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THE 1960 WORLD CENSUS OF AGRICULTURE

(Note submitted by the United Nations
Food & Agricultural Organization)

The 1960 World Census of Agriculture

Most African countries have organized or are in the process of organizing agricultural censuses or nation-wide agricultural surveys within the framework of the 1960 World Agricultural Census Programme. The year of the census or survey for different countries is shown in Table 1. A brief description of each individual project consisting of scope, sampling design, method of enumeration, schedule of field work and tabulation of results, etc. then follows. No attempt has been made to present the available information according to a fixed pattern, nor was it considered desirable.

ANGOLA

Preparatory work for the agricultural census was completed in 1960. A survey mission led by an agronomist specializing in sample surveys has been established in Luanda. Field work for the census is expected to start in 1961. It will extend for more than one year and it is hoped to make the complete results available in 1964.

BASUTOLAND

An agricultural sample census of peasant farming is being conducted in Basutoland to collect information on agricultural holder and holdings, land use, crop areas and yields, farming practices, farm population, livestock, agricultural implements, dwellings and storage facilities. The entire territory was divided into 26 ecological zones spread over all the districts. Using the results of the 1956 population census a frame was prepared of 868 enumeration areas each containing approximately 250 households. At the first stage of sampling 242 of these enumeration areas were selected and then within each of them 10 farming households that owned land or stock. The total of 2420 households constituted a sampling fraction of about $1\frac{1}{2}\%$. Field work was conducted in four stages: first - preparation of lists of households in selected enumeration areas, second - enumeration of population and livestock, third - measurement of area and yield of winter crops and fourth - measurement of area and yield of summer crops. It started in February 1960 and is expected to be completed in July 1961. Objective measurement techniques were employed for collecting information on crop areas and yields. A team of 300 school teachers was engaged for one week for the preparation of the frame. 110 field staff of agricultural department carried out the enumeration at the rate of 20 households per enumerator. Based on the results of a pilot census in 1959 it is expected that estimate for the average size of holding for the whole territory will be obtained with a sampling error of less than 5%. Results will be processed by desk calculators and punch card equipment. Publication of results is scheduled to begin in February 1962.

BECHUANALAND

An agricultural census of European farms is being conducted in 1961 on basis of complete enumeration. Data will be collected by enumerators making personal visits to each farm and the results will be tabulated by punch card machines. It is also envisaged that a sample census of African agriculture will be conducted in 1962-63 in combination with a population census. Tentative plans are to use a two-stage sampling design with village as primary units and tax payers as ultimate units. In all it is proposed to interview about 9000 tax payers forming an over all sampling fraction of 10% approximately.

CENTRAL AFRICAN REPUBLIC

A nation-wide agricultural sample survey was conducted in 1960. Primary units of approximately equal population were formed by grouping small villages or splitting large villages. About 450 primary units were selected at random at the first stage of sampling. For each selected primary unit a complete list of agricultural holdings was prepared by house to house enumeration. 3 or 4 agricultural holdings were selected at random within each chosen primary unit giving a total of about 1600 holdings in the sample. Information was collected on holding, land tenure, livestock numbers, etc.. Crop areas were estimated objectively by means of scaled diagrams obtained through pacing the sides and measuring the angles at each corner by a compass. Crop densities were measured by counting the number of plants within randomly selected squares of 10 m. x 10m. for coffee, 5m. x 5m. for maize and cassava and 2m. x 2m. for cotton and groundnuts.

CHAD

An agricultural sample census was conducted in 1960 in the 5 southern provinces consisting of over 4000 villages with a population of more than 1.1 millions. The entire area was divided in 21 strata on basis of ethnique and cropping characteristics. Within each stratum the villages were further divided into 4 size classes viz. less than 300, 300-599, 600-999 and 1000 and more. 429 villages were selected at the first stage of sampling; the number of villages allocated to each stratum being proportional to its population. Sampling fractions of $1/16$, $1/8$, $1/4$ and $1/2$ were used for each size class of villages. For each selected village sketch map was prepared and a list of agricultural holdings compiled during April-June 1960 by about 70 enumerators controlled by 25 supervisors. At the second stage of sampling the following varying fractions were used, $1/10$ of the holdings in villages with less than 60 holdings, $1/20$ in those with 60 to 119 holdings, $1/40$ in those with 120 to 249 holdings, $1/80$ in those with 250 to 479 holdings and $1/60$ in those with 480 or more holdings. This resulted in the selection of about 4 holdings per village. Enumeration was carried out from July to December 1960 to collect information on holding, crop areas, crop densities, year of clearing, agricultural population and livestock numbers. Crop areas were measured objectively by pacing the sides of fields and crop-cuttings were carried out to estimate the yields of groundnuts, sorghum and millet.

DAHOMY

An agricultural sample census covering the whole of the country has just been completed. Results of the last administrative census were used in forming primary units of 500 to 600 population by combining small villages and by splitting large villages. Approximately 10 per cent of the primary units were selected in the sample. For each selected primary unit a list of heads of agricultural households was compiled by house to house enumeration. One out of every 25 heads of household was selected at random at the second stage of sampling. The entire sample thus consisted of about 1000 agricultural households. Information on holding, land utilization, livestock numbers, farm employment and agricultural population was obtained by interviewing the selected holders. Crop areas were measured by pacing the sides and taking compass bearings at each corner of the field.

JABON

An agricultural census covering the whole country was conducted in 1960 to collect information on size and number of holdings, systems of land tenure, crop areas, yields and densities, number and age of fruit trees, livestock numbers, use of fertilizers, farm equipment, etc.. The whole country was divided into 7 strata on basis of the principal cropping patterns. 3700 villages with a total population of over 340,000 were farmed into primary units of approximately equal population by grouping together small villages and splitting large villages. 245 primary units consisting of 443 villages were selected at the first stage of sampling. The number of primary units allotted to each stratum being proportional to its population. Sketch maps were prepared for each selected primary unit and lists of holdings compiled by house to house enumeration. 4 holdings were selected in each chosen primary unit for detailed enumeration. Crop areas were measured by drawing sketch maps of fields, pacing the sides of fields and taking compass bearings at each field corner. Crop yields and densities were estimated by using for each field crop-cutting plots of 10m. x 10m. for coffee and cacao, 5m. x 5m. for cassava, yams and maize and 2 m. x 2m. for groundnuts.

KENYA

A. Non-African Agriculture

As in previous years an agricultural census of scheduled areas was taken on 31 August 1960. All non-Africans owning or occupying land of 20 acres (8 hectares) or more were required to complete and return census forms mailed to them in September 1960. In this census which covered about 3500 farms with a total area of about 3 million hectares information was collected on land utilization, crop areas, production and sale of wheat, maize, barley, oats, sunflower and linseed, livestock numbers and products, number of African employees and resident labourers, number of tractors and combines and capital expenditure.

B. African Agriculture

A sample census of African agriculture was carried out with reference to the crop year 1960/61. In consolidated areas the unit of enumeration was the farm. Farms were selected from the appropriate Land Consolidation Register using stratified multi-stage sampling design. In Nyanza province farms were selected on basis of tax payers' lists of selected sub-locations. Information was collected on size of farm, land utilization, crop areas, livestock numbers, farm employment and farm population. Information on crop-yields was also collected on a sub-sample of farms. Crop areas were measured by objective methods such as triangulation and pacing, use of measuring wheel, taking compass bearing at field corners, etc. Yields were obtained on basis of crop cutting experiments and eye estimates. Two field visits were made by the agricultural staff to measure areas under crops planted in two seasons. A third visit was made for yield estimation. In non-consolidated areas the unit of enumeration was a double transect consisting of two parallel lines 1000 yards long and 100 yards apart. Number of

transects to be allocated to each selected sub-location within the different agricultural divisions of a district were determined using a stratified multi-stage sampling design. Starting point of each transect was given in the form of map reference or by reference to the nearest identifiable landmark. Enumerators walking along the transect lines recorded the number of paces taken to cross each crop, crop mixture or land use category. Yields of maize, millet, beans and potatoes were estimated by eye. Estimation of yields was carried out simultaneously with the assessment of areas during two field visits, one for the crops planted in the first half of 1960 and the second for the crops planted in the second part of the year

LIBYA

An agricultural census based on complete enumeration of about 160,000 holdings has been completed in 1960. Field enumeration was carried out by about 700 enumerators during the months of July and August 1960. 2% of all the holdings in each Mudiria were re-enumerated by district supervisors during September-October for purposes of post enumeration checking using objective measurement techniques.

MADAGASCAR

A national agricultural sample survey is being conducted in 1961/62 within the programme of multi-purpose rural surveys including surveys on crop yields, demography and road traffic. It is proposed to survey about 800 villages from July 1961 to April 1962 at the rate of 80 villages per month. A few holdings in each selected villages will be surveyed in detail. Survey on crop yields will start in September 1961 and will continue for several years. About 140 enumerators were given a fortnight's training in April-May 1961. Supervision for the yield surveys is to be carried out by personnel trained at various regional centres. Results of these surveys will start becoming available towards the end of 1962.

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M A L I

Following the pilot agricultural survey in the region of Haute-Vallee in August-September 1960, a nation-wide sample survey was conducted from November 1960 to April 1961. The country was divided into 47 strata on basis of afro-economic considerations within each administrative region. Village units of about 400 inhabitants were used as primary sampling units with sampling fractions varying from 2% to 10% in the different region. 4 holdings were selected for enumeration in each of the selected primary units. About 50 agricultural agents and 25 enumerators of the statistical office worked in teams of 2 with one supervisor for 2 teams. Enumerators had at their disposal sketch maps with lists of households for each primary unit prepared for the 1960 demographic survey. Selected holdings were enumerated and crop areas were sketched and measured by pacing and using the plachette. Studies on crop yield and crop densities will be carried out in the 1961 season.

MOZAMBIQUE

Following the pilot agricultural survey of 1500 farmers (sample of 0.5%) in the district of Mozambique in 1960 a province-wide survey is now being undertaken to cover all the 9 districts at the rate of 2 to 3 districts per year. Besides agriculture the survey is also meant to collect information on demography, migration and births and deaths. In 1961 the survey has been confirmed to Mozambique district which has been divided into 18 strata on basis of ecological and agronomic considerations. Within each stratum a list of villages and settlements was compiled. 5% of these were selected with probability proportional to size of population and were completely enumerated for demographic characteristics. 20% of the agricultural households in each selected village or settlement were enumerated for agricultural characteristics. Crop areas are to be measured objectively and yields estimated by crop-cuttings on 2 plots of 10m. x 10m. per selected farm. Each year the field work is to be carried out between April and September and the results are scheduled to be made available in 1964.

N I G E R

An agricultural sample survey was conducted in 1960 in the whole country which was divided into 6 strata on basis of agronomic, climatic and ethnic characteristics. In each stratum primary units of approximately equal population were formed by combining small villages or by splitting up large villages. 316 primary units consisting of 525 villages out of a total of about 8500 villages were selected in the sample at the first stage. About 3 holdings were selected from each primary unit included in the sample. In about three fourth of the primary units selected lists of holdings were available from the demographic survey. In the remaining primary units lists of holdings were compiled by house to house enumeration. 17 chiefs of agricultural sectors and 68 enumerators who were trained in March-May carried out the field work from August to November 1960. Information was collected on the holding, population, employment, crop areas, livestock numbers, farm machinery, methods of marketing crops, irrigation facilities, etc., Crop areas were measured objectively by drawing sketch maps of fields and pacing the sides and taking compass bearings at field corners. Yields of millet, sorghum and groundnuts were estimated by cutting and weighing crops from a square of 10m. x 10m. in each selected holding. Results which are being analysed now are expected to be available before the end of 1961.

N I G E R I A

A five year programme of agricultural surveys was completed in March 1960 by surveying about 30 to 35 villages each year in the different provinces of the country. Villages in the different provinces were stratified into two or three groups according to size of population and on 1½% sample of villages was selected from each size group. Complete lists of tax payers or electors were compiled for each selected village and a 5% sample was chosen from each selected village, with a minimum of 30 persons per village. Crop areas and yields were measured and a village land area was estimated by a traverse survey of paths radiating from the centre of each village settlement to the village land boundary. A slightly larger sample was selected from household livestock count. The entire project was carried out by the Federal Office of Statistics with the co-operation of the Regional Ministries of Agriculture.

S E N E G A L

An agricultural sample survey was conducted in 1960/61 to collect information on holding, land tenure, year of clearing, crop areas, livestock numbers, use of fertilizers and yield of groundnuts and rice. The country was divided into administrative regions and further stratified according to size of villages viz. population of less than 200; 200 to 499; 500 and more. 265 villages were selected as primary sampling units and about 3 compounds selected as secondary units from each sample village. Approximately 1380 agricultural holdings operated through these selected compounds constituted the entire sample. In the first stage of field work 4 teams of enumerators compiled a list of compounds in the selected villages during August 1960. During September and October about 60 enumerators along with 14 supervisors enumerated the selected holdings and carried out area measurements by pacing the sides of fields and taking compass bearings at each corner. Crop-cuttings were carried out in early 1961 and the results are now being analysed.

SOUTHERN RHODESIA

A sample census of African agriculture was taken in 1959/60 to obtain the acreage, production and anticipated sales of different crops and total number and age-sex composition of various livestock by effective rainfall areas, land categories, etc., In areas where the Land Husbandry Act Census has been undertaken a 10% sample of kraals was chosen from the dipping records and one or two farmers selected per kraal. In other parts the sample was selected from the tax registers. Field work was undertaken in several stages. Estimation of crop areas was done throughout the growing season by triangulation and measuring field lengths. Livestock count was undertaken in December 1959. Preliminary production estimation through questioning farmers and eye estimation was undertaken in February 1960 together with estimation of anticipated sales. Crop yields were estimated by harvesting at normal times one twenty-fifth of an acre of each field in the sample. While the Central Statistical Office was responsible for designing the sample and analysing the results. The major portion of the field work was undertaken by the African staff of the Department of Native Agriculture. It is proposed to carry out sample censuses of this type at regular three or four yearly intervals.

SWAZILAND

Following a pilot agricultural survey in 1959 a sample census of African agriculture was undertaken in 1960 to cover all trival lands which constitute about half the total area of the territory. The entire territory was divided into 4 strata corresponding to the physiographic provinces. Within each stratum sample units of 3000 metres square were selected and located on a 1: 50,000 topographic map. Information was collected on land use, crop areas, crop production, length of fencing, extent of soil erosion, irrigated land in Native Areas and agricultural employment. Data are being analysed and documented by the Institute of Social Science, Natal University. A full report is expected to be available by the end of 1961. Statistical information about land held on title-deed is obtained through annual questionnaires sent to farmers, dipping records and Annual Stock Census.

TANGANYIKA

Beginning 1958 a complete census of all farmers occupying land under rights of occupancy or freehold (in effect non-African agriculture) has been taken each year. These censuses cover about 900 farms with an area of over 2 million acres. Enumeration is carried out by sending out questionnaires to the farmers and requesting them to return the forms by mail. Information is collected on number and size of holding, land tenure, land utilization, crop areas, livestock numbers, African labour force, agricultural machinery and capital expenditure on building, equipment, construction, etc., In the 1958 census 1563 questionnaires were mailed in September seeking information for the twelve months period ending 31 October. By mid-December about 55 per cent of the forms had been returned. Another 3 per cent of the forms were received within the next three months after sending remainders and personal visits of agricultural officers. Results were analysed and published in late 1959.

TUNISIA

Following a pilot agricultural sample survey in the Cap Bon region in 1960 a nation-wide survey is being conducted in 1961-62. 4 regions in the north are proposed to be enumerated in 1961 and 5 southern regions in 1962. Using the results of the 1956 population census, primary units of about 200 households are to be formed by combining small adjacent cheikhals or by dividing a large cheikhal. A 10 per cent sample of these primary units will be selected within each of the 13 provinces. By visiting all the households in the selected primary units a list of agricultural holdings is to be compiled according to the following 5 size classes: less than 4 ha., 5 to 9 ha., 10 to 19 ha., 20 to 49 ha. and 50 ha. and more. A sample of holdings will be chosen from each selected primary unit by using varying sampling fractions in the different size classes viz. 1/16, 1/8, 1/4, 1/2 and 1 respectively. Information on holding, crop areas, crop yields, livestock numbers, farm population employment, etc. will be collected by 22 trained enumerations at the rate of one holding per day. Objective measurement of crop areas is expected to take about six months each year and yield determination by crop-cutting about two months each year. Preliminary results for the provinces are expected to be made available by the end of 1962.

UNION OF SOUTH AFRICA

A comprehensive agricultural census based on complete enumeration was conducted in 1960 to obtain particulars of all occupied holdings and farming units. Over a 100,000 questionnaires were distributed to the farmers by the police with instructions to complete and post the forms to the district census supervisor within 14 days of the census date which was 31 August 1960. After 14 September reminders were sent to non-respondents and a provision was also made for instituting legal actions where necessary. In addition to the items included in the FAO census programme information was also requested on expenditure incurred in farming and wages and salaries paid in cash and kind. A separate section was devoted to crops, livestock and machinery of Bantus on the farms of whites Asiatics and coloureds. For allocating work to the different enumerators, magisterial districts were divided into subdistricts of convenient size in accordance with Police Patrol Registers. The expected number of returns from each subdistrict was known from previous annual censuses and enumerators prepared fresh lists during the course of their work. Bonuses of 3d. to supervisors, 6d. to assistant supervisors and 1s. to enumerators were paid for each completed questionnaire. For the census of Bantu agriculture a similar procedure was followed but the questionnaire was less detailed. Enumeration was carried out by the Department of Bantu Administration and by the South African police. In case of communally operated land or tribally owned farm the entire ward was regarded as one holding and the chief or headman as the holder. Results which are to be published by districts as well as by agro-ecological zones are now being processed by punch card equipment.

UPPER VOLTA

An agricultural sample survey is being carried out over the entire country using the same stratification into 9 zones as employed for the 1960 demographic sample survey. Villages were stratified according to number of inhabitants as follows: under 500; 500-1099; 1100 and over. Using varying sampling fractions in the different size classes a total of about 450 villages will be selected. 4 or 5 agricultural holdings will be enumerated in each selected village. In addition to 40 agents of Service de l'Agriculture, it is expected to recruit 30 enumerators and 5 supervisors. Preliminary preparations and training of enumerators were undertaken in April-May 1961. Main enumeration on structure of holding, crop areas (using objective methods of measurement), employment in agriculture and livestock numbers is scheduled for June to September. Determination of yields will be carried out in October-November and analysis of results will begin in December 1961. The cost of the entire survey has been estimated to be about 22 million francs C.F.A.