

cleared is cultivated for a number of years, using no fertilizers, until yields fall rapidly and weeds grow rampant, at which time the farmer abandons the land and allows it to restore itself through the natural growth of vegetation, which may take several years, before clearing and cultivating it again.

051813 Area actually irrigated

This item refers to the gross area of land purposely and actually provided with water, other than by rain, for improving the production of crops or pastures. The uncontrolled flooding of land by the overflow of rivers or streams should not be considered irrigation. However, rain water or water from uncontrolled overflow of rivers and streams may be collected and later used for irrigation. Land irrigated more than once during the agricultural year should be counted only once for this item, so that the total of irrigated and non-irrigated areas equals the total area in all land uses.

05152, 05162, 05172, 05183 and 05192 Costs incurred

Costs incurred for soil conditioners, cropland additions, pasture establishment, and irrigation and drainage facilities are classified as own account or contracted items. Own-account costs are for materials and hired labour used by the holding itself for these purposes, where the value of labour for unpaid family workers is imputed. Such own-account activities are considered to be ancillary activities of holdings and thus constitute part of agricultural production. The same activities, if contracted out to others, such as construction firm, are then not considered production of the agricultural sector but rather of construction.

0522 Area by tenure

Land tenure refers to the arrangements or rights under which the holder holds or uses the land of the holding. A holding may be operated under one or more forms of tenure, as described in the following subsections.

05221 Owned or held in ownerlike possession

Area owned is the area of a holding for which the holder possesses title of ownership and, consequently, the right to determine the nature and extent of its use. It does not include area owned but rented to others. Areas held in ownerlike possession include land for which the holder does not have title of ownership but which may be

operated as if he or she did, excluding land so held but rented to others. Some common types of ownerlike possession are:

- (a) land operated under perpetual and long-term lease and hereditary tenure;
- (b) land peacefully and uninterruptedly operated by the holder without legal title of ownership or long-term lease, for a long period of time, and without payment of rent; and
- (c) land granted to the holder, rent free, from tribal or other communal land, to be retained by the holder as long as it is kept under cultivation by his or her own labour and that of household members, but which cannot be sold or mortgaged.

#### 05222 Rented from others

Rental or lease arrangements may take different forms. Some common examples include:

- (a) Land rented to the holder, for a pre-agreed amount of money and/or produce. In general, the administration, management and operation of the land are the responsibility of the holder.
- (b) Land rented for a pre-agreed proportional share of the produce or, in exceptional cases, the cash equivalent. The responsibility for management of the holding may be exclusively the holder's or may be shared to a limited degree with the landlord if the latter contributes tools, fertilizers, or other inputs. The economic risks, however, as far as income is concerned, are always shared by the holder and the landlord.
- (c) Land rented in exchange for services, in which the usufruct is granted to the holder instead of wages, e.g., in return for a certain number of days of work as an agricultural labourer on the landlord's holding or for other services rendered to the landlord (e.g., a religious organization or government).

#### 05223 Operated on a squatter basis

Land occupied and used by squatters may be public or private property and is land for which the holder lacks title of ownership and for which rent is not paid but which the holder operates to his or her benefit without the consent of the owner.

#### 05224 Operated under tribal or traditional communal forms of tenure

Individuals have certain rights in the joint exploitation of land held on a tribal, village, kindred, or family basis, by virtue of their membership in the social unit. Title to the land, often vested

in the chief of the tribe, is communal in character but is only usufructuary, not absolute.

05225 Operated under other forms of tenure

Examples of other forms of tenure which may exist in some countries include (a) land operated by a trustee, (b) communal land received by members of a collective for their individual use, and (c) land under inheritance proceedings.

0524 Land use

The total area of a holding consists of land in the following classification:

(1) Agricultural land

- a) Cropland
  - i) Arable land
  - ii) Land under protective cover
  - iii) Land under permanent crops - in open air
- b) Land under permanent meadows and pastures
  - i) Cultivated
  - ii) Naturally grown

(2) Woodland or forest

(3) All other land

- a) Unused and undeveloped potentially productive land
- b) Land in the holding not elsewhere specified

Land in each land use class should be measured in terms of gross area, where gross area includes, and net area excludes, uncultivated patches, bunds, footpaths, ditches, headlands, shoulders and shelterbelts.

Some countries utilize the concept of "cultivated land", which is the total cropland and the cultivated part of land in permanent meadows and pastures. For the international comparability of statistics, such countries should clarify their definition of this concept.

05241 Arable land

Arable land is defined here to include the area in the classes described in the following items: (a) land under temporary crops in the open air, (b) land under temporary meadows, (c) land temporarily

fallow, and (d) all other arable land. In some countries, however, the term "arable land" may also include land in permanent crops or be used in some other sense. Therefore, each country should clarify its own definition of arable land so that international comparisons based on the definition given here can be made.

052411 and 052421 Land under temporary crops - in open air

Temporary crops are those with a growing cycle of under one year, which need to be newly sown or planted for further production after the harvest. Crops remaining in the field for more than one year but destroyed when harvested (e.g., cassava and yams) and crops grown in rotation and destroyed when the land is ploughed (e.g., alfalfa and clover) should also be considered temporary crops. Some crops (e.g., asparagus, strawberries, pineapples, bananas and sugar cane) may be classified as either temporary or permanent, depending on how they are grown in a particular area.

052412 Land under temporary meadows

To distinguish temporary and permanent meadows and pastures, it is suggested that a period of less than five years be considered temporary. Some countries may use different criteria and a few do not make the distinction, so countries should clarify their own definitions in their censuses and surveys.

052413 Land temporarily fallow

A maximum period of idleness, probably less than five years, should be specified. Otherwise, if land remains fallow too long, it might acquire characteristics which would place it in another category, such as permanent meadows and pastures (if it could be used for grazing), or wood or forestland (if it has become overgrown with trees that could be used as timber or firewood), or wasteland. On the other hand, land should not be considered temporarily fallow unless it has been, or is intended to be, kept at rest for at least one agricultural year.

052414 All other arable land

This category includes, for example, arable land temporarily damaged by floods, land prepared for cultivation but not sown because of unforeseen circumstances, and abandoned land.

052422 and 05243 Land under permanent crops - in open air

Permanent crops are those which occupy the land for a long period of time and do not have to be planted for several years after each harvest. Included is land in trees, flower-producing shrubs, and nurseries; excluded are permanent meadows and pastures.

05244 Land under permanent meadows and pastures

Land used for five or more years for growing herbaceous forage crops, either through cultivation or naturally (wild prairie or grazing land), is considered to be permanent meadows and pastures.

05245 Woodland and forest

Included in this subsection are all tracts of timber, natural or planted, which have or will have value as wood, timber, or other forest products or for protection, e.g., scattered trees, trees in rows, belts and small clumps, nurseries of forest trees, and bamboo and other woody vegetation. Excluded are woodlands or forests used for recreational purposes only, which should be counted under "land in the holding not elsewhere specified".

052461 Unused and undeveloped potentially productive land

This item includes uncultivated land which is either producing some kind of utilizable vegetable product -- e.g., reeds and rushes for matting and livestock bedding, and wild berries and fruits -- or could be brought into crop production at relatively little additional expenditure.

052462 Land in the holding not elsewhere specified

Included, for example, is land occupied by buildings, parks and ornamental gardens, roads and lanes, wasteland, and land under water.

5.3.6 Category 06: Crops

This category covers the basic features of crop cultivation, including items on inputs used and outputs obtained. The information is classified in two divisions, one pertaining to the holding as a whole and the other to each parcel.

New orchards, rubber plantations, vineyards and other fruit-bearing and sap-bearing plants take more than a year after planting to become productive. The United Nations, in its System of National Accounts, considers expenditures on clearing, planting and tending permanent crops in their non-productive stage to be fixed capital formation (UN 1968a, p. 113). Therefore, such input costs are classified in a separate section (0626) in order to distinguish between fixed capital formation and intermediate consumption. The following is a suggested classification scheme, based on end use, for temporary and permanent crops. Since most crops may undergo different degrees of processing depending on their end use, countries may modify the classification of crops in accordance with their own national situation.

- A. Temporary crops
  - 1. Cereals harvested for grain
  - 2. Tuber, root and bulb crops
  - 3. Leguminous plant mainly for grain (excluding soybeans and groundnuts)
  - 4. Crops mainly for food processing and industrial purposes (sugars, oilseeds, fibres, and spices and condiments)
  - 5. Vegetables
  - 6. Special horticultural cultivation (flowers, ornamentals, mushrooms and greenhouse vegetables)
  - 7. Fodder crops (for grazing or cut for hay, green feed or silage)
  - 8. Seed crops
  - 9. Other temporary crops not elsewhere specified
- B. Permanent crops
  - 1. Fruits and nuts
  - 2. Permanent industrial crops (e.g., beverages, oils, spices, rubber and fibres)
  - 3. Nurseries
  - 4. Other permanent crops not elsewhere specified

#### 0613 Fertilizers

In general, fertilizers refer to anything added to the soil to increase the amount of plant nutrients available for crop growth and are here classified into inorganic fertilizers, organic manures, and other fertilizers. The four types of inorganic fertilizers are: nitrogenous; phosphates; potash; and mixed, compound and complex fertilizers. There are also four types of organic manures: (a) farmyard manure, which refers to faeces and urine of farm animals mixed with litter (mainly straw); (b) compost, which is derived from decomposed plant remains, usually with lime, nitrogen and water added; (c) green manure, which provides humus to the soil when crops specifically grown for the purpose (e.g., Italian rye grass and

mustard) are ploughed under; and (d) kelp, which is seaweed applied as a source of potash. Finally, other fertilizers include, for example, guano, fish manure, fish guano, bone meal and wood ashes.

#### 0614 Pesticides

Materials useful for the mitigation, control or elimination of pests which are troublesome or harmful to crops or livestock include insecticides, fungicides, fumigants, herbicides and rodenticides.

#### 0618 Crop insurance

Included are insurance schemes against such natural calamities as hail, snow or rain storms, floods and droughts.

#### 0621 Crop stand

A pure stand is a single crop, temporary or permanent, cultivated alone in a field. Different crops may also be cultivated simultaneously on the same piece of land so that it is difficult to measure how much area is allocated to each crop. There are two types of such cropping combinations: mixed and associated crops.

Mixed crops are two or more different temporary or permanent crops (but not both temporary and permanent crops) grown simultaneously on the same field or plot. The number, kinds and proportions of crops in the mixture will generally vary according to prevailing practices, meteorological conditions and other factors. In some countries, certain temporary crops, particularly grains, are grown and harvested as mixtures. It is recommended that such mixtures be treated as a single crop, without attempting to estimate the area under each crop, although the names of the constituent crops should be indicated. For other types of crop mixtures, however, it may be practicable and desirable to estimate the area covered by each crop. Methods for making such estimates commonly range from the informal -- e.g., relative quantities of seed used, densities in the mixture compared to common densities in pure stands, and eye estimates -- to statistical sampling procedures.

Interplanted crops, a special type of mixture, occur in the situation where one crop is planted between rows of another crop, e.g., sorghum and groundnuts between rows of cotton, or groundnuts between rows of maize or sorghum. It is generally desirable to assign areas to each of the interplanted crops in proportion to the areas occupied by each crop, even when favourable interactions may result in

higher yields than in pure stands, so that the total of individual crop areas equals the total mixed area.

When both temporary and permanent crops are grown simultaneously in the same field, each of the crops is referred to as an associated crop. In assigning areas to the associated crops, net harvested areas should be used for temporary crops and gross areas for permanent crops. If the permanent crop is in a compact plantation, the whole gross area should be assigned to it for purposes of estimating land use in category 05; however, it is still important to estimate the net area equivalents under the associated temporary crops for purposes of calculating total area harvested for those crops.

#### 062202 Cropping intensity

Intensity refers to the frequency with which a given piece of land is cultivated. In countries with more than one cropping season, successive cropping is of great importance where the same or different crops are grown and harvested on the same land several times during the agricultural year. The field, or parts of it, may also be left fallow during one or more of the cropping seasons. The area of successive crops is to be counted for each crop separately each time the area is sown or planted during the year. Thus, since such areas are counted more than once a year, the total harvested or sown areas for the year may be larger than the total physical areas of the holding.

#### 06231 Area sown or planted, and harvested

The area sown for a temporary crop includes the areas (preferably net areas) for growing that crop as many times as they are used during the agricultural year. The area planted for permanent crops is the gross area of the stand regardless of how many times produce is harvested from the stand.

The area harvested for a particular crop is the total area from which the crop is gathered. In the case of successive cropping, a piece of land is counted as many times as the crop is harvested from it. As for area sown or planted, net areas should be used, if possible, for temporary crops and gross areas for permanent crops. For crops producing more than one product, such as cotton fibre and cottonseed, duplication should be avoided by assigning the harvested area to the principal product.

06251 Permanent crops plantation characteristics

Most tree crops and some other permanent crops must reach a certain age before they become productive. Crops at that stage should be counted as "of productive age" even if they have not yet yielded a harvest because of poor weather or other abnormal conditions. Old trees or other trees of productive age but no longer producing, if they can be identified, should not be counted.

Compact plantations are plants, trees or shrubs planted in a regular or systematic manner. Irregularly planted land may be considered compact if it is planted densely enough to permit the collection of data regarding the area planted; otherwise, the plantation is said to be scattered. Areas under scattered trees may be estimated by assigning a standard area to each tree and multiplying by the number of trees.

5.3.7 Category 07-08: Livestock

This category consists of a division containing information on livestock production management systems and population numbers and separate divisions for each of nine classes of animal. The animal divisions contain sections on demographic characteristics of the herds, the use of inputs, and outputs produced. The category also contains information on the manufacturing of milk products, which is considered an ancillary activity of agricultural holdings, and on the slaughtering of animals at slaughterhouses, which is a non-agricultural economic activity.

0711 Livestock production system

Four production systems are identified:

- (a) Nomadic or totally pastoral -- where livestock is kept by households that neither have a permanent place of residence nor practise regular cultivation.
- (b) Semi-nomadic or semi-pastoral -- where livestock is kept by households that establish a permanent place of residence. Crops are cultivated as a supplementary food source, but the herds are moved on transhumance to assure sufficient forage and water.
- (c) Sedentary pastoral -- where livestock raising and the cultivation of crops are carried out by households that have a permanent residence.
- (d) Ranching -- where livestock are kept on ranches.

0721, 0731, 0741, 0751 and 0761      Herd structure and management

For each major livestock type, a herd model, in the form of a table, shows the population structure of the herd at the beginning of the year (by age, sex, breed and purpose), and management practices during the year in terms of births, deaths, purchases and sales. The herd model is especially useful in computing the number of animals fed and cared for during the year.

5.3.8   Category 09:   Machinery and Equipment

Information on machinery and equipment used wholly or partly for agricultural production is classified in two divisions, the first referring to holdings and the second to both holdings and agricultural service establishments. Machinery and equipment used on holdings will generally be among the following types:

- 1      Stationary power-producing machinery
  - 11     Prime movers
  - 12     Electric generators and motors
- 2      Agricultural machinery
  - 21     Tractors
  - 22     Tillage, planting and cultivating equipment
  - 23     Harvesting and threshing equipment
  - 24     Livestock and food and feed processing equipment
  - 25     Other agricultural machinery and equipment
- 3      Transport equipment
  - 31     Trucks
  - 32     Cars, jeeps and station wagons
  - 33     Carts and wagons (animal drawn)
  - 34     Wheelbarrows
  - 35     Others
- 4      Office machinery and equipment
  - 41     Fixed capital
  - 42     Others

092121   Horsepower

It is recommended that the nameplate horsepower (hp) rating be used as the capacity measure for power equipment, even though this rating may not represent the actual effective power output for older equipment. The kilowatt (kw) is another power measure frequently used, with the relationship of 1 hp = .7457 kw.

09213 and 09214 Purchases and sales

For national accounts purposes, it is necessary to distinguish between purchases of new and used machinery and equipment. For new purchases, the total cost is the amount paid to the seller, while for used purchases it is that plus such transfer costs as brokers' commissions, legal fees and title searches. The total amount received for the sale of machinery and equipment may also include transfer costs.

092151 and 092152 Repairs

Expenditures on repairs are divided into current and capital repairs. Current repairs are made on machinery and equipment to keep them in proper working order. Capital repairs, on the other hand, lengthen the expected normal lifetime of machinery and equipment or significantly increase their productivity, e.g., major alterations and additions or replacements, and are considered fixed capital formation in the national accounts. For example, the replacement of the tyres on a truck is a current repair, while the replacement of the engine in the truck is a capital repair (UN 1968a, p. 113).

09216 Own-account production

For the national accounts, the value of machinery and equipment with an expected useful life of one year or more and manufactured by the holding for its own use is considered part of fixed capital formation (UN 1968a, p. 96).

5.3.9 Category 10: Buildings and Other Structures

The three divisions of this category describe living quarters, agricultural buildings and other structures, respectively, mostly in keeping with United Nations recommendations for housing censuses (UN 1980).

The United Nations defines a building as:

"any independent free-standing structure comprising one or more rooms or other spaces, covered by a roof and usually enclosed within external walls or dividing walls which extend from the foundations to the roof. However, in tropical areas, a building may consist of a roof with supports only, that is, without constructed walls; in some cases, a roofless structure consisting of a space enclosed by walls may be considered a building." (UN 1980, p. 232)

101 Living quarters

Living quarters are defined as "structurally separate and independent places of abode" (UN 1980, p. 236) and may be inhabited by only one household or, as in the case of collective living quarters, house large groups of individuals or several households.

10111 Structural type

Several structural types of living quarter are identified (UN 1980, pp. 238-241):

- (a) Conventional dwelling -- a room or suite of rooms in a permanent building (expected life of 10 or more years) or structurally separated part thereof, which is intended for habitation by one household, e.g., houses, flats, suites of rooms, and apartments.
- (b) Semi-permanent dwelling -- typical and traditional in many tropical rural areas; constructed with locally available crude materials, e.g., bamboo, palm or straw, and often with mud walls and/or thatched roofs; and expected to last for only a limited time (from a few months to 10 years).
- (c) Mobile housing unit -- any type of housing unit made to be transported (e.g., a tent) or mobile (e.g., a boat, barge, railroad car or trailer).
- (d) Marginal housing unit -- makeshift shelters constructed of waste materials or otherwise generally considered unfit or unintended for human habitation, e.g., squatters' huts, stables, warehouses and caves.

102 Non-residential buildings

This division includes information on buildings and structures entirely or primarily intended for agricultural purposes, e.g., warehouses, stables and office buildings. Information on irrigation and drainage facilities is classified in category 05, Land and Water.

1023 Purchases and sales

For the purchase or sale of buildings, the total cost includes the amount paid to the seller and any transfer costs. Transfer costs need to be considered separately for national accounts purposes.

1024 Construction costs

Expenditures for constructing new non-residential buildings and other structures and for major alterations in existing ones --

including the installation, alteration and improvement of fixtures, facilities and equipment which are integral and fixed parts of structures -- constitute part of agricultural fixed capital formation. The cost of materials and labour, including the imputed value of the labour of unpaid household members, used in construction activities carried out by a holding itself are considered own-account costs and hence part of the agricultural production activity. Construction contracted to others, on the other hand, constitutes production of the construction industry of the non-agricultural sector of the economy.

### 103 Other structures

Other structures include, for example, roads, bridges and railroad sidings.

#### 5.3.10 Category 11: Ancillary Activities

As defined in Chapter 2, agriculture includes certain non-agricultural ancillary activities, most of which are classified in appropriate subject-matter categories, as follows:

- (a) Land and water improvements -- category 05
- (b) Provision of veterinary services and processing of livestock products -- category 07-08
- (c) Machinery and equipment manufacture -- category 09
- (d) Construction of non-residential buildings and other structures -- category 10
- (e) Transport to the first point of sale or storage -- category 12

The remaining ancillary activities, forestry and fisheries, are covered in category 11.

#### 1112 Number of forest trees

Forest trees are grown for wood, fuel, forage, and protection (e.g., shelter, shade or soil conservation) purposes; excluded are trees grown for crop production (covered in category 06) and included are bamboo and other woody vegetation.

#### 113 Area under forest trees

Compact areas are those planted in a regular or systematic manner, or, if irregular, dense enough to permit estimation of the area covered. Nurseries cover land where young forest trees are cultivated for sale or transplanting.

1122 Cultural installation for fisheries

Holdings having more than one type of water environment used for fishery activities, should be classified by the most important installation.

1124 Fisheries production

Landings refer to the weight of fish as taken from the water before gutting or other treatment. Other aquatic products may include frogs, crabs and their products.

5.3.11 Category 12: Credit, Marketing, Stocks

The three divisions of category 12 cover credit, marketing and stocks, respectively, with marketing and stocks including separate sections for inputs and products.

121 Credit

Credit refers to the borrowing and repayment of financial resources, in cash or in kind, in order to facilitate the production, storage, processing and marketing of agricultural products.

121211 Sources of credit

Credit sources vary from country to country, depending on local conditions and institutions. Commonly observed sources of credit are money lenders, cooperatives and banks. Other possible sources include merchants selling goods on credit, insurance companies, and relatives and friends.

121212 Terms of credit

Short-term credit, which is to be paid back within a year, is generally used to pay for fertilizers, seeds, labour and other inputs for ongoing production activities; medium-term credit, with a period of one to five years, is mainly for purchasing livestock and important machinery items; and long-term credit, advanced for over five years, serves for the purchase of land and the construction of buildings and irrigation facilities.

12122 Amount of credit

The amount of credit includes the principal of the loan, i.e., the money actually taken by the borrower, or the cash equivalent if credit in kind. The amount to be repaid will thus exceed the principal amount by the amounts of service and interest charges. Data is needed on these items separately for national accounts purposes.

5.3.12 Category 13: Prices

Information on prices is contained in three divisions. The first division (131) includes prices for agricultural products and inputs, for which further information can be found in FAO (1980a). Divisions 132 and 133, then, cover retail prices for household goods and services and world prices for agricultural products and inputs, respectively. Disaggregations of these two divisions are not given here, because the items tend to be numerous and very detailed, and, in any case, these areas are generally readily available from components of the national information system other than food and agriculture. Category 15, sections 1561-1567, illustrates a possible commodity breakdown for retail prices, and Appendix II suggests one possible classification of consumer food items.

1311-1314 Agricultural product prices

Farm-gate prices are prices actually, or conceptually, received by farmers for products leaving the farm, thus excluding transportation costs to, and selling costs at, the first point of wholesale or retail sale off the farm. If the costs of such activities, which are considered to be non-agricultural, are included in the prices actually received by the farmer, they should be subtracted to arrive at the conceptual farm-gate price.

Agricultural products are not usually purchased directly by final consumers at the farm gate but rather through one or more wholesale markets and middlemen. At the first wholesale market in the chain, called a primary wholesale market, producer-sellers or their agents assemble their products and offer them for sale in bulk quantities to wholesalers, who then resell them to local or nearby retailers, to exporters, or to other wholesalers who transport the products to other locations and markets for resale there. Secondary wholesale markets, then, are distribution markets, where retailers, exporters and bulk consumers buy from wholesalers and, to a lesser degree, directly from producer-sellers. Finally, retail markets sell to final consumers.