Tonga - Agricultural Census 2015

Tonga Statistics Department, Tonga Ministry of Agriculture, Food, Forestry and Fisheries

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Overview

Identification

ID NUMBER
TON_2015_AC_v01_EN_M_v01_A_OCS

Overview

ABSTRACT
Agriculture is the predominant activity in the Kingdom of Tonga's economy, contributing more than 17% to the Gross Domestic Product (GDP) in 2012 - 2013. The first ever Agriculture Census of the Kingdom was conducted in 1985. The second Census was conducted in 2001, focusing on land tenure, land utilization, area and production of principal crops, livestock, agricultural implements and equipment, use of fertilizers, etc. including the various agricultural activities in which most of the households were engaged in. Although agriculture is the main factor in the economy of the Kingdom of Tonga, the database in this sector seems to be inadequate. There were quite several surveys conducted for this sector, however, an updated frame (list of holdings/parcels and its characteristics) is needed so these surveys will obtain more reliable estimates. There were important developments in agriculture within the fourteen-year period from the last census that should be captured like the use of forest trees within the farming system to enhance productivity and information on fisheries, which is becoming a very important sector of the Kingdom's economy. Considering the above issues, there is a great need to update the statistics on agriculture in order to determine its present situation and to use it for economic planning and policy-making.

In support of the strategic plans and programmes of the Kingdom of Tonga on agriculture, the Government has decided to conduct the Agriculture Census (AC). This census is envisioned to:

a) Provide benchmark or basic data on structure of agricultural holdings and their main characteristics;

b) Use this information to develop a regular system of agricultural statistics;

c) Build up some important village level statistics;

d) Establish a technical and organizational foundation on which to build up a comprehensive and integrated system of food and agricultural statistics; and

e) Provide a frame from which samples can be drawn to study certain aspects of agricultural activities in greater depth.

f) Provide information on community (village) statistics.

KIND OF DATA
Census/enumeration data [cen]

UNITS OF ANALYSIS
Households

Scope

NOTES
The 2015 census covers all households and agricultural holdings as well as all villages in Tonga. It covered the following:

A. Identification particulars

B. Household demographic and economic information

C. Household engagement in agricultural subsectors

D. Usage of land

E. Food crops

F. Agricultural practices

G. Livestock

H. Fisheries

I. Forestry

J. Handicrafts

K. Labour

L. Machinery and equipment

M. Agricultural income and loan for all subsectors

TOPICS

Topic	Vocabulary	URI
Agriculture & Rural Development	World Bank	
Forests & Forestry	World Bank	
Millennium Development Goals	World Bank	
Community Driven Development	World Bank	
Gender	World Bank	
Participation/Empowerment	World Bank	
Social Development	World Bank	

KEYWORDS
Tonga, Agriculture, Population, Crops, Livestock, Fishing, Forestry, Handicraft

Coverage

GEOGRAPHIC COVERAGE
National coverage

UNIVERSE
The Census covered all individuals and households.

Producers and Sponsors

PRIMARY INVESTIGATOR(S)

Name	Affiliation
Tonga Statistics Department	Government of Tonga
Tonga Ministry of Agriculture, Food, Forestry and Fisheries	Government of Tonga

OTHER PRODUCER(S)

Name	Affiliation	Role
Statistics for Development Division	Pacific Community	Technical assistance in data processing

FUNDING

Name	Abbreviation	Role
Food and Agricultural Organisation	FAO	Funding
Tonga Ministry of Agriculture, Food, Forestry and Fisheries	MAFFF	Funding and Field operations
Tonga Statistics Department	TSD	Funding, Field operation and data processing

Metadata Production

METADATA PRODUCED BY

Name	Abbreviation	Affiliation	Role
Office of Chief Statistician	OCS	Food and Agriculture Organization	Metadata adapted for FAM
Tonga Statistics Department	TSD	Pacific Community	Review of the documentation

DDI DOCUMENT VERSION
TON_2015_AC_v01_EN_M_v01_A_OCS_v01

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DDI_TON_2015_AC_v01_EN_M_v01_A_OCS_FAO

Sampling

Response Rate

The final national response rate was 89% with 16,122 households enumerated out of the 18,043 total households.

Response Rate

Questionnaires

Overview

The questionnaire was designed in collaboration between FAO, Ministry of Agriculture and the TNSO. It was designed in such a way that data items were efficiently encoded and processed using the software package CSPro.

The questionnaire was developed in English, but enumerators were specifically trained to be able to clearly translate these questions to other languages and dialect used in the country.

The questionnaires were designed in 13 sub-sections which are:

A. Identification particulars
B. Household demographic and economic information
C. Household engagement in agricultural subsectors
D. Usage of land
E. Food crops
F. Agricultural practices
G. Livestock
H. Fisheries
I. Forestry
J. Handicrafts
K. Labour
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M. Agricultural income and loan for all subsectors

Information collected for each sub-sections:

Section A:
This section basically include the IDs for the households and include:
- Village number
- Census block
- Household number
- Sample
- Type of holding

Section B:
- name
- relationship
- sex
- age
- economic activity
- educational attainment

Section D:
- Bush allotment
- Town allotment

Section E:
- Exisiting crops
- Crops harvested

Section F:
- Fertilizer
- Pesticides
- Irrigation
- Community farming

Section G:
- Beef cattle

- Dairy cattle
- Pig
- Horse
- Sheep
- Goat
- Chicken
- Duck
- Dog / Cat
- Veterinary services

Section H:
- Fishing type
- Fish income / sales
- Purpose of fishing

Section I:
- Number of trees
- uses of trees

Section J:
- Handicraft materials
- Handicrafts sold
- Value of handicrafts

Section K / L
- Number of laborers
- Days worked
- Hours worked
- Machinery used

Section M:
- Income from agriculture
- Loans
- Drawbacks

Data Collection

Data Collection Dates

Start
2015-04-07

End
2015-06-30

Cycle
N/A

Data Collection Mode

Face-to-face paper [f2f]

Data Collection Notes

Each census supervisor was assigned to handle several enumerators. He/she was tasked to guide the enumerators during the first week of the census taking. Then a follow-up supervision was also required from him/her. Then he/she was also expected to do some field checking/editing to facilitate the data processing in the headquarters.

Trainers/Supervisors are identified and selected from the staff of the Ministry of Agriculture and Food, Forests and Fisheries and Statistics Department. All supervisors were trained in Tongatapu by the members of the Agriculture Census Working Committee. The supervisors trained the enumerators in the second level. On the other hand, 90 enumerators were recruited in February 2015, with minimum qualifications at the National Tonga School Certificate, to cover the household interviewing operations. These 90 enumerators were supervised by 18 supervisors, making a team of 18, consists of 5 enumerators per supervisor. All districts in the main island groups are divided into census blocks, as in the last 2011 population census, and all households within every census blocks were interviewed. The main island group census block divisions and estimated number of enumerators allocating to cover these are as follows:

Number of Census Blocks:
1. Tongatapu - 287
2. Vava'u - 78
3. Ha'apai - 49
4. 'Eua - 22
5. Niuas - 15
6. TOTAL - 451

Number of Enumerators:
1. Tongatapu - 55
2. Vava'u - 15
3. Ha'apai - 10
4. 'Eua - 5
5. Niuas - 5
6. TOTAL - 90

In average, it was estimated for each enumerator to cover 5 census blocks at this regard and the estimate time to carry out these enumerating operations was 30 working days.

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Section M:
- Income from agriculture
- Loans
- Drawbacks

Data Processing

Data Editing

VERIFICATION AND CODING

The data editing process begins when the completed questionnaires were returned to the national statistics office (NSO) for checking by the coders. This include checking that all fields are correctly filled, skipped pattern are properly followed, missing fields and so forth. Once the questionnaires are verified to be correct, then coding begins where certain variables are coded to their respective codes for capturing in the data entry screen - codes include Village code, Crops and Trees codes.

IN-BUILT EDITING

The data entry application for the 2015 Agriculture Census was designed using the software package CSPro where all necessary checks were incorporated to allow the Data Entry Operators (DEO) to verify data while doing data entry. With all the in-built checks, this ensures capturing good quality data efficiently and effectively. The in-built checks include range checks, skip and filtering questions and consistent and logic checks. With these in-built checks ensures good quality data is captured while entering and this greatly helps in the final batch editing.

SECONDARY EDITING

After the completion of the data entry, the final editing process was done. This include verification of questionnaires that all are captured and the actual running of the batch editing program on the whole data. Since most of the checks were done during the data entry phase, the batch editing process mostly involves verifying those errors that were missed or could not be solved during data entry, checking on those responses which have been coded 'missing' and trying to impute or verify by referring to the respective questionnaire and fixing 'outliers' responses. Frequencies on each variable were also checked to verify any inconsistencies between variables. The batch editing logic program was ren twice when it was decided to finalize the data. Some missing values were not fixed as they were not able to be verified, examples of these are mostly on money values and number of crops/trees.

Data Appraisal

Other forms of Data Appraisal

There were 12 data entry operators, 7 computers and a server used for data entry. The 12 operators took turns in doing data entry as well as coding and verification of questionnaires before they were entered. The data entry was done manually was done in the head office to allow for easy access to the books.

The data entry screen was designed using the CSPro software.

The data entry application was well designed and efficient during the actual data entry as a lot of testing was done during the pilot census. Questionnaires from the pilot census was used to test the application and relevant modifications were done, hence, by the time the actual data processing commences, the application was fully developed and ready. This ensures the capturing of good quality and reliable data from the questionnaires.

TECHNICAL NOTES AND DEFINITIONS
1. Agriculture active household is a household that is active in any of the agriculture activities: cropping; livestock; fisheries; forestry and handicraft. A household is active in any of these agriculture activities if it can be classified into either: subsistence, semi subsistence or commercial.
2. A household is non active in agriculture if it cannot be classified into any of the agriculture activities: cropping; livestock; fishery; forestry or handicraft.
3. Subsistence is a type of agriculture activities (cropping; livestock; fishing; forestry or handicraft making) in which most of the produce is consumed by the farmer and his family, leaving nothing to be marketed.
4. Semi-subsistence is a type of agriculture activities in which some of the produces are to be consumed by the farmer and his family and some of them are to be marketed.
5. Commercial is a type of agriculture activities in which most of the produces are to be marketed.
6. For the 2015 Agricultural Census, the following definition was used to classify the levels of agriculture activities whether it was subsistence; semi-subsistence or commercial.

Crop was based on total cultivated land area
a) Subsistence: 0 < and <= 1 acres
Semi Subsistence: 1 acres < and <= 8 acres
Commercial: > 8 acres

Livestock was based on type and number of livestock kept
a) Subsistence: If Milk Cattle or Beef Cattle =1 or Sow = 1
b) Semi Subsistence: If Milk Cattle or Beef Cattle = 2 - 100 or Sow = 2 - 25
c) Commercial: If Milk Cattle or Beef Cattle > 100 or Sow > 25 or Egg layer > 0 or Broiler > 0

Fishery was based households or organizations' response to the question on purpose of their fishing activities; whether it was for subsistence; semi-subsistence or commercial.

Forestry was based on number of high value trees and timber trees that households have grown at the time of the census
a) Subsistence: number of trees 1 - 4
b) Semi Subsistence: number of trees 5 - 100
c) Commercial: number of trees 101 - 999

Handicraft was based on proportion of handicraft being sold
a) Subsistence: no handicraft sold
b) Semi Subsistence: 1% - 75 % sold
c) Commercial: 76% - 100% sold

LIMITATIONS
A Pilot Census was conducted which the questionnaires received were used to test the data entry application. This allowed to redefine the questionnaires as well as the data entry application to ensure that it everything was efficiently designed to capture reliable data. Like any other census, the 2015 Agriculture Census (AGC) has its own limitations. These are summarized as follows:

- The 2015 AGC only covered 89% of the total households in Tonga; 11% of the households were not enumerated.
- The 2015 AGC took place at the aftermath of Cyclone Ian which had destroyed a large part of the agriculture sector and the infrastructure for the Ha'apai Region.
- The 2015 AGC Questionnaire design meant that some of the data was not comparable to 2001. For example, the levels of agriculture activities (subsistence, semi-subsistence and commercial) and the way they were described.
- The 2015 AGC took place between April and June 2015 whereas the 2001 AGC took place between October and December 2001, therefore there is variation in the data due to seasonality of some of the agriculture activities, such as cropping and fishing.
- In the 2001 AGC the size of agricultural holding, to be considered as an agricultural holder was more than 1/8 of an acre. The 2015 AGC included town allotments below 1/8 of an acre. This was done so that agriculture activities in the town allotment could be accounted for.
- Questions on the use of fertilizers were answerable only by "Yes" or "No" and questions on agricultural chemicals asked only for the name of the chemical and the crops they were used on. Quantities of these agricultural inputs were not gathered.
- In the 2015 AGC, the question on the level of agriculture activities was only asked for the fisheries sub-sector and not for the other sub-sectors. Therefore, these were determined by the size of the land cultivated, the numbers of livestock kept, the number of forest trees grown, and the number of handicrafts made and sold.
- The time allowed for data processing, editing and verification was rather limited and did not allow sufficient time for thorough and in-depth checking of the data.