

CODEX ALIMENTARIUS COMMISSION



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Agenda Item 7

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ORIGINAL LANGUAGE ONLY

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON CONTAMINANTS IN FOODS

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REPORT OF THE PRE-SESSION WORKING GROUP ON SAMPLING PLANS FOR TOTAL AFLATOXINS AND OCHRATOXIN A IN CERTAIN SPICES

(Prepared by India, the Chair of the PWG)

Summary based on submitted CRDs and discussion had with member countries on 22-06-2025

1. Based on the CRDs submitted by member countries including the USA, Singapore, Thailand, Kenya, Panama, Tanzania, EU, Brundi and Uganda, the comments were compiled and systematically analyzed.
2. A key inconsistency was observed in Table 1, specifically in the last row under "Lot weight (tonne)" where the value was mentioned as <15. This was not aligned with Table 2, which begins with ≤15, thereby creating a gap in the range between 15 and 25 tonnes. Additionally, Table 1 lists categories starting from ≥500 tonnes to ≥25 tonnes, while Table 2 begins from ≤0.1 up to <15 tonnes, omitting the intermediate range of 15–25 tonnes. To resolve this discrepancy, both Table 1 and Table 2 were revised, replacing the value "15" with "25" to ensure continuity and consistency.
3. To further enhance clarity, the phrase "(for lots <25 tonnes)" was added to the titles of Tables 2, 4, and 6, clearly distinguishing these from other tables that apply to higher lot weight categories.
4. During the discussion, Brazil pointed out a discrepancy in Table 1, last row, where the aggregate sample weight was initially listed as 10 kg. This was revised to 1–10 kg to reflect the variable number of incremental samples (10–100).
5. The European Union (EU) proposed changing the incremental sample weight from 100 g to 200 g to better represent the heterogeneity of spice samples. However, this suggestion was not adopted, as CCCF17 had already discussed and agreed to retain the 100 g standard due to the high value of spices and strong support from other member countries.
6. Another member country highlighted that while an increasing trend in aggregate sample weight is provided for lot weights below 25 tonnes, a uniform 10 kg is applied for larger lot sizes. It was clarified that for smaller lot sizes (e.g., 100 kg), collecting a 10 kg aggregate sample would be disproportionate (i.e., 10% of the lot). Therefore, for lot sizes up to 25 tonnes, incremental sampling with corresponding aggregate sample weight adjustments was considered appropriate.
7. In response to member country comments and scientific justification provided by the EU, the incremental sample weight listed below Table 5 was updated from 40 g to 80 g. Accordingly, the values under Tables 5 and 6 for aggregate sample weight were revised to a range of 0.24 to 4 kg.
8. In Table 7, under the column "Analyte" for AFB1, the previously indicated ML of 15 µg/kg was replaced with "None", in line with the discussion at CCCF11 (REP17/CF para 118), which concluded that only total aflatoxins (AFT) should be considered, as it includes AFB1.

Conclusion

9. The lot weight category of <15 tonnes was revised to <25 tonnes in Tables 1 and 2 to ensure logical continuity and eliminate range gaps.
10. The 100 g incremental sample weight was retained for both large and small particle size spices, consistent with previous CCCF decisions.
11. The earlier value of 40 g for incremental samples was removed, and 80 g was adopted based on scientific input and member comments. Consequently, aggregate sample weights in Tables 5 and 6 were updated to 0.24 to 4 kg.

12. The ML value of 15 µg/kg for AFB1 was removed and replaced with "None" in Table 7, reaffirming that only total aflatoxins (AFT) are to be considered, as endorsed by CCCF11.

Recommendation

13. CCCF18 is invited to forward the sampling plan (Appendix I) to CAC48 for adoption.

APPENDIX I

**SAMPLING PLAN FOR TOTAL AFLATOXINS AND OCHRATOXIN A IN
NUTMEG, DRIED CHILLI AND PAPRIKA**

A) Spices with large particle size (Whole nutmeg, whole dried chilli and whole paprika)

In case of large lots and on condition that the subplot can be separated physically, each lot shall be subdivided into sublots following Table 1. Taking into account that the weight of the lot is not always an exact multiple of the weight of the sublots, the weight of the subplot may exceed the mentioned weight in Table 1 by a maximum of 20 %.

**Table 1: Subdivision of Spices sublots according to lot weight
– Whole nutmeg, whole dried chilli and whole paprika –**

Lot weight (tonne)	Weight or number of sublots	No incremental samples	Aggregate sample weight (kg)
≥ 500	100 tonnes	100	10
> 125 and < 500	5 sublots	100	10
≥ 25 and ≤ 125	25 tonnes	100	10
< 15 < 25	—	10-100 (*)	1 -10
(*) Depending on the lot weight — see Table 2.			

Each sub-lot shall be sampled separately. The number of incremental samples of 100 g to be taken depends on the weight of the lot, with a minimum of 10 and a maximum of 100. The figures in the following Table 2 shall be used to determine the number of incremental samples to be taken and the subsequent division of the aggregate sample.

**Table 2: Number of incremental samples to be taken according to lot weight
– Whole nutmeg, whole dried chilli and whole paprika – ~~(for lots <25 tonnes)~~**

Lot weight (tonnes)	No of incremental samples	Aggregate sample Weight (kg)
≤ 0.1	10	1
> 0.1 – ≤ 0.2	15	1.5
> 0.2 – ≤ 0.5	20	2
> 0.5 – ≤ 1.0	30	3
> 1.0 – ≤ 2.0	40	4
> 2.0 – ≤ 5.0	60	6
> 5.0 – ≤ 10.0	80	8
> 10.0 – < 25.0	100	10

The accept/reject level is a level usually equal to the Codex maximum level.

B) Spices with small particle size (crushed/cracked/broken/flakes of nutmeg, dried chilli and paprika)

In the case of large lots and on condition that the subplot can be separated physically, each lot shall be subdivided into sublots following Table 3. Taking into account that the weight of the lot is not always an exact multiple of the weight of the sublots, the weight of the subplot may exceed the mentioned weight in Table 3 by a maximum of 20 %.

Table 3 Subdivision of spices sublots according to lot weight
- crushed/cracked/broken/flakes of nutmeg, dried chilli and paprika -

Lot weight (tonnes)	Weight or number of sublots	Number of incremental samples	Aggregate sample Weight (kg)
≥ 25	25 tonnes	100	10
< 25	—	5-100 (*)	0.5-10
(*) Depending on the lot weight — see Table 4			

Each subplot shall be sampled separately. The number of incremental samples of 100g to be taken depends on the lot weight, with a minimum of 5 and a maximum of 100. resulting in an aggregate sample of 0.5 to 10 kg. Table 4 can be used to determine the number of incremental samples to be taken from lots of various sizes.

Table 4 Number of incremental samples to be taken according to lot weight
- crushed/cracked/broken/flakes of nutmeg, dried chilli and paprika — (for lots <25 tonnes)

Lot weight (tonnes)	Number of incremental samples	Aggregate sample weight (kg)
≤ 0.01	5	0.5
> 0.01-≤ 0.1	10	1
> 0.1-≤ 0.2	15	1.5
> 0.2-≤ 0,5	20	2
> 0,5-≤ 1.0	30	3
> 1.0-≤ 2.0	40	4
> 2.0-≤ 5.0	60	6
> 5.0-≤ 10.0	80	8
> 10.0-≤ 25.0	100	10

C) Powdered spices (obtained by grinding nutmeg, dried chilli and paprika)

In the case of large lots and on condition that the subplot can be separated physically, each lot shall be subdivided into sublots following Table 5. Taking into account that the weight of the lot is not always an exact multiple of the weight of the sublots, the weight of the subplot may exceed the mentioned weight in Table 5 by a maximum of 20 %.

**Table 5 Subdivision of spices sublots according to lot weight
- Powdered spices (nutmeg, dried chilli and paprika) -**

Lot weight (tonnes)	Weight or number of sublots	Number of incremental samples	Aggregate sample Weight (kg)
≥ 25	25 tonnes	50	2 [4]
< 25	—	3 – 50 (*)	0.1 – 2.0 [0.24 – 4.0]
(*) Depending on the lot weight — see Table 6			

Each subplot shall be sampled separately. The number of incremental samples ~~{40 g} {80 g}~~ to be taken depends on the lot weight with a minimum of 3 and maximum 50 incremental samples. Table 6 can be used to determine the number of incremental samples to be taken from lots of various sizes.

Table 6 Number of incremental samples of Powdered Spices to be taken depending on the weight of the lot - (for lots <25 tonnes)

Lot weight (tonnes)	Minimum number of incremental samples	Minimum aggregate sample weight (kg)
≤ 0.1	3	0.1 [0.24]
> 0.1 - ≤ 0.5	10	0.4 [0.8]
> 0.5 - ≤ 5.0	25	1.0 [2]
> 5.0 - ≤ 10.0	35	1.4 [2.8]
> 10.0 - ≤ ≤ 125.0	50	2.0 [4]

Method performance criteria

Table 7: Method performance criteria for the analysis of total aflatoxins and ochratoxins A in spices

Commodity	Analyte	ML (µg/kg)	LOD (µg/kg)	LOQ (µg/kg)	Precision (%)	Minimal applicable range (µg/kg)	Recovery (%)
Chilli pepper, Nutmeg	AFT B1+B2+G1+G2	20	≤4	≤8	≤44	11.2-28.8	60-115
	AFB1	15	≤1	≤2	≤44	2.8-7.2	40-120
	AFB2	-	≤1	≤2	≤44	2.8-7.2	40-120
	AFG1	-	≤1	≤2	≤44	2.8-7.2	40-120
	AFG2	-	≤1	≤2	≤44	2.8-7.2	40-120
Chilli pepper, Paprika, nutmeg	OTA	20	≤4	≤8	≤44	11.2-28.8	60-115