

**PRINCIPLES AND GUIDANCE ON THE SELECTION OF
REPRESENTATIVE COMMODITIES
FOR THE EXTRAPOLATION OF MAXIMUM RESIDUE LIMITS FOR PESTICIDES TO
COMMODITY GROUPS**

(CAC/GL 84-2012)

INTRODUCTION

Residue extrapolation is the process by which the residue levels on representative commodities are utilised to estimate residue levels on related commodities in the same commodity group or subgroup for which trials have not been conducted. Representative commodities are chosen based on their commercial importance and the similarity of their morphology and residue characteristics to other related commodities in the group or subgroup. Ideally representative commodities are the most economically important commodities in production and/or consumption in a group or subgroup and have a greater dietary burden and have residue characteristics similar to other members of the group or subgroup. Residue extrapolation is a common consideration utilised by regulators internationally for ensuring that data requirements are only at a level that is scientifically justified in conducting risk assessment and to ensure the regulatory process does not become unnecessarily burdensome especially for minor crops.

The objective of this document is to (1) propose criteria for the selection of representative commodities; (2) propose example representative commodities and (3) provide a detailed justification for the selection of the representative commodities.

GENERAL PRINCIPLES

Representative commodities within each Classification¹ commodity group and subgroup will be selected and proposed, based on consideration of all available information. The following principles will be used for the selection of representative commodities:

- A representative commodity is most likely to contain the highest residues.
- A representative commodity is likely to be major in terms of production and/or consumption.
- A representative commodity is most likely similar in morphology, growth habit, pest problems and edible portion to the related commodities within a group or subgroup.

The application of the three principles in the selection of representative commodities is based on the assumption that all of the commodities, covered by the commodity group maximum residue limit (MRL), are produced following a similar² use pattern or good agricultural practice (GAP).

To facilitate the global use of the commodity groups for MRLs, alternative representative commodities may be selected giving flexibility for use of residue research conducted in different countries or regions that may vary due to regional differences in dietary consumption and/or areas of production for certain commodities.

Note: Table 1 in this document is provided to (1) separate the selection of representative commodities from the Classification itself; (2) propose examples of representative commodities in parallel with the respective Codex commodity grouping Classification revisions; (3) provide flexibility on the selection of representative crops and (4) provide guidance not only to the Committee on Pesticide Residues (CCPR) and Codex members, but also to the Joint Meeting on Pesticide Residues (JMPR), product manufacturers and other data generators.

¹ Classification of Foods and Animal Feeds (CAC/MISC 4-1993).

² Submission and Evaluation of Pesticide Residues Data for the Estimation of Maximum Residue Levels in Food and Feed (Section 6.7, Point a), FAO Plant Production and Protection Paper 197, Food and Agriculture Organisation of the United Nations, Rome, 2009 (Second Edition).

Detailed background information regarding production, consumption, MRLs and characteristics and justification for selection of the representative commodities according to the indicated principles were provided in working documents considered by the Committee when developing the representative commodities for each commodity group.

GUIDANCE AND PROCEDURES

As proposals for the revision of the Classification are made and revised commodity groupings are developed and provided to CCPR for their review, proposals on representative commodities will also be provided in parallel with the respective commodity grouping revisions and will advance through the Step Procedure for adoption by the Codex Alimentarius Commission (CAC).

As comments are addressed on the revisions of the Classification and the proposed representative commodities and these are agreed by CCPR and adopted by CAC, two separate documents will be created and maintained: (1) the Classification (without mention of representative commodities) and (2) principles and guidance on the selection of representative commodities.

The JMPR may be advised to use the representative commodities adopted by CAC. However, JMPR may use other representative commodities (including those which may be specifically requested by member nations) on a case-by-case basis. The JMPR will be requested to provide to CCPR justification for the use of any alternative representative commodities, based on all available data.

ALTERNATIVE REPRESENTATIVE COMMODITIES

To facilitate the global use of the commodity groups for MRLs, alternative representative commodities may be selected giving flexibility for use of residue research conducted in different countries or regions that may vary due to regional differences in dietary consumption and/or areas of production for certain commodities. Table 1 in this document proposes examples of representative commodities for commodity groups. Depending on country or regional differences, alternative representative commodities may be proposed by a country. For example, leeks may be proposed as an alternative representative commodity for green onions in the green onion subgroup of Bulb Vegetables.

PRECEDENCE IN SELECTION OF REPRESENTATIVE COMMODITIES

In situations where a representative commodity does not meet all three of the above principles, a representative commodity should at least meet the first two principles (likely to contain the highest residues and also major in terms of production and/or consumption).

Selection of Representative Commodities

When representative commodities are utilised to extrapolate residue levels to other members of a commodity group, it is on the assumption that residues in other members of the commodity group will not be significantly different to residues found in the representative commodity. That is, the representative commodities are good indicators of the upper range of residues likely to be encountered for the group or subgroup, based on the same or comparable GAP and other available information.

An MRL for the group may be estimated from the highest residue level for any of the individual representative commodities or from the larger combined data set. The ALARA³ principle should be considered in terms of whether the larger residue data set should be combined and the potential impact of derived values used in the dietary risk assessment.

³ ALARA (as low as reasonable achievable).

WIDER EXTRAPOLATIONS

A representative commodity should meet at least the first two principles described above, i.e. likely to contain the highest residues and also major in terms of production and/or consumption. However, it may not always fit well with the growth habits, or pest problems of morphology within one group or subgroup. In such situations, extrapolations beyond the members of a commodity group may be appropriate. These can be considered on a case-by-case basis when commodities (with similar GAPs) have similar size, shape and surface area. Examples of these possible wider extrapolations include (1) translation of certain stone or pome fruit MRLs to a tropical fruit; (2) where residues are all <LOQ for pre-emergent herbicide uses and (3) seed treatments for non systemic pesticides.

TABLE 1. EXAMPLES OF THE SELECTION OF REPRESENTATIVE COMMODITIES, TYPE 01 FRUITS

Codex Group / Subgroup	Examples of Representative Commodities ⁴	Extrapolation to the following commodities
Group 001 Citrus Fruits	Lemon or Lime; Mandarin; Orange and Pummelo or Grapefruit	<u>Citrus Fruit (FC 0001)</u> : Australian blood lime; Australian desert lime; Australian round lime; Brown River finger-lime; Calamondin; Citron; Clementine; Grapefruit; Kaffir Lime; Kumquats; Lemon; Lime; Lime, Sweet; Limequats; Mandarin; Mount White-lime; New guinea wild lime; Orange Sour; Orange, Sweet; Pummelo; Russell River-lime; Tahiti Lime; Trifoliolate orange; Unshu orange; Yuzu.
Subgroup 001A, Lemons and Limes	Lemon or Lime	<u>Lemons and Limes (FC 0002)</u> : Australina blood lime; Australian desert lime; Australian round lime; Brown River finger-lime; Citron; Kaffir Lime; Kumquats; Lemon; Lime; Lime, Sweet; Limequats; Mount White-lime; New guinea wild lime; Russell River-lime; Tahiti Lime; Yuzu.
Subgroup 001B, Mandarin	Mandarin	<u>Mandarins (FC 003)</u> : Calamondin; Clementine; Mandarin; Unshu orange.
Subgroup 001C, Oranges, Sweet, Sour	Orange	<u>Oranges, Sweet, Sour (FC 004)</u> : Orange Sour; Orange, Sweet; Trifoliolate orange.
Subgroup 001D, Pummelos	Pummelo or Grapefruit	<u>Pummelos and Grapefruit (FC 005)</u> : Grapefruit; Pummelo.
Group 002 Pome Fruits	Apple or Pear	<u>Pome Fruit (FP 0009)</u> : Apple; Azarole; Chinese quince; Crab-apple; Loquat; Mayhaw; Medlar; Nashi pear; Pear; Persimmon, Japanese; Quince; Tejocote; Wild pear.
Group 003 Stone Fruits	Cherry, Sweet or Cherry, Sour; Plum or Prune Plum or Peach or Apricot	<u>Stone fruits (FS 0012)</u> : Apricot; Bullace; Cherry, black; Cherry, Nanking; Cherry plum; Cherry Sour; Cherry, Sweet; Choke cherry; Japanese apricot; Jujube, Chinese; Klamath plum; Nectarine; Peach; Plum; Plum, beach; Plum, Chickasaw; Plumcot; Sloe.
Subgroup 003A, Cherries	Cherry, Sweet or Cherry, Sour	<u>Cherries (FS 0013)</u> : Cherry, black; Cherry, Nanking; Cherry Sour; Cherry, Sweet; Choke cherry
Subgroup 003B, Plums	Plum or Prune Plum	<u>Plums (FS 0014)</u> : Bullace; Cherry plum; Jujube, Chinese; Klamath plum; Plum, Plum, beach; Plum, Chickasaw; Plumcot; Sloe.

⁴ Alternative representative commodities may be selected based on documented regional/country differences in dietary consumption and/or areas of production.

Codex Group / Subgroup	Examples of Representative Commodities ⁴	Extrapolation to the following commodities
Subgroup 003C, Peaches	Peach or Apricot	<u>Peaches (FS 2001)</u> : Apricot; Japanese apricot; Nectarine; Peach.
Group 004 Berries and other small fruits	Blackberry or Raspberry; Blueberry or Currants, black, red or white; Elderberry; Grape and Strawberry	<u>Berries and other small fruits (FB 0018)</u> : Agritos; Amur river grape; Arguta kiwifruit; Aronia berries; Bayberries; Bearberry; Bilberry; Bilberry, Bog; Bilberry, Red; Blackberries; Blueberries; Buffaloberry; Buffalo currant; Che; Chilean guava; Cloudberry; Cranberry; Currants, Black, Red, White; Dewberries; Elderberries; European barberry; Guelder rose; Gooseberry; Grapes; Huckleberries; Jostaberries; Juneberries; Mulberries; Muntries; Native currant; Partridge berry; Phalsa; Raspberries, Red, Black; Ribberies; Rose hips; Salal; Schisandraberries; Sea buckthorn; Service berries; Silverberry, Russian; Strawberry; Strawberries, Wild; Table grapes; Vaccinium berries; Wine grapes.
Subgroup 004A, Cane berries	Blackberry or Raspberry	<u>Cane berries (FB 2005)</u> : Blackberries; Dewberries; Raspberries, Red, Black.
Subgroup 004B, Bush berries	Blueberry or Currants, black, red or white	<u>Bush berries (FB 2006)</u> : Vaccinium berries; Blueberries; Agritos; Aronia berries; Bearberry; Bilberry; Bilberry, Bog; Bilberry, Red; Buffalo currant; Chilean guava; Currants, Black, Red, White; Gooseberry; European barberry; Huckleberries; Jostaberries; Juneberries; Native currant; Ribberies; Rose hips; Salal; Sea buckthorn.
Subgroup 004C, Large shrub/tree berries	Elderberry	<u>Large shrub/tree berries (FB 2007)</u> : Bayberries; Buffaloberry; Che; Elderberries; Guelder rose; Mulberries; Phalsa; Service berries; Silverberry, Russian.
Subgroup 004D, Small fruit vine climbing	Grapes	<u>Small fruit vine climbing (FB 2008)</u> : Arguta kiwifruit; Amur river grape; Grapes; Schisandraberries; Table grapes; Wine grapes.
Subgroup 004E, Low growing berries	Strawberry	<u>Low growing berries (FB 2009)</u> : Cranberry; Cloudberry; Muntries; Partridge berry; Strawberry; Strawberries, Wild.
Group 005 Assorted tropical and sub-tropical fruits – edible peel	Olive; Fig or Guava and Date	<u>Assorted tropical and sub-tropical fruits – edible peel (FT 0026)</u> : Açaí; African plum; Almondette; Ambarella; Apak palm; Apple berry; Arazá; Arbutus berry; Babaco; Bacaba palm; Bacaba-de-leque; Barbados cherry; Bayberry, Red; Bignay; Bilimbi; Breadnut; Cabeluda; Cajou (pseudofruit); Cambucá; Carambola; Carandas-plum; Carob; Cashew apple; Ceylon iron wood; Ceylon olive; Cherry-of-the-Rio-Grande; Chinese olive, Black,

Codex Group / Subgroup	Examples of Representative Commodities ⁴	Extrapolation to the following commodities
		<p>White; Chirauli-nut; Ciruela verde; Coco plum; Date; Davidson's plum; Desert date; Doum or Dum palm; False sandalwood; Fig; Fragrant Manjack; Gooseberry, Abyssinian; Gooseberry, Ceylon; Gooseberry, Indian; Governor's plum; Grumichama; Guabiroba; Guava; Guava, Brazilian; Guava, Cattley, Guava, Costa Rican; Guava, Para; Guava berry; Guayabillo; Hog plum; Illawarra plum; Imbé; Imbu; Jaboticaba; Jamaica cherry; Jambolan; Java apple; Jelly palm; Jujube, Indian; Kaffir plum; Kakadu plum; Kapundung; Karanda; Kwai muk; Lemon aspen; Mangaba; Marian plum; Mombin, Malayan; Mombin, purple; Monkeyfruit; Monos plum; Mountain cherry; Nance; Natal plum; Noni; Otaheite gooseberry; Papaya, Mountain; Pataua; Peach Palm; Persimmon, Black; Pitomba; Pomerac; Rambai; Rose apple; Rumberry; Sea grape; Sentul; Sete-capotes; Silver aspen; Surinam cherry; Table olives; Uvalha; Water apple; Water berry; Water pear.</p>
Subgroup 005A, Assorted tropical and sub-tropical, Edible Peel – Small	Olives	<p><u>Edible Peel - Small (FT 2011)</u>: African plum; Almondette; Apple berry; Arbutus berry; Barbados cherry; Bayberry, Red; Bignay; Breadnut; Cabeluda; Carandas-plum; Ceylon iron wood; Ceylon olive; Cherry-of-the-Rio-Grande; Chinese olive, Black, White; Chirauli-nut; Coco plum; Desert date; False sandalwood; Fragrant Manjack; Gooseberry, Abyssinian; Gooseberry, Ceylon; Governor's plum; Grumichama; Guabiroba; Guava berry; Hog plum; Illawarra plum; Jamaica cherry; Jambolan; Java apple; Kaffir plum; Kakadu plum; Karanda; Kapundung; Lemon aspen; Monos plum; Mountain cherry; Otaheite gooseberry; Persimmon, Black; Pitomba; Rumberry; Sea grape; Sete-capotes; Silver aspen; Table olives; Water apple; Water berry; Water pear.</p>
Subgroup 005B, Assorted tropical and sub-tropical, Edible Peel – Large	Fig or Guava	<p><u>Edible Peel - Large (FT 2012)</u>: Ambarella; Arazá; Babaco; Bilimbi; Cajou (pseudofruit); Cambucá; Carambola; Carob; Cashew apple; Ciruela verde; Davidson's plum; Fig; Gooseberry, Indian; Guava; Guava, Brazilian; Guava, Cattley, Guava, Costa Rican; Guava, Para; Guayabillo; Imbé; Imbu; Jaboticaba; Jujube, Indian; Kwai muk; Mangaba; Marian plum; Mombin, Malayan; Mombin, purple; Monkeyfruit; Nance; Natal plum; Noni; Papaya, Mountain; Pomerac; Rambai; Rose apple; Sentul; Surinam cherry; Uvalha.</p>

Codex Group / Subgroup	Examples of Representative Commodities ⁴	Extrapolation to the following commodities
Subgroup 005C, Assorted tropical and sub-tropical, Edible Peel – Palms	Date	<u>Edible Peel - Palms (FT 2013)</u> : Açai; Apak palm; Bacaba palm; Bacaba-de-leque; Date; Doum or Dum palm; Jelly palm; Pataú; Peach Palm.
Group 006 Assorted tropical and sub-tropical fruits – inedible peel	Litchi (lychee) or Longans or Spanish Lime; Avocado; Pomegranate or Mango; Banana and Papaya; Atemoya; Pineapple; Dragonfruit; Prickly pear; Kiwifruit or Passionfruit and Muriti or Palmyra Palm	<u>Assorted tropical and sub-tropical fruits – inedible peel (FI 0030)</u> : Abiu; Aisen; Akee apple; Atemoya; Avocado; Bacuri; Bael fruit; Banana; Binjai; Biriba; Breadfruit; Burmese grape; Cacao (pulp); Canistel; Capuacú; Champedak; Cherimoya; Coconut, young; Custard apple; Durian; Elephant apple; Etambe; Feijoa; Granadilla; Granadilla, Giant; Guriri; Ilama; Ingá; Jackfruit; Jatobá; Kei apple; Kiwifruit; Kokam; Langsat; Lanjut; Longan; Lucuma; Litchi (lychee); Mabolo; Madras-thorn; Mammy apple; Manduro; Mango; Mango, horse; Mango, Saipan; Mangosteen; Marang; Marmalade-box; Matisia; Mesquite; Mongongo; Monkey-bread tree; Monstera; Muriti; Naranjilla; Paho; Palmyra palm; Papaya; Passionflower, Winged-stem; Passion fruit; Passion fruit, banana; Pawpaw; Pawpaw, small flower; Pelipisan; Pequi; Persimmon, American; Pineapple; Pitaya; Pomegranate; Poshte; Prickly pear, Pulasan; Quandong; Rambutan; Saguaro; Salak; Sapodilla; Sapote, black; Sapote, green; Sapote, Mammey; Sapote, white; Sataw; Satinleaf; Screwpine; Sierra Leone-tamarind; Soncoya; Soursop; Spanish lime; Star apple; Sugar apple; Sun sapote; Tamarillo; Tamarind (sweet varieties); Tamarind-of-the-Indies; Velvet tamarind; Wampi; White star apple; Wild loquat.
Subgroup 006A, Assorted tropical and sub-tropical, Inedible Peel, Small	Litchi (lychee) or Longans or Spanish Lime	<u>Inedible Peel - Small (FI 2021)</u> : Aisen; Bael fruit; Burmese grape; Ingá; Litchi; Longan; Madras-thorn; Manduro; Matisia; Mesquite; Mongongo; Pawpaw, small flower; Satinleaf; Sierra Leone-tamarind; Spanish lime; Tamarind (sweet varieties); Velvet tamarind; Wampi; White star apple.
Subgroup 006B, Assorted tropical and sub-tropical, Inedible Smooth Peel - Large	Avocado; Pomegranate or Mango; Banana and Papaya	<u>Inedible Smooth Peel - Large (FI 2022)</u> : Abiu; Akee apple; Avocado; Bacuri; Banana; Binjai; Cacao (pulp); Canistel; Capuacú; Etambe; Feijoa; Jatobá; Kei apple; Kokam; Langsat; Lanjut; Lucuma; Mabolo; Mango; Mango, horse; Mango, Saipan; Mangosteen; Naranjilla; Paho; Papaya; Pawpaw; Pelipisan; Pequi; Persimmon, American; Pomegranate; Quandong; Sapote, black; Sapote, green; Sapote, white; Sataw; Star apple; Tamarillo; Tamarind-of-the-Indies; Wild loquat.

Codex Group / Subgroup	Examples of Representative Commodities ⁴	Extrapolation to the following commodities
Subgroup 006C, Assorted tropical and sub-tropical, Inedible, Rough or Hairy Peel - Large	Atemoya and Pineapple	<u>Inedible rough or hairy peel - Large (FI 2023)</u> : Atemoya; Biriba; Breadfruit; Champedak; Cherimoya; Custard apple; Durian; Elephant apple; Ilama; Jackfruit; Mammy apple; Marang; Marmalade-box; Monkey-bread tree; Pineapple; Poshte; Pulasan; Rambutan; Sapodilla; Sapote, Mammey; Screwpine; Soncoya; Soursop; Sugar apple; Sun sapote.
Subgroup 006D, Assorted tropical and sub-tropical, Inedible Peel - Cactus	Pitaya and Prickly pear	<u>Inedible Peel - Cactus (FI 2024)</u> : Pitaya; Prickly pear; Saguaro.
Subgroup 006E, Assorted tropical and sub-tropical, Inedible Peel - Vines	Kiwifruit or Passionfruit	<u>Inedible Peel - Vines (FI 2025)</u> : Granadilla; Granadilla, Giant; Kiwifruit; Monstera; Passionflower, Winged-stem; Passionfruit; Passionfruit, banana.
Subgroup 006F, Assorted tropical and sub-tropical, Inedible Peel - Palms	Muriti or Palmyra Palm	<u>Inedible Peel - Palms (FI 2026)</u> : Coconut, young; Guriri; Muriti; Palmyra Palm; Salak.