001 - 72,000	84
72,001 - 120,000	126
more than 120,00	200

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)
600 or less	13
601 - 2,000	21
2,001 - 7,200	29
7,201 - 15,000	48
15,001 - 24,000	84
24,001 - 42,000	126
more than 42,000	200

ANNEX B**CATEGORIZATION OF CHEMICAL ANALYSES**

Chemical analyses of samples can be divided into five categories: (A) additives and proximate analysis, (B) product safety parameters and drug residue, (C) chemical contaminants, (D) chemical indicators, and (E) other chemistry testing. If categorizing the analysis proves difficult, consult the testing laboratory.

A) Additives are chemicals added to the product during processing in order to preserve it in some manner, modify the colour, modify the taste, or alter the characteristics of the product. The application methods for these substances may vary which affects the distribution of the substance in the product. Substances included in this category are sulphite (bleaching agent), benzoate (preservative), and saccharin (sweetener).

Proximate Analyses are those analyses used to determine the components of a product and the percentage of those components in a product including fat, protein, moisture.

B) Product safety parameters are those parameters which are used to curtail bacterial growth in a product and prolong the product shelf life. The parameters may be used in combination in a product or only one parameter may be controlled to prevent bacterial growth. Salt, water activity, and pH are included in this category.

Drug Residue is residue that has resulted from the application of antibiotics or similar substances to the fish to prevent or treat disease. Tetracyclines, sulfonamides, and chloramphenicol are included in this category.

C) Chemical contaminants are substances which are present in the fish products as a result of the environmental conditions to which the fish was exposed. Organic contaminants concentrate in the lipid portion of the fish whereas inorganic contaminants are more uniformly distributed throughout the muscle (protein) tissue. Mercury, PCBs, and Mirex are included in this category.

D) Chemical Indicators (quality indices) are substances which are produced from decomposition processes that are occurring in the fish. Chemical testing is often used to corroborate results from sensory analysis. Quality indices include histamine, indole, and total volatile base

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nitrogen (TVBN).

- E) **Other chemistry testing** refers to testing which does not correspond with one of the afore-mentioned categories. The tests contained in this category cannot be grouped with other tests. Species identification by electrophoresis is included in this category.

ANNEX C

SYSTEMATIC RANDOM SAMPLING

1. Identify the N units in the population to be sampled by serially numbering them from 1 to N .
2. If a sample of size n is desired, find an integer k , called the sampling interval, where $k=N/n$. (round up)
3. Randomly select a number j between 1 and k .
4. The required systematic sample is then produced by the population units corresponding to the numbers: $j, j + k, j + 2k, \dots, j + (n-1)k$.

Example:

Lot of 2.2 kg packages of frozen, block shrimp

Number of cases:	2000
Boxes per case:	6
Lot Size (N):	12,000 cases
Number of sample units required (n):	13

Procedure:

1. Serially number the packages from 1 to 12,000 according to their placement on the skid.
2. Evaluate the sampling interval as $k = N/n = 12,000/13 = 923$.
3. Choose a random number (j) between 1 and 923, e.g., 11.
4. The packages of shrimp selected to make up a systematic sample of size 13 will then be those which position numbers are:

$j, j + k, j + 2k, \dots, j + 12k$
 11, 11 + 923, 11 + (2 x 923), ..., 11 + (12 x 923)
 11, 934, 1857 , ..., 11087

that is, select the 11th package and every 923rd package after that until thirteen packages have been identified.

SAMPLING PLAN 1

(Inspection Level I, AQL = 6.5)

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)	Acceptance Number	
		No.	(c) *
4,800 or less	6	1	(0)
4,801 - 24,000	13	2	(1)
24,001 - 48,000	21	3	(2)
48,001 - 84,000	29	4	(3)
84,001 - 144,000	48	6	(4)
144,001 - 240,000	84	9	(6)
more than 240,000	126	13	(9)

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance number	
		No.	(c) *
2,400 or less	6	1	(0)
2,401 - 15,000	13	2	(1)
15,001 - 24,000	21	3	(2)
24,001 - 42,000	29	4	(3)
42,001 - 72,000	48	6	(4)
72,001 - 120,000	84	9	(6)
more than 120,000	126	13	(9)

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance Number	
		No.	(c) *
600 or less	6	1	(0)
601 - 2,000	13	2	(1)
2,001 - 7,200	21	3	(2)
7,201 - 15,000	29	4	(3)
15,001 - 24,000	48	6	(4)
24,001 - 42,000	84	9	(6)
more than 42,000	126	13	(9)

* The figure in brackets under the Acceptance Number (c) indicates the Acceptance Number for decomposition.

SAMPLING PLAN 2
(Inspection Level II, AQL = 6.5)

Net weight is equal to or less than 1 kg (2.2 lb)

Lot Size (N)	Sample Size (n)	Acceptance Number	
		No.	(c) *
4,800 or less	13	2	(1)
4,801 - 24,000	21	3	(2)
24,001 - 48,000	29	4	(3)
48,001 - 84,000	48	6	(4)
84,001 - 144,000	84	9	(6)
144,001 - 240,000	126	13	(9)
more than 240,000	200	19	(13)

Net weight is greater than 1 kg (2.2 lb) but not more than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance Number	
		No.	(c) *
2,400 or less	13	2	(1)
2,401 - 15,000	21	3	(2)
15,001 - 24,000	29	4	(3)
24,001 - 42,000	48	6	(4)
42,001 - 72,000	84	9	(6)
72,001 - 120,000	126	13	(9)
more than 120,000	200	19	(13)

Net weight is greater than 4.5 kg (10 lb)

Lot Size (N)	Sample Size (n)	Acceptance Number	
		No.	(c) *
600 or less	13	2	(1)
601 - 2,000	21	3	(2)
2,001 - 7,200	29	4	(3)
7,201 - 15,000	48	6	(4)
15,001 - 24,000	84	9	(6)
24,001 - 42,000	126	13	(9)
more than 42,000	200	19	(13)

* The figure in brackets under the Acceptance Number (c) indicates the Acceptance Number for decomposition.