

NEPAL – NATIONAL SAMPLE CENSUS OF AGRICULTURE 2021/2022 – METADATA REVIEW

1. Historical outline

The first National Sample Census of Agriculture (NSCA) was conducted in Nepal in 1961/1962, followed by the decennial NSCAs held in 1971/1972, 1981/1982, 1991/1992, 2001/2002, and 2011/2012. The seventh NSCA, to which the metadata review and data presented here refer, was the NSCA 2021/2022.

2. Legal basis and organization

Legal framework

The legal basis for the NSCA 2021/2022 included:

- Statistics Act 2015 Bikram Sambat¹ (BS), which commits the National Statistics Office² (NSO) to carrying out censuses, with a periodicity of 10 years for agricultural censuses;
- Statistics Regulation 2041 (BS); and
- National Agriculture Census Operation and Management Order 2078 (BS).

Institutional framework and international collaboration

The NSCA 2021/2022 was conducted by the Agriculture and Livestock Census Section under the Economic Statistics Division of the NSO, and was supported by a Steering Committee, chaired by the Vice President of the National Planning Commission, a Technical Committee, chaired by the Director General of the NSO that provided support in technical areas, and Subject Committees, chaired by the Deputy Director General, that provide advice in thematic areas. Different Coordination and Facilitation committees were established at the provincial, district and local levels to coordinate and facilitate the field work. FAO assisted the country with the organization and planning of the NSCA through a Technical Cooperation Programme project.

Census staff

Along with the census core team in headquarters, the NSCA 2021/2022 involved about 7 200 field staff including 5 150 enumerators, 1 350 supervisors, 77 census officers and 625 supporting administration and management staff in the field offices. For the data processing stage, it involved 50 coders and editors, 100 data entry operators and 3 IT staff.

3. Reference date and period

Reference day: the day of the interview, for land area and livestock.

Reference periods: the calendar year 2021, for all other variables.

4. Enumeration period

The NSCA 2021/2022 was collected from 19 April to 2 June 2022, six months after the National Population and Housing Census 2021 (NPHC) data collection. Due to the COVID-19 pandemic, the NPHC listing operation was delayed by five months. Consequently, the field work of the agriculture census was also delayed by a few months. The NSCA fieldwork was planned in two phases (separately for mountains/hills and lowlands), starting in January 2022, but starting date was postponed to April 2022 and all areas were enumerated at the same time.

5. Scope of the census and definition of the statistical unit

The **scope of the census** mainly covers crop and livestock production activities.

The **statistical unit** was the agricultural holding, defined as an economic unit of agricultural production under single management comprising all livestock and poultry kept, and all land used wholly or partially for agricultural production purposes. The holding's land may consist of one or more parcels located in one or more separate areas within a district. The census was limited to collecting agricultural

¹ Bikram Sambat is a calendar based on lunar system in Nepal.

² Former Central Bureau of Statistics (CBS)

information only in the household sector. A household with livestock but no land was not considered a holding if the household did not use the livestock for agricultural purposes (e.g., a livestock trader).

Community-level data

A community survey was conducted along with the census. Supervisors collected municipality-level data on community infrastructure and facilities.

6. Census coverage

Geographic coverage

The NSCA 2021/2022 covered the entire country. Nepal is divided into seven provinces, 77 districts, and 753 municipalities for administrative purposes.

Cut-off threshold and other exclusions

The NSCA 2021/2022 considered the following threshold for agricultural holdings: (i) area under crops greater than or equal to a quarter of a *ropani* (or four *anna*) in the hill or mountain district (0.01272 ha), or greater than or equal to eight *dhur* (0.01355 ha) in the *Terai* (lowlands); (ii) one or more head of cattle or buffaloes; (iii) five or more head of sheep or goats; or (iv) 20 or more poultry. Large livestock activities above the predefined threshold³ operated by households and agricultural activities undertaken by government organizations, cooperatives, and business farms were excluded. They were compiled and analyzed separately as Institutional holdings.

7. Methodology

Methodological modality for conducting the census

The NSCA 2021/22 was a sample-based census conducted using the classical approach. Some basic questions were administered in the Population Census 2021's listing operation (holding area and livestock numbers) to screen the NSCA target population and to improve the sampling design. The sample-based census was conducted as a single one-off operation in the selected sample holdings.

Relation to other censuses

The sampling frame for enumeration areas (EA) was prepared from the EA list of the NPHC. Following FAO recommendations, an agricultural module was included in the NPHC 2021 that collected basic agriculture-related information from all households in the country, including the total operational holding area, and number of livestock and poultry.

Frames

According to the sampling design, two types of sampling frames were used for the NSCA 2021/2022: the frame of primary sampling units (PSU), the EAs, and the frame of secondary sampling units (SSU), the agricultural holdings. As mentioned in the previous section, the PSU frame was prepared from the NPHC 2021 EA list and contained the number of households and agricultural households for each EA. The frame for SSU was developed through listing operations in the sampled EA. All households in each sampled EA were interviewed to develop an updated list of agricultural households as the SSU sampling frame in the selected EA.

Complete or/and sample enumeration methods

The NSCA 2021/2022 was conducted on a sample basis.

Sample design

The NSCA 2021/2022 adopted a stratified two-stage sampling design. Within each stratum (municipality), EAs were selected with a probability proportional to size systematic sampling, with the number of holdings as the size variable. In the second stage, a systematic sampling was selected from each of four strata defined by three total area intervals and an exclusively livestock holdings stratum. Sample size was determined to ensure reliable estimates at the municipality level. From among 13 576 EA, a sample of 330 112 holdings were selected, approximately eight percent of all holdings.

³ Agriculture holding rearing more than 35 milking cows; 25 milking buffaloes; 150 goats; 150 sheep; 60 pig for meat; 20000 boilers; or 10000 layers, were considered to be of large livestock activities.

Data collection methods

The NSCA 2021/2022 used the PAPI and CAPI (tablets) methods. CAPI was used only in three districts, Kathmandu, Lalitpur, and Bhaktapur of Kathmandu valley, while PAPI was used in the remaining 74 districts.

Questionnaire(s) and items covered

Two listing forms and two questionnaires were used in the NSCA 2021/2022: (i) holding listing form (Form 1), to list all the agricultural holdings (above the thresholds) in the selected enumeration area; (ii) selected holding listing form (Form 1A); (iii) agricultural holdings questionnaire (Form 2); and (iv) community questionnaire (Form 3). The form 2 covered 20 out of 23 essential items recommended in the WCA 2020.⁴

8. Use of technology

The NSCA 2021/2022 used the CAPI data collection method in three districts. Enumeration Areas (EAs) were digitized using satellite images to identify selected agricultural holdings throughout the country for data collection. Census results including soft copies of publications and aggregate data were disseminated and are accessible online.

9. Data processing

Direct data capture was ensured by the CAPI method. For the PAPI method, coding and editing of the questionnaires were carried out by 50 temporarily recruited coders and editors from November 2022 to January 2023. For this data collection method, manual data entry was carried out by 100 staff from December 2022 to February 2023 using an application developed in CSPro that included a comprehensive built-in system with range and consistency checks. For data management, SPSS and STATA were used. This involved editing, cleaning, and tabulation of data. Doubtful information found during the data cleaning process was verified by re-contacting the agriculture holdings through phone calls or field visits. After data quality was ensured, SPSS was mainly used for data tabulation, analysis, and summary of results.

10. Quality assurance

A pilot agriculture census was conducted during 2020 to test and refine data collection methods, ensure a smooth and logical flow of questions, adequate resource allocation, provide an estimate of the average time required to complete a questionnaire, and logistical arrangements. The CBS was highly focused on ensuring the accuracy of census data by implementing various measures to minimize non-sampling errors. To reduce sampling errors, an appropriate sampling design was prepared modifying the designs used in previous agriculture sample censuses. Quality control mechanisms for data included training, supervision, completeness checks, verification of data entry, and consistency checks. Central level officials, along with district census officials, assistant officials, and supervisors, were assigned to supervise and manage the fieldwork using monitoring and supervision forms. The progress of the fieldwork was reported periodically to both the district census office and the CBS. Sampling errors of major indicators were estimated and will be presented in a technical report in detail before mid-2024.

11. Data and metadata archiving

Census microdata will be provided to users in accordance with NSO dissemination policies. The documentation of the census along with its metadata and variable level information will be published in the National Data Archive (NADA) platform and it will be published on NSO website for public access. The microdata will be anonymized before it is made available to public use in 2024.

12. Data reconciliation

A manual comparison of census's results of key variables were done mainly with the current agriculture statistics published by Ministry of Agriculture and Livestock Development (MoALD). The trend of census's values of key variables were also compared with the values from previous agriculture censuses. The major differences in values of some variables between two agencies or in between two

⁴The following essential items were not covered by the AC: (i) 0501 Type of livestock system; (ii) 0901 Whether working on the holding is the main activity; and (iii) 0902 Working time on the holding.

censuses were reassured through revisiting raw dataset, filled in questionnaires, contact to respondents for dubious numbers, contact to province and local bodies for confirming actual scenarios, and estimating CVs. Discrepancies in data are adjusted accordingly.

13. Dissemination of census results and microdata

The official dissemination of the results of the NSCA 2021/2022 was on 7 September 2023. The census results were published in both paper and online for the national, province and local levels. The main statistical report, as per the FAO guidelines, of the census termed as National report was published in English version. A summarized version of the main national report was also published in Nepali version with key statistical tables and description of major findings. Other dissemination methods included a district summary report (by province) in English, a booklet with a brief census information and key results published in Nepali, and the statistical tables with final results at the national, provincial, district and municipal levels published in English. The municipality level statistical tables are also available in Nepali format. In addition, seven provincial reports in Nepali and English and all 753 municipal reports in Nepali by province, were published in printed and online versions. All publications are available on the census website (<https://nsonepal.gov.np/> and <https://agricensusnepal.gov.np/>). The NSO will also make aggregate data and microdata available upon request during 2024. A technical report will be published before mid-2024 with detailed description of the methodology, including sampling design, data collection methods, data processing, estimation of sampling errors, and data quality assessment.

14. Data sources

National Statistics Office (NSO) . 2023. National Sample Census of Agriculture 2021/2022. In: NSO [online]. Kathmandu, Nepal. [Cited 13 September 2023]. <https://agricensusnepal.gov.np/>.

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