

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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Agenda item 10

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JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON FRESH FRUITS AND VEGETABLES

21st Session

DISCUSSION PAPER ON GLOSSARY OF TERMS FOR APPLICATION IN THE LAYOUT FOR CODEX STANDARDS FOR FRESH FRUITS AND VEGETABLES.

Prepared by the United States

BACKGROUND

1. The 19th Session of the Codex Committee on Fresh Fruits and Vegetables¹ (CCFFV19) held in Ixtapa Zihuatanejo, Guerrero (Mexico) in October 2015 established an EWG, led by Mexico, and working in English and Spanish to prepare a draft Glossary of Terms for Application in the Layout for Codex Standards for Fresh Fruits and Vegetables for consideration at its next session.
2. CCFFV20² held in Kampala, Uganda, October 2017, discussed the Glossary of Terms (CX/FFV 17/20/11) and accepted an offer by the United States of America to further develop Glossary of Terms as a discussion paper for consideration at its next session. CCFFV20 requested the United States take into consideration the CCFFV standard layout, terms used in Codex fresh fruits and vegetables standards, terms used in trade and other pre-existing glossary of terms from other intergovernmental standardization organizations.
3. Objective of Glossary of Terms:
 - to facilitate uniform understanding of terminology and provisions in CCFFV standards; and
 - to facilitate uniform application/interpretation of CCFFV standards.

RECOMMENDATION

4. CCFFV21 is invited to consider the discussion paper on glossary of terms for application in the layout for Codex standards for Fresh Fruits and Vegetables (Appendix I).

¹ REP16/FFV paras 102 and 103

² REP18/FFV para 95

Glossary of Terms for Application in the Layout for Codex Standards for Fresh Fruits and Vegetables

1. **Scope:** This indicates the general name of the FFV being standardized and the point of application of the standard.

2. **Definition of Produce:** This section of the standard identifies the part of the plant being standardized; the species, sub-species/ variety and/or cultivar.

Species: a group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding. A biological classification ranking immediately below the genus or subgenus, comprising related organisms or populations.

Variety: A naturally occurring variation of individual plants within a species that can reproduce.

Cultivar: Cultivated varieties

Hybrids: Crosses between two species or can be developed from a series of crosses between parents.

Commercial Type: Produce with similar characteristics including appearance, but which may belong to different varieties

Industrial Processing: the process of transforming the physical textural characteristics of raw fresh fruit and vegetables into a new product through chemical or physical means. Industrial processing includes juice extraction, pulp/puree creation, canning, preserving, freezing, or drying/dehydrating. These operations mainly change the FF&V texture and flavor.

Fruit: The seed-bearing structure developed from the ovary of a flowering plant or the ripened ovaries of flowering plants . In some plants it is the edible part- the mesocarp (flesh or pulp layer) located between the exocarp (peel/skin) and the endocarp (the seed/s).

Vegetable: The edible portion of plants such as such as bulbs, flowers, leaves, stem, and roots.

3. Provisions Concerning Quality

3.1 Minimum Requirements

These are the ideal organoleptic prerequisites that FF&V must have to facilitate trade and meet consumer food safety and other performance criteria. These requirements must reflect the physiological characteristic of the individual FF&V. Deviations/exceptions from these prerequisites are permissible on an individual basis and are referred to individually as an "allowance", and collectively as "Tolerances for defects allowed".

Intact/whole: The fruit or vegetable has no physical parts/pieces missing. However, depending on the characteristics of the FF&V (yams, finger, taro) and trade practices, some trimmed FFV- as considered whole or intact.

Sound: The fruit or vegetable is free from physical and chemical defects (injury and diseases) affecting its eating and/or keeping quality. Produce free of disease, damage, rot, damage caused physical means, live or dead insects including insect larva.

Clean: Free from soil, dirt, visible extraneous and foreign objectionable matter including surface residues of inputs evident to the naked eye or with adjusted correct vision lenses.

Extraneous Matter: Vegetal matter associated with the FF&V such as leaves, twigs, roots, loose stems/peduncles and bark.

Foreign Matter: All non-vegetal matter such as stones, pieces of metal, plastic, paper and glass

Firmness: The textural level of turgidity/compactness in the flesh of fruit or vegetable. In some F&V firmness is measured using pressure test (penetrometer) to determine level of maturity and or ripeness. Firmness is also used to describe levels of flesh maturation/ripeness as:

Hard: the fruit's flesh is tenacious and not yielding to moderate pressure

Firm: the flesh yields very slightly to moderate pressure

Firm ripe: the flesh yields slightly to moderate pressure

Ripe: the flesh yields readily to moderate pressure

Over-ripe: the flesh has to breakdown and to soften- and deterioration is quickening- produce is unacceptable for wholesale trade.

Fresh in appearance: Produce having its original quality looking like when harvested. Or, portraying the desired original quality unimpaired except for a change of color in produce that changes colour during the ripening process.

Pests: Animal, insects or micro-organisms whose present or actions are detriment to the quality, keeping quality/storage and/or safety of the F&V.

Foreign smell and/or taste: Smell or taste not associated with the natural product and/or due to its approved post-harvest practices.

Damage caused by low and/or high temperature: Damage caused to the FF&V after harvest due to exposure to non-ambient or extreme temperatures such as freezer burn, frozen flesh, certain types of sunburn and skin discoloration.

Abnormal external moisture: Moisture from sources not associated with condensation after refrigerated storage and/or transportation.

Defect: Imperfection or flaws in the FFV resulting from deterioration, physical injury or physiological factors affecting the appearance or usability (market utility) of the produce. Defects can be progressive and/or non-progressive.

Progressive defects/Condition factors- the defects that worsens over time such as unhealed bruises, fresh skin breaks, flesh damage, decay, mold and other physical damage, that eventually result in the FF&V losing its utility. These factors vary depending on the specific characteristics of each FF&V.

Non-progressive defects/Quality defects- these defects do not change /worsen overtime- healed bruises and cuts, scars, undersize, immaturity, russets and other skin marks, wax residues. These factors vary depending on the specific characteristics of each FF&V.

Common defects in FF&V include:

Damage: Means any specific defect or an equally objectionable variation of defects, any other defect, or a combination of defects, which materially detracts from the appearance, or the edible or shipping quality of the FFV.

Pest Damage: Physical injury to, or detracting in appearance of the product caused by pest (insects, mammals, birds etc.) feeding/gnawing; living on or in the FF&V; or the presence of dead pest at any stage of development.

Insect Injury: Various injuries due to insects at any stage, their current or past presence in the FF&V including nest/frass, excreta or dead insect fragments.

Bruise: A physical injury that ruptures the outer surface/ skin of the FF&V and penetrating through or injuring the underlying plant tissue.

Slight Bruise: A physical injury that ruptures the outer surface/ skin of the FF&V without penetrating through or injuring the underlying plant tissue

Sunburn: Discoloration in some area of the fruit surface due to overexposure to sunrays. The skin, peel, or rind becomes bleached or turns yellow, golden, or bronze color. Often the underlying flesh becomes firmer and drier.

Frostbite: Damage to the FF&V resulting from non-ambient low temperatures in the field before harvest. This may manifest as the following defects in FF&V- skin discoloration, soft or flabby, external and/or internal flesh darkening.

Limb rub: Injuries to the fruit caused by friction between the limb of the tree and the fruit.

Decay: Deterioration and/or decomposition induced by fungi, bacteria resulting from injury (physical damage), pest damage, diseases and or senescence; or an aerobic decomposition of the FF&V by bacteria as a natural process of change/senescence

Rot: To decompose due to biological action

Immature/not sufficiently developed: FF&V has not attained the physiological and biochemical stage of development at which it possesses the desired characteristics/pre-requisites to provide the minimum accepted level of utility to the consumer

Translucent: Water-soaked condition resulting in the FF&V having a glassy appearance

Trimmed: the removal undesired attached leaves, suckers, stems or edible part of the plant or bunch.

Well-shaped/Well Formed: The FFV having a uniform shape characteristic of the variety

Misshapen: The physical shape of FF&V does not fully conform to the established/normal shape characteristics and therefore its appearance is affected.

Badly misshapen. The FF&V's shape is so decidedly deformed that its appearance is seriously affected.

3.1.1 Minimum Maturity Requirements (Horticultural/ Market maturity/Sufficiently developed)

Maturity/³: The fruit has attained a physiological and biochemical stage of development at which it possesses the desired characteristics/pre-requisites to provide the minimum accepted level of utility to the consumer (normal taste, flavor and odor).

Climacteric fruits: Fruits with ripening process that is accompanied by increased ethylene production due to increased respiration.

Non-climacteric fruits: Fruits with ripening processes that is not accompanied by increased ethylene production due to increased respiration.

Stalk/Peduncle: A stalk bearing a flower or flower cluster or a fructification: after the fruit is formed it attaches the fruit to the plant.

Maturity measurements include: Sugar content, sugar-acid ratio, shape, juice content, number of days from flowering or fruit setting, ground color changes and pressure testing of the flesh.

Sufficiently developed measurements may include: Ground color, flavor, leaf texture, shape, days from planting and firmness. The following terms are generally used to indicate different levels of Sufficient Development along with the general quality or condition of vegetables, to describe maturity.

Maturity/sufficiently developed textural terms for roots/rhizomes and tubers: Firm, tender, flabby, pithy, shriveled, woody, translucent, and overmatured.

OverMature/Overdeveloped - textural terms for roots/rhizomes and tubers; The vegetable's physiological development has exceeds the desired organoleptic characteristics making it flabby, pithy, shriveled, woody, translucent.

Senescence: The gradual aging/deterioration of F&V due to Physio- biochemical changes which may be accompanied by either flesh softening, changes in color, structure and other organoleptic characteristics; which at a point renders the fruit unsuitable for the consumption.

Description of Freshness

Fresh: Normal succulence, brightness, and firmness shown by stock when harvested. This is important in fresh vegetables; any impairment of original quality reduce the product's value.

Firm: Compact, solid, substantial, and unyielding to touch. Indicative of normal development and good condition. Very important in root crops, cucurbits, eggplant, etc.

Crisp: Turgid, brittle, and breaks readily. This denotes a fresh condition that is desirable, e.g., in celery, rhubarb, and spinach.

Tender: Succulent and of delicate texture. This is a desirable condition in certain commodities, e.g., asparagus, artichokes, spinach, and beans.

Flabby: Soft, limp, pliable, and lacking firmness. Flabbiness is often due to loss of stored nutrients and water or account of sprouting or old age, such as in sprouted potatoes or aged carrots.

Pithy: Open texture with air spaces in pith or central portion that is usually the result of very rapid growth. This condition is especially applicable to celery, radishes, turnips, and carrots.

Shriveled: Shrunken, drawn, or wrinkled resulting in a marked change in form and often in size. This is an extreme condition resulting from excessive transpiration or old age.

Wilted: Has lost normal succulence and turgidity.

Spongy: Easily compressed and of loose open texture. This is usually the result of very rapid or irregular growth in commodities such as poorly headed cabbage or lettuce, and immature or sprouted onions.

³ In some languages maturity and ripe are the same word with the same meaning.

Horticultural or Market maturity/Sufficiently developed: The fruit has attained a minimal level of physiological development (organoleptic characteristics) at which it can be traded and/or consumed.

Physiological maturity/ Fully developed– the fruit has attained a biological stage of development that results in the fruit being able to continue development (ripening) even it is detached from the plant

Color variation: Differences in color occurring with the same variety of FFV

Overmature: Woody, fibrous, pithy, tough, showing excessive seedstems or bolting. The product is losing or has lost its utility.

3.2 Classification: The placing of FF&V into groups/classes based on physical and physiochemical characteristics /parameters (Size, shape, color, taste/maturity and defects allowed)

3.2.1 “Extra” Class: Selection of fruit or vegetables of superior quality. The produce shall have the characteristics typical of the variety or commercial type and shall fulfil the minimum requirements. The produce may have superficial defects only, unless otherwise indicated in the standard. The superficial defects should affect only very small areas of the produce and should hardly contrast with the typical coloring, nature of the skin or typical shape. The produce shall not have any defect affecting the internal quality.

3.2.2 Class I: Selection of fruit or vegetables of good quality. The produce shall have the characteristics typical of the variety or commercial type and shall fulfil the minimum requirements. The produce may have slight defects only about shape, development, coloring and skin, unless otherwise indicated in the standard. The slight defects should affect only small areas of the produce and should only slightly contrast with the typical coloring, nature of the skin or typical shape. The produce shall not have any defect affecting the internal quality.

3.2.3 Class II: Selection of fruit or vegetables of marketable quality. The produce may have defects regarding shape, development, coloring and skin as well as to minimum requirements, unless otherwise indicated in the standard. The produce shall not have serious defects affecting the internal quality.

4. Provision Concerning Sizing

Size: The Physical dimension or mass of the FF&V measured by:

- Count - the number of individual FF&V per package or to a set volume/dimension
- Length - the longitudinal axis excluding the peduncle.

Diameter: means the greatest dimension of the FF&V measured at right angles to a line from stem to blossom end. Or the greatest dimension at right angles to a straight line running from stem to root. Or is determined by the FF&V passing through a round opening in any position. Diameter can be either the maximum diameter of the equatorial section of each fruit or a diameter range per package.

Stalk/Peduncle: A stalk bearing a flower or flower cluster or a fructification: after the fruit is formed it attaches the fruit to the plant.

Growth End/Apex: The part of a F&V opposite the stalk/peduncle at which growth occurs.

- Weight - the individual weight of each fruit or a weight range per package
- Minimum size- the smallest acceptable size in the standard
- Uniformity in size - a size range that is defined to guarantee uniform appearance of the FF&V in the package with respect to the physical dimensions. It may be expressed by minimum and maximum size or a minimum or maximum number of units in the package.

Uniformity: Terms used to indicate that the FF&V in a package are similar in variety, shape, size and/or size range, and color and/or color range.

Undersize: The fruit or vegetable is lower than the size that is indicated on the package or the minimum size allowed.

Oversize: The fruit or vegetable is larger than the size that is indicated on the package or the minimum size allowed.

5. Provision Concerning Tolerances

The sum of all the allowances /deviations that is permitted within a lot of FFV or a class from the requirements of the standard. Tolerances are assessed on samples taken from the lot in accordance with a pre-set ratio and/or based on recognized internationally agreed methods of sampling (such as OECD or Codex rules for conformity checks).

5.1 Quality tolerances: Maximum deviation allowed for produce not meeting the quality requirements, expressed in percentage, by number or weight.

Allowance: The amount of a factor/defect (e.g., staining) deviation permitted from a minimum requirement in a lot of produce.

5.2 Size tolerances: Maximum deviation allowed for produce not meeting the indicated size i.e. larger or smaller. This deviation is expressed as a percentage, by number or weight.

Lot: The quantity of produce presented for inspection as one unit, having similar characteristics regarding:

- packer, dispatcher and/or shipper country of origin
- nature of produce class of produce
- size (if the produce is graded according to size)
- variety or commercial type (according to the relevant provisions of the standard)
- type of packaging and presentation

Shipping Point: The physical location at which after preparation and packaging and/or storage the FF&V enters or re-enters the market distribution Channel.

Conformity check: Inspection carried out by an inspector to check that FF&V conform to the requirements laid down in a standard.