

Foods counting for the Nutritional Indicators for Biodiversity on food composition and consumption (Indicator 1 and 2)

The Nutrition Indicator for Biodiversity on food composition (Indicator 1 and 2) should include foods that are described at the genus, species and subspecies level and below. When different parts, shapes or stages of maturation of the same food are reported to be consumed, they should be counted separately; for example, the root and leaf, larva and adult animal, egg and bird, meat and milk, muscle meat and organ meat, ripe or unripe. No minimum amount or frequency of consumption is required.

It was recognized that in some cases identification with scientific names at subspecies level and below and sometimes even at species level is difficult. For many wild or underutilized foods, taxonomic names do not yet exist, and in other cases, different taxonomic sources may provide different scientific names for the same food. Examples are certain fruits, vegetables, fish, snails and insects. It was therefore decided that wild or underutilized foods are exceptions to the general rule and may be included in Indicator 1 and 2 even if their taxonomic identification is only at species level and/or through a local name. If possible, the country/region/culture of origin should be provided, or a photograph or voucher sample.

Taxonomic varieties considered by error as a species (taxonomic name always including var.) need to be described with an additional cultivar name to be taken into consideration in Indicator 1 and 2 (e.g. *Brassica oleracea* var. *capitata* 'January King'). Without this additional criterion, the count for the Indicators would artificially be inflated. The following examples do not count for Indicator 1 and 2 even though their taxonomic names include variety because the variety name is not followed by a cultivar name:

- clementines (*Citrus reticulata* var. *clementine*);
- nectarines (*Prunus persica* var. *nectarine*);
- mange-tout peas or snowpeas (*Pisum sativum* var. *macrocarpum*);
- asparagus (*Asparagus officinalis* var. *altilis*);
- peppers, capsicum, chilli, green (*Capiscum annum* var. *grossum*);
- peppers, capsicum, green/red (*Capiscum annum* var. *grossum*);
- broccoli (*Brassica oleracea* var. *botrytis*);
- cauliflower (*Brassica oleracea* var. *botrytis*);
- brussels sprouts (*Brassica oleracea* var. *gemmifera*);
- cabbage (*Brassica oleracea* var. *capitata*);
- curly kale (*Brassica oleracea* var. *acephala*);
- spring greens (*Brassica oleracea* var. *acephala*);
- swede (*Brassica napus* var. *napobrassica*);
- turnip (*Brassica rapa* var. *rapifera*).

As the reporting on the Indicators revealed many difficulties in deciding which foods should be included or excluded, detailed criteria were developed to guide users in reporting on Indicators 1 and 2. These general and specific criteria are listed in table 1.

Table 1 Criteria for the inclusion or exclusion of foods counting for Indicator 1 and 2.

Foods included	Foods not included
<ul style="list-style-type: none"> • Foods at cultivar/variety/breed level for common and imported foods (e.g. rice, banana, potato), preferably with scientific name • For those foods counting for the indicator: <ul style="list-style-type: none"> – different parts of plants (e.g. leaf, root, flower, stem, fruit) and animal (e.g. all muscle cuts count only once but all organs or visible fat count separately) – different stages (e.g. egg, larva and young/adult animal) – only raw foods; except if just the cooked form of this food is available • Ingredients, if they meet the criteria, used in: <ul style="list-style-type: none"> – recipes or processed foods (e.g. spices, condiments, micro-organisms and probiotics) – non-packaged form of botanical supplements/extracts (including beverages) • Foods with the number of cultivars/varieties/breeds per species even if not described by taxonomic or local name (<i>Musa</i> spp. – 4 varieties) • Wild (i.e. not cultivated/reared/farmed) and/or underutilized foods only described at genus/species level and/or with local name (e.g. “grasshopper”). The underutilized foods must be recorded on the ‘list of underutilized species counting for food biodiversity’¹ • A local name in addition to an English/Spanish/French or taxonomic name if it is indicative for a variety/cultivar/breed (e.g. in brackets after the English/Spanish/French name) • Colour and/or shape describe the variety/cultivar/breed. Examples: <ul style="list-style-type: none"> – Pear, brown-skinned (<i>Pyrus</i> sp.) – Snake gourd (<i>Trichosanthes cucumerina</i>) • Taxonomic varieties considered by error as a species when described with additional cultivar name. Examples are found in the text above. • Genetically modified foods 	<ul style="list-style-type: none"> • Common or imported foods (e.g. rice, banana, potato) described only at species level, even if other specification are given such as: <ul style="list-style-type: none"> – region – country – season – colour as part of the food name (e.g. green beans) or as indication of processing (e.g. white or brown rice) – shape (e.g. medium-size carrot) – species name is followed by author (e.g. L. or Linn. [for Linnaeus], Mill.), which should not be confused with the cultivar/variety/breed name – local name • Common or imported described only with local name • Foods with unspecific name, e.g. “wild green leaves”, “reef fish”, “bushmeat” • Local name in addition to English/Spanish/French name seeming to be the translation of the food (i.e. not indicative of variety/cultivar/breed) • Processed foods or recipes • Supplements, and plant or animal extracts in packaged form • Fortified foods • Taxonomic varieties considered by error as a species when described without an additional cultivar name. Examples are found in the text above.

¹ The reference list for underutilized foods for food biodiversity can be found on the websites of the Global Facilitation Unit for Underutilized Species (GFU) at http://www.underutilized-species.org/species/about_species.asp or at the INFOODS website http://www.fao.org/infoods/biodiversity/index_en.stm.

Glossary²

Biodiversity: the variability among living organisms from all sources, including terrestrial, marine and other ecosystems and the ecological complexes of which they are part; it covers diversity within species, between species and of ecosystems; synonyms: biological diversity, ecological diversity.

Breed: (1) a subspecific group of animal species, within a single zoological taxon of the lowest known rank, with definable and identifiable external characteristics that enable it to be separated by visual appraisal from other similarly defined groups within the same species; (2) a group of domestic livestock for which geographical and/or cultural separation from similar groups has led to acceptance of its separate identity.

Cultivar (from cultivated + variety) (abbr.: cv.): a category of plants that is below the level of a subspecies taxonomically and equivalent taxonomically to variety, and is found only in cultivation; it is an international term denoting certain cultivated plants that are clearly distinguishable from others by stated characteristics and that retain their distinguishing characteristics when reproduced under specific conditions; the naming of a cultivar should conform to the International Code of Nomenclature for Cultivated Plants (the ICNCP, commonly known as the “Cultivated Plant Code”); a cultivar is named with a cultivar (or fancy) epithet, a word or words in a vernacular language (unless published prior to 1959), or a botanical (Latin) epithet already established for a taxon now deemed to be a cultivar, formed according to the precepts of the code; the epithet is printed in roman characters, not italic, takes a capital first letter and is enclosed in single quotation marks, for example, *Hosta kikutii* ‘Green Fountain’; cultivar names, unlike varieties, have generally been registered with an appropriate body in order to associate that name with a particular population and, usually, to claim rights over the population.

Ecosystem: a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit (CBD, 1993).

Food biodiversity: the diversity of plants, animals and other organisms used for food, covering the genetic resources within species, between species and provided by ecosystems.

Genus (pl.: genera): a group of closely related species, whose perceived relationship is typically based on physical resemblance, now often supplemented with DNA sequence data.

Species: below the level of genus, species is a class of potentially interbreeding individuals that are reproductively isolated from other such groups having many characteristics in common; species classifications are subject to review and change as new genomic and other scientific evidence is considered; by convention, a species is assigned a two-part italicized name in Latin, the genus being listed first (with its leading letter capitalized) and the species second; the name of the species is the whole binomial, not just the second term, for example, apple belongs to the species *Malus domestica*. Species is sometimes abbreviated: “spec.” or “sp.” *singular*.

Subspecies: population(s) of organisms sharing certain characteristics that are not present in other populations of the same species; the taxonomic naming convention is to append “ssp.” or “subspec.” and the Latin name in italic to the species name, for example *Prunus domestica* L. ssp. *domestica*.

Underutilized species: for the purpose of this publication, underutilized species are defined as species with underexploited potential for contributing to food security, health and nutrition, income generation and environmental services (GFU, 2007). However, “underutilized species” is not a well-defined term and it depends on the geographical, social, economic and temporal aspects

² Definitions are adapted from FAO (1999) and FAO (2001), and are the same as those used for Indicator 1 (FAO, 2008a).

and includes a wide range of wild, traditional, indigenous and local foods. Often, their taxonomic identification is not complete, especially below species level. For this document, only foods reported in the reference list for underutilized foods for food biodiversity will contribute to Nutritional Indicators for Biodiversity. This list and the definition for underutilized foods counting for the Indicators can be found on the websites of the Global Facilitation Unit for Underutilized Species (GFU) at http://www.underutilized-species.org/species/about_species.asp or at the INFOODS website http://www.fao.org/infoods/biodiversity/index_en.stm.

Variety: a naturally occurring subdivision of a plant species, within a single botanical taxon of the lowest known rank, with distinct morphological characteristics and given a Latin name according to the rules of the International Code of Nomenclature; a taxonomic variety is known by the first validly published name applied to it, so that nomenclature tends to be stable (cf. cultivar; pathovar); the taxonomic naming convention is to append “var.” and the Latin name in italic to the species name, for example *Malus angustifolia* (Ait.) Michx. var. *angustifolia* – southern crabapple; a variety will have an appearance distinct from other varieties, but will hybridize freely with other varieties if brought into contact; varieties are usually geographically separate from one another; to plant breeders, at least in countries that are signatories to the International Convention for the Protection of New Varieties of Plants (UPOV Convention), “variety” or “plant variety” is a legal term; in zoological nomenclature, the only officially regulated rank below that of species is subspecies; forms and morphs are used instead of varieties if needed, but are unregulated by the International Commission on Zoological Nomenclature (ICZN). In bacteriological nomenclature, “variety” and “subspecies” are used interchangeably.

Wild foods: the definition is adapted from the first *State of the World’s Plant Genetic Resources for Food and Agriculture* report (FAO, 1997): wild plants, animals and insects, that are not cultivated or reared in captivity, are part of the minor crops and underutilized species, and include roots and tubers, vegetables and leafy vegetables, fruits, insects, amphibians, reptiles, birds and mammals gathered for food.

Schema of taxonomic names

Schema	Plant – example	Plant – example	Fish – example	Animal – example
Family	<i>Rosaceae</i> – Rose family	<i>Poaceae</i> – Grass family	<i>Pleuronectidae</i>	<i>Bovidae</i> <i>Caprinae</i>
Genus	<i>Prunus</i> L. – plum	<i>Triticum</i> L. – wheat	<i>Platichthys</i>	<i>Ovis</i>
Species	<i>Prunus domestica</i> L. – European plum	<i>Triticum aestivum</i> L. – common wheat	<i>Platichthys flesus</i> (Linnaeus, 1758)	<i>Ovis aries</i> – sheep
Subspecies	<i>Prunus domestica</i> L. ssp. <i>domestica</i>			(rarely used)
Variety*	<i>Prunus domestica</i> L. var. <i>domestica</i> – European plum		<i>Platichthys flesus</i> var. <i>marmorata</i> Nordmann, 1840 – European flounder	
Cultivar	<i>Prunus domestica</i> ‘Cacak’s Beauty’	<i>Triticum aestivum</i> ‘Pioneer 2163’		
Breed				Suffolk

Notes:

Cultivar names should always be enclosed in single quotation marks ‘ ’ even though it is not always done. The cultivar name should not be confused with the author’s name of the taxonomic name, e.g. L. or Linn. (for Linnaeus), Roem, (L.) Roem, Bosc., Roxb., Swartz, Mill., Muell., Nordmann, which can be followed by a year. It is possible to check the author names through The International Plant Names Index – Author Query (available at <http://www.ipni.org/ipni/authorsearchpage.do>).

Some species, subspecies or varieties can be followed by a form name (abbreviated to f.), e.g. *M. moschata* f. *alba* or *Narcissus romieuxii* ssp. *albidus* var. *zaianicus* f. *lutescens*.

* Variety, cultivar and breed are the lowest taxonomic level, except for taxonomic varieties considered by error as a species and that can be described with an additional cultivar name. The taxonomic name of these common always includes ‘var.’, e.g. clementine, nectarine, peppers, mange-tout peas and foods of the Brassica genus e.g. cauliflower, broccoli, cabbage, Brussels sprouts. For Indicator 1 and 2, Cabbage January King (*Brassica oleracea* var. *capitata* ‘January King’) counts because it has a cultivar name in addition to the variety name.

Resources

• Taxonomic Web sites

- Plants
 - <http://www.ars-grin.gov/cgi-bin/npgs/html/index.pl>
 - <http://mansfeld.ipk-gatersleben.de/>
 - <http://www.plantnames.unimelb.edu.au/Sorting/Frontpage.html>
 - <http://www.seedtest.org/en/home.html>
 - <http://plants.usda.gov/>
 - <http://epic.kew.org/index.htm>
- Fish
 - http://www.fao.org/figis/servlet/static?dom=org&xml=sidp.xml&xp_lang=en&xp_banner=fi
 - <http://www.fao.org/fi/website/FISearch.do?dom=species>
 - <http://www.fishbase.org/home.htm>
 - <http://www.fda.gov/food/foodsafety/product-specificinformation/seafood/regulatoryfishencyclopediaife/default.htm>
 - <http://www.nativefish.asn.au/taxonomy.html>
 - <http://www.nativefish.asn.au/fish.html>
- Plants, animals, fish
 - <http://www.ncbi.nlm.nih.gov/sites/entrez?db=Taxonomy>
 - <http://www.cbif.gc.ca>
 - <http://www.sp2000.org/>
- Gene bank databases**
 - http://www2.bioversityinternational.org/Information_Sources/Species_Databases/Species_Compndium/
- Other resources**
 - http://www.underutilized-species.org/institutional_mapping/Species%20and%20Countries.xls
 - <http://www.ipni.org/> , by author: <http://www.ipni.org/ipni/authorsearchpage.do>
 - <http://www.bgbm.org/iapt/nomenclature/code/SaintLouis/0001ICSLContents.htm>
 - <http://www.ishs.org/icra/index.htm>
 - <http://apps.rhs.org.uk/rhsplantfinder/plantnaming/hownameswork.asp>
 - Module 12 on Biodiversity in the Food Composition Study Guide – Volume 1 Questions and Exercises / Volume 2 Answers. Available at: http://www.fao.org/infoods/publications_en.stm
 - CINE's Arctic Nutrient File. Available at: http://www.mcgill.ca/files/cine/Traditional_Food_Composition_Nutribase.pdf
 - <http://www.twentyten.net/>