



**WORKSHOP
ON
SUPPLY UTILIZATION ACCOUNTS
AND
FOOD BALANCE SHEETS**

**FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
(FAO)**

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CROP STATISTICS

CONCEPTS, DEFINITIONS AND CLASSIFICATION

The paper discusses concepts, definitions and standards underlying statistics of temporary and permanent crops, together with their classification. It also describes the related international recommendations prepared by FAO in consultation with international statistical bodies intended for application by government agencies concerned in order to enhance international comparability of such statistics.

CROPS STATISTICS

CONCEPTS, DEFINITIONS AND CLASSIFICATION

I. INTRODUCTION

1. The FAO constitution confers on the Organization the mandate to "collect, analyse, interpret and disseminate information relating to nutrition, food and agriculture". The importance of this task was emphasized recently by the Review of FAO's Goals and Operations, which considered information as one of the three primary functions of the Organization.
2. The FAO Statistics Division (ESS) performs five main activities to carry out this constitutional mandate.
 - a) **Collection** of countries' data on agricultural statistics, primarily from questionnaires submitted by Member Countries and from national publications; then from international publications and reports issued by boards and associations. All that supplemented with information received through correspondence with Governments and consultations with regional officers and field experts.
 - b) **Selection** of the data collected after careful analysis and scrutiny. Since data received by FAO originate from various sources - sometimes with conflicting figures -, their selection is of paramount importance. In general, data received need a systematic check for quality and consistency through cross-reference checking.
 - c) **Filling-in gaps** when necessary.
 - d) **Processing** and storage of the data selected.
 - e) **Dissemination** of data through yearbooks, census reports, bulletins and other publications as well as electronic means such as the Web site on Internet, FAOSTAT, PC diskettes and CD Rom, either in plain form or in the form of statistical indicators showing trends and comparisons on various topics, such as Food Balance Sheets, Index Numbers, Economic Accounts for Agriculture, etc.

3. Assembling and tabulating this enormous mass of data in internationally comparable form, present many problems arising from differences found in countries' data as regards concepts, definitions, coverage and classifications. These differences need to be settled to achieve the maximum possible degree of international comparability.

From the early sixties to the present day, particular attention has been given to these problems at various international and regional meetings and seminars, such as those promoted by ESS in collaboration with UN Economic Commissions, the Inter American Statistical Institute, the Conference of European Statisticians, the FAO Statistics Advisory Committee of Experts, etc. Advices, suggestions and recommendations emanating from these meetings and seminars are reflected in the text that follows on problems of definitions and classifications of commodities and commodity groups.

II. PRIMARY CROPS

1. **Primary crops** are those which come directly from the land and without having undergone any real processing, apart from cleaning. They maintain all the biological qualities they had when they were still on the plants.

2. Certain primary crops can be aggregated, with their actual weight, into totals offering meaningful figures on area, yield, production and utilization; for example, cereals, roots and tubers, nuts, vegetables and fruits. Other primary crops can be aggregated only in terms of one or the other component common to all of them. For example, primary crops of the oil-bearing group can be aggregated in terms of oil or oil cake equivalent.

3. Primary crops are divided into temporary and permanent crops. **Temporary crops** are those which are both sown and harvested during the same agricultural year, sometimes more than once; **permanent crops** are sown or planted once and not replanted after each annual harvest.

III. TEMPORARY PRIMARY CROPS: CONCEPTS, COVERAGE AND GENERAL RECOMMENDATIONS

1.1 **Concept of area.** Crop area is a surface of land on which a crop is grown. In general, the area measured for cadastral purposes includes, in addition to the area cultivated, headlands, ditches and other non-cultivated areas. Such an area can be called **gross** area as against the **net** area which includes only the portion of the gross area actually cultivated. For various reasons, e.g., natural calamities or economic considerations, certain areas planted or sown with a given crop are not harvested or are harvested before the crop reaches maturity. Hence the need for the concept of area to be sub-divided into sown or planted area and harvested area.

Sown area data are necessary to estimate quantities used for seeding purposes; harvested area, to provide reliable and accurate yield and production data.

1.2 **Coverage of area.** In certain countries, the unit of enumeration is the holding; in other countries, administrative units (commune, village, etc.) When the

enumeration unit is the holding, a criterion of the minimum size is generally introduced for the inclusion in the enumeration, e.g., a minimum size of area or economic criteria. In such cases, the small holdings' area risks being completely disregarded. This is particularly so with regard to horticultural crops, which are cultivated outside agricultural holdings, in kitchen gardens and similar small plots.

It was recommended that area data should cover the entire area devoted to each crop, including, when necessary, estimates for small areas not covered in the current annual area surveys. This can be made by conducting special inquiries at appropriate intervals.

- 1.3 **Associated or mixed cropping.** **Associated crops** are those sown interplanted with other temporary or permanent crops, for example, beans and maize. This way of cultivation is widely used in many African countries, particularly for food crops. It can happen that the area covered by crops grown in association with others is reported to be about the same as if the crops were sown alone. In this case the entire area of the plot could be attributed to each of the crops grown in association. Otherwise, it is recommended that area for each one of the associated crops be estimated in such a way that figures relate to that part of the area the particular crop would have covered if it had been grown alone. The criteria for area allocation to specific crops in mixed cropping are, *inter alia*, quantities of seed used, plant density, yield obtained, eye estimates. When this allocation is not possible, it was suggested that countries should report separately for crops grown alone and for crops grown associated with others.
- 1.4 **Successive cropping.** **Successive crops** or **catch crops** are those which are sown and harvested on the same piece of land previously occupied by another crop, or even by the same crop, during the same agricultural year. It has been recommended that the area of crops growing under this condition be accounted for in the total crop area, conducting, if necessary, *ad hoc* surveys for that purpose.
- 1.5 **Shifting cultivation.** This is a peculiar land utilization method practiced generally in remote and not easily accessible areas in certain African countries. A particular piece of land is cultivated for some years and then, when the productivity decreases, it becomes more convenient to open up a new piece of land and abandon the exhausted one. Naturally, the crops grown in this sort of itinerant agriculture, are most probably excluded from the regular agricultural surveys. Some rough estimates may be undertaken when such crops are important at the national level.
- 1.6 **Cultivation under glass or protective cover.** Area data on crops growing in these conditions should be reported by all countries, preferably separated from field and garden crops.
- 2.1 **Concept of yield and production.** In certain countries, estimates of crop production are obtained by multiplying the average yield per unit of area by the corresponding crop area harvested. Other countries estimate production on the basis

of information gathered from various sources, including declarations of producers, deliveries to marketing boards, administrative records, etc. In the first case, production figures are derived from yield and area, while in the second case, yields are derived from production and area figures.

In most of the cases yield data are not recorded but obtained by dividing the production data by the data on area harvested. Data on yields of permanent crops are not as reliable as those for temporary crops either because most of the area information may correspond to planted area, as for grapes, or because of the scarcity and unreliability of the area figures reported by the countries, as for example for cocoa and coffee.

Crop production data refer to the actual harvested production from the field or orchard and gardens, excluding harvesting and threshing losses and that part of crop not harvested for any reason. Production therefore includes the quantities of the commodity sold in the market (marketed production) and the quantities consumed or used by the producers (auto-consumption). When the production data available refers to a production period falling into two successive calendar years and it is not possible to allocate the relative production to each of them, it is usual to refer production data to that year into which the bulk of the production falls. Crop production data are recorded in tonnes (t). In many countries, crop production data are obtained as a function of the estimated yield and the total area. If such a compilation method of production statistics is enforced by the country, it must be ensured that the total area does not refer to sown or planted area, which would give then the 'biological production', but to the actually harvested area during the year. It is recommended that countries report primarily production in terms of harvested production, and when this is not possible that they indicate clearly the concept adopted by them in reporting production (and yield) figures.

- 2.2 **Coverage of yield and production.** It is recommended that the coverage of yield and production data be total and complete, similar to the coverage of area figures (see 1.1 above). They should, therefore, include field crops and garden crops; main, secondary and successive crops; crops grown alone and associated with others; in the open and under glass. They should include crops for sale as well as crops used by farmers for own consumption as food, feed, seed, etc.

IV. TEMPORARY PRIMARY CROPS: DEFINITION, CLASSIFICATION AND SPECIFIC RECOMMENDATIONS

1. **Cereals.** This is, by far, the most important group of crops. Carbohydrates, mainly starches, are the dominant nutrient element in cereal crops. They also contain a modest amount of protein and little fat. The moisture content is low.

- 1.1 **Definition.** Cereals are annual plants, generally of the gramineous family, yielding grains or seeds used as such or processed for food, feed, seed and industrial purposes, e.g. ethanol. They are cultivated all over the world, particularly in the Northern Hemisphere where in recent years about 89% of the total world cereal crops were harvested. The denomination of "cereals" or "cereal crops" should be

limited to crops harvested only for their dry grains, excluding therefore crops harvested green for forage and silage and for human consumption in the case of maize. Also excluded from the group are industrial crops such as broom sorghum and sweet sorghum when cultivated explicitly for making syrup. Contrary to leguminous grains (pulses) which can be used for human consumption as harvested, just after threshing and winnowing, cereal grains in general have to pass through a number of successive operations before they become suitable for human consumption. The simplest of such operations is the removal of the husks (paddy) and the pericarp (most of them), which along with edible substances contain inedible or at least unacceptable material for use as human food without additional processing. Production data are given in terms of clean, dry weight of grains in the form in which they are usually marketed. The only exception is rice, given in terms of paddy rice.

- 1.2 **Classification.** Cereals should be classified individually according to the *genus* to which they belong. However, when two or more genera are sown and harvested together as a mixture, they should be classified as "mixed grains" and reported in one single figure.

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
Cereals	1001	Wheat	1001	Wheat
Cereals	1006.10	Rice, paddy	1006.10	Rice, paddy
Cereals	1003.00	Barley	1003.00	Barley
Cereals	1004.00	Oats	1004.00	Oats
Cereals	1005	Maize	1005	Maize
Cereals	1002.00	Rye	1002.00	Rye
Cereals	1008.20	Millet	1008.20	Millet
Cereals	1007.00	Sorghum	1007.00	Sorghum
Cereals	1008.90aa	Buckwheat	1008.90_a	Cereals, nec
Cereals	1008.90ab	Canary seed	1008.90_a	Cereals, nec
Cereals	1008.90ac	Quinoa	1008.90_a	Cereals, nec
Cereals	1008.90ad	Fonio	1008.90_a	Cereals, nec
Cereals	1008.90ae	Triticale	1008.90_a	Cereals, nec
Cereals	1008.90af	Mixed grain	1008.90_a	Cereals, nec
Cereals	1008.90ag	Cereals, nec	1008.90_a	Cereals, nec

1.3 **Recommendations.** It is recommended that countries report production figures in terms of clean, dry grains, in the form these are usually marketed. The only exception is rice, which should be reported in terms of paddy rice.

2. **Pulses.** These protein-rich crops no longer have the importance as human food that they did at one time. In addition to their value as food and feed stuffs, pulses are also important in cropping systems for their ability to produce nitrogen and thus increase the fertility of the soil.

2.1 **Definition.** Pulses are annual leguminous crops yielding grains or seeds of diverse sizes, shapes and colours contained in various numbers within a pod.

The term “pulses” should be limited to crops harvested only for dry grains excluding, therefore, crops harvested green for food (green peas, green beans, etc.), which are considered vegetables. They also exclude those used mainly for the extraction of oil, i.e. soybeans. Also excluded from the group are those leguminous crops, such as clover and alfalfa, whose seeds are used almost exclusively for sowing purpose and green manure crops. Lupins and vetches are included in this group, although HS classifies them as fodder crops. Production of pulses should be reported in terms of dry, clean weight, excluding the weight of the pods.

2.2 **Classification.** Although the botanical classification of pulses is somewhat controversial, it was suggested that data on at least the following genera be collected and reported separately by the countries:

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
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Pulse S	0713.3_a	Beans, dry	0713.3	Beans (incl. cow peas), dry
Pulse S	0713.10	Peas, dry	0713.10	Peas, dry
Pulse S	0713.20	Chick peas	0713.20	Chick peas
Pulse S	0713.3_b	Cow peas, dry	0713.3	Beans (incl. cow peas), dry
Pulse S	0713.40	Lentils	0713.40	Lentils
Pulse S	0713.50	Broad beans and horse beans, dry	0713.50	Broad beans and horse beans, dry
Pulse S	0713.90aa	Pigeon peas	0713.90_a	Pulses, nec
Pulse S	0713.90ab	Lupins	0713.90_a	Pulses, nec
Pulse S	0713.90ac	Other pulses	0713.90_a	Pulses, nec
Pulse S	0713.90ad	Bambara beans	0713.90_a	Pulses, nec
Pulse S	0713.90ae	Pulses, nec	0713.90_a	Pulses, nec

2.3

Recommendations. Production data should be reported in terms of dry clean weight, excluding the

3.

Roots and tubers. These crops contain mainly starch. Their water content is very high.

3.1 **Definition.** Starchy root and tuber crops are grown generally as annual crops and yield roots, tubers, rhizomes, corms and stems which are mainly used for human consumption. Also included in this group are the starchy pith and flour contained in the trunk of the sago palm and in the stem of the Abyssinian banana.

Crops, which are cultivated mainly for animal feed, or for processing into sugar, or which are classified as "root, bulb and tuberous vegetables" are not included.

Propagation of root crops is made in various ways, depending on the various crops. For potatoes, for example, a live tuber or seed is required for planting the following season; for yams, only a part of the live tuber, and for cassava, pieces of the stalk (not the root).

3.2 **Classification.** Roots and tubers are classified by genera.

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
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Group	Code	Name	Code SUA	Name SUA
Roots and Tubers	0714.20	Sweet potatoes	0714.20	Sweet potatoes
Roots and Tubers	0714.90_a	Yams	0714.90_a	Yams
Roots and Tubers	0714.90_ba	Yautia (cocoyam)	0714.90_b	Starchy roots, nec
Roots and Tubers	0714.90_bb	Taro (cocoyam)	0714.90_b	Starchy roots, nec
Roots and Tubers	0714.90_bc	Roots and Tubers, nec	0714.90_b	Starchy roots, nec

3.3 **Recommendations.** The production of root crops (and related yield) should be reported in terms of clean weight, i.e. the weight of the product free of earth and mud.

Particular attention is to be given as regards the coverage of the data (total) and the concept of production (harvested).

4. **Sugar crops.** Contrary to cereals, pulses and root crops, the main component of sugar crops is not starch but simple monosaccharides (glucose and fructose) and particularly disaccharides (sucrose or saccharose). The protein and fat content is negligible.

4.1 **Definition.** Sugar crops are those cultivated primarily for the manufacture of sugar, secondarily for the production of alcohol (food and non-food) and ethanol for industrial use. Sugar and syrups are also produced in North America from the sap of certain species of maple trees, and in Asia from certain palms. Production data of sugar beets and sugar cane, the main sugar crops, relate to the stage when they are sent to the sugar factories, i.e., reasonably clean and free of mud, tops and leaves.

4.2 **Classification.** Sugar beets cultivated explicitly as a fodder crop, and red or garden beets, which are grown and classified as vegetable crops, should be excluded from the denomination of "sugar crops".

The list of commodities included in this group is the following:

Sugarcrop	1212.91	Sugar beet	1212.91	Sugar beet
Sugarcrop s	1212.99aa	Sugar cane	1212.99_a	Sugar Cane and Sugar crops, nec
Sugarcrop s	1212.99ab	Sugar crops, nec	1212.99_a	Sugar Cane and Sugar crops, nec
Sugar	1701.12	Beet sugar, raw, centrifugal		
Sugar	1701.11_a	Cane sugar, raw, centrifugal		
Sugar	1701.9_b	Sugar, n.e.c.		

4.3 **Recommendations.** Production of sugar beets and sugar cane should relate to the stage when they are sent to the sugar factories, i.e., reasonably clean and free of tops and leaves.

5. **Oil-bearing crops (Temporary only).**

5.1 **Definition.** Temporary oil-bearing crops are usually called oilseeds. These are annual plants whose seeds are used mainly for extraction of culinary and industrial oils, excluding essential oils. These crops could be consumed raw as well. Some temporary oil crops are rich in protein content, particularly soybeans, but when processed into oil, the proteins go with the cake which is fed to animals.

As in the case of cereals and pulses, the denomination of "oilseed" should be limited to crops harvested for the dry seed only, excluding crops harvested green and used for food or feed, or used for grazing and green manure.

The oil content of oilseeds varies widely from one to the other. It can be as low as 17 percent (soybeans) and as high as 50 percent (sesame seed).

5.2 **Classification.** Oilseeds are classified according to the genera to which they belong. Although rape and mustard seeds belong to the same genus, it seems advisable that they are treated as two distinct oilseed crops.

There are some oilseed crops which are also fibre crops, i.e., from the same plant both seeds and fibres are harvested and utilized by industry. These crops are: cotton, cultivated for both seeds and fibres; flax and hemp, which in some countries are cultivated for seeds only and in other countries for both seed and fibre; certain crops being cultivated mainly for fibre and others mainly for seed. As an example, most linseed comes from crops cultivated for seed only.

Area figures of crops yielding both seeds and fibres could go either with the oilseed group or with the fibre group. If they are included in both groups, particular attention is required to avoid double counting.

Production figures for fibres and seeds are always reported separately for flax and hemp. In the case of cotton, certain countries report separately fibres and seeds while others report fibres and seeds together in one single figure reported as seed cotton or unginned cotton.

Both cotton seed and cotton lint (but not seed cotton) are considered by FAO to be primary crops and are classified in the oil crops and fibre crops groups. This is because seed cotton is a mixture of both food (seed) and non-food (fibre).

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
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Oilcrops	1201.00	Soybeans	1201.00	Soybeans
Oilcrops	1202.10	Groundnuts, with shell	1202.10	Groundnuts
Oilcrops	1206.00	Sunflower seed	1206.00	Sunflower seed
Oilcrops	1205	Rapeseed	1205_a	Rapeseed and Mustard seed
Oilcrops	1207.50	Mustard seed	1205_a	Rapeseed and Mustard seed
Oilcrops	1207.20_a	Cottonseed	1207.20_a	Cottonseed
Oilcrops	1207.20_b	Seed cotton	1207.20_a	Cottonseed
Oilcrops	1207.40	Sesame seed	1207.40	Sesame seed
Oilcrops	1204.00	Linseed	1204.00	Linseed
Oilcrops	1207.60	Safflower seed	1207.9_a	Oilseeds, nec
Oilcrops	1207.9aa	Poppy seed	1207.9_a	Oilseeds, nec
Oilcrops	1207.9ab	Melonseed	1207.9_a	Oilseeds, nec
Oilcrops	1207.9ac	Oilseeds, nec	1207.9_a	Oilseeds, nec
Group	Code	Name	Code SUA	Name SUA

- 5.3 **Recommendations.** Production of oilseeds should always relate to the quantities actually harvested, whatever use will be made of them after harvest.

Groundnuts data should be reported in terms of groundnuts in the shell; other oilseeds, in terms of the weight of the seeds.

6. **Fibre crops (Temporary only) and Fibres of animal origin**

- 6.1 **Definition.** Fibres of vegetal origin come from annual and perennial plants, and are utilized by the textile industry to produce first thread and yarn, and from them innumerable fabrics or manufactures. But thread, yarn and manufactured products are not any more agricultural products, and for this reason are not listed here. Certain fibre crops yield also seeds utilized for sowing purposes and for processing into oil and cakes (see oil-bearing crops derived products). Fibres are commonly divided into soft (e.g., cotton) and hard fibres (e.g., sisal). Fibres of animal origin come mainly from live animals. They have the same use as vegetable fibres but are of much higher value. By extension, fine or coarse animal hair is also included in this group.
- 6.2 **Classification.** As mentioned previously (5.2), fibre crops also yield seeds which are utilized for sowing purposes, and in certain cases are processed into oil and cakes (cotton seed, linseed).

The list of commodities included in this group is the following:

Fibres, vegetal origin	5201.00_a	Cotton lint	5201.00_a	Cotton lint
Fibres, vegetal origin	5301.2	Flax fibre and tow	5303.10_a	Jute and other bast fibres (inc. flax)
Fibres, vegetal origin	5303aa	Jute and Jute-like fibers	5303.10_a	Jute and other bast fibres (inc. flax)
Fibres, animal origin	5101.1	Wool, greasy	5101.1	Wool, greasy
Fibres, animal origin	5001.00	Silk-worm cocoons, suitable for reeling		

6.3 **Recommendations.** Area data for each fibre crop should cover all areas from which the fibres have been harvested.

Specific problems relating to fibre crops are to be solved as follows:

- yield and production of cotton should be reported in terms of seed cotton or unginning cotton and/or in terms of cotton lint, excluding linters and waste. Linters are short fibres attached to the cotton seeds after ginning, used for padding, and as a source of cellulose.
- yield and production of flax and hemp should be reported in terms of dry straw, retted, and/or (preferably) in terms of scutched and hackled fibres, including tow. Hemp grown for other purposes, e.g., paper making, should be excluded.
- yield and production of jute and jute-like fibres should be reported, preferably in terms of dry fibres as they are generally marketed, and/or in terms of dry stems.

7. **Vegetables.** Vegetables contain principally water, amounting to 70 to 95 percent of the total weight. They are, therefore, very low in dry matter and accordingly in nutrients. Vegetables contain also minerals and vitamins, which are partly lost during cooking and processing. Moreover, the "refuse", i.e. the parts of the vegetables which are discarded before consumption or processing, is quite substantial in most of them, accounting for up to 50 percent of their total weight as harvested for leguminous vegetables, and for artichokes and watermelons. Refuse includes tops, stems, seeds, rinds, peel, pods, damaged and withered leaves and parts that are high in cellulose. Owing to the highly perishable nature of vegetables, waste also tends to be rather high.

7.1 **Definition.** Vegetables are temporary crops cultivated principally for human consumption both as field crops and garden crops, in the open and under protective cover. Certain gramineous and leguminous plants, if harvested for their dry grains, are classified as cereals and pulses and belong to this group as they are harvested while green for their green grains or for their green pods (green maize, green peas, string beans, etc.). Vegetables cultivated mainly for animal feed or cultivated only for their seeds are excluded. The group includes mushrooms. Production data relate

to farm weight and data for green peas, green beans, green broad beans and string beans refer to the total weight of both grains and pods.

This group includes also melons and watermelons which some countries classify as fruit crops. As with all other vegetables, melons and watermelons are temporary crops, while fruit crops are permanent crops.

7.2 Classification.

Vegetables are grouped according to botanic characteristics as follows: leafy or stem vegetables (e.g., cabbage); fruit-bearing vegetables (e.g., melons); flower vegetables (e.g., cauliflowers); root, bulb and tuberous vegetables (e.g., onion); leguminous vegetables (e.g., green peas); other vegetables (e.g., green maize and mushrooms).

Since vegetables grown under protective cover are becoming increasingly important, it is desirable that area, yield and production data for covered crops be collected and reported separately from those of vegetables grown in the open.

The list of commodities included in this group is the following:

Vegetables	0702.00	Tomatoes	0702.00	Tomatoes
Vegetables	0703.10_a	Onions (incl. shallots), green	0703.10	Onions (incl. shallots), green and ripe
Vegetables	0703.10_b	Onions, dry	0703.10	Onions (incl. shallots), green and ripe
Vegetables	0703.20	Garlic	0703.20	Garlic
Vegetables	0706.10	Carrots and turnips	0706.10	Carrots and turnips
Vegetables	0703.90	Leeks and other alliaceous vegetables	0703.90	Leeks and other alliaceous vegetables
Vegetables	0704.10	Cauliflowers and broccoli	0704.10	Cauliflowers and broccoli
Vegetables	0704.90_a	Cabbages and other brassicas	0704.90_a	Cabbages and other brassicas
Vegetables	0705	Lettuce and chicory	0705	Lettuce and chicory
Vegetables	0707.00	Cucumbers and gherkins	0707.00	Cucumbers and gherkins
Vegetables	0708.10	Peas, green	0708.10	Peas, green

Group	Code	Name	Code SUA	Name SUA
Vegetables	0708.20_a	Beans, green	0708.20	Beans (incl. string beans), green
Vegetables	0708.20_b	String beans	0708.20	Beans (incl. string beans), green
Vegetables	0708.90	Leguminous vegetables, nec (incl. broad beans), green	0708.90_a	Leguminous vegetables, nec, green
Vegetables	0709.10	Artichokes	0709.10	Artichokes
Vegetables	0709.20	Asparagus	0709.20	Asparagus
Vegetables	0709.30	Eggplants (aubergines)	0709.30	Eggplants (aubergines)

Vegetables	0709.5	Mushrooms and truffles	0709.5	Mushrooms and truffles
Vegetables	0709.60	Chillies and peppers, green (Capsicum spp.)	0709.60	Chillies and peppers, green
Vegetables	0709.70	Spinach	0709.70	Spinach
Vegetables	0709.90_b	Pumpkins, squash and gourds	0709.90_b	Pumpkins, squash and gourds
Vegetables	0709.90ca	Maize, green	0709.90_c	Vegetables, nec (inc. okra)
Vegetables	0709.90cb	Okra	0709.90_c	Vegetables, nec (inc. okra)
Vegetables	0709.90cc	Cassava leaves	0709.90_c	Vegetables, nec (inc. okra)
Vegetables	0709.90cd	Chicory roots	0709.90_c	Vegetables, nec (inc. okra)
Vegetables	0807.11	Watermelons	0807.11	Watermelons
Vegetables	0807.19	Other melons (incl. cantaloupes)	0807.19	Other melons (incl. cantaloupes)
Vegetables	0709.90ce	Vegetables, nec (may include aromatic herbs)	0709.90_c	Vegetables, nec (inc. okra)

- 7.3 **Recommendations.** Area and production of vegetables of little importance in the context of total area and production of vegetables, for example, less than 1 percent each of them, could be reported together in one single figure.

Countries should report both total area and total production of individual vegetable crops and, as separate items whenever possible, estimate that portion of each crop produced mainly for sale as distinct from that produced mainly for consumption by producers.

General recommendations on mixed and successive cropping as well as coverage of area and production data, are particularly applicable to vegetable crops.

8. **Tobacco**

- 8.1 **Definition.** *Nicotiana tabacum*, *N. rustica*. Sub-tropical and tropical annual plant, cultivated all over the World for the narcotic leaves, which prepared in various ways are used for smoking, chewing or sniffing. About one third of the World production is harvested in China. Main varieties are: Oriental, Maryland, Burley, tropical. Production data should relate to farm sales weight of the leaves, which could be about 90% of the weight of fully dried leaves. The leaves not yet fully dried are fermented, cured and dried with various methods (sun curing, air curing, flue curing, hot air and fire curing). They are further prepared and cut depending on the various forms in which they are used (for cigarettes, for cigars, for use in pipes, etc). Sometimes they are also flavoured with aromatic substances. The alkaloid nicotine is the chief active principle of tobacco leaves. It is a very toxic substance. The seeds of the tobacco plant are used for the extraction of industrial oil.

- 8.2 **Classification.** Although tobacco crops are classified by countries according to varieties and/or according to the different ways in which leaves are dried, cured and prepared, it would be sufficient that countries report separate figures for *N. tabacum* and for other low quality tobacco species, if any.

Tobacc	2401	Tobacco,	2401	Tobacco,
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8.3 **Special recommendations.** Tobacco yield and production figures should refer to farm sales weight, i.e., the weight of the leaves leaving the farm for tobacco factories. The leaves are usually drier than at harvest, though not fully dry.

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Group	Code	Name	Code SUA	Name SUA
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Fodder crops (Temporary and permanent)

FODDER CROPS are those cultivated explicitly or primarily for animal feeding. Temporary crops grow in artificial meadows which are normally used very intensively, with various cuttings per year.

They contain three major groups of fodder: grasses, including cereals harvested green; legumes, including pulses harvested green; root crops and vegetables cultivated for fodder. All can be given to animals as green feed; as hay, i.e. crops harvested dry or left to dry if harvested green; and as silage products.

Silage or ensilage is a method of preservation of green fodder without drying it through processes of fermentation that retard spoiling. Some fodder crops enter in the composition of various compound feeds. Grasses contain crude fibres and crude protein and some minerals; legumes bear pods and are particularly rich in proteins and minerals; root crops have a high starch and sugar content, and low fibre content, so they are highly digestible. The fibre content of most fodder crops is constituted by cellulose, a very complex carbohydrate polysaccharide which, by contrast with starches and sugars, are not digestible for man but which are a good source of energy for animals, particularly ruminants. The aggregation of various fodder crops into "feed units" is made in different ways in different countries; for example, in terms of metabolizable energy, digestible nutrients, starch equivalent, protein equivalent, grain equivalent, etc. Although fodder crops do not provide directly any nutrient for the man, they are essential in the feeding of animals; and the products from slaughtered and live animals provide man with almost 16% of all calories consumed.

PRODUCTS USED FOR ANIMAL FEED. They include: 1. Processed products from fodder crops 2. Waste and residues 3. Manufactured compound feed, consisting of various feeds of vegetal and animal origin mixed, with added minerals and vitamins. A typical compound feed is composed as follows: cereals and bran 35%, oil cakes about 40%, fish and meat meal and dry milk 4-5%, molasses, beet pulp 3-4%, cassava dry and citrus meal 2%, meal of fodder crops 2-3%, mineral and vitamins 4-5%, other feed stuff 6-10%. But the composition varies widely depending on the availability of feed and the destination to various kinds of animals. In Developed countries the diet of animals includes generally more compound feed than straight feed, particularly in the case of pigs and poultry. 4. Chemical preparations for feed such as vitamins and minerals and various additives. All for

supplementing farm—produced feed to ensure a well balanced animal diet. These preparations are also included in the compound feeds.

9.1 Classification. The list of commodities included in this group is the following:

Feed products	1214.90_a	Maize for forage and silage	1214	Fodder crops
Feed products	1214.90_b	Clover for forage and silage	1214	Fodder crops
Feed products	1214.90_c	Alfalfa for forage and silage	1214	Fodder crops
Feed products	1214.90_d	Sorghum for forage and silage	1214	Fodder crops
Group	Code	Name	Code	Name SUA
Feed products	1214.90_e	Rye grass for forage and silage	1214	Fodder crops

V. PERMANENT PRIMARY CROPS: CONCEPTS, COVERAGE AND GENERAL RECOMMENDATIONS

Much of what has already been said about temporary primary crops under item III, applies to permanent crops as well. Peculiarities of permanent crops are highlighted in the paragraphs that follow.

1. **Concept of area.** A peculiarity of permanent crops is that most countries report number of trees or plants in addition to or, instead of, the area planted. This is particularly so as regards plants growing outside of compact plantations, which are either interplanted with other crops or are scattered. Both area and number of trees are also divided into productive or bearing and non-productive or non-bearing areas or trees. In most cases, non-bearing refers to young plants that are not yet bearing.

It is recommended that countries report primarily the area or number of trees actually harvested or the bearing area/trees actually harvested and, secondarily, the total planted area or number of trees. Countries reporting differently should define the concept behind the published figures.

2. **Coverage of area.** As is the case for temporary crops, reported area, or number of trees, should cover the entire area or the total number of trees. Estimates should be made, when necessary, to cover small areas and/or scattered trees which might be neglected by annual area surveys.

It is recommended that countries which collect current data for commercial areas only should also conduct periodic surveys of the area or number of trees in small allotments and family gardens, or which are scattered.

3. **Interplanted crops and scattered trees.** It is **recommended** that the area of permanent crops interplanted and scattered be added to the area of compact plantations by estimating the area that such crops would have covered had they been growing in compact plantations. When such estimates are not possible, countries should report separately area figures for compact plantations and for interplanted crops, as well as for the number of scattered trees.

VI. PERMANENT PRIMARY CROPS: DEFINITION, CLASSIFICATION AND SPECIFIC RECOMMENDATIONS

1. Fruits and berries.

- 1.1 **Definition.** Fruit crops are those crops yielding fruits and berries characterized (with few exceptions) by their sweet taste. In general they are rich in organic acid and pectin. The majority are permanent crops, mainly trees, bushes and shrubs, but also vines and palms. Fruits and berries grow on branches, stalks or the trunk of plants, usually singly, but sometimes grouped in bunches or clusters. Commercial crops are cultivated in orchards and compact plantations, but significant quantities are also collected from cultivated, scattered or spontaneous plants.

Bananas, plantains, grapes, dates are considered fruit crops by FAO, while nuts, olives, coconuts, melons and watermelons are not considered as such. Production data of fruit crops should relate to fruits actually harvested. Data on bananas should be given in terms of the weight of single bananas or banana hands, excluding, therefore, the weight of the central stalk of the bunches.

1.2 **Classification.** Fruits differ widely in shape, colour and size, from the small berry to the very large jackfruit and banana bunch. They are broadly classified as sub-tropical/tropical fruits and fruits of the temperate zones and are sub-divided into two main categories: pome fruit, e.g. apples, and stone fruit, e.g. peaches, grapes, dates, figs and a few other fruit crops do not enter in any sub-group; berries and citrus form particular groups.

In principle, fruit crops should be classified according to the genus and species to which they pertain with related data reported separately. In certain cases, a further distinction by varieties of the same species may be very useful.

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
Fruit	0803.00_a	Bananas	0803.00_a	Bananas
S Fruit	0803.00_b	Plantains	0803.00_b	Plantains
S Fruit	0804.10	Dates	0804.10	Dates
S Fruit	0804.20	Figs	0804.20	Figs
S Fruit	0804.30	Pineapples	0804.30	Pineapples
S Fruit	0804.40	Avocados	0804.40	Avocados
S Fruit S	0804.50	Guavas, mangoes and mangosteens	0804.50	Guavas, mangoes and mangosteens
Fruit	0805.10	Oranges	0805.10	Oranges
S Fruit S	0805.20	Tangerines, mandarins and clementines	0805.20	Tangerines, mandarins and clementines
Fruit	0805.40	Grapefruit (incl. pomelos)	0805.40	Grapefruit and pomelo
S Fruit	0805.50	Lemons and limes	0805.50	Lemons and limes
S Fruit	0805.90	Citrus fruit, nec	0805.90	Citrus fruit, nec
S Fruit	0806.10	Grapes	0806.10	Grapes
S Fruit	0807.20	Papayas	0807.20	Papayas
S Fruit	0808.10	Apples	0808.10	Apples
S Fruit	0808.20_a	Pears	0808.20	Pears and quinces
S Fruit	0808.20_b	Quinces	0808.20	Pears and quinces
S Fruit	0809.10	Apricots	0809.10	Apricots
S Fruit	0809.20_a	Cherries	0809.20	Cherries (incl. sour cherries)
S Fruit	0809.20_b	Sour cherries	0809.20	Cherries (incl. sour cherries)
S Fruit	0809.30	Peaches and nectarines	0809.30	Peaches and nectarines
S Fruit	0809.40	Plums and sloes	0809.40	Plums and sloes
S Fruit	0810.10	Strawberries	0810.10	Strawberries
S Fruit	0810.20	Raspberries and other berries	0810.20	Raspberries and other berries
S Fruit	0810.30_a	Currants	0810.30	Currants and gooseberries
S Fruit	0810.30_b	Gooseberries	0810.30	Currants and gooseberries
S Fruit S	0810.40	Cranberries, blueberries and other fruits of Vaccinium spp.	0810.40	Cranberries, blueberries
Fruit	0810.50	Kiwi fruit	0810.50	Kiwi fruit
S Fruit	0810.90aa	Persimmons	0810.90_a	Fruit, nec (inc. persimm.)
S Fruit	0810.90ab	Pome fruit, nec	0810.90_a	Fruit, nec (inc. persimm.)
S Fruit	0810.90ac	Stone fruit, nec	0810.90_a	Fruit, nec (inc. persimm.)
S Fruit	0810.90ad	Cashewapple	0810.90_a	Fruit, nec (inc. persimm.)
S Fruit	1212.10	Carobs	0810.90_a	Fruit, nec (inc. persimm.)
S Fruit	0810.90ae	Fruit, nec (incl. tropical fruit)	0810.90_a	Fruit, nec (inc. persimm.)

1.3 **Recommendations.** With particular application to fruit crops, it is recommended that countries report separately area figures for commercial orchards or compact plantations and for interplanted crops, as well as the number of scattered trees in

instances when it is not possible to arrive to a single total area figure in terms of pure stand equivalent.

It is further recommended that separate data on area and number of trees in new plantings should be an integral part of current statistics on fruits. It is considered desirable that countries report the density or planting space of various fruit crops in commercial orchards.

It is worth emphasizing that fruit crops are grown outside agricultural holdings and commercial orchards to a greater degree than are other crops. It is necessary, therefore, to evaluate periodically how much of the production comes from non-commercial crops.

Data on bananas should be given in terms of the weight of single bananas or banana hands, excluding, therefore, the weight of the central stalk of the bunches.

Finally, the gathering of wild plants, particularly berries, should be recorded apart from the production of cultivated crops.

2. Nuts

2.1 **Definition.** Nuts are tree crops yielding dry fruits or kernels characterized by their woody shells or hard husks. Their shells and husks are generally covered by a thick, fleshy/fibrous outer husk which is removed at harvesting time. This group includes only nuts used mainly as dessert or table nuts.

2.2 **Classification.** In the FAO classification, only those nuts used mainly as dessert or as table nuts are included. Consequently, nuts used mainly for flavouring beverages are excluded, as are masticatory and stimulant nuts, and nuts used mainly for the extraction of oil or fat: areca/betel nuts, kola nuts, illipe nuts, karite nuts, coconuts, tung nuts, oil palm nuts, etc.

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
Nut	0802.11	Almonds, with shell	0802.11	Almonds
^S Nut	0802.50	Pistachios	0802.50	Pistachios
^S Nut ^S	0801.31	Cashew nuts, with shell	0801.31	Cashew nuts
Nut	0802.21	Hazelnuts, with shell	0802.21	Hazelnuts
^S Nut	0802.31	Walnuts, with shell	0802.31	Walnuts
^S Nut	0802.40	Chestnuts	0802.40	Chestnuts
^S Nut	0802.90aa	Kolanuts	0802.90_a	Nuts, nec
^S Nut	0801.21	Brazil nuts, with shell	0802.90_a	Nuts, nec
^S Nut	0802.90ab	Arecanuts	0802.90_a	Nuts, nec
^S Nut	0802.90ac	Nuts, nec	0802.90_a	Nuts, nec

2.3

Recommendations. Production data should relate to the weight of the nuts in the shell, or in the husk, without counting the weight of the outer husks.

Gathering of wild plants, particularly chestnuts, walnuts and hazelnuts, should be recorded separately from the production of cultivated crops.

3. **Oil-bearing crops (Permanent only)**

3.1 **Definition.** Oil-bearing crops are annual and perennial plants whose seeds (oilseeds), fruits or mesocarp, nuts and kernels (oil palm) are used mainly for extraction of culinary and industrial oils and fats, excluding essential oils.

3.2 **Classification.** The oil palm produces bunches containing a large number of fruits or nuts having a fleshy mesocarp or pulp enclosing a kernel covered by a hard shell. As regards coconuts, the primary product is the nut, including the woody shell, the meat and the water or milk, but excluding the fibrous outer husk (coir), which represents about one third of the total weight of mature unhusked coconut.

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
Oilcrops	0801.19	Coconuts	0801.19	Coconuts (incl. copra)
Oilcrops	1207.40	Sesame seed	1207.40	Sesame seed
Oilcrops	1207.10aa	Palm kernels	1207.10_a	Palm kernel equivalents
Oilcrops	1207.10ab	Oil palm fruit	1207.10_a	Palm kernel equivalents
Oilcrops	0709.90_a	Olives	0709.90_a	Olives

3.3 **Recommendations.** Production data relate to the weight of the clean, dry seeds, except for groundnuts which are given in terms of groundnuts in the shell. For coconuts, see 3.2 above. Olive crops should be classified according to the main use, i.e. olives for oil or table olives.

4. **Spices, condiments and aromatic herbs.** Spices are plants which, in one or the other of their components (rhizome, bark, fruits, berries, seeds, etc.), contain strongly flavoured and aromatic substances. For this reason they are mainly used as condiments. Most of them are perennial.

Practically all species are rich in essential oils which, in addition to their use in the food industry, are also employed in cosmetic and medicinal preparations. Although the nutritive value of spices is normally insignificant, their commercial value is very high.

Production data of spices are given in terms of ripe, dried or powdered products to make them roughly comparable with trade data.

The list of commodities included in this group is the following:

Group	Code	Name	Code SUA	Name SUA
Spice	0904.11	Pepper (Piper spp.)	0904.11	Pepper (Piper spp.)
Spice	0904.20	Chillies and peppers (Capsicum spp.) and allspice (Pimenta spp.)	0904.20	Chillies and peppers and allspice
Spice	0905.00	Vanilla	0905.00	Vanilla
Spice	0906.10	Cinnamom (canella)	0906.10	Cinnamom (canella)
Spice	0907.00	Cloves	0907.00	Cloves
Spice	0908	Nutmeg, mace and cardamoms	0908	Nutmeg, mace and cardamoms
Spice	0909	Anise, badian, fennel, coriander, cumin, caraway seeds and juniper berries	0909	Anise, badian, fennel, corian.
Spice	0910.10	Ginger	0910.10	Ginger
Spice	1210.10	Hops	0910.9_a	Spices, nec
Spice	0910.9_a	Spices, nec	0910.9_a	Spices, nec

5. Other permanent crops

5.1 **Coffee.** A bushy tree, 3-6m high, of the Rubiaceae family, native to Ethiopia or Yemen and now cultivated all over the world in many tropical countries. The coffee tree grows between 500 and 1700m of altitude. The fruits, resembling to cherries in shape and colour, are pulpy drupes, called cherries, with a thin skin and mucilaginous mesocarp covering a second skin or husk, called parchment. Inside, lie two adjacent seeds wrapped up in a silvery pellicle. The seeds are semi-oval in shape and have a pale green colour. The cherries are harvested when they still have high moisture content. After harvesting they are processed either by the simple dry method or by the more advanced wet method to free the seeds or beans from the pulp and the parchment. Then they are fully dried and fermented. The seeds account for 40-50% of the weight of the whole cherries. In the Middle Ages the whole fruits were eaten, raw or crushed or converted into a beverage. In modern times the seeds are roasted; with the roasting the seeds lose weight, due to water evaporation; increase volume, by action of CO₂; change colour from green to dark brown, owing to caramelization of carbohydrates; release the characteristic aroma and enhance the flavour.

There are many varieties of coffee belonging to three main groups: Arabica, the most cultivated, very fragrant; Robusta, more resistant and with more body and accentuated bitterness; Liberica, not much cultivated. There are particular cherries bearing a simple seed; they are much appreciated by refined gastronomers. Coffee contains very little nutritive elements, some fat, and for that reason is classified among the edible but “non-food” crops. It contains 1.1 to 2.1% of an alkaloid, caffeine, and for that is counted with “stimulant” crops. Coffee contains also many oligoelements.

5.2 **Cocoa.** A tropical rainforest tree, 5-6m high, of Central and South American origin, belonging to the Sterculiaceae family, today cultivated in many tropical countries. The fruits, which grow directly on the trunk and big branches of the tree, consist of a big, round-oval drupe (pod), containing 20-40 seeds or beans. The beans and the white mucilage or pulp covering them represent about one third of the total weight of the pods. Both mucilage and beans are taken out of the pods and fermented. Dried, fermented beans are considered a “primary crop”, from which derive various processed products: roasted beans (still in the shell) to develop flavour and aroma, nibs (fragments of roasted/shelled/crushed beans). The nibs are ground to give cocoa mass or chocolate liquor, from which fat or butter is extracted by pressing and the resulting cake is pulverized into cocoa powder. Cocoa beans contain carbohydrates, protein and particularly fat. They are, therefore, a “food” crop, and since they contain also alkaloids, caffeine and theobromine, they are considered “stimulant” crop. The fats contained in cocoa beans and derived products are principally saturated fatty acids (palmitic and stearic) and monounsaturated (oleic acid).

5.3 **Tea.** Camellia family of South and South East Asia origin, cultivated in subtropical and tropical regions, mainly in the Far East and China, for the tender leaves which prepared by different processes, drying and partial fermentation, give the so called “made” tea. There are two main varieties of tea: assamica and Chinese.

The primary crop consists of the tender leaves withered, rolled, fermented and dried (black tea). Data may contain green tea, i.e. black tea not fermented. Tea leaves do not contain nutritive substances (non-food crop), but contain various alkaloids, caffeine and theine or theophylline, and for that reason are counted among the “stimulant” crops. Green tender leaves can be consumed fresh as vegetables. The seeds are used for the extraction of oil, rich in oleic fatty acids.

The list of stimulants included in this group is the following:

Group	Code	Name	Code	Name
Stimulant	0901.11	Coffee,	0901.11	Coffee,
Stimulant	0901.00	Green Cocoa beans	0901.00	Green Cocoa beans
Stimulant	0902	Tea	0902_a	Tea and
Stimulant	0903.00	Maté	0902_a	Maté Tea and

5.4 **Natural rubber.** Natural Rubber *Hevea brasiliensis*, The Para rubber or caoutchouc tree is indigenous to Brazil but now is cultivated mainly in the Far East. The natural rubber is the milky fluid latex which exudes when the trunk of the tree is cut (tapped) and coagulates on exposure to the air. The dried latex is treated with sulphur at high temperatures (vulcanization) to increase the more desirable properties of the final product (elasticity, strength and stability).

For FAO, the "primary crop" is the latex, concentrated, stabilized and dried.

Group	Code	Name	Code SUA	Name SUA
Rubber, gums, waxes	4001.1	Natural rubber	4001.1	Natural rubber

- 5.5 **Hops.** A climbing perennial vine cultivated for the female unfecundate inflorescence called hop “cones.” Ripe, dry cones are the primary product. Hop cones, fresh or dried, whether or not ground, powdered or in the form of pellets. Includes lupuline, a yellow resinous powder that covers the hop cones. Mainly used in the brewing industry to give flavour to beer.

This commodity is included in the spices group:

Group	Code	Name	Code SUA	Name SUA
Spice	1210.10	Hops	0910.9_a	Spices, nec

- 5.6 **Sisal.** *Agave sisalana*. The agave family includes many plants with fibrous, fleshy and persistent spiny leaves attached to rhizometous rootstock, flowering only once. The fibre, usually coarser and thicker than other textile fibres, is obtained from the leaves. Native to tropical America is also cultivated in East Africa. Certain varieties used also as ornamental plants. The juice of certain plants is converted into fermented more or less alcoholic beverages; pulque, mescal and tequila. Other agave fibres includes inter alia; *A. fourcroydes*, heneguen; *A. lurida*, Mexican heneguen; *A. letona*, *A. cantala*, *A. lecheguilla*, *Aatrovirens*, *A. americana*, *A. foetida*. (maguey, aloe, pita).

The list of fibres of vegetal origin included in this group is the following:

Fibres, vegetal origin	5304	Sisal and other agave fibers	5304	Sisal and other Agave fibers
Group	Code	Name	Code SUA	Name SUA