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Sampling plan - Illustrative Guide explanatory text

Submitted by the secretariat

The following document is submitted to the Working Party for adoption as the explanatory text to be used in the Illustrative Guide of the United Nations Economic Commission for Europe (UNECE) sampling plan for tree nuts and dried produce.

The document is prepared according to ECE/CTCS/2017/10 section II c and ECE/CTCS/2018/2 section VII a.

Explanatory text - United Nations Economic Commission for Europe Illustrative Guide of the sampling plan

Note by the secretariat: The following document contains explanatory text. It is not a stand-alone document. This text will be combined with photos and the text of the sampling plan. The text follows the order of the Illustrative Guide. For resource efficiency, repetitive text has been omitted. The numbering refers to the Sections of the Sampling Plan.

2.3 Place of control

Illustration: Sampling of produce at arrival or import. The produce is presented in the transport vehicle.

3.0 Sampling

Illustration: In order to allow random sampling, the transport vehicle must be unloaded – at least to a degree that it is possible to take primary samples from each part of the lot. This means, at the arrival point, the produce must have been unloaded, and at dispatch point, the produce must be inspected before it is loaded onto the transport vehicle.

Workflow of sampling a lot

Primary samples	initial 5 (or 10) packages
Secondary samples	300-1000 g each
Composite sample	minimum 3 kg
Reduced sample	Minimum: 2 x 100 nuts in shell 1 kg + 1 kg nut kernels, 1 kg + 1 kg dried grapes 2 x 1 kg sticky and irregular dried produce

Example 1

Inspection of Inshell Walnuts

Size of the lot: 1,100 kg net weight, 100 bags à 10 kg

The lot is checked for conformity with UNECE Standard DDP-01 (2014) for Inshell Walnuts.

2.5 Presentation of produce

Illustration: Primary samples are presented by the trader and selected by the inspector.

3. Sampling

lllustration: Primary samples must be selected at random from the lot and they must be taken from different pallets of the lot.

3.1. Bulk sample in case of initial sampling

Illustration: 5 primary samples have been selected.

2.3 Place of inspection

lllustration: Example of place of inspection.

3.6.2 Verification of marking (1)

Illustration: The print on the bag shows the obligatory indications such as name and address of the dispatcher, the country of origin and the nature of produce. On a voluntary basis, the net weight and the information “of controlled production” are indicated.

3.6.2 Verification of marking (2)

Illustration: The obligatory indications are highlighted in red, the optional indications in green. Result of inspection: All obligatory indications are present.

3.3 Size of the secondary sample

Illustration: A secondary sample of about 1 kg is taken from the first bag and the four other bags taken as primary samples.

3.4 Size of the composite sample (1)

Illustration: This carton contains the composite samples made of the five secondary samples. The size of the composite sample was about 5 kg.

3.4 Size of composite sample (2)

Illustration: The composite sample is mixed by means of a laboratory tray.

3.6.5 Verification of characteristics of the produce (1)

Illustration: The indicated size is 32-34 mm. A reduced sample of 200 nuts in shell is checked for uniformity in size. The check is done by means of round-hole sieves of 32, 33, 34, 35 and 36 mm stacked one on top of the other.

3.6.5 Verification of characteristics of the produce (2)

Illustration: The reduced sample is shaken and the number of nuts meeting the size of the respective sieve is determined.

3.6.5 Verification of characteristics of the produce (3)

Illustration: Example of an inspection sheet. In this case: 15 % of the nuts are larger than 34 mm. The uniformity of the indicated size (32-34 mm) is not met and the tolerance of 10 % is exceeded.

3.5 Size of the reduced sample

Illustration: The nuts are placed in 2 trays with 100 depressions/indentations each.

3.6.5 Verification of characteristics of the produce (1)

Illustration: The reduced sample of inshell walnuts is assessed for defects of the shell. In one tray 11 out of 100 nuts are set aside for defects of the shell. These 11 nuts are checked to determine whether the defects are within the limits allowed.

3.6.5 Verification of characteristics of the produce (2)

Illustration: 5 out of the 11 walnuts with defects of the shell are exceeding the tolerances for external defects.

3.6.5 Verification of characteristics of the produce (3)

Illustration: In the second tray 8 out of 100 nuts are exceeding the tolerances for defects of the shell. These 8 nuts are checked to determine whether the defects are within the limits allowed.

3.6.5 Verification of characteristics of the produce (4)

Illustration: In the reduced sample of 200 inshell nuts, 13 nuts are exceeding the limits for skin defects defined in the minimum requirements. The next photo shows more details.

3.6.5 Verification of characteristics of the produce (5)

Illustration:

4 units misshapen

6 units dirty; adhering foreign matter exceeding 10 % of the surface area

1 unit cracked; missing portion of the shell exceeding in aggregate an area of a circle one-fourth inch (6 mm)

2 units blemishes; exceeding in aggregate 25 per cent of the surface of the shell

Class I: Tolerances for defects affecting the external appearances of the shell such as shells with adhering husk/hull, dirt and blemishes, open, broken or damaged shells: 10 %

In this reduced sample: 13 out of 200 nuts have defects affecting the external appearance of the shell = 6.5 %

The lot is in conformity with respect to external defects.

3.6.5 Verification of characteristics of the produce (6)

Illustration: The reduced sample is cracked to assess possible defects affecting the edible part. Care must be taken that the kernel remains more or less intact. It is recommended to crack the nuts with a hammer and to strike on the convex side of the nut.

3.6.5 Verification of characteristics of the produce (7)

Illustration: A cracked nut with a kernel largely unbroken.

3.6.5 Verification of characteristics of the produce (8)

Illustration: First step: The cracked nuts (kernel and shells) are placed in the tray. Second step: one by one, the shells are eliminated, and the kernels are checked. Kernels are placed in an empty tray – the kernels without any defect are placed in the tray from the bottom line to the top, the defective kernels are placed from the top row to the bottom.

3.6.5 Verification of characteristics of the produce (9)

11 units mouldy

8 units shriveled; i.e. dried tough portions affecting more than 25 per cent of the kernel

3.6.5 Verification of characteristics of the produce (10)

For clarification: the photo on the left shows “mould visible to the naked eye”, while the photo on the right shows a kind of “duvet” which is not assessed as mould.

3.6.6 Determination of inspection result (1)

Result of the inspection:

100 % complete labelling

6 % external defects or defects of the shell – in conformity (standard 10 % for Class I)

4 % mouldy kernels – in conformity (standard 4 % for Class I)

6 % shrivelled kernels – in conformity (standard 10 % for Class I)

Total of 9 % of defects affecting the edible part (standard 10 % for Class I).

15 % lager size than indicated – not in conformity (standard 10 % for Class I)

As the lot shows defects exceeding the size tolerances, the size of the sample must be increased as specified in the sampling plan.

3.6.6 Determination of inspection result (2)

The result of inspection is representative for the lot, as all samples (primary, secondary and reduced sample) are taken at random.

In the case where defects are detected, the inspector shall determine the respective percentage of the produce not in conformity with the standard by number or weight – as specified in the standard.

If the percentage of defects found is close +/- 10 per cent to the tolerance another bulk sample, equal in number to the first sample, must be checked. The overall result is reported as an average of the two checks.

The final result is given as a rounded integer.

2. Sample size in case of non-conformity

The bulk sample shall comprise the following minimum quantities whenever a lot is declared unsatisfactory: 7 packages in case of lots consisting of 101 to 300 packages.

The lot in the given example consists of 110 packages. 5 packages have been taken for the initial inspection. Another 2 packages have to be taken as samples.

Moreover, with respect to the 3rd paragraph of 2.8.4, a second bulk sample has to be taken.

In order to fulfil both requirements, a second sample of 9 packages must be taken and this second bulk sample must be checked.

3.6.6 Determination of inspection result (3)

Result of the inspection of two bulk samples:

Defect	*1. Bulk sample = 5 packages; reduced sample = 200 nuts*	*2. Bulk sample = 4 packages; reduced sample = 200 nuts*	*Total bulk sample = 9 packages; reduced sample = 400 nuts*	*In conformity with Class I*	
Defects of the shell	***13***	***10***	***23 = 5.7% ≡ 6%***	***Ok (10% allowed)***	
Mouldy kernels	***8***	***9***	***17 = 4.2% ≡ 4%***	***Ok (4% allowed)***	***9% mouldy and shrivelled = ok as a maximum of 10% of kernels not satisfying the minimum requirements are allowed in Class I***
Shrivelled kernels	***11***	***8***	***19 = 4.7% ≡ 5%***	***Ok (10% allowed)***	
Sizing	***30***	***20***	***50 = 12.5 % ≡ 13%***	***No (10% allowed)***	

The lot is not in conformity with Class I

13 % of oversize nuts exceed the tolerance of 10 %.

A non-conformity report must be issued. The final result is given as a rounded integer.

Possible follow-up: The lot is resized to eliminate the oversizes or the indication of the size is changed to “32 mm and above”.

Example 2

Inspection of Almond Kernels

Size of the lot: 19,960 kg net weight; 20 big bags à 998 kg each

The lot is checked for conformity with UNECE Standard DDP-06 (2016) for Almond Kernels.

3. Sampling

lllustration: Primary samples must be selected at random from the lot. In case of big bags, these big bags are the primary samples. Different big bags have to be selected.

3.1 Bulk sample in case of initial sampling

Illustration: 5 big bags out of the 20 in the lot are selected as primary samples.

2.5 Presentation of produce

Illustration: The overall appearance of the content of the primary samples is checked.

3.6.2 Verification of marking

Illustration: One label on the big bag provides handling advice for the big bag. The country of origin “China” does not refer to the produce contained in the bag but to the bag.

3.6.2 Verification of marking

Illustration: The obligatory indications are highlighted in red, the optional indications in green. Result of inspection: Missing indications: class and address of the dispatcher.

2.4 Inspector's equipment

Illustration: Equipment to take samples from a big bag.

3. Sampling (1)

Illustration: Taking the secondary samples at random, i.e. from different parts of the big bag.

3. Sampling (2)

Illustration: The big bag has to be sealed carefully after the secondary sample has been taken.

3. Sampling (3)

Illustration: Taking the secondary samples at random, i.e. from different parts of the big bag.

3. Sampling (4)

Illustration: Taking the secondary samples at random, i.e. from different parts of the big bag.

1.17 Reduced sample

Illustration: In order to check the size, the reduced sample of 3 x 30 g (≈ 1 ounce) is taken from the composite sample. This sample size is determined by the industry.

3.6.5 Verification of characteristics of the produce (1)

Illustration: The indicated size is 23/25. The size checked is 24/25. The lot is in conformity.

3.6.5 Verification of characteristics of the produce (2)

Illustration;

4 doubles and twins – no defect

2 shrivelled; i.e. tough portions exceeding 25 % of the kernel = 0.3 %

3 pieces, i.e. more than 1/8 missing = 0.2 %

4 dark kernels, i.e. discolouration exceeding 20 % of the surface = 0.4 %

5 mechanical damage; i.e. less than 1/8 missing = no defect

32 scratched kernels; i.e. less than1/8 missing = no defect

3.6.6 Determination of inspection result (1)

Result of the inspection of the bulk sample:

Defect	*Reduced Sample = 1,000 g*	*Percentage*	*In conformity with Class I*
Pieces	***2 g***	***0.2***	***Ok (3 % allowed)***
Shrivelled kernels	***3 g***	***0.3***	***Ok (2 % allowed)***
Dark colour (discolouration exceeding 20 % of the surface)	***4 g***	***0.4***	***Ok (3 % allowed)***
Labelling address of dispatcher and class are missing		***100***	***No tolerance granted***

Because of the incomplete labelling, the lot is not in conformity with the standard. As the bulk sample of 5 primary samples is of the appropriate size to state a non-conformity. A non-conformity report must be issue.

Possible follow-up: Correction of the labelling – add address and class.

3.6.6 Determination of inspection result (2)

Illustration: Example of an inspection report.

Example 3

Inspection of Dried Grapes

Size of the lot: 22,000 kg net weight; 1,760 cartons à 12.5 kg each

The lot is checked for conformity with UNECE Standard DDP-11 (2016) for Dried Grapes.

2.5 Presentation of produce

Illustration: Primary samples are selected by the inspector and presented by the trader.

3.1. Bulk sample in case of initial sampling

Illustration: 5 primary samples have been selected at random from the lot. Cartons are restacked to take the primary samples from different parts of the pallet.

3.6.2 Verification of marking (1)

Illustration: The obligatory indications on the label of the pallet are highlighted in red, the optional indications in green.

Result of inspection: Missing indications: class and address of the dispatcher.

3.6.2 Verification of marking (2)

Illustration: The obligatory indications on the package are highlighted in red.

Result of inspection: Missing indications: class and size.

3.1. Bulk sample in case of initial sampling

Illustration: In this case, the inspector decided to take 3 samples only – because of previous inspection results he/she saw a low risk for non-conformity.

3.3 Size of the secondary sample

Illustration: The secondary sample has to be taken at random from the primary sample. In case of sticky produce such as dried grapes, the produce must be loosened before the secondary sample can be taken. Another option would be to open some of the primary samples on the bottom side to get secondary samples from those parts as well.

3.5 Size of the reduced sample

Illustration: Two bowls are filled with 1 kg of dried grapes from the composite sample. This makes the reduced sample.

3.6.5 Verification of characteristics of the produce (1)

Illustration: To check for correct sizing, the number of dried grapes per 100 g are counted. Result 223 units per 100 g.

3.6.5 Verification of characteristics of the produce (2)

Illustration: The reduced sample consists of 2 x 1 kg. The first kg is checked for defects.

3.6.5 Verification of characteristics of the produce (3)

Illustration: The defects found in the first kg are set aside.

3.6.6 Determination of inspection result (1)

Result of the inspection of the bulk sample made of three primary samples:

Defect	*Reduced sample 1,000 g*	*Percentage*	*In conformity with Class I*
Sugared	***10 g***	***1 %***	***Ok (10 % allowed)***
Shrivelled	***6 g***	***0.6 ≡ 1 %***	***Ok (10 % allowed)***
Damaged	***7 g***	***1.2 ≡ 1 %***	***Ok (3 % allowed)***
Sunburn	***5 g***		
Labelling address of dispatcher and class are missing		***100 %***	***No tolerance granted***

3.6.6 Determination of inspection result (2)

Result of the inspection:

100 % incomplete labelling (address of dispatcher, class and size are missing)

1 % sugared dried grapes – in conformity (standard 2 % for Class I)

1 % shrivelled dried grapes – in conformity (standard 3 % for Class I)

1 % damaged and sunburnt – in conformity (standard 3 % for Class I)

Because of incomplete labelling, the lot is the not in conformity with the standard. As the bulk sample of 5 primary samples is of the appropriate size to state a non-conformity, a non-conformity report must be issued.

Possible follow-up: Correction of the labelling – add address and class. In case the lot is going to be re-packed in sales packages, the inspector may decide that the correct labelling must only be done after re-packing.

Example 4

Inspection of Dried Grapes in Izmir

Size of the lot: 480 cartons à 12.5 kg = 6,000 kg total weight

9 cartons are taken as the bulk sample

Note: With respect to the lot size, a minimum of 9 packages must be examined before a lot can be declared unsatisfactory.

The lot is checked for conformity with UNECE Standard DDP-11 (2016) for Dried Grapes.

2.3 Place of inspection

lllustration: Example of place of inspection.

2.5 Presentation of produce

Illustration: Primary samples are presented by the trader and selected by the inspector.

3. Sampling (1)

Illustration: Primary samples must be selected at random from the lot and they must be taken from different pallets of the lot.

3. Sampling (2)

Illustration: The inspector marks the cartons to be taken as primary samples.

3. Sampling (3)

Illustration: Primary samples must be selected at random from the lot and they must be taken from different pallets of the lot. Cartons are restacked to take the primary samples from different parts of the pallet.

3.6.2 Verification of marking

Illustration: The obligatory indications on the label of the pallet are highlighted in red, the optional indications in green.

Result of inspection: Missing indications: name and address of the dispatcher.

3.1. Bulk sample in case of initial sampling

Illustration: Due to the size of the lot, the inspector decides to select 9 primary samples.

3.6.1 Verification of packaging and presentation (1)

Illustration: After fixing the tare weight, the net weight of each primary sample is checked.

3.6.1 Verification of packaging and presentation (2)

Illustration: The overall appearance of all primary samples is checked.

3.3 Size of the secondary sample (1)

Illustration: In case of sticky produce such as dried grapes, the produce must be loosened before the secondary sample can be taken. The primary sample is completely emptied and loosened.

3.3 Size of the secondary sample (2)

Illustration: The content of the primary sample has been loosened. The content is checked for foreign material loose in the package.

3.3 Size of the secondary sample (3)

Illustration: From each of the first two primary samples, a secondary sample of about 1 kg has been taken and placed in the corner of the inspection table. The inspector is checking the third primary sample.

3.4 Size of the composite sample (1)

Illustration: The composite sample consisting of 9 secondary samples is evenly mixed.

3.4 Size of the composite sample (2)

Illustration: From the composite sample, about 1 kg is taken as a first step to take the reduced sample.

3.4 Size of the composite sample (3)

Illustration: From the 1 kg sample, the reduced sample of 100 g is taken.

3.5 Size of the reduced sample

Illustration: From the 1 kg sample, the reduced sample of 100 g is taken.

3.6.5 Verification of characteristics of the produce (1)

Illustration: Verifying the correct sizing, by counting the number of dried grapes in the reduced sample of 100 g. Result: 348 units per 100 g (indicated on the label: Medium = 320-380 units per 100 g).

3.6.5 Verification of characteristics of the produce (2)

Illustration: Verifying the correct quality, by counting the number of dried grapes in the reduced sample of 100 g.

3.6.5 Verification of characteristics of the produce (3)

Illustration: Defective dried grapes found in 100 g are weighed. Here 0,2 g mouldy.

3.6.6 Determination of inspection result (1)

The result is presented in the inspection report.

3.6.6 Determination of inspection result (2)

Result of the inspection of the reduced sample:

Defect	*Reduced sample of 100 g*	*Percentage calculated on the basis of 100 g*	*In conformity with Class I*
Undeveloped	***4.2 g***	***4.2 ≡ 4 %***	***No***
Mouldy	***0.2 g***	***0.2 ≡ 0 %***	***Yes***
Rotten	***1.4 g***	***1.4 ≡ 1 %***	
Foreign material	***4.2 g***	***4.2 ≡ 4 %***	
Labelling address of dispatcher and class are missing		***100 %***	***No tolerance granted***

3.6.6 Determination of inspection result (3)

Result of the inspection:

100 % incomplete labelling – not in conformity

0 % undeveloped dried grapes – not in conformity (standard 3 % for Class I)

0 % mouldy – in conformity (standard 3 % for Class I)

0 % rotten – in conformity (not explicitly mentioned in the standard, thus up to 10 % in total tolerance for units not meeting the minimum requirements)

0.05 % foreign matter – not in conformity (standard 0.02 % for Class I)

The lot is not in conformity with the standard. As the bulk sample of 9 primary samples is of the appropriate size to state a non-conformity, a non-conformity report must be issue.

Possible follow-up: Re-grading.

Example 5

Inspection of Dried Apricots in Izmir

Size of the lot: 200 cartons à 12.7 kg = 2,540 kg total weight

7 cartons are taken as bulk sample.

Note: With respect to the lot size, a minimum of 7 packages must have been examined before a lot can be declared unsatisfactory.

The lot is checked for conformity with UNECE Standard DDP-15 (2016) for Dried Apricots.

2.5 Presentation of produce

Illustration: Primary samples are presented by the trader and selected by the inspector.

3. Sampling

Illustration: Primary samples must be selected at random from the lot and they must be taken from different pallets of the lot.

3. Sampling

Illustration: Primary samples must be selected at random from the lot and they must be taken from different pallets of the lot. Cartons are restacked to take the primary samples from different parts of the pallet.

3.6.2 Verification of marking

Illustration: The obligatory indications on the label of the pallet are highlighted in red, the optional indications in green.

Result of inspection: Missing indications: name and address of the dispatcher.

3.1. Bulk sample in case of initial sampling

Illustration: Due to the size of the lot (200 packages), the inspector decides to select 7 primary samples. Thus, in case of non-conformity an additional sampling will not be necessary.

3.6.1 Verification of packaging and presentation (1)

Illustration: After fixing the tare weight, the net weight of each primary sample is checked.

3.6.1 Verification of packaging and presentation (2)

Illustration: The general appearance of all primary samples is checked.

3.3 Size of the secondary sample

Illustration: In case of sticky produce such as dried apricots, the produce must be loosened before the secondary sample can be taken. The primary sample is completely emptied and loosened. In the corner of the inspection table: The secondary sample set aside is from the first primary sample – about 2 kg.

3.4 Size of the composite sample

Illustration: The composite sample is taken from the secondary samples (here about 2 kg each). The composite sample about 14 kg.

3.5 Size of the reduced sample

Illustration: The reduced sample of 997 g is taken from the composite sample.

3.6.5 Verification of characteristics of the produce

Illustration: Verifying the correct sizing, by counting the number of dried apricots in the reduced sample of 997 g. Result: 155 units per 997 g (indicated on the label: size = 4 = 141-160 units per kg).

3.6.5 Verification of characteristics of the produce (1)

Illustration: Verifying the correct quality, by counting the number of dried apricots in the reduced sample of 997 g.

3.6.5 Verification of characteristics of the produce (2)

Illustration: Defective dried apricots found in 1,000 g are weighed; here 41 g of dried apricots are affected by serious sunburn.

3.6.6 Determination of inspection result (1)

Result of the inspection of the reduced sample:

The tolerances may be determined by weight or by number.

	By weight		*By number*	
Defect	*Reduced sample of 997 g*	*Percentage*	*Reduced sample 155 units*	*Percentage*
Substantial defects in colour or texture, heat injury and sunburn	***41 g***	***4.1 ≡ 4 %***	***7***	***4.5 ≡ 5 %***
Spotted	***17 g***	***1.7 ≡ 2 %***	***3***	***1.9 ≡ 2 %***
Lesion and calluses	***8 g***	***0.8 ≡ 1 %***	***1***	***0.6 ≡ 1 %***
Labelling **address of dispatcher and class are missing**		***100 %***		

3.6.6 Determination of inspection result (2)

Result of the inspection – tolerances determined by weight:

4 % substantial defects in colour or texture, heat injury and sunburn – in conformity (standard 8 % for Class I)

2 % spotted – in conformity (standard 5 % for Class I)

1 % lesions and calluses – in conformity (standard 6 % for Class I)

Result of the inspection – tolerances determined by number:

5 % substantial defects in colour or texture, heat injury and sunburn – in conformity (standard 8 % for Class I)

2 % spotted – in conformity (standard 5 % for Class I)

1 % lesions and calluses – in conformity (standard 6 % for Class I)

Because of incomplete labelling, the lot is not in conformity with the standard. As the bulk sample of 7 primary samples is of the appropriate size to state a non-conformity, a non-conformity report must be issued.

Possible follow-up: Correction of the labelling – add address and class.