Crops statistics

Concepts, definitions and classifications

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 be replanted after each annual harvest.

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

- 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. It happens that 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.

- It has been recommended that countries report net area sown and net area harvested. Countries which normally do not present data for harvested area were requested to show these figures, at least when the harvested area differs significantly from the normally-reported area. Depending on the date of enumeration, it could be possible that sown and harvested area are practically identical. 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 or 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.

Three main concepts of production (and yield) are used by countries. Biological production refers to the production still on the plants. Production actually harvested excludes harvesting losses and production not harvested for various reasons. Thirdly, the marketed production, or production for sale, excludes also own consumption by farmers and perhaps some after-harvest losses.

- 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 used for food, feed, seed and industrial purposes, e.g., ethanol. They exclude legumes, such as pulses, but include rice, canary seed, buckwheat and triticale. It has been recommended that the denomination of "cereal crops" be limited to crops harvested for dry grain only, excluding, therefore, crops harvested green for forage, silage, grazing, etc.; and, in the case of maize, harvested green, also for food.
- 1.2 Classification. Cereals shoud 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.
- 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, although it was suggested that countries report also, when available, in terms of brown rice and milled rice. It was suggested that the moisture content of the production figures be made available by the countries. Another recommendation stated that countries report, wherever possible, separate data for durum wheat and other hard wheat, hybrid maize and hybrid sorghum as part of the total wheat, total maize and total sorghum. So also as regards winter and spring crops.

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 used for food, feed and sowing purposes. The denomination "pulses" should be limited to crops harvested for dry grain only, excluding, therefore, crops harvested green for forage, used for grazing or as green manure, and also crops harvested green for food (green beans, green peas, etc.), which are considered vegetables. They exclude those used mainly for extraction of oil, e.g., soybeans. Also excluded from this group should be those leguminous crops whose seeds are used exclusively for sowing purposes, such as alfalfa and clover.

- 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:
    - Phaseolus spp. (beans)
    - Vicia faba (broad beans)
    - Lens esculenta (lentils)
    - Cicer arietinum (chick peas)
    - Pisum spp. (peas)
    - Cajanus spp. (pigeon peas)
    - Vigna sinensis (cow peas)
    - Vicia sativa (vetch)
    - Lupinus spp. (lupins)
    - Vigna spp. (black gram, green gram, mung, etc.)
- 2.3 Recommendations. Production data should be reported in terms of dry clean weight, excluding the weight of the pods.

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

- 3.1 Definition. These plants grow generally as annual crops and yield roots, tubers, rhizomes, corms and stems which are used largely for human food, either as such or in processed form, but also for animal feed. In certain countries, they are used to manufacture starch and alcohol.

The denomination "roots and tubers" excludes those crops which are cultivated mainly for feed (mangels, swedes), or for processing into sugar (sugar beets), or which are generally classified as "roots, bulb and tuberous vegetables" (onions, beets). It does include the starchy pith and flour which are derived therefrom and which are contained in the trunk of the sago palm, and in the stem of the Abyssinian banana (Musa ensete).

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. Potatoes grown specifically for seed and potatoes grown for industrial (non-food) purposes should be reported separately, when such crops are important. Countries are advised to report early/new potatoes and other potatoes, separately .
- 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 crops cultivated primarily for the manufacture of sugar, secondarily for the production of alcohol (food and non-food) and ethanol. There are two main sugar crops: sugar beets and sugar cane. Sugar cane is a perennial grass (replanted at certain intervals using pieces of the cane stalks); sugar beets is an annual crop, propagated by the seed of the flowers. In certain countries, sugar cane is eaten raw in significant quantities. Both sugar cane and sugar beets are used for feed. Sugar and syrups are also produced in North America from the sap of certain species of Maple trees, and, in a few countries, from maize and sorghum which are primarily cereal crops, except sweet sorghum when it is cultivated explicitly for making syrup.
- 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". Similarly, both sugar cane and sugar beets, when cultivated explicitly for alcohol making or ethanol.
- 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). The oil and fat extracted from all the oil-bearing crops, both temporary and permanent is used for human food and industrial purposes 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.

- 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.

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).

- 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)

- 6.1 Definition.

Fibre crops are annual crops yielding vegetable fibres, mostly soft fibres, which are utilized by the textile industry to produce first thread and yarn, and, from these, innumerable fabrics or manufactures. The primary fibre crops are cotton, jute and flax.

- 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).

- 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 unginned 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 plants cultivated both as field crops and garden crops, both in the open and under glass.

Certain gramineous and leguminous plants which, if harvested for the dry grain, are