

CENSUS OF AGRICULTURE 2021



**Enumerator
PAPI Manual of Instruction**

November 2021

CHAPTER 1

GENERAL INFORMATION ABOUT THE CENSUS OF AGRICULTURE

1.1 Importance of the Census of Agriculture

Agriculture and fisheries are very important activities in the economy of the Cook Islands in terms of food production, foreign exchange earnings, employment generation and economic activity. These sectors contributed about 14 million to the country's Gross Domestic Product in 2019.

The first census ever conducted for agriculture was in 1988. Since then a Census of Agriculture and Fisheries has been conducted in 2000, 2011 and 2021 being the fourth census.

To date, the agricultural data of the country in terms of land resources and its capability to produce crops remain dependent on what was described in the last census of agriculture in 2011. In addition, the recent changes in the economy due to the impacts of covid19 place great importance on the need to collect agricultural information to update the statistics on agriculture and fisheries in order to determine its present situation and to have timely, accurate and reliable data for economic planning and policy making.

1.2 Objectives of the 2021 COA

In support of the strategic plans and programmes of the Government on agriculture and fisheries, the 2021 Census of Agriculture (COA) aim to:

- a) make an inventory of the agricultural and fisheries resources of the country;
- b) provide benchmark or basic data on agriculture and fisheries that will be useful for planning and decision-making; and
- c) provide a frame from which samples can be drawn to study certain aspects of agricultural and fishing activities in greater depth.

1.3 Authority for Undertaking the 2021 COA

The 2021 COA will be conducted by the Ministry of Agriculture in cooperation with Outer Island Governments and the Statistics Office. Authority for the census will rest with the Government Statistician who has the legal power to collect such information under the Statistics Act 1966.

1.4 Confidentiality of Information Collected

This same act provides for the total confidentiality of the information collected in the census. The information can only be used for the purpose of compiling statistics and no individual information can be disclosed to anyone outside the census organization.

1.5 Coverage and Scope of the 2021 COA

The 2021 census will cover all households and agricultural holding in the Cook Islands. Items to be covered will include:

- a) location of the household
- b) level of agricultural activity
- c) size, number of separate parcels and location of holdings
- d) crops currently growing and/or planted and harvested for minor agricultural activities
- e) livestock and poultry
- f) household composition by sex and age group
- g) proportion of household income from agriculture
- h) loans by the household for agriculture purposes
- i) equipment in operational condition
- j) use of fertilizers, agricultural chemicals, selected agricultural activities and improved varieties
- k) area and location of holding
- l) number, area, location, land tenure, land use and number of years used/fallow of each separate parcels
- m) labour inputs
- n) crops planted and harvested during the last twelve months, area harvested, number of plants, and proportion sold
- o) fishing, aquaculture, and pearl farming

1.6 Census Methodology

The Ministry of Agriculture with the help of the Outer Island Governments and the Statistics Office will identify the trainers and supervisors for Rarotonga, Other Southern Islands and the Northern Group. The trainers/supervisors will recruit the enumerators in their respective assigned areas.

The workload and number of trainers/supervisors and enumerators will be computed using the results 2011 Census of Population and Dwelling Units.

There are two levels of training that will be held for this 2021 COA: the first for the trainers/supervisors and the second for the enumerators. This information will be detailed by the census manager.

For the purpose of the census, the country is divided into Census Districts. Each district is further sub-divided into a number of Enumeration Areas. Each enumerator will be assigned to handle at least one enumeration area and will be provided with Household List, enumeration area map, codes of districts and enumeration areas, census questionnaires, instruction manual, summary form and other control forms.

Each enumerator will be responsible for completing the work in his/her assigned enumeration area(s) and he/she must make every effort to do the work to the best of his/her ability.

CHAPTER 2

DUTIES AND RESPONSIBILITIES

2.1 The Job of an Enumerator

As an enumerator, you will be given at least one “Enumeration Area” or “EA” to work on. An Identification card (ID) will be provided, which you need to wear during the enumeration period. This card entitles you as an official enumerator of the 2021 Census of Agriculture and Fisheries.

Your main duties are as follows:

- a) Wear your ID card every time you go out to interview households.
- b) Visit all households in your assigned area.
- c) Conduct the interview using the tablet to record all responses.
- d) Make sure that all new households that are not accounted in the map or in the Household list given to you are also interviewed. No household in your assigned enumeration area should be left out.

2.2 Census Field Supervisor

Your field supervisor will give your enumeration area assignment and supply you with the forms and equipment you need to carry out your job. He will review your work every now and then and if necessary, he will explain to you how you should improve your work. It is his duty to see that you complete your assignment as quickly and accurately as possible.

Whenever, you have some problems or questions that you cannot solve from the instructions in this book, write them down and consult your field supervisor for help. Also let him / her know in advance if you need more control forms or other materials, so that your work will not be delayed or interrupted.

Any problems that you encounter during the census such as refusals, absent households, etc, must be reported to your field supervisor at the earliest opportunity. You will also find it useful to keep a record of any problems you encounter.

2.3 Hours of Work

No specific hours have been prescribed. However the most important thing is that you must complete your work on or before 18 December 2021. You should plan your hours of work accordingly. In most cases, you will have to adjust your working hours to the time when you are most likely to find the

people at home. The most likely or convenient time may be early in the morning or in the evening or during weekends.

2.4 Confidentiality of Census Information

As stated in the Statistics Act of 1966, all information collected in the census are confidential and should not be revealed to anyone except to the 2021 CAF Supervisors and Officials. This means that you may not give any census information even to members of your family. You will take an oath of office requiring you to keep the information confidential.

2.5 How to Conduct an Interview

It is important that you develop effective interviewing habits and that you know what to do in each household and how to do it quickly and efficiently.”

Here are some points:

- a) Try and make good impression on the respondent right from the start. Be friendly and polite but do not waste time in small talk. Wear neat clothes suitable for the areas where you are enumerating.
- b) Begin the interview with a pleasant greeting or use any courteous introduction.
- c) Spend a minute or so in general conversation or make a complimentary remark about some interesting feature of the place, in which the respondent can take pride. Then you can begin to undertake the questions in the Household Questionnaire.
- d) Ask the questions as worded on the screen. Be careful not to change their meaning.
- e) Use probing questions that will help you get the accurate answers of the respondents.
- f) Try to interview privately. Avoid group interviewing. Talk to the head of the household or any responsible member of the household who can accurately answer the questions. If not find out when some responsible member of the household will be at home and take note of this.
- g) Listen carefully to the respondent’s answers. You may get answers to several questions at once. Do not reveal your opinion on census questions. Do not show surprise, approval or disapproval of the replies either by the way you look or by the tone of your voice.
- h) If a respondent does not understand a question, it is sometimes helpful to repeat it. Show him the questions on the screen of the tablet if it will help him understand.

- i.) Do not lose any control forms, household lists, or maps whether completed or not. Upon completion of all control forms, put them carefully into the envelope provided and mark the envelope as specified.
- j) If the respondent seems reluctant or hesitant in answering, mention the importance and value of census information. Explain that it is strictly confidential and cannot be used for purposes of taxation, investigation or regulation.
- k) Do not discuss politics or other controversial subjects.
- l) Make an appointment to interview or to complete an interview at the respondent's request.
- m) Always thank the respondent when the interview is completed. Let him know that you appreciate his contribution to the success of the census.

2.6 Refusals

Most people cooperate fully in the undertaking of the census in the Island. Refusals are rare. You may find a respondent who is a little bit reluctant to give information mainly because he/she does not understand why it is necessary. In such cases, explain to him/her the importance or objectives of the census.

Explain politely that everyone is required by law to give census information and emphasize that all information is confidential. Explain the importance of census information.

Under the Statistics Act of 1966 every person commits an offence if he refuses to answer any question lawfully addressed to him by the Census Enumerator or Supervisor or any other official authorized to conduct the census.

Your attitude in a refusal situation is an important factor in creating goodwill towards the census. You should try to remain calm and courteous. Do not argue and do not lose your temper. You should also inform the person that you are obligated to report the refusal to your supervisor who will take further action in this matter.

CHAPTER 3

ENUMERATION AREA MAPS AND HOUSEHOLD LISTS

3.1 Enumeration Area (EA) Map

Your EA map is the best detailed map available from the Statistics Office. It is important to learn to read and use your map accurately. You will be issued a map of your assigned enumeration area. Know your boundaries. The side lines show the EA'S boundaries. These may be recognized by the roads, streams or by your supervisor.

If you cannot identify your boundaries, inform your field supervisor. Do not proceed to the enumeration of households until you are sure of your exact boundaries. You cannot be paid for working in the wrong EA. Also, if you miss household(s) in your EA, you will be required to return and enumerate them before your field supervisor can accept your work as complete.

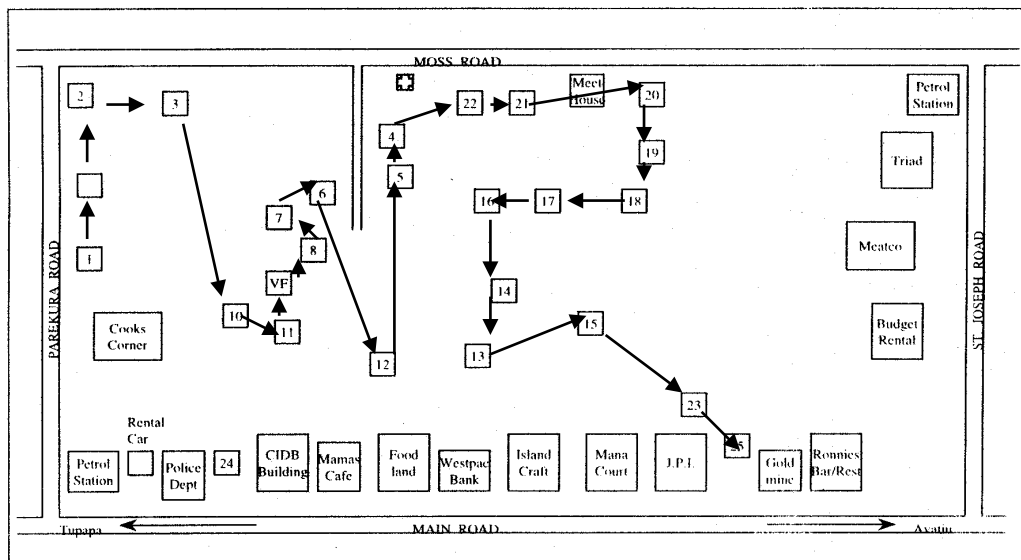
3.2 Route for Visiting Households

The Enumeration Area map given to you outlines the route to be followed. You should strictly adhere to this route. Never visit household in a haphazard manner. They should be visited in a logical sequence for example going along the roads in a clockwise direction. You may have to work out a special route to visit households with difficult access. Do not forget to go to those points of your block where there are no households according to the map. Verify whether this is the case.

HOUSEHOLD LOCATIONS

ISLAND: RAROTONGA
AREA: TUTAKIMOA-TEOTUE

CD: 03
EA: 01



3.3 Household List

In addition to the Enumeration map you will also be supplied with a Household List. This household list has been used in the 2016 Census of Population and Dwellings. Some changes might have taken place since then.

The majority of agriculture households to be interviewed will be sourced from the Ministry of Agriculture registry of farmers. The remaining households will be referred to the CAF 2021 team from the population census team as they will interview every household and pass on the list of households that are engaged in agriculture and / or fisheries. Upon receiving this list, CAF 2021 team will proceed to enumerate these households. Check for the name of the head of the household to ensure you have located the right household and proceed to interview responsible individual.

CHAPTER 4

INSTRUCTIONS FOR FILLING IN THE CENSUS QUESTIONNAIRES

4.1 General Instructions

Unlike the CAF of 2011 where there were three separate paper forms on which to record responses, the CAF of 2021 has combined these 3 forms into one comprehensive electronic CAPI questionnaire with 8 main sections.

- a) Section 1 - Household composition
- b) Section 2 - Crop production activity of the household
- c) Section 3 – Livestock and poultry
- d) Section 4 – Land operated by the household
- e) Section 5 – Crops planted and / or harvested
- f) Section 6 – Non – household labour input
- g) Section 7 – Household income and loans / grants by and for agricultural purposes
- h) Section 8 – Fishing, aquaculture, and pearl farming

Questions that require you to record area should be specified in acres and fractions of acres (e.g. 1/8, 1/4, 1/3, etc). Do not use decimal notation. Areas in square meters (sq. m.) should be specified in whole numbers.

Questions that require you to record monetary values should be rounded to the nearest dollar and no cents should be recorded.

4.2 Household Questionnaire

This electronic household questionnaire will be used in enumerating all the households in the Cook Islands. This contains eight (8) sections, seven of which are for the agricultural operation and one section is devoted for fisheries activities.

4.2.1 Geographic Identification and Other Relevant Information

This section identifies the island, district, enumeration area, and the household number. You must fill in correctly the identification particulars.

Illustration 1. Geographic Identification and Other Relevant Information

COOK ISLANDS
AGRICULTURE CENSUS 2021
MINISTRY OF AGRICULTURE AND STATISTICS OFFICE

The information is being collected under the Statistics Act 1966 and will be kept strictly confidential and will be used for statistical purposes only.

Household Schedule

District: <input style="width: 100%;" type="text"/>	Island: <input style="width: 100%;" type="text"/>	Enumeration Area: <input style="width: 100%;" type="text"/>
Household Number:	<input style="width: 100%;" type="text"/>	

- Island Enter the Island that you are working in.
- District Enter the Census District where the household is located in the boxes provided. This code is included in the Household List that will be provided to you.
- Enumeration Area Enter the code of the Enumeration Area of the Census District in the box provided. This can be obtained also from the Household List.
- Household Number Enter the household number as given in the column of Dwelling Number in the Household List. If there is a change in the number because of updating, enter the new number in the boxes provided. See the instructions in Chapter 3, Section 3.3

4.2.2 Section I – Household composition (as on the day of enumeration)

Q1.1 Household Composition

To begin completing this section it is important to understand that a household is composed of persons, individually or in groups, who make common provision for food and other essentials for living. They may be related or unrelated or a combination of both. Refer to Appendix A for the definition of household.

When recording the usual members of the household include temporary visitors who have been staying with the household for three months or more, but exclude those who have been with the household for less than three months. Furthermore, include household members who have been away for less than three months, but exclude those who have been away for three months or more.

Sl. No.	Full Name	Relationship with Head of Household	Sex	Date of Birth DD/MM/YYYY	Age in completed years	Marital Status	#Main Activity Last Week (Code)	Extent of Engagement in Main Activity (Code)	Av. Hour/Week worked on Holding	Agricultural Holder (1-Yes / 2-No)
1	2	3	4	5	6	7	8	9	10	11
1										
2										
3										
4										
5										
6										

Main Activity to be recorded only if the age is 15 years or more.

For each member of the household that will be listed, the following information should be recorded:

Column 2: Full name

Column 3: Relationship of the individual to the Head of Household (see available options with corresponding codes below)

Column 4: Sex (see available options with corresponding codes below)

Column 5: Date of birth. Be sure to follow the format given (DD/MM/YYYY)

Column 6: Age in completed years.

Column 7: Marital status (see available options with corresponding codes below)

Column 8: Main activity last week (see available options with corresponding codes below)

Column 9: Extent of engagement in main activity (see available options with corresponding codes below)

Column 10: Average hours worked on the holding in the last week

Column 11: Agricultural holder (1=yes / 2 – no)

Relationship with Head of HH	Sex	Marital Status	Main Activity Last week	Extent of Engagement
1- Self	1-Male	1-Never Married	1-Employer (including Self-employed)	1-Full Time
2- Spouse	2-Female	2-Married	2- Employed in Govt/ Public Sector	2-Part Time
3-Son/Daughter		3-Defacto	3- Employed in Private Sector	3-None
4- Daughter-in-law / Son-in-law		4-Widowed	4- Producing goods/services for family consumption	
5-Grand Child		5-Seperated / Divorced	5- Voluntary / Community Work	
6-Parent			6- Domestic Duties	
7-In-laws			7-Student	
8-Other relative			8-Too young / Retired/ Too old	
9-Not related			9-Unemployed	

Try your best to get all the information correct. There may be some cases where the person giving the information may not recall the date of birth of one of the household members. Sometimes the person will recall the month but not the date and year, and sometimes they will remember the year but cannot recall the correct month or date.

- Cannot recall at all = 99/99/9999
- Recall only the year = 99/99/1984
- Recall only the month and year = 99/08/1984
- Recall only the date and month = 01/08/9999

Main activity last week

ONLY HOUSEHOLD MEMBERS AGED 15 AND ABOVE ARE ASKED THIS QUESTION.

This question applies to the person's **main activity** during the previous **one week**. Be careful to ask the question exactly as given in the questionnaire to ensure that the information reported is correct. Record the appropriate code for that activity. Sometimes respondents may report that they have more than one main activity. In this case you should probe the respondent to determine which activity took up most of their time in the last week. There can only be one main activity selected.

Below is a detailed description of common main activities to help you select the most appropriate option.

1 Employer – a person who hires employees/workers to perform work for them/business. Workers are either paid a salary or wage for their labour. This would also include a person who runs his / her business (self – employed), runs his / her own taxi, or engages in agricultural activities such as crops, livestock and fishing for sale.

2 Employed in Govt / Public Sector – a person who works in a paid job or earns an income from a job where the employer is the government, including quasi government; e.g., those working in government ministries and corporations.

3 Employed in private sector – a person who works in a paid job or earns an income from a job where the employer is a private company, a non-government organization, or a religious organization; e.g., customer service agent, pastor, store clerk, baker, fisherman, security guard.

4 Producing goods / services for family consumption – a person who works primarily in subsistence activities such as agriculture, livestock, fishing **mainly for home consumption**.

5 *Voluntary / community work* – a person who is engaged in community work for free.

6 *Domestic Duties* – a person who stays at home mainly doing household work such as looking after the elderly and the sick, preparing or cooking food for the family, caring and looking after children, and doing other chores at home.

7 *Student* – a person who is attending an educational institution full-time.

8 *Too young / Retired / too old* – a person who is too young to attend school or have a main activity. Includes a person, due to old age, is not able to perform any activity. A person who has reached retirement age but is actively pursuing other activities should be recorded under that activity; e.g., a retired person running a small shop should be coded “1” instead of “8”. Just because an individual has reached or passed retirement age does not always mean that their main activity is retired/old age.

9 *Unemployed* – A person who is still looking for paid form of employment

4.2.3 Section II – Crop production activity of the household

This section of the questionnaire will ask the household about their crop production in the last 12 months. It will also ask about management of production, the production of value added products and cooked food and how and where it is being sold.

Q2.1 Did your household grow and / or harvest garden crop(s), coconut trees, pawpaw tress, or any other tree crops during the last 12 months?

A “1-yes” response will continue to question Q2.2. A “2-no” response will ask you to skip to question Q2.6. Input the appropriate code in the box provided.

Q2.2 Did your household have more than 64M² (8Mx8M) land under crops / garden crops, coconut trees, pawpaw trees, or other tree crops during the last 12 months?

A “1-yes” response will continue to question Q2.3. A “2-no” response will ask you to skip to question Q2.6. Input the appropriate code in the box provided. To give some context to the size of 8m x 8m you may mention that 8m x 8m is about the size of half of the playable area of a tennis court so the respondent will have a reference to compare the size of his agriculture operation.

Q2.3 Did your household sell / export any crop produce, fruits, vegetables or other agricultural produce during the last 12 months?

A “1-yes” or “2-no” response are the only options for this question. Input the appropriate code in the box provided.

Q2.4 What do you consider is the main purpose of your crop production?
(enter appropriate code)

- 1- Subsistence
- 2- Semi-Subsistence
- 3- Commercial
- 4- Others (specify)

There are 4 options provided. Input the appropriate code in the box provided.

Subsistence - The household produces crops for the main purpose of feeding itself, but does not sell for any significant amount.

Semi-Subsistence - The household's main purpose of agricultural production is to feed itself (subsistence) but some crops or surplus crops are sold as in copra production.

Commercial - Households in this category main purpose of production is to sell their produce either locally or for export.

Q2.5 If the household is engaged in commercial farming, did the proceeds from sale of crops in last 12 months exceed NZ\$1000?

If the respondent indicated that the main purpose of their crop production was for commercial purposes, then this question is asking them to respond with “1-yes” or “2-no” if the sales of their crops exceeded NZ\$1000.

Q2.6 Did the household own / operate any of the following during the last 12 months?

a. Bee keeping for honey production

Choose “1-yes” or “2-no” and input into box provided. If 1-yes is chosen proceed to next question (i and ii). If 2-no is chosen skip to b.

- (i) If yes, how many hives do you have? (record the total number of hives reported as at the day of enumeration)
- (ii) How much honey was harvested during the last 12 months (in litres)? (record the total number of litres harvested)

b. Hydroponic crop production

Choose “1-yes” or “2-no” and input into box provided. If 1-yes is chosen proceed to next question (i, ii, iii). If 2-no is chosen skip to c.

- (i) If yes, capacity of the operation (area in acres (meter²)) (record the total number of acres reported)
- (ii) Number of hydroponic plants grown and harvested (record the total number of plants reported)
- (iii) What hydroponic crops did you grow during the last 12 months? (record a “1 - yes” or “2-no” in the following boxes)

Lettuce	<input type="checkbox"/>	Pepper (Capsicum)	<input type="checkbox"/>	Cucumber	<input type="checkbox"/>
Herbs	<input type="checkbox"/>	Tomato	<input type="checkbox"/>	Others	<input type="checkbox"/>

c. Floriculture for commercial purposes

Floriculture is a discipline of Horticulture and it includes **cultivation of flowers and ornamental plants** for selling or for use as an input materials for other products.

Choose "1-yes" or "2-no" and input into box provided. If 1-yes is chosen proceed to next question (i, ii). If 2-no is chosen skip to d.

(i) What was the total quantity of flowers sold during the last 12 months? (record the total quantity reported for each plant, if the plant was not sold in the last 12 months record 0)

Orchid	<input type="checkbox"/>	<u>Tiare Maori</u>	<input type="checkbox"/>	<u>Anthurium</u>	<input type="checkbox"/>	Gardenia	<input type="checkbox"/>
Ginger	<input type="checkbox"/>	Desert Rose	<input type="checkbox"/>	Bougainvillea	<input type="checkbox"/>	Others	<input type="checkbox"/>

(ii) What was the quantity of flowers sold during the last 12 months? (record the total quantity reported for each plant, if the plant was not sold in the last 12 months record 0)

<u>Maire Leis (each)</u>	<input type="checkbox"/>	<u>Gardenia (bags)</u>	<input type="checkbox"/>
<u>Tiare Maori (bags)</u>	<input type="checkbox"/>	<u>Tiare Maori (leis)</u>	<input type="checkbox"/>
<u>Ginger/Heliconia Bouquets</u>	<input type="checkbox"/>	<u>Others, specify</u>	<input type="checkbox"/>

d. Did you or your household engage in any value added agricultural activities?

Choose "1-yes" or "2-no" and input into box provided. If 1-yes is chosen proceed to next question (i). If 2-no is chosen skip to e.

(i) If yes, provide average quantity sold in a week. (record the average quantity reported for each product, if the product was not sold in the last 12 months record 0)

Powdered products (in Zip lock bag)	<input type="text"/>		
Chips (in Zip lock bags)			
<u>Maniota</u>	<input type="text"/>		
Taro	<input type="text"/>		
Kumara	<input type="text"/>		
Bread fruit	<input type="text"/>		
Chutney			
Lime	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Tamarind	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Others (specify)	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Turmeric Paste	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Ginger Paste	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Jam			
Pawpaw	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Ginger	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
<u>Chilli</u>	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Lime	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Others (specify)	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles
Coconut Products			
Cream	<input type="text"/>	Small Bottle	<input type="text"/> Large Bottle
Oil	<input type="text"/>	100 ml Bottle	<input type="text"/> 500 ml Bottle
Soap	<input type="text"/>	Number	
Other Products Specify	<input type="text"/>	Small Bottles	<input type="text"/> Large Bottles

e. Did you or your household engage in selling cooked food?

Choose “1-yes” or “2-no” and input into box provided. If 1-yes is chosen proceed to next question (i, ii). If 2-no is chosen skip to section 3.

(i) If yes, what is the average quantity sold per week? (record the average quantity reported for each product, if the product was not sold in the last 12 months record 0)

Chestnut (in zip lock bag)	<input type="text"/>	Chestnut pudding (kanaka) (in single bars)	<input type="text"/>
Banana Pudding (Poke Meika –small container)	<input type="text"/>	Banana pudding – Large container	<input type="text"/>
Coconut Sauce – 600 ml bottle	<input type="text"/>	Coconut Sauce – 750 ml bottle	<input type="text"/>
Taro leaves – small container	<input type="text"/>	Taro leaves – Large container	<input type="text"/>
Taro (Plate)	<input type="text"/>	Maniota (Plate)	<input type="text"/>
Kumara (Plate)	<input type="text"/>	Banana (Plate)	<input type="text"/>
Pudding – Poke nita (Plate)	<input type="text"/>	Tarua (Plate)	<input type="text"/>
Cassava pudding (maniota) (Single bars)	<input type="text"/>	Others (specify)	<input type="text"/>

(ii) Where did you sell? (record a “1-yes” or “2-no” in the following boxes)

Roadside	<input type="text"/>	to Shops	<input type="text"/>
Market	<input type="text"/>	Others (specify)	<input type="text"/>

It is important to recognize the possible options for where these cooked foods might be sold. Roadside stalls are makeshift kiosks or tents on the side of the road where people sell food products. Shops refer to retail shops, specialty shops, and dairies. Market refers to the open market where anyone can sell products whether they are fresh produce, ornamental plants and cuttings, to cooked food and drinks. These are the most common in Cook Islands.

4.2.4 Section III – Livestock and Poultry (as at day of enumeration / visit)

This section relates to the livestock **kept and owned** by the household as of the day of visit or enumeration. This should be asked for all households regardless of the level of agricultural activity.

First establish whether the household has any livestock.

Q3.1 Does your household have any livestock or poultry?

Choose “1-yes” or “2-no” and input into box provided. If 1-yes is chosen proceed to next question (Q3.2). If 2-no is chosen go to section 4.

Q3.2 What was the type of operation during the last 12 months?

- 1 – Commercial
- 2 – Semi – commercial
- 3 – Subsistence

There are three possible options (refer to appendix A for definitions) available to choose from and only 1 option can be selected. Record the appropriate code that best matches the response given by the household and place it in the box provided.

Q3.3 Livestock has been divided into the following categories with their corresponding types listed below each livestock category: (refer to appendix A for definitions of each type of livestock)

- 1. Pigs
- 2. Cattle
- 3. Goats
- 4. Horses
- 5. Chickens
- 6. Ducks

The first part of Q3.3 will ask you to record the total number of each animal kept / owned at the time of visit (column 4) and the **main** system of rearing being used by the household (columns 5 – 8). Only one answer can be selected for the main rearing of animals, place a tick in the appropriate box. After recording the number of each type of livestock, you will be asked to record the overall total for pigs, cattle, goats, horses, and poultry. Please note that column 3 will require you to enter a code that corresponds to each specific type of livestock and can be found in Appendix B of this manual. (see table above for completed example)

The second part of Q3.3 will ask you to record the number of animals that were slaughtered and consumed, gifted, or sold in the last 12 months. The same question will be asked for animals that were sold or gifted alive. Column 14 will require you to record the total income the household received from livestock sold in the last 12 months (this amount should be rounded to the nearest dollar). (see table below for completed example)

Sl. No.	Type of Livestock / Poultry	Code	Number Kept (as on date of visit)	Main System of Rearing			
				Free Range	Tied on Rope	Enclosed on own land	Enclosed on another households land
1	2	3	4	5	6	7	8
Pigs							
1	Weaners	11	10				
2	Growers						
3	Fatteners	12	5				
4	Boars						
5	Sows	14	7				
6	Others	6	4				
7	Total Pigs		26	√			
Cattle							
8	Bulls	21	5				
9	Cows	22	3				
10	Others	23	1				
11	Total Cattle		9			√	
Goats							
12	Bucks						
13	Does						
14	Others						
15	Total Goats						
Horse							
16	Stallion						
17	Mares						
18	Others						
19	Total Horses						
Chicken							
20	Chicken-Broilers	51	15			√	
21	Chicken-Layers	52	10			√	
22	Chicken-Local	53	10	√			
Ducks							
23	Drakes						
24	Hens						
25	Total Poultry		35				

Sl. No.	Type of Livestock / Poultry	Slaughtered (during last 12 months)			Alive (during last 12 months)		Total revenue from Sale (NZ\$)
		Consumed	Gifted	Sold	Sold	Gifted	
		9	10	11	12	13	14
Pigs							
1	Weaners						
2	Growers						
3	Fatteners	1					
4	Boars						
5	Sows			1			100
6	Others						
7	Total Pigs	1		1			100
Cattle							
8	Bulls				1		1000
9	Cows						
10	Others						
11	Total Cattle				1		1000
Goats							
12	Bucks						
13	Does						
14	Others						
15	Total Goats						
Horse							
16	Stallion						
17	Mares						
18	Others						
19	Total Horses						
Chicken							
20	Chicken-Broilers						
21	Chicken-Layers						
22	Chicken-Local	2					
Ducks							
23	Drakes						
24	Hens						
25	Total Poultry	2					

4.2.5 Section 4 – Land operated by the household (during the last 12 months)

This section asks about some important characteristics of the land operated by the household such as location, area, land tenure, period of use, soil conservation methods, soil testing, and land under crops, livestock, and non-agricultural use. Household land refers to land operated exclusively by the household.

Sl. No	Parcel No	Location of Parcel (code)	Total Area of parcel		Land Tenure (code)	Period of use (in years)	Soil conservation methods used (code)		Soil Testing done (1-YES / 2-NO)	AREA (Acres) UNDER LAND USE CATEGORIES								
			Acre	Square Meter (M ²)			How many HH's operate this parcel?	1-Yes / 2-No		If yes, what was the main method used?	Land under tree crops	Land under Root Crops	Land under Temporary crops (other than root crops)	Land under mixed crops (Permanent & Temporary crops)	Land under fallow	Land under virgin bush	Land under Livestock and/or Poultry	Land under other non-agricultural uses
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1																		
2																		
3																		
4																		
5																		
6																		
7																		

Location: 1- Within village (same Island) 2- Outside village (same Island) 3- Outer Island
 Tenure: 1 – Borrowed Land 2- Leased land 3- Occupation right land. 4- Customary Land
 Soil Conservation method: 1- Crop Rotation 2- Mulching 3- Cover cropping 4- Inter cropping
 5- Contour farming on sloping land 6- Others (specify)

Q4.1 There are 19 columns in this question illustrated by table above. For each parcel you will be required to fill in appropriate information given by the respondent.

Column 2 – For every parcel given you must record a number beginning with 1 to indicate parcel 1 which should always be the homestead where the operator's home is or where he resides. After filling in information about parcel 1 in applicable columns 3 – 19, you should continue to record parcel 2 and repeat the same process.

Column 3 – This column asks about the location of the parcel. There are 3 possible choices to choose from. Using the codes at the bottom of the table for the appropriate code and record it in the cell.

1 – Within village (same island)

2 – Outside village (same island)

3 – Outer island

A household might live in Rarotonga but operates a parcel of land in rural areas on Rarotonga. In this case the parcel should be shown as being in an "2-outside village (same island)". Note that the homestead parcel (Parcel 1) will always be "1-within village (same island). Should the household operate a parcel on a different island you would select option 3.

Column 4 & 5 – This column asks for total area of the parcel. The response can be given in either acres and / or fraction of acres (column 4) or in square meters (column 5). In the event that the response is given in acres it is important that you record a fraction and not a decimal. Example: $\frac{1}{4}$ acre, $\frac{1}{2}$ acre, $1\frac{1}{2}$ acres. NOT 0.25, 0.5, 1.5.

If the respondent is more comfortable using square meters then record the response in column 5. Either column 4 or 5 should be used not both. Example: Do not record $\frac{1}{4}$ in column 4 and then record 1011.714m² in column 5 this is not necessary. Either record in acres or square meters but not both.

Column 6 – this column is asking if there are other households (besides the household being interviewed) that access or operate each land parcel listed. If the respondent responds that other households also access or operates a particular parcel then you should record the total number of households using this parcel.

Column 7 – This column pertains to the land tenure of the parcel. **Land tenure** refers to the arrangements or rights under which the household holds or uses the agricultural land. There are 4 classifications of land tenure to be considered and used for this column. Based on the response from the household choose the appropriate code for each parcel reported.

- 1 – Borrowed land
- 2 – Leased land
- 3 – Occupation right land
- 4 – Customary land

1 – **Borrowed land** is a land belonging to another household or person that the borrower has borrowed for use usually on a temporary basis. Terms of the agreement are between the two parties concerned; i.e. it need not go through the court.

2 – **Leased land** is a contract by which one party (lessor), usually in consideration of rent, conveys land to another (lessee) for specified time period.

3 – **Occupation right land** is where the operator (or his / her spouse) has an exclusive right to use a piece of land, such right being obtained through the land court system of the Cook Island.

4 – **Customary land** (alias native land, native freehold land) is a land which, being vested in the Crown, is held by natives or the descendants of natives under the native customs and usage in the Cook Islands. Customary land is not investigated by the land court but is being looked after and handled by the natives.

Column 8 - This column asks about how long the parcel has been operated by the household. This answer should be recorded in the number of years the parcel has been operated by the household. If the response is less than 12 months you should record 0.

Column 9 & 10 – Columns 8 and 9 pertain to soil conservation methods used for each parcel reported. In column 8 only a response of “1- yes” or “2- no” is required. The question is whether or not the household practiced any soil conservation methods on the reported parcel in the last 12 months. Place the appropriate answer in the corresponding cell. If the answer to column 8 was “1-yes”, column 9 is asking you to record the **main method of soil conservation** used and should also have a response. Column 9 has the following corresponding codes to choose from at the bottom of the table:

- 1 – Crop rotation
- 2 – Mulching
- 3 – Cover cropping
- 4 - Inter cropping
- 5 – Contour farming on sloping land
- 6 – Others (please specify)

Based on the response given by the household choose the most appropriate response and enter it in the space.

Crop rotation is the practice of planting different crops sequentially on the same plot of land to improve soil health, optimize nutrients in the soil,

and combat pest and weed pressure.

Mulching is simply a protective layer of a material that is spread on top of the soil. Mulching **enriches and protects soil, helping provide a better growing environment.**

Cover cropping are plants that are planted to cover the soil rather than for the purpose of being harvested. Cover crops manage soil erosion, soil fertility, soil quality, water, weeds, pests, diseases, biodiversity and wildlife.

Inter cropping is a farming method that involves planting or growing more than one crop at the same time and on the same piece of land.

Contour cropping on sloping land is the practice of tilling sloped land along **lines of consistent elevation** in order to conserve rainwater and to reduce soil losses from surface erosion.

Column 11 - This column seeks a “1- yes” or “2- no” response to determine whether or not soil testing was conducted to each parcel reported in the last 12 months. Place the appropriate code in the cell.

Column 12 – 19 will be asking for all responses to be recorded in acres using whole numbers and fractions. These columns are still referring to the parcels that were recorded in column 2. For every parcel reported you must record the number of acres (using whole numbers and fractions) of:

Land under tree crops - permanent crops that are sown or planted once and not replanted after each annual harvest. Trees bearing edible fruits or nuts that have an economic life of more than five years such as mango, coconut, cocoa, citrus, and breadfruit etc.

Land under root crops - field and root crops such as taro, banana, giant taro, cassava, yam, etc.

Land under temporary crops (other than root crops) - crops are **those which are both sown and harvested during the same agricultural year, sometimes more than once** such as vegetable crops like eggplant, beans, cabbage and tomato, etc.

Land under mixed crops – having a mix of permanent tree crops and temporary crops on the same parcel of land.

Land under fallow - idle lands that are not prepared and not ready for planting.

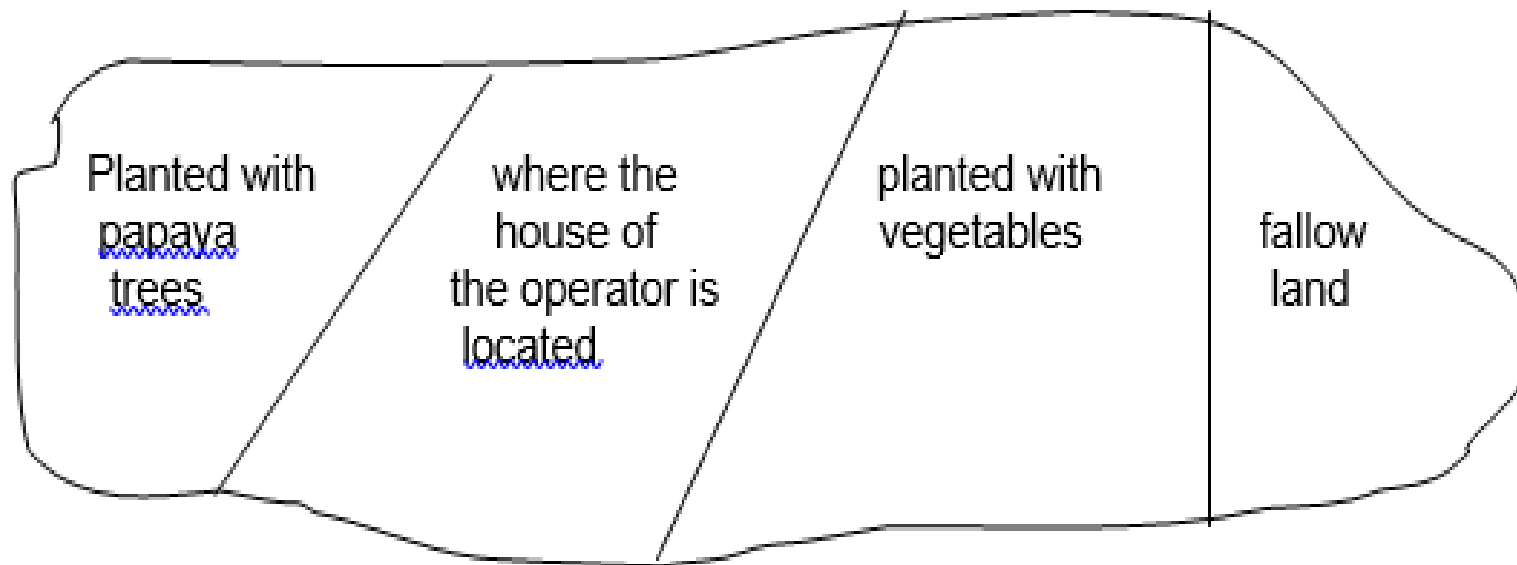
Land under virgin bush - lands that are not cultivated with grasses and bushes all around. These are good as grazing ground for cattle, horses and goats.

Land under livestock or poultry - land that is used for raising or tending livestock such as horses, cattle, goats, pigs, ducks and chickens.

Land under non-agricultural use - land that is under buildings, roads, and other non-agricultural use.

Note that the acres recorded in columns 12 – 19 should add up to the total acres recorded in column 4. Record the answer in the appropriate cell. An illustration of a holding with 1 parcel and example of how to fill in the corresponding table is given below.

Illustration 1: A holding with one parcel with four plots



Sl. No.	Parcel No	Location of Parcel (code)	Total Area of parcel		How many other HH's operate this parcel?	Land Tenure (code)	Period of use (in years)	Soil conservation methods used (code)		Soil Testing done (1-YES / 2-NO)	AREA (Acres) UNDER LAND USE CATEGORIES							
			Acre	Square Meter (M ²)				1-Yes / 2-No	If yes, what was the main method used?		Land under tree crops	Land under Root Crops	Land under Temporary crops (other than root crops)	Land under mixed crops (Permanent & Temporary crops)	Land under fallow	Land under virgin bush	Land under Livestock and/or Poultry	Land under other non-agricultural uses
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1 (homestead)	1	5 1/2		0	4	10	1	2	2	1	0	2 1/2	0	1	0	0	1
2																		
3																		
4																		
5																		
6																		
7																		

Location: 1- Within village (same Island)

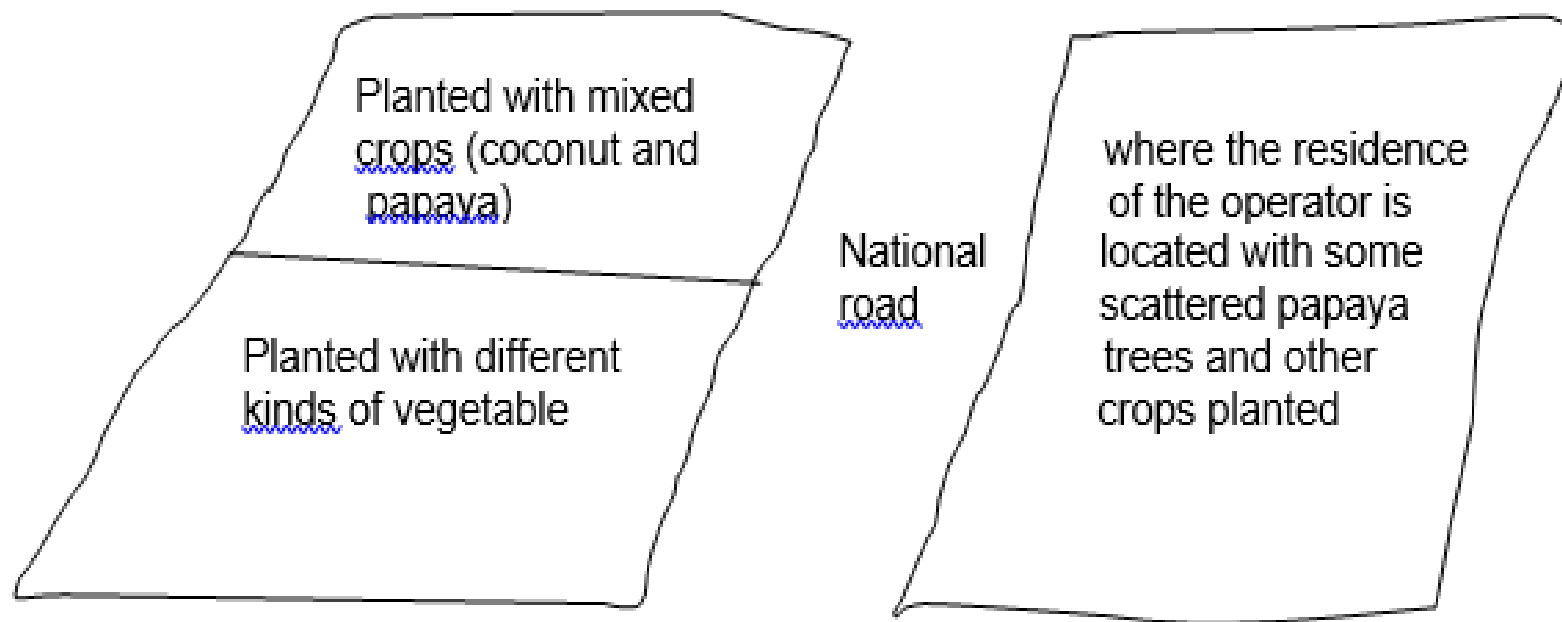
2- Outside village (same Island) 3- Outer Island

Tenure: 1 – Borrowed Land 2- Leased land 3- Occupation right land. 4- Customary Land

Soil Conservation method: 1- Crop Rotation 2- Mulching 3- Cover cropping 4- Inter cropping 5- Contour farming on sloping land 6- Others (specify)

Another illustration of a holding with 2 parcels and an example of how to fill in the corresponding table is given below.

Illustration 2: A holding with two parcels in which one has two plots and the other has one plot.



Sl. No	Parcel No	Location of Parcel (code)	Total Area of parcel		Land Tenure (code)	Period of use (in years)	Soil conservation methods used (code)		Soil Testing done (1-YES / 2-NO)	AREA (Acres) UNDER LAND USE CATEGORIES								
			Acre	Square Meter (M ²)			How many other HH's operate this parcel?	1-Yes / 2-No		If yes, what was the main method used?	Land under tree crops	Land under Root Crops	Land under Temporary crops (other than root crops)	Land under mixed crops (Permanent & Temporary crops)	Land under fallow	Land under virgin bush	Land under Livestock and/or Poultry	Land under other non-agricultural uses
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	1 (homestead)	1	2		0	4	10	2		2	1	0	½	0	0	0	0	½
2	2	1	2		0	4	5	1	2	1	1	0	1	0	0	0	0	0
3																		
4																		
5																		
6																		
7																		

Location: 1- Within village (same Island) 2- Outside village (same Island) 3- Outer Island

Tenure: 1 – Borrowed Land 2- Leased land 3- Occupation right land. 4- Customary Land

Soil Conservation method: 1- Crop Rotation 2- Mulching 3- Cover cropping 4- Inter cropping 5- Contour farming on sloping land 6- Others (specify)

4.2.6 Section 5 – Crops planted and / or harvested (during last 12 months)

Q5.1 - This section is designed to record all the crops that were planted and / or harvested during the last 12 months by households engaged in crop activity. Below is the table in which this information will be recorded along with the corresponding codes to be used at the bottom of the table. There should not be any new parcels added in this section of the questionnaire. Using the same parcels from section 4, the following questions will now ask you to record the crops that were planted and / or harvested in the last 12 months.

Parcel No.	Name of the Crop planted and / or harvested	Crop Code	Method of Planting (Code)	Area under crop	No. of Trees/ Plants	Av. Age* in Years	Type of seed / plant material used 1-traditional / 2- Improved /	Method of Irrigation used (Main)	Total Production	Proportion Consumed	Proportion sold	Proportion Gifted
1	2	3	4	5	6	7	8	9	10	11	12	13

Crop Name & code – from list.

Method of planting code : 1- Single Row, 2- Double Row, 3- Mixed Crop, 4- Scattered

Method of irrigation: 1- Drip tape irrigation, 2-Sprinkler irrigation, 3- Irrigation Water pump, 4- Water Tank, 5-Others

Column 1 – This column asks to record the same parcel numbers from section 4 remembering that parcel 1 is the homestead.

Columns 2 & 3 – In column 2 you will record the name of each crop planted and / or harvested by the household in the last 12 months while in column 3 you will record the corresponding crop code associated with each crop reported (refer to appendix c of this manual). Inquire also for tree crops in which fruits or nuts were harvested during the reference period.

Column 4 – Using the codes at the bottom of the table record the planting method used for each crop reported. There are 4 possible options to choose from. Select the appropriate code and record it in the space.

- 1 – Single row
- 2 – Double row
- 3 – Mixed crop
- 4 – Scattered

1 – **single row** refers to crops planted in a single line with no other crops mixed. If there are a few other trees / plants of different crops in scattered plantings over the plot, the plot is still considered to be single row or single crop.

2 – **double row** refers to crops planted in double rows in a single line with no other crops mixed. If there are a few other trees / plants of different crops in scattered plantings, the plot is still considered to be double row crop.

3 – **mixed crop** refers to two or more crops which are inter-planted in a regular pattern such as rows. Sometimes there are few scattered plantings of other crops but not considered to be as part of the mixed crops.

4 - **scattered** cropping refers to crops/plants which have not been planted in any regular pattern such as rows or some uniform method of spacing and are usually few in number.

Column 5 – In this column you will be required to report in acres the area under each crop reported. Ensure that the area is reported in acre and fraction of acres and not decimals.

Column 6 – This column will require you to record the number of trees / or plants that were planted and / or harvested in the last 12 months. In the reference period the household may have planted tree crops in which the number should be recorded if they are too few to record in acres. In some cases, there will be trees that are growing on the parcel that were planted in previous years. However, harvesting the fruit or nuts from those trees occurs every year. For example, harvesting mangoes from existing trees planted 10 years ago will require you to give the number of mango trees on that parcel.

Column 7 – In this column you are required to give the average age of each tree crop reported in years. If you have a response in column 6 you will now record the average age in years. As in the example above, mango was listed as a crop that was harvested during the last 12 months (column 2 & 3), 5 mango trees are growing on the parcel (column 6), therefore the years in which the mango trees have been growing on that parcel must be recorded. A best guess from the respondent is much better than leaving the space blank.

Column 8 – For crops that were planted, this column asks for the type of seed that was planted or the plant material used. There are 2 options to choose from.

- 1 – traditional
- 2 – improved

Improved seeds and planting materials refers to high yielding varieties that could have been used by the holder.

Column 9 – The main method of irrigation used on the reported parcel is what should be recorded here. There are 5 options to choose from.

- 1 – drip tape irrigation
- 2 – sprinkler irrigation
- 3 – irrigation water pump
- 4 – water tank
- 5 - others

Households may employ more than one method of irrigation, however, in this question it is important that you probe the respondent to give the main method of irrigation for each parcel listed. Take the method used the most.

Drip tape irrigation is a pipeline with a dripper manufactured inside the pipeline. It is a thin-walled tube rather than a structure pipe, with the common wall-thickness being 0.2mm (8mil). Commonly a seasonal product used in market gardens or rows of crops. The tape is low pressure and low flow system that has evenly spaced emitters built into the tubing.

Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Water is distributed through a system of pipes usually by pumping. It is then sprayed into the air through sprinklers so that it breaks up into small water drops which fall to the ground.

Irrigation water pumps are machines for moving water, they play a fundamental part in agriculture as they move water from its source to the fields and crops. Water pumps can be used with many forms of irrigation, such as drip, sprinklers or with a hose.

Water tanks store water on-site allows your irrigation system to pump water much faster than the main water supply is able to, improving the efficiency of your irrigation.

Column 10-13 – Column 10 asks about the household's total production for each crop planted or harvested from each reported parcel. This response should be recorded in kilograms. Columns 11 – 13 ask about the proportion consumed, sold, and gifted by the household and should be recorded as a percentage. For example, if the household reports that total production of mangoes harvested is 100kg in the last 12 months and they did not sell or give away any then column 11 would record 100 to indicate 100% of mangoes harvested was consumed by the household. Another possible response could be 100kg of mango was harvested and they gifted $\frac{1}{4}$ of the mangoes to their neighbor in which case column 11 would have 75 while column 13 would have 25. In any case columns 11 – 13 should always add up to 100.

Q5.2 – Did you or your household use / apply any of the following on the crops grown during the last 12 months?

This question asks the respondent to answer “1-yes” or “2-no” if they had used any organic / inorganic fertilizers in the referenced period. It also requires you to record the quantity in kg or liters of each fertilizer used. It is important that you go through the list item by item as some farmers tend to forget what was used. Fill out the table accordingly.

Inorganic fertilizers are manufactured mineral substances applied to soil, or irrigation water, to supply plants with the necessary nutrients.

Organic fertilizers are materials of organic origin, either natural or processed that can be used as sources of plant nutrients. The most commonly used are compost, chicken manure or other animal manure, etc.

Sl. No.	Fertilizer / Compost	1-Yes / 2- No	Quantity (KG)	Quantity (Litres),
Inorganic Fertilizer				
1	Ammonium Sulphate			
2	Ammonium Nitrate			
3	Urea			
4	Calcium Ammonium Nitrate			
5	Superphosphate			
6	Sulphate of Potash			
7	Nitrophoska Extra			
8	Nitrophoska Perfekt			
9	Yara Mila Complex			
10	Nitrosol original			
11	Plasma			
12	N-P-K (11-2-15)			
13	N-P-K (12-4-30)			
14	Plantafol 20-20—20			
15	Plantafol 5-15-45			
16	Others, specify			
Organic fertilizers				
17	Nitrosol Inorganic			
18	Alaska Fish Fertilizer 511			
19	GoodEnough			

20	Others (specify)			
21	Compost & animal manure			

Q5.3 – Did you or your household use / apply any of the following chemicals on your crops grown during the last 12 months?

This question asks about the use of agricultural chemicals in household agricultural activities. A response of “1-yes” or “2-no” is required for each pesticide / herbicide along with the quantity in kg or liters that was used in the past 12 months. As in the previous table it is important to ask the respondent item by item in case the respondent forgets using some chemicals.

Agricultural chemicals such as pesticides and herbicides are used for controlling or eliminating pests that destroy crops or livestock.

Sl.No.	Name	Type code	Used 1-Yes / 2- No	Quantity	
				KG	Litre
1	Glyphosate (Round-up, Sting, G360, Proclaim)	H			
2	Paraquat (Gramoxone, Agriquat)	H			
3	Fluazifob-p-butyl (Fusilade)	H			
4	Imidacloprid (Cyrus, Velcloprid, Confidor)	I			
5	Abamectin (Avid, Abamectin, Vertex)	I			
6	Permethrin + pirimiphos-methyl (Attack, Ambush)	I			
7	Mineral oil (DC Tron, Conqueror oil, Sunspray oil)	I			
8	Neem Kernel Oil (Naturally neem, NeemAQ)	I			
9	Bacillus thuringiensis var. kurstaki (Dipel, Delfin)	I			
10	Metaldehyde (Blitzem, Metarex) (Snail bait)	M			
11	Brodifacoum (Talon rat bait)	R			
12	Copper Hydroxide (Copperstar, Kocide, Kocide Opti, BlueShield)	F			
13	Mancozeb (Mancozeb, Manzate, Dithane M-45, Penncozeb)	F			
14	Chlorothalonil + Thiophanate methyl (Taratek)	F			
15	Chlorothalonil (Bravo, Chrolotek)	F			

16	Any other not specified above				
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H-Herbicide, I-Insecticide, M-Molluscide, R-Rodenticide, F-Fungicide

Q5.4 – Did you or your household import any plant / material from overseas during the past 12 months?

This question asks about the importing of plants and / or planting material from overseas in the last 12 months. This would include seeds or planting materials hand carried from overseas for which an import permit is required. A simple 1-yes or 2-no response is required to indicate if the planting material was imported. If the response is 1-yes then the following columns should also be completed. Record the quantity in kg of planting material or the number of seeds / plants imported along with the overseas country it was imported from (see corresponding country codes below table).

Sl. No.	Plant Material	1-Yes / 2- No	Plant / Variety Name	Quantity		Country from which imported
				KG	Number of plants	
Seeds						
1	Pawpaw					
2	Watermelon					
3	Tomato					
4	Cabbage					
5	Herbs					
6	Corn					
7	Bean					
8	Chinese cabbage					
9	Others, specify					
Tissue Cultured Food crop Plants						
1	Breadfruit					
2	Sweet potato/kumara					

3	Taro					
4	Others, specify					
Tissue Cultured ornamental / flower Plants						
1	Orchid					
2	Anthurium					
3	Others, specify					
Nursery Food crop Plants						
	Citrus					
	Rambutan					
	Logan					
	Lychee					
	Others, specify					
Nursery Ornamental Plants						
	Orchid					
	Anthurium					
	Desert Rose					
	Cordyline					
	Diffenbachia					
	Others, specify					

Country – 1 - Australia, 2 - New Zealand, 3 - Fiji, 4 - Tahiti and 5 - Others

4.2.7 Section 6 – Non – household labour input

This section seeks to establish the labor inputs (from outside the household) utilized in the holding for carrying out the agricultural activity. This should include all persons aged 15 years old and over who worked on the holding whether paid or in unpaid capacity during the last month prior to the enumeration day.

Q6.1 – Did the household employ any non – household member to work on the holding during the last month?

This question is a simple 1-yes or 2-no question. Notice that the reference period for this question is the last 1 month. Place the appropriate code in the box provided. If the response is 1-yes proceed to complete the following table.

Sl. No.	Type of Labour	Age	Sex 1-Male 2-Female	Number of Hours worked during the month	Cash Payment		Benefits provided		
					1-Yes / 2-No	If Yes, amount in NZ\$	Free/ Subsidized House	Free Meals	Other Benefits
							1-Yes/ 2-No	1-Yes/ 2-No	1-Yes/ 2-No
1	2	3	4	5	6	7	8	9	10
1									
2									
3									
4									

Type of Labour: 1- Non-HH Labour from Cook Islands 2- Foreign Labour

Column 2 – There are two types of labour available to choose from. Option 1- non household labour from the Cook Islands simply refers to any local labour hired from outside the household. This type of labour also refers to Cook Island Nationals. Option 2-foreign labour refers to a person hired from outside the household that is a from another country who may be working on a work permit or in other words a non - Cook Island resident. Choose the appropriate code.

Column 3 & 4 – This simply asks to put in the age of the hired employee (column 3) along with their sex (column 4).

Column 5 - Enter the number of hours worked in the last month for each hired individual.

Column 6 & 7 – These 2 columns ask whether the hired individual was paid in cash (1-yes or 2-no) and if so how much was paid to him / her in the last month. The response for column 7 should be recorded in whole dollars and if any cents are reported you must round the value to the nearest dollar.

Columns 8 – 10 – In many cases when households hire individuals from outside, in addition to cash payments sometimes the household will also compensate the individual with payments in kind. In other cases households will not pay out cash but compensate the worker with in kind payments. Columns 8 – 10 attempt to capture some of these payments such as subsidized or free housing, free meals, or other benefits such as free transport, mobile top-up etc. A simple code of 1-yes or 2-no is required for each individual reported.

4.2.8 Section 7 – Household’s income and loans / grants by and for agricultural purposes (during the last 12 months)

This section seeks to find out whether agriculture is the main source of income of the household.

Q7.1 – What was the proportion of your household's total income (in cash / or in kind) usually derived from agricultural activities during the last 12 months? Select the appropriate code based on household response.

What was the proportion of your household's total income (in cash / kind) usually derived from agricultural activities during last 12 months. (*Note that "in kind" means agricultural products that were received at no cost and consumed by the household during last 12 months or may be wages received in terms of agricultural products by any member employed in own household other household's holding*)

1-None 2-About 1/4 3- about 1/3 4- About 1/2 5- About 3/4 6- All

This question inquires the proportion of income derived from agriculture to the total income that the household received during the last 12 months. The household may have received income from different sources.

Income includes wages and salaries received by any employed member of the household from a particular occupation, net receipts derived from the household entrepreneurial activities such as crop farming, livestock raising, fishing, manufacturing, etc. and from other sources of income such as gifts received from relatives or friends whether in cash or in kind, winnings, housing rentals, etc. Note that net receipts derived from entrepreneurial activities specifically from crop farming and livestock raising should include those that were produced and consumed by the household for the last twelve months. Wages received in terms of agricultural products by any member employed in the own holding or other household's holding should also be considered as part of the income of the household.

Example: The household received its income for the last twelve months in the following sources:

Wages of the eldest son employed in a private company:	NZ\$12,000.00
Net receipts derived from vegetable garden and papaya:	6,000.00
Net receipts derived for selling three pigs:	1,500.00

It also consumed vegetables from its produce amounting to NZ\$50.00.

Total income: NZ\$19,550.00
Income derived from agriculture: 7,550.00
Proportion of income from agriculture to total income: 39%.
The nearest answer is code 3.

Q7.2 – Did you obtain or receive any loan and / or grant for your household's agricultural activities?

This section seeks to find out whether the household had availed loans or grants to finance its agricultural activities for the last 12 months. The loan that should be considered here was the loan availed and used for agricultural activities. The loan used for consumption or social and religious functions should not be included here. A "1-yes" or "2-no" should be selected and placed in the space. If option 1-yes is selected continue to ask the next question Q7.3.

If option 2-no is selected skip ahead to section 8.

Q7.3 – What was the main source of the loan and / or grant that you used for your household agricultural activities?

Since the household answered yes to the previous question, this question now asks to indicate where the loan or grant was sourced from. There are 4 options to choose from. Choose appropriate code and place in the space.

1. – Bank of Cook Island (BCI)
2. – Other Commercial Bank (ANZ or BSP)
3. – Government Support
4. – Other Sources (e.g. relatives, farmers associations etc.)

Q7.4 – What was the purpose of the loan and / or grant that you used for your household agricultural activities?

This question seeks the purpose of the loan or grant. This question is also a multiple select question in which more than one answer can be selected. Using the codes “1=yes” or “2=no” place a response for each item listed depending on the response given. An example is given below.

- | | |
|--|---|
| 1. Hand Tools (e.g. shovel, spade, machete, garden fork) | 1 |
| 2. Vehicles | 2 |
| 3. Small Machinery/equipment (knapsack, mist blowers) | 2 |
| 4. Chemicals | 1 |
| 5. Seeds | 1 |
| 6. Irrigation Materials | 1 |
| 7. Fertilizer | 1 |
| 8. <u>Labour</u> | 2 |
| 9. Others, specify | 2 |

4.2.9 Section 8 – Fisheries, pearl farming, and aquaculture (during the last 12 months)

This section is especially designed to capture the households engaged in fisheries activities during the last 12 months. Note that fishing as a hobby or sport fishing is not included in this section. It is also important to note here that if anyone in the household is engaged in fishing, pearl farming, or aquaculture in the reference period this section must be completed. Sometimes the

household member being interviewed is not the member that is usually engaged in fishing and may sometimes respond that he does not engage in fishing but there is another household member that does. It is important that you try and catch this household member at home or schedule a time where you can interview this person if the respondent is not able to give the information needed in this section. This section should be asked for all households.

Fisheries include the following activities:

- 1 – capture fishing and other marine products either in the lagoon or within the reef or outside or over the reef through the use of fishing gears and with or without fishing boat; Seafood products harvesting includes other seafood collection (eg rori, trochus, paua, rimu, crab etc); deep-sea fishing is included here;
- 2 – pearls and pearl farming include pearl farming, retail, wholesale and artisan/craft of pearls etc.
- 3 - Aquaculture

Q8.1 – Which of the following activities did you or your household engage in during the last 12 months?

The fisheries section is divided into three sub sections.

- | | |
|---|--------------------------|
| Capture Fishing / Seafood products harvesting | <input type="checkbox"/> |
| Pearls and Pearl Farming | <input type="checkbox"/> |
| Aquaculture | <input type="checkbox"/> |

You are required to read out each option to the household and place a tick in the appropriate boxes. Multiple answers can be selected depending on which fishing activities they have been engaged in during the last 12 months. Should a household indicate that they did not engage in any fishing activities in the last 12 months you may end the interview now.

For every subsection you tick, you will be asked more detailed questions in connection with that subsection later in the questionnaire.

Q8.2 – Where does your household engage in fishing / seafood product harvesting? (multi-select option)

- | | |
|-----------------------------|--------------------------|
| a- Lagoon | <input type="checkbox"/> |
| b- Reef (outer reef slope) | <input type="checkbox"/> |
| c- Outside or over reef | <input type="checkbox"/> |
| d- Inland (Fresh water) | <input type="checkbox"/> |

This is a multiple response question where you can tick more than one option. The household could be engaged in one or more fishing locations; for example, it could do both “reef / outer reef slope” and “outside or over reef” fishing. Fishing in the lagoon or reef / outer reef slope is considered in-shore fishing while offshore fishing is fishing outside or over reef or in the open ocean. Freshwater fishing is fishing in lakes or rivers. There are 4 options available for multi-select.

Q8.2a – Do you fish on any Fish Aggregating Devices (FADS)?

FADS are anchored around the island, and is made up of anchor block, rope lines, floats and aggregate such as coconut fronds (kikau) or bamboo. This is a simple yes or no question. Tick the appropriate box. If you tick “yes” follow up questions regarding FADs will follow.

Q8.2b – Name the two FADS you fish on the most.

- | | |
|---|--------------------------|
| <u>Rarotonga-Arorangi-Edgewater-Shallow</u> | <input type="checkbox"/> |
| <u>Rarotonga-Nikao-Seawall-Shallow (Met Office)</u> | <input type="checkbox"/> |
| <u>Rarotonga-Avarua-Avarua Harbour-Shallow</u> | <input type="checkbox"/> |
| <u>Rarotonga-Arorangi-Arorangi Primary School-Shallow</u> | <input type="checkbox"/> |
| <u>Rarotonga-Ngatangiia-Avana-Deep</u> | <input type="checkbox"/> |
| <u>Rarotonga-Nikao-Panama-Deep</u> | <input type="checkbox"/> |
| <u>Rarotonga-Arorangi-TheRarotongan-Deep</u> | <input type="checkbox"/> |

There are 38 FADS around the islands and the list above is not a complete list of FADS but is given here as an example. This is a multiple select question where more than 1 answer can be ticked, however, remember that the question is only asking you to select only 2 responses. You may read out the various options to the respondent if they are unsure.

Q8.2c – What methods did your household use for fishing / seafood product harvesting in the last 12 months?

- | | |
|---|--------------------------|
| a- <u>Gill and other Net fishing</u> | <input type="checkbox"/> |
| b- <u>Vertical Long lining</u> | <input type="checkbox"/> |
| c- <u>Drop Lining</u> | <input type="checkbox"/> |
| d- <u>Hook and Line</u> | <input type="checkbox"/> |
| e- <u>Trolling</u> | <input type="checkbox"/> |
| f- <u>Deep Bottom fishing</u> | <input type="checkbox"/> |
| g- <u>Spear gun</u> | <input type="checkbox"/> |
| h- <u>Collecting/gleaning shellfish and invertebrates</u> | <input type="checkbox"/> |
| i- <u>Flying Fishing (maroro)</u> | <input type="checkbox"/> |
| j- <u>Harpoon</u> | <input type="checkbox"/> |
| k- <u>Traditional fish traps</u> | <input type="checkbox"/> |
| l- <u>Others, please name</u> | <input type="checkbox"/> |

This multi – select question asks the respondent to identify all the different fishing methods used in the last 12 months. Tick all that apply. Should the respondent give a fishing method used that is not on the list, be prepared to specify that method in a follow up question.

- a. **Gill and other net fishing** are used to catch a number of different reef fish in a lagoon or along a reef edge. These include the use of gill nets, scoop nets, cast nets, etc.
- b. **Vertical long lining** is used to catch tunas. Its gear consists of a main line between 100 to 300 kg breaking strength with several branch lines between 10 to 20 attached to the mainline via quick release clips. The gear is left to soak from two to four hours before hauling. This method is generally used around fish aggregating devices (FADs).
- c. **Drop lining** is usually hooked to around 50 meters in depth to target deep-sea fish species such as groupers and snappers and pelagic fish like tuna, wahoo and marlin. The gear included in this method is l'li or drop stone fishing.
- d. **Hook and line fishing** is one of the oldest methods for catching fish. It is considered an environment-friendly method as it catches primarily target species, inflicts minimal injury to the fish, and causes minimal damage to the surrounding habitat. The gears used in this fishing method are matira or takiri, tiritiri and matau tamoe.
- e. **Trolling** is one of the methods used for catching oceanic species of fish. It includes trolling lures, using rod and reels.
- f. **Deep bottom fishing (in excess of 200 m)** is used in catching tuna and other pelagic fishes in big quantities. Manga is included in this method.
- g. **Spear gun fishing** is a traditional fishing method using javelin-like wooden spear or the metal or rubber powered spear and is being done along the shore or in the surf or over the reef. Examples of this are the pata spearing, throw spearing, spear guns, etc.
- h. **Collecting / gleaning shellfish and invertebrates** is gathering of seafood like clams, sea urchins, sea cucumbers, turban snails, oyster meat, octopus, crabs, etc., through the use of limited equipment and specialized gear. It is usually being done during low tide.
- i. **Flying fishing (maroro)** is an angling method that uses a light-weight lure called an artificial fly to catch fish. The fly is cast using a fly rod, reel, and specialized weighted line. The light weight requires casting techniques significantly different from other forms of casting. The flies may resemble natural invertebrates, baitfish, or other food organisms.
- j. **Harpoon** is a long spear – like instrument and tool used in fishing,

whaling, sealing, and other marine hunting to catch large fish or marine mammals.

k. **Traditional fish traps** are traditional trapping methods used in some rural villages and outer islands to catch fish.

l. **Other** forms of fishing include trapping, freshwater fishing, etc.

Q8.3 – What is the average number of fishing trips per month that you or your household made in the last 12 months?

This question requires the respondent to give the average number of fishing trips per month in the last 12 months. As the number of fishing trips may vary from month to month due to seasonality or weather conditions, it is important that the respondent give an average number of fishing trips per month over the reference period of 12 months. You must enter in the numerical value in the box provided.

Q8.3a – In which months would you go fishing more?

January	<input type="checkbox"/>
February	<input type="checkbox"/>
March	<input type="checkbox"/>
April	<input type="checkbox"/>
May	<input type="checkbox"/>
June	<input type="checkbox"/>
July	<input type="checkbox"/>
August	<input type="checkbox"/>
September	<input type="checkbox"/>
October	<input type="checkbox"/>
November	<input type="checkbox"/>
December	<input type="checkbox"/>

Now that an average number of fishing trips has been given in the previous question, this question now asks to identify the month(s) in which most of the fishing takes place. There is no limit on how many months can be selected. Tick all that apply.

Q8.3b – Please give the reasons why you fish more during (selected months).

Month	Fishing more during the month because						
	Unemployed and fish for livelihood	Seasonal worker - fish only to Supplement livelihood	Season for catching target species	Time of year with better weather/ conditions	To support community driven activity	Market demand increases	Other, please specify
January							
February							
March							
April							
May							
June							
July							
August							
September							
October							
November							
December							

This question is a follow up question to Q8.3a in that you will now probe the respondent to give the reason(s) why more fishing takes place in the particular month(s) selected in Q8.3a. This question is a multi-select question in which more than one answer can be ticked. If “other” option is selected, be prepared to specify the reason that is not listed above in a follow up question.

Q8.3c – Which months would you go fishing the least?

Similar to Q8.3a, this question now asks the respondent to identify the months in which he / she fishes the least or has the least fishing trips. A list of the 12 months are given for you to choose from. Tick all months that apply.

Q8.3d – Please give the reasons why you fish less during (selected months).

Month	Fishing less during the month because					
	Timing of the tides clash with other activities	Seasonal worker - employment commenced	Not the season for catching target species	Time of year with bad weather/ conditions	Market declines	Other, please specify
January						
February						
March						
April						

May						
June						
July						
August						
September						
October						
November						
December						

This is a follow up question to the answers provided in Q8.3c about the months least fished. This multi select question are some of the common reasons why households or fishermen tend to reduce fishing trips in some months. Tick all that apply and should you tick “other” be prepared to list an option that is not listed above in a follow up question.

Q8.4 – What is the average number of hours that you would spend on each fishing trip in the last 12 months?

This question is now asking for the respondent to give the average number of hours spent on each fishing trip. An estimated guess is better than no answer at all. Write in the numeric value given by the respondent.

Q8.5 – What is your MAIN purpose for fishing?

- Only for home consumption
- Mainly for home consumption and some for sale
- Mainly for sale and some for home consumption
- Only for sale
- Other (specify)

Only one answer can be selected for this question. See appendix A for the meaning of each option. Should you choose the “other” category be prepared to list a main purpose that is not listed above in a follow up question.

Q8.6 – Name the top 5 target species that you fished for in the last 12 months.

Sl.No.	Name of the target species
1	
2	
3	
4	
5	

This question will require you to list the top species the respondent will give. If the respondent clearly only fishes 2 or 3 species throughout the year, then you will only list those 3 species. Do not worry that you have to give 5 species every time you ask this question. 5 spaces are given in the event you come across fishermen that fish more than 5 species, we are only interested in the top 5.

Q8.6a – Select which months you go fishing for (species listed in previous question).

Sl. No.	Name of the targeted Species@	months you go fishing for above mentioned species											
		January	February	March	April	May	June	July	August	September	October	November	December
1													
2													
3													
4													
5													

This question is connected to Q8.6. For every species listed in the previous question you will now be required to list them again and select which months you go fishing for that particular species. Tick all months that apply.

Q8.6b - What is the MAIN fishing method that you or your household use to catch the top 5 fish species?

Sl. No	Name of the targeted Species@	Methods used for fishing above mentioned species											
		Gill and other net fishing	Vertical long lining	Drop lining	Hook and line	Trolling	Deep bottom fishing	Spear gun	Collecting/ gleaning shellfish and invertebrates	Flying fishing (maroro)	Harpoon	Traditional fish traps	Other, please name
1													
2													
3													
4													
5													

For the top 5 fish species listed in Q8.6, this question now asks to identify the MAIN method used for catching that particular fish species. Only 1 answer can be ticked in this question so probe the respondent to give the main method. If you select the “other” option be prepared to list the method that is not shown on the list above in a follow up question.

Q8.6c – How much fish species did you catch on average per fishing trip?

Sl. No.	Name of the targeted Species@	Quantity caught per fishing trip
1		
2		
3		
4		
5		

This question requires a numeric value to be written in and will be asked for every fish species that was given as the top 5. The answers should be given in kilograms (kg).

Q8.6d – What proportion of fish species did your household sell?

Sl. No.	Name of the targeted Species@	Proportion of the species sold					
		All Sold	About 1/4	About 1/3	About 1/2	About 3/4	All Consumed, none sold
1							
2							
3							
4							
5							

For every fish species specified as the top 5, you will be required to select the proportion of fish that was sold in the last 12 months for each species. In this question, ask the respondent for the best estimate of the proportion of fish or other aquatic products sold. In other words, of the total quantity of fish or other aquatic products obtained from capture fisheries in the last 12 months, what proportion was sold. **Sales** include selling for cash or in exchange for other produce (barter). Disposal of fish produce in other ways – for example, for payment of labour, sending to family members, or as gifts – should not be considered as sales.

Q8.6e – What processing state is your fishing species mainly sold at?

Sl. No.	Name of the targeted Species@	Gilled and gutted	Gilled and gutted and tailed	Whole gutted only	Fish, partial, fillet / loin / truck	Headed and gutted	Shellfish or invertebrate meat /gonad etc only	Whole	Smoked	Other
1										
2										
3										
4										
5										

Some fishermen add an extra step of processing such as gilling and gutting the fish or fillet before selling to customers or retailers. This question will be asked for each of the top 5 specified fish. Only one processing state can be selected for each species.

Q8.6f – What storage state is your fishing species mainly sold in?

Fresh	<input type="checkbox"/>
Frozen	<input type="checkbox"/>
Dried/dry salted	<input type="checkbox"/>
Pickled/preserved	<input type="checkbox"/>
Other	<input type="checkbox"/>

Again with the top 5 species identified you are required to tick the storage state that the fish is sold in. Choose from the options above and only one response can be selected for each species.

Q8.7 – Which top 2 islands is your fishing species sold in?

Sl. No	Name of the targeted Species @	Top 2 Islands where fishing species are sold												
		Aitutaki	Atiu	Mangai	Manihiki	Mauke	Mitiaro	Nassau	Palmerston	Penrhyn	Pukapuka	Rakahanga	Rarotonga	Exported overseas
1														
2														
3														
4														
5														

This is a multi-select question that will require only 2 options to be selected. In connection with the top 5 fish species already identified, this question is asking to identify the top 2 islands in which these fish species are sold. Be careful not to select more than 2 options.

Q8.7a – What MAIN market in top 2 islands is your catch sold to?

Sl. No	Island@	Type of Market						
		Village/town market	Roadside	Service industry e.g. restaurant, café, hotel	Retail sector –e.g. shop, supermarket (on home island)	Fish broker/wholesaler (on selling to other markets e.g. hotels, shops)	Sell from home (advertised online...eg. facebook community pages)	Other
1								
2								

For each island identified you will be asked about the **main** markets the household sold their fish to. If for example, you select Rarotonga as one of the islands in which your fish species is sold, a list of markets applicable to that island will appear. Only one market / retailer / service industry etc. can be ticked so probe the respondent to identify the **main** market.

Q8.7b – What proportion of fish species did you sell in top 2 islands in the last 12 months?

Sl. No	Name of the targeted Species @	Island 1						Island 2					
		None	About 1/4	About 1/3	About 1/2	About 3/4	All	None	About 1/4	About 1/3	About 1/2	About 3/4	All
1													
2													
3													
4													
5													

This question now drills down the question for top 5 fish species and top 2 islands and asks to select the proportion of fish / aquatic plants sold in the last 12 months. Ask the respondent for the best estimate of the proportion of fish or other aquatic products sold. In other words, of the total quantity of fish or other aquatic products obtained from capture fisheries in the last 12 months, what proportion was sold taking into account the fish species and islands selected in previous questions. **Sales** include selling for cash or in exchange for other produce (barter). Disposal of fish produce in other ways – for example, for payment of labour, sending to family members, or as gifts – should not be considered as sales. For each species and each island only one answer on proportion can be ticked.

Q8.8 – In the last 12 months, how many MALE members of your household were normally engaged in fishing / seafood product harvesting?

This question requires you to write in a numeric value to show the total number of male members that are “normally” engaged in fishing or seafood product harvesting. “Normally” means the household members that are expected go fishing and not a “one-off”. If the household hired males from outside to help with fishing and / or harvesting seafood products then they should not be counted in this total. Only male members of the household aged 15 years and over should be counted.

Q8.8a – What was male members main fishing activity in the last 12 months?

Sl. No. of Male Member	Main Fishing Activity of Male member				
	Lagoon fishing	Fishing Outside the reef	Gleaning or Harvesting	Processing	Selling
1					
2					
3					
4					
5					

This question will require you to list the male member of the household that are normally engaged in fishing and seafood products harvesting. For example, if 3 was entered for Q8.8 to identify 3 male members 15 years and over of the household who are normally engaged in fishing and seafood product harvesting then there would now be a roster of 3 male individuals that will generate follow up questions regarding each male individual. The first question seeks to identify the main fishing activity for each male in the last 12 months. Only one answer can be ticked and although the individual may engage in more than one type of fishing activity, this question seeks the MAIN fishing activity. The fishing activity that took up most of his time in the past 12 months.

Q8.9 – In the past 12 months, how many FEMALE members of your household were normally engaged in fishing / seafood product harvesting?

This question requires you to write in a numeric value to show the total number of female members that are “normally” engaged in fishing or seafood product harvesting. “Normally” means the household members that are expected go fishing and not a “one-off”. If the household hired females from outside to help with fishing and / or harvesting seafood products then they should not be counted in this total. Only female members of the household aged 15 years and over should be counted.

Q8.9a – What was female members main fishing activity in the last 12 months?

Sl. No. of Female Member	Main Fishing Activity of Female member				
	Lagoon fishing	Fishing Outside the reef	Gleaning or Harvesting	Processing	Selling
1					
2					
3					
4					
5					

This question requires you to write in a numeric value to show the total number of female members that are “normal” engaged in fishing or seafood product harvesting. For example, if 2 was entered for Q8.9 to identify 2 female members 15 years and over of the household who are normally engaged in fishing and seafood product harvesting then there would now be a roster of 2 female individuals that will generate follow up questions regarding each individual female. The first question seeks to identify the main fishing activity

for each female in the last 12 months. Only one answer can be ticked and although the individual may engage in more than one type of fishing activity, this question seeks the MAIN fishing activity. The fishing activity that took up most of her time in the past 12 months.

Q8.10 – Please tick from the following list of equipment for fishing and / or seafood product harvesting activities your household used in the last 12 months. Tick all that apply.

Canoe	<input type="checkbox"/>
Aluminum dinghy / Boat	<input type="checkbox"/>
Inflatable dinghy	<input type="checkbox"/>
Outboard motor	<input type="checkbox"/>
Boat or Charter	<input type="checkbox"/>
Kayak	<input type="checkbox"/>
Fishing Rod	<input type="checkbox"/>
Life Jacket	<input type="checkbox"/>
VHF Radio	<input type="checkbox"/>
Flares	<input type="checkbox"/>
EPIRB (Emergency Position Indicating Radio Beacon)	<input type="checkbox"/>

Equipment that are normally used in capture fishing and seafood product harvesting are listed above. This is a multi - select question in which more than one answer can be ticked. Note that this question asked for the equipment “used” and not owned. If a household borrowed a canoe from a friend or neighbor to carry out their fishing activities then you would still tick the box next to canoe. Tick all equipment that were used by the household in the last 12 months.

Q8.10a – Q8.10b

Any other equipment not listed earlier?

Please specify other equipment.

These 2 questions give the respondent an opportunity to identify some equipment that may have been used to carry out their fishing activities that are not listed in question Q8.10. Should there be any “other” equipment mentioned, you must specify it in the follow up questions.

Q8.10c – Is this equipment used owned by the household, or was it hired, borrowed or shared?

Sl. No.	Equipment	Category of the Equipment used			
		Owned	Hired/ Rented	Borrowed	Shared
1	Canoe				
2	Aluminum dinghy / Boat				
3	Inflatable dinghy				
4	Outboard motor				
5	Boat or Charter				
6	Kayak				
7	Fishing Rod				
8	Life Jacket				
9	VHF Radio				
10	Flares				
11	EPIRB (Emergency Position Indicating Radio Beacon)				
12	Other, specify #				

For every equipment ticked in Q8.10 the respondent will be asked follow up questions on ownership, hiring or rental, borrowing, and / or sharing of the equipment. Only one answer can be ticked. In order for the household to “own” a piece of equipment, it must be in working order on the day of visit. For example, if the household indicates on the day of interview that they own a canoe but it is broken and needs repair then you will not select “owned” in this question but other options that they may have used in the last 12 months.

S805.d – How many equipment used does your household own?

Sl. No.	Equipment	Number of equipment Owned
1	Canoe	
2	Aluminum dinghy / Boat	
3	Inflatable dinghy	
4	Outboard motor	
5	Boat or Charter	
6	Kayak	
7	Fishing Rod	
8	Life Jacket	
9	VHF Radio	
10	Flares	
11	EPIRB (Emergency Position Indicating Radio Beacon)	
12	Other, specify #	

If you ticked “owned” in Q8.10c then this follow up question will require you to record the number of each equipment the respondent says it owns. Write in the quantity of each equipment owned.

Q8.10d – Q8.10e

Is this other fish equipment owned by the household, or was it hired, borrowed or shared?

How many “other fish equipment” does your household own?

This question(s) is being called up because questions Q8.10d and Q8.10e have been answered listing “other” fishing equipment the household used. You will now be required to identify the status of these “other” fishing equipment that were identified as being used in the last 12 months on whether they were owned, hired, borrowed, or shared. If “other” equipment was owned you will be required to specify quantity owned.

Q8.11 – Did Covid19 influence your household’s fishing activities in the last 12 months?

This is a simple single select yes or no question.

Q8.11a – How did Covid19 influence your household’s fishing activities?

- Caused household to start fishing/ harvest activities i.e. don’t usually or never have fished/harvested seafood products
- Increased fishing/harvesting activities
- Decreased fishing/harvesting activities
- Stopped fishing/harvesting activities
- Other (specify)

If the respondent answered “yes” in Q8.11, this follow up question will be asked. A few common reasons that may have influenced household fishing activities due to Covid19 are listed with the option of ticking “other” if the household’s reason is not captured in the list above. Be prepared to specify the “other” factor brought on by Covid19 in a follow up question Q8.11b.

PEARLS AND PEARL FARMING

Q8.12 – How many farm areas does your household currently operate?

This question is connected to question Q8.1 in the beginning of the fisheries section. If the household responded yes to engaging in “pearls and pearl farming,” a series of associated questions will now be asked. This question asks for the quantity of pearl farm areas the household operates. Write in the numeric value.

Q8.13 – How many farm lines does your household own on the farm?

Farm lines are main lines used to hang cultures black pearl oysters. Ask the respondent the number of farm lines that his / her household owned in their pearl farm during the last 12 months. Write the numeric value.

Q8.14 – Does your household collect spat?

This is a simple yes or no question.

Q8.14a – How many spat collectors do you have in the water?

Spat collector lines are lines used to hang spat collectors for the collection of larval phase of black pearl oysters. This question asks to record the total number of spat collectors that are in the water on the day of visit. If the respondent says “none” you will write in 0. If the respondent is not sure encourage him to give a best estimate. Write the numeric value.

Q8.14b – How often do you put spat collectors in the water?

Seasonally	<input type="checkbox"/>
Annually	<input type="checkbox"/>
All year round	<input type="checkbox"/>
Certain months	<input type="checkbox"/>
Other (specify)	<input type="checkbox"/>

There are 4 options on how most pearl farmers put spat collectors in the water. Only one answer can be ticked. Should the “other” option be ticked to identify the frequency in which spat collectors are put in the water (that are not already listed) then be prepared to specify this option in question Q8.14c.

Q8.14d – Which are the certain months that you put spat collectors in the water?

January	<input type="checkbox"/>
February	<input type="checkbox"/>
March	<input type="checkbox"/>
April	<input type="checkbox"/>
May	<input type="checkbox"/>
June	<input type="checkbox"/>
July	<input type="checkbox"/>
August	<input type="checkbox"/>
September	<input type="checkbox"/>
October	<input type="checkbox"/>
November	<input type="checkbox"/>
December	<input type="checkbox"/>

If the option of “certain months” was ticked in the previous question, then you will now be required to indicate which months that spat collectors were put in the water in the last 12 months. If the option of certain months was not selected this question will not need to be answered. Select all that apply.

Q8.15 – Which farmed shells do you currently have in the water?

Seeded Shells

Virgin Shells

One or both options can be ticked and are based on the type of shells that are currently in the water on the day of visit.

Seeded shells are cultured black lip pearl oysters which have nucleus inserted into their gonads. These are being hanged on farm lines.

Virgin shells are cultured black lip pearl oysters, which are hanged on farm lines for further growth out. These shells being grown to suitable size for seeding. It also includes shells, which have been seeded and have rejected the nucleus and will be seeded for the second time at a later date.

Q8.15a – Q8.15b

How many seeded shells do you currently have in the water?

How many virgin shells do you currently have in the water?

Both of these questions ask you to record the number of shells reported by the household with regards to seeded shells and virgin shells. Write in the numeric value.

Q8.16 – Please select from the following list of equipment / facilities for the pearl farming activities your household used in the last 12 months.

Scuba Tanks

Scuba gear set (i.e BCD, regulators, weight belt, fins, masks)

Scuba Compressors

Set of Snorkeling gear

Motorized Boats

Seeding equipment/ Tools

Seeding houses / Platforms

Other, please specify

This question is similar to the equipment question for capture fishing / seafood product harvesting. Multiple responses can be ticked if they had been used for the household's **pearl farming** activities in the last 12 months. Tick all that apply.

Q8.16a – Q8.16b

Any other equipment / facilities not listed earlier?

Please list the **other** pearl farming equipment.

The questions above are still referring to pearl farming and asks the respondent to identify any other equipment or facilities used in their pearl farming activities that were not listed on the list in question Q8.16. If there are “other” equipment that were used tick “yes” for Q8.16a and then enter the “other” equipment in Q8.16b.

Q8.16c – How many times a week do you use the pearl farming equipment?

Sl. No.	Equipment	No. of times used in a week
1	Scuba Tanks	
2	Scuba gear set (i.e BCD, regulators, weight belt, fins, masks)	
3	Scuba Compressors	
4	Set of Snorkeling gear	
5	Motorized Boats	
6	Seeding houses / Platforms	
7	Other, please specify	

For each piece of equipment selected in question Q8.16 you will now be required to record the number of times a week the household used the equipment for their pearl farming activities in the last 12 months. Perhaps not every week may be the same in terms of the frequency they used each piece of equipment so an average number of times will suffice for this question. Write in the numeric answer.

Q8.16d – Is this pearl farming equipment owned, hired, borrowed or shared by your household?

Sl. No.	Equipment	Category of the Equipment used@			
		Owned	Hired or Rented	Borrowed	Shared
1	Scuba Tanks				
2	Scuba gear set (i.e BCD, regulators, weight belt, fins, masks)				
3	Scuba Compressors				
4	Set of Snorkeling gear				
5	Motorized Boats				
6	Seeding houses / Platforms				
7	Other, please specify				

For every equipment selected in Q8.16 the respondent will be asked follow up questions on ownership, hiring or rental, borrowing, and / or sharing of the equipment. Only one answer can be ticked. In order for the household to “own” a piece of equipment, it must be in working order on the day of visit. For example, if the household indicates on the day of interview that they own a

motorized boat but it is not in working condition (on the day of interview) and needs repair then you will not select “owned” in this question but other options that the household may have used in the last 12 months.

Q8.16e – Q8.16f

How many times a week do you use the “other” pearl farming equipment?

Is this “other” pearl farming equipment owned, hired, borrowed, or shared by your household?

This question(s) is being called up because questions Q8.16a and Q8.16b have been answered listing “other” pearl farming equipment the household used. You will now be required to record how many times in the week the equipment is used as well as the status of these “other” pearl farming equipment that were identified as being used in the last 12 months on whether they were owned, hired, borrowed, or shared. If “other” equipment was owned you will be required to specify the numeric value owned.

Q8.17a – Q8.17b

How many shells do you intend to have seeded in the pearl farm over the next 3 years?

How many shells do you intend to have seeded in the pearl farm over the next 5 years?

This question asks about the perception of the household regarding the number of seeded shells that the household is aiming to have in three or five years from now. Record the total number reported by the respondent in the appropriate space for 3 years and 5 years. An estimate is better than a blank space.

Q8.18 – What is the proportion of your household total income (in cash / in kind) usually derived from pearl farming in the last 12 months?

- | | |
|-----------|--------------------------|
| None | <input type="checkbox"/> |
| About ¼ | <input type="checkbox"/> |
| About 1/3 | <input type="checkbox"/> |
| About ½ | <input type="checkbox"/> |
| About ¾ | <input type="checkbox"/> |
| All | <input type="checkbox"/> |

Similar to previous questions related to proportion of income derived from agricultural activities, this question relates to the proportion of income derived specifically from pearl farming activities. Note that net receipts derived from entrepreneurial activities specifically from pearl farming should include those oyster taken from the farm and consumed by the household for the last 12

months. Wages received by any member employed in own pearl farm or other household's pearl farm should also be considered as part of the income of the household. Six options are available to choose from. Tick the appropriate answer.

Q8.19 – Did your household take out any loan or receive a grant for pearl farming in the last 5 years?

Yes, loan only	<input type="checkbox"/>
Yes, grant only	<input type="checkbox"/>
Yes, both loan and grant	<input type="checkbox"/>
No	<input type="checkbox"/>

The loan that should be considered here was the loan availed and used for the pearl farm operation in the last 5 years. The loan used for consumption or social and religious functions should not be included here. In addition, if the household was eligible to receive a grant (in the last 5 years) this should be considered here also. Select the most appropriate answer.

Q8.19a – What was the source of the loan / grant that you used for your household pearl farm in the last 5 years?

Bank of Cook Islands	<input type="checkbox"/>
Other Commercial Bank	<input type="checkbox"/>
Island Government administered fund	<input type="checkbox"/>
Cook Islands Government administered initiative e.g. MFEM or other ministry/agency	<input type="checkbox"/>
Other non-bank financial institutions	<input type="checkbox"/>
Family / friend	<input type="checkbox"/>
Other Sources	<input type="checkbox"/>

This question attempts to identify the source of the loans / grants used for the household pearl farming activities. Households may have received a combination of loans and grants from government or development partner organizations. Multiple answers can be ticked.

Q8.20 – What value added and / or byproducts are derived from your household's pearl farming activities (other than black pearls that are sold as pieces or parcels)?

Pearl oyster meat (<u>korori</u>)	<input type="checkbox"/>
Pearl shell	<input type="checkbox"/>
Jewelry	<input type="checkbox"/>
None	<input type="checkbox"/>

Other, specify	<input type="checkbox"/>
----------------	--------------------------

A list of common byproducts or value added products usually derived from pearl farming are displayed above. More than one answer can be ticked here including an “other” category in which case a follow up question will be asked for you to list the “other” byproduct(s).

AQUACULTURE

Q8.21 – Where is your aquaculture located (site)?

Land Based	<input type="checkbox"/>
Inland Waters	<input type="checkbox"/>
Coastal Waters	<input type="checkbox"/>

Aquaculture is the farming of aquatic organisms such as fish, molluscs, and crustaceans. There are 3 main methods in which aquaculture is usually practiced. Only 1 option can be ticked for this question.

Land based aquaculture is aquaculture practiced in ponds, tanks, raceways and other land areas.

Inland waters covers aquaculture practiced in dams, reservoirs, lakes and rivers.

Coastal waters covers aquaculture in lagoons, estuaries, shallow and open seas, bays and coves.

Q8.22 – What type of water was used in carrying out your aquaculture?

Fresh Water	<input type="checkbox"/>
Brackish Water	<input type="checkbox"/>
Seawater	<input type="checkbox"/>

Fresh water refers to aquaculture in reservoirs, rivers lakes, and canals with consistently negligible salinity. **Brackish water** refers to aquaculture in waters with appreciable salinity but not to constant high level, characterized by

fluctuations due to regular influxes of freshwater or seawater such as in estuaries, coves and bays. **Sea water** refers to aquaculture in coastal and offshore waters where salinity is high and is not subject to significant daily or seasonal variations.

If “land based” or “inland” is selected in Q8.22, at least one of “fresh water” or “brackish water” must be selected.

If “coastal waters” is selected in Q8.22, at least one of “brackish water” or “sea water” must be selected.

Q8.23 – What type of aquatic organisms were cultivated?

- | | |
|-----------------|--------------------------|
| Freshwater fish | <input type="checkbox"/> |
| Marine fish | <input type="checkbox"/> |
| Crustaceans | <input type="checkbox"/> |
| Molluscs | <input type="checkbox"/> |
| Aquatic plants | <input type="checkbox"/> |
| Others | <input type="checkbox"/> |

There are 6 options available and multiple selections can be made. Should the respondent identify an organism that is not listed, you may select “other” and list the response in a follow up question Q8.23a.

Q8.24 – What was the MAIN purpose of your household’s aquaculture activity in the last 12 months?

- | | |
|-----------------------------|--------------------------|
| Only for Home Consumption | <input type="checkbox"/> |
| Mainly for home consumption | <input type="checkbox"/> |
| and some sale | <input type="checkbox"/> |
| Mainly for Sale and some | <input type="checkbox"/> |
| home consumption | <input type="checkbox"/> |
| Only for sale | <input type="checkbox"/> |
| Other (specify) | <input type="checkbox"/> |

There are 5 possible responses and only 1 option can be selected. The first response (only for home consumption) is selected where the household does not sell any aquaculture produce at all. If a household does sell some aquaculture produce, the choice is between the second and third responses according to whether the aquaculture is carried out mainly for home consumption (2 – mainly for home consumption and some sales) or mainly for sale (3 – mainly for sale and some home consumption). The term **main** means which of the two – own consumption or sale – represents the larger volume of aquaculture production. Option 4 – only for sale should be selected if the

household does not consume any of the aquaculture produce harvested and option 5 – other (specify) is selected should the response not fit into any of the above descriptions and you are asked to specify the main purpose of the household's aquaculture activity in Q8.24a.

APPENDIX A

CONCEPTS AND DEFINITIONS

An **Agricultural Holding** is an economic unit of agricultural production under single management comprising all livestock kept and all land used wholly or partly for agricultural production purposes, without regard to title, legal form, or size. Single management may be exercised by an individual or household, jointly by two or more individuals or households, by a clan or tribe or by a juridical person such as a corporation, cooperative or government agency. The holding's land may consist of one or more parcels, located in one or more separate areas or in one or more enumeration areas, providing the parcels share the same production means utilized by the holding, such as labour, farm buildings or machinery.

A **Holding Parcel** is any piece of land entirely surrounded by other land, water, road, forest, etc. not forming part of this holding. A parcel may consist of one or more plots adjacent to each other.

A **Plot** is a part or whole of a parcel on which a specific crop or crop mixture is cultivated. A plot can also be fallow land or land ready for planting.

The concept of a **Household** is based on the arrangements made by persons, individually or in groups, for providing themselves with food or other essentials for living. A household may be either:

- (a) a one person household, that is, a person who makes Provision for his or her own food or other essentials for living without combining with any other person to form part of a multi-person household; or
- (b) a multi-person household, that is, a group of two or more persons living together who make common Provision for food or other essentials for living. They may be related or unrelated persons or a combination of both. They may live in one house or in more than one house.

An **Institution** is an organization providing a specified service or performing some general public function -for a group of individuals such as a Prison, hospital, hotel, boarding school, etc. Institutions will be covered separately.

A **Holder or an Operator** of an agricultural holding is the person exercising management control over the operation of the agricultural holding. Where the holding is being operated by a single household the head of the household is in most cases the operator. A holding can have more than one operator

Crop production activity of the household

Non-Agricultural - the household does not engage in any crop production (such households may own or look after land not in use and also own or look after livestock).

Minor Agricultural Activity - the household has only very few crops defined as less than 64M² (8M X 8M) of land under garden crops or less than 10 coconut trees or less than 10 banana plants or less than 10 trees bearing other tree crops.

Subsistence - The household produces crops but does not sell for any significant amount.

Semi-Commercial - The household's main purpose of agricultural production is profit maximization after satisfying the need to feed itself (subsistence).

Commercial - Households in this category main purpose of production is to sell their produce either locally or for export.

Other ornamental plants are those plants used for beautification or decoration whether indoor or outdoor. Example of these are bougainvillea, orchids, etc. However, report only those for sale. Do not include if the household is planting these plants as a hobby.

Land operated by the household

A **Partnership** holding is operated in association with one or more partners who may be related or not related but who live in different households.

Land tenure refers to the arrangements or rights under which the holder holds or uses the agricultural land.

Customary Land (alias Native land, Native Freehold land) is a land which, being vested in the Crown, is held by Natives or the descendants of Natives under the Native customs and usage in the Cook Islands. Customary land is not investigated by the land court but is being looked after and handled by the Natives.

Freehold Land is a land, which have been investigated by the land court and held by individuals under the following terms:

Leased is a contract by which one party (lessor), usually in consideration of rent, conveys land to another (lessee) for a specified time period.

License (borrowed) is a land belonging to another household or person that the borrower has borrowed for use usually on a temporary basis. Terms of the agreement are between the two parties concerned; i.e. it need not go through the court.

Occupation right is where the operator (or his/her spouse) has an exclusive right to use a piece of land, such right being obtained through the land court system of the Cook Islands.

The **Physical Land or Farm Area** is the actual measure of the land or farm used for agricultural activities or agricultural lands left fallow or idle or under

virgin bush. The land or farm area will be measured in acres or in some cases square meters. There are 4,840 sq yds or 4,046 sq m in an acre. As a rough guide the following proportions of an acre are represented by squares whose sides have the following lengths.

Area in Acres	Length of Sides of Square in Yards	Length of Sides of Square in Meters
1	70	64
$\frac{3}{4}$	60	55
$\frac{1}{2}$	50	48
$\frac{1}{4}$	35	32
$\frac{1}{8}$	25	23

Fallow lands are idle lands that are not prepared and not ready for planting.

Lands Under Virgin Bush are lands that are not cultivated with grasses and bushes all around. These are good as grazing ground for cattle, horses and goats.

Crop rotation is the practice of planting different crops sequentially on the same plot of land to improve soil health, optimize nutrients in the soil, and combat pest and weed pressure.

Mulching is simply a protective layer of a material that is spread on top of the soil. Mulching **enriches and protects soil, helping provide a better growing environment.**

Cover cropping are plants that are planted to cover the soil rather than for the purpose of being harvested. Cover crops manage soil erosion, soil fertility, soil quality, water, weeds, pests, diseases, biodiversity and wildlife.

Inter cropping is a farming method that involves planting or growing more than one crop at the same time and on the same piece of land.

Contour cropping on sloping land is the practice of tilling sloped land along **lines of consistent elevation** in order to conserve rainwater and to reduce soil losses from surface erosion.

Crops planted and / or harvested

Inorganic fertilizers are manufactured mineral substances applied to soil, or irrigation water, to supply plants with the necessary nutrients.

Organic fertilizers are materials of organic origin, either natural or processed, that can be used as sources of plant nutrients. The most commonly used are compost, chicken manure or other animal manure, etc.

Single row refers to “one crop” planted over a plot in a regular pattern of “single rows.” If there are few scattered trees or plants of different crops within the plot, the plot is still considered to be single rows.

Double row refers to “one crop” planted over a plot in a regular pattern of “double rows.” If there are a few scattered trees or plants of different crops within the plot, the plot is still considered to be double rows.

Mixed crop pattern refers to two or more crops, which are interplanted in a regular pattern such as rows. Sometimes there are few scattered plantings of other crops but not considered to be as part of the mixed crops.

Scattered crop refers to trees or plants, which have not been planted with any uniform method of spacing over a plot. Important timber trees including; Miro, Tamanu, Tou shall also be recorded.

Drip tape irrigation is a pipeline with a dripper manufactured inside the pipeline. It is a thin-walled tube rather than a structure pipe, with the common wall-thickness being 0.2mm (8mil). Commonly a seasonal product used in market gardens or rows of crops. The tape is low pressure and low flow system that has evenly spaced emitters built into the tubing.

Sprinkler irrigation is a method of applying irrigation water which is similar to natural rainfall. Water is distributed through a system of pipes usually by pumping. It is then sprayed into the air through sprinklers so that it breaks up into small water drops which fall to the ground.

Irrigation water pumps are machines for moving water, they play a fundamental part in agriculture as they move water from its source to the fields and crops. Water pumps can be used with many forms of irrigation, such as drip, sprinklers or with a hose.

Water tanks store water on-site allows your irrigation system to pump **water** much faster than the main water supply is able to, improving the efficiency of your irrigation.

Reference Period

Enumeration Period – November 15 to December 18, 2021

2021 CAF – last twelve months (November 15, 2020 to October 31, 2021)

Livestock and Household Composition – as of day of enumeration

Labour Inputs – one month prior to the day of enumeration

Loans for Agriculture & Fisheries Purposes – last twelve months

Other Items – last twelve months (November 15, 2020 - October 31, 2021)

Appendix B - Livestock

The categories of **Livestock** stated should include all such animals, regardless of age. For example, in the first category pigs, state all the animals (sows, boars, weaners fatteners) kept by the household.

Pigs

Piglets are newborn pigs still nursing from the sow.

Weaners are piglets separated from sow. Their live weight is less than 24kg.

Growers are pigs from 3-months after weaning. Their live weight ranges from 20 – 40 kg.

Fatteners are middle aged pigs. Their live weight ranging from 40 kg.

Sows are adult female pigs that has given birth at least once.

Boars are adult male pigs. Their live weight is over 40 kg.

Cattle

Bulls are adult male cattle.

Cows are adult female cattle

Calves are young cows or bulls

Goats

Bucks are adult male goats.

Doe are adult female goats.

Kids are goats under 1 year of age.

Horses

Stallions are adult male horses.

Mares are adult female horses.

Foals are young horses under 1 year of age.

Chickens

Chicken – broilers refers to chicken raised for meat and not for eggs.

Chicken – layers refers to chicken raised for laying eggs.

Chicken - local refers to chickens of local breed (moa kainga).

Ducks

Drakes refers to male ducks.

Hens refers to female ducks.

Ducklings are young ducks under 16 weeks.

Appendix C – ALL CROPS

Tree Crops are trees bearing edible fruits or nuts. The trees themselves should usually have an economic life of more than five years. Examples include mango, litchi, banana, spondias, avocado, coconut, citrus, custard apple, macadamia, chestnut, carambola, pawpaw.

Other Crops are field crops that usually have a life cycle of less than a year. Usually a field crop can be planted and harvested more than once a year.

Apple star is a round fruit with juicy flesh and purple-coloured skin. Eaten fresh after removal of skin.

Avocado (Apuka) is a seasonal, pear-shaped nutritious tropical fruit.

Banana-Cavendish (Meika amoa) has two varieties: tall (taunga) and dwarf (kauare). Both exported to NZ from Aitutaki.

Banana-plantain has all varieties of cooking bananas, e.g. meika-utu, meika ma-ori, meika tarua.

Banana-other has any other variety not belonging to the banana plantain, eg. meika tiki.

Breadfruit (Kuru) is a seasonal and round-shaped starchy fruit eaten after cooking.

Carambola (Raparapa) is a five-angled fruit and star-shaped in cross section, ripening translucent yellow with crisp, juicy, aromatic flesh. Used in fruit salads and drinks.

Chestnut (I'I) is a nut with red/brown/green coloured skin eaten after cooking.

Citrus-grapefruit is a poor man large orange-like citrus variety usually globe-shape, 8-15 cm in diameter.

Citrus-lemon (Remene) is a sour or bitter citrus, not eaten as fresh fruits but used in the preparation of lemonade, squashes and as a flavouring and garnish.

Citrus-lime (Tiporo) is used for fresh juice but mainly as a flavouring.

Citrus-mandarin (Anani Papaa) is a fruit usually orange-red and yellow in colour when ripe.

Citrus-orange has two main varieties: Rarotonga Seedless and Late Valencia. Local names include anani Matavera, anani Maori, anani Late. Eaten as a dessert fruit or made into juice.

Citrus-tangerine has fruits usually pale orange-yellow when ripe.

Cocoa tree can grow up to 12 meters tall. It is a member of the Sterculiaceae family and thrives between 15^oC north and south latitude. It requires 18^o-32^oC, 1500-2000 mm rain with high humidity.

Coffee belongs to the family of Rubiaceae. All species of coffee are woody, ranging from small shrubs to large, robust trees 10 meters tall. The three economically important species are: Coffee arabica L. (arabica coffee), Coffee canephora Pierre ex Froehner (robusta coffee), and Coffee liberica Bull ex Hiern (Liberian coffee).

Coconut (Akari or Niu) is a tropical fruit tree providing food, drink, oil, medicine, fibre, timber, thatch, mats, fuel and domestic utensils hence sometimes referred to as the tree of life!

Custard apple (Katarapa) is a yellowish-green, heart-shaped fruit, 7-10 cm in diameter, covered, birth rounded. fleshy tubercles which represent the loosely-cohering carpels, and separate readily when ripe. Also known as sweetsop.

Granadilla (Parapotini mamaata) is a large fleshy fruit growing from vines. The flesh and the pulp of the fruit are edible and are eaten alone or in fruit salads and drinks.

Guava (Tuava papaa) is a fruit taken raw or after removal of the seeds, made into preserves, jam, jelly, paste, juice and nectar.

Jackfruit (Barrel) is a pear-shaped fruit measuring a 30-90 x 25-50 cm. The pulp of the ripe fruit is eaten fresh or preserved in syrup.

Litchi is a fruit, usually red when ripe. Eaten fresh and is also canned in syrup. Trees come into bearing in 4-6 years.

Kava (Piper methysicum Forst) is a member of the pepper family, Piperaceae. It has been grown in the Pacific Islands for centuries and is used as a drink to induce relaxation. It is a hardy, slow-growing perennial that can attain heights of more than three meters.

Macadamia Nut has fleshy husk and single spherical seed up to 2 cm in diameter, with hard brown shell. Eaten raw or roasted.

Mango (Vi) is a seasonal, pear-shaped fruit with yellow flesh when ripe. Ripe fruits are eaten raw as a dessert fruit and are used in the manufacture of juice, squash, jams, jellies and preserves.

Nono (Morinda citrifolia) is used for traditional healing. The tree grows to 6-10 meters tall on most soil types and is salt tolerant. The fruit possesses antibacterial, anti-inflammatory and cancer inhibiting characteristics.

Passion fruit (Parapotini) is an edible fruit of a type of climbing vine. The pulp and seeds may be eaten directly from the shell or used in fruit salads.

Pawpaw-solo (Nita) is a tropical fruit eaten for breakfast and dessert and in

fruit salads. Also used for making soft drinks, jams, ice cream flavouring, crystallized fruit and are canned in syrup. This variety originally came to Rarotonga from Hawaii and is the variety exported mainly to New Zealand.

Pawpaw-wild (Nita) is a local variety, not exported.

Sapodilla are globe-shaped fruits, 5-10 cm in diameter, grayish to rusty brown, with yellowish-brown flesh. Eaten fresh as a dessert fruit. Trees bear fruit 3-4 years after planting, the fruit taking 4 months to mature.

Spondias (Vi kavakava) is a rounded-shaped fruit ranging in size from a golf ball to a medium-sized orange. Has a fibrous seed structure.

Soursop is a dark green ovoid fruit, 15-25 cm long, covered with recurved fleshy spines. Fruit are often distorted and kidney-shaped due some of the ovules are not being fertilized.

Bean-export (Pi) has variety with average length about 15 cm.

Bean-snake (Pi) is also known as runner beans due to its lengthy structure, which may reach up to 50 cm. It is usually sold locally.

Broccoli is a hardy kind of cauliflower with numerous white or purple sprouts (flowerheads), each like a small cauliflower.

Brussels Sprouts are buds about 3 cm in diameter growing thickly on the stem of a cabbage-like plant. Eaten after boiling.

Cabbage-Chinese (Pinapi) is a leafy vegetable commonly eaten after cooking.

Cabbage-European (Kapati) is leafy vegetable with a round head (also called the heart) of thick green/white leaves. Eaten after cooking or used in salads.

Capsicum is also known as sweet peppers. Eaten raw in salads and cooked in various ways. Colours are green and red depending on the variety.

Carrot is a yellow or orange-red root used as a vegetable. Eaten cooked as mixed in soups, stews, curries and other dishes; or used in salads.

Cassava or Arrowroot (Maniota or Pia) is a starchy roots from which cassava flour may be extracted. Eaten after cooking. Flesh -yellow or white in colour depending on the variety.

Cauliflower is a cabbage-like plant with a large, white flower head used as a vegetable.

Celery is a garden plant of which the stems are eaten raw as salad or cooked as a vegetable.

Chilli (Oporo veravera) is a small sized vegetable used fresh or dried as a hot ingredient in various dishes.

Choko is a vegetable growing from vines. The flesh is eaten after cooking. Light green in colour.

Courgette is also known as zucchini. Small green marrow eaten as a vegetable. Younger stage of marrow. **Marrow** is a later stage of courgette. Vegetable of the gourd family, like a large fat cucumber.

Cucumber is a creeping plant with long, green-skinned fleshy fruit, usually sliced and eaten in salads, or made into pickle.

Eggplant is a plant with purple or light green-yellowish, egg-shaped fruit, hence, also known as eggfruit.

Ginger is a spice widely used in cookery and medicine and is esteemed for its flavour, pungency and aroma.

Kape is a rootcrop belonging to the taro family.

Sweet potato (Kumara) is an edible tubers eaten boiled or baked. It matures 3-6 months depending on the variety.

Lettuce (Tarati) is a widely cultivated leafy vegetable specifically used for salads. The leaves may also be boiled as spinach.

Maize is a grain vegetable crop used for human consumption but mainly for livestock feed. Plant stands 1-4 meters high, 3-4 cm in diameter. Looks exactly like a sweet corn.

Melon-musk is a vegetable from the melon family.

Melon-rock is a vegetable from the melon family.

Melon-water (Merani) is a round and/or elongated (depending on variety) juicy fruit growing on vines trailing along the ground.

Okra is a tender fruit used as a vegetable either boiled or sliced and fried.

Onion (Oniani) is a vegetable plant with a round bulb of many concentric coats, a strong smell and flavor, used in salads, cooking and pickles.

Parsley is a garden plant with crinkled green leaves, used in seasoning and sauces and for garnishing (decoration) food.

Peanut (Aratita) is a ground nut eaten raw or after roasting. Nuts are used in confectionery and in curries. Also made into peanut butter.

Pineapple (Ara painapa) is a cylindrical tropical juicy averaging 20.5 cm long and 14.5 cm in mid-diameter and 2.2 kg in weight used as dessert fruits.

Potato (Pitete) is a rounded tubers eaten as vegetable.

Pumpkin (Motini) is a large round orange-yellow fruit with many seeds in it, used as a vegetable. Grows from vines.

Puraka is a tuber crop from the taro family.

Radish is a salad plant with a white or red edible root. Has a pungent flavour.

Rukau is a young leaves of some taro varieties used for cooking as a vegetable. Usually mixed with coconut cream when cooking.

Silverbeet is a leafy crop eaten as vegetable.

Snowpea is a vegetable from the pea family. Exported to NZ.

Spinach is a vegetable with green leaves, cooked and eaten as a vegetable.

Spring onion (Oniani) is an onion grown specifically for the use of its top green leafy part mainly in salads.

Sweet corn (Koni) is a grain vegetable crop containing a glossy sweetish endosperm which is translucent when immature and dries to give a wrinkled appearance. Eaten after boiling. Also used for canning and freezing.

Taro-dry is a tuber crop, matures between 8-12 months depending on the variety. Taro-dry is any variety planted on dry land (e.g. like kumara).

Taro-wet (flooded) is any taro variety planted in areas where water is allowed to flow through the plot.

Taro-wet (raised bed) is any taro variety planted on raised beds/patches in swamp-land areas.

Tarua is a tuber crop with one main tuber, the edible parts being the side shoots or tuberlets.

Tawa is a rootcrop used to make flour (pia) for use in the preparation of puddings (poke). The crop was commonly used before the introduction of cassava.

Tomato (Tomati) is a soft, juicy, red or yellow fruit usually eaten with meat, in salads, and in sauces. Eaten raw or cooked.

Turmeric Renga is a root crop used as a coloring substance and a flavouring, especially in the making of curries.

Yam (U'I) is a root crop rich in carbohydrate, grows from vines.

Vanilla is a creeper or vine and belongs to the orchid family, Orchidaceae. It grows well in most soil types provided it is well drained and rich in organic matter. Temperatures ranging from 20^o-30^oC is ideal for good growth with adequate rainfall required and about 30%-50% shade.

Appendix D Fishing

Gill and other net fishing are used to catch a number of different reef fish in a lagoon or along a reef edge. These include the use of gill nets, scoop nets, cast nets, etc.

Vertical long lining is used to catch tunas. Its gear consists of a main line between 100 to 300 kg breaking strength with several branch lines between 10 to 20 attached to the mainline via quick release clips. The gear is left to soak from two to four hours before hauling. This method is generally used around fish aggregating devices (FADs).

Drop lining is usually hooked to around 50 meters in depth to target deep-sea fish species such as groupers and snappers and pelagic fish like tuna, wahoo and marlin. The gear included in this method is l'i or drop stone fishing.

Hook and line fishing is one of the oldest methods for catching fish. It is considered an environment-friendly method as it catches primarily target species, inflicts minimal injury to the fish, and causes minimal damage to the surrounding habitat. The gears used in this fishing method are matira or takiri, tiritiri and matau tamoe.

Trolling is one of the methods used for catching oceanic species of fish. It includes trolling lures, using rod and reels.

Deep bottom fishing (in excess of 200 m) is used in catching tuna and other pelagic fishes in big quantities. Manga is included in this method.

Spear gun fishing is a traditional fishing method using javelin-like wooden spear or the metal or rubber powered spear and is being done along the shore or in the surf or over the reef. Examples of this are the pata spearing, throw spearing, spear guns, etc.

Collecting / gleaning shellfish and invertebrates is gathering of seafood like clams, sea urchins, sea cucumbers, turban snails, oyster meat, octopus, crabs, etc., through the use of limited equipment and specialized gear. It is usually being done during low tide.

Flying fishing (maroro) is an angling method that uses a light-weight lure called an artificial fly to catch fish. The fly is cast using a fly rod, reel, and specialized weighted line. The light weight requires casting techniques significantly different from other forms of casting. The flies may resemble natural invertebrates, baitfish, or other food organisms.

Harpoon is a long spear – like instrument and tool used in fishing, whaling, sealing, and other marine hunting to catch large fish or marine mammals.

Traditional fish traps are traditional trapping methods used in some rural villages and outer islands to catch fish.

Other forms of fishing include trapping, freshwater fishing, etc.

APPENDIX E CODES

I. Census Districts

Census Districts	Code	Census Districts	Code
Rarotonga		Mauke	
Kiikii-Ooa-Pue	00	Kimiangatau-Parai and	
Tupapa-Maraerenga	01	Avaavaroa	28
Takuvaine-Parekura	02	Areora-Makatea	29
Tutakimoa-Teotue	03	Ngatiarua	30
Avatiu-Ruatonga	04		
Nikao-Panama	05	Mitiaro	
Ruaau-Arorangi	06		
Akaoa-Betela-Arorangi	07	Takaue-Mangarei	31
Muri enua Arorangi	08	Atai-Auta	32
Titikaveka	09		
Ngatangia Muri	10	Palmerston	
Matavera	11		
		Palmerston	33
Aitutaki		Pukapuka	
Amuri-Ureia	12		
Arutanga-Taravao	13	Ngake	34
Vaipae-Avanui	14	Roto	35
Tautu	15	Yato	36
Mangaia		Nassau	
Tavaenga	17	Nassau	37
Kaumata	18		
Te Makatea	19	Manihiki	
Tamarua	20		
Ivirua	21	Tauhunu	38
Karanga	22	Tukao	39
Atiu		Rakahanga	
Mapumai	23	Matara, Ni'Tehiri-Pu'rapoto	40
Teenui	24	Numahanga-Terua Kiore	41
Ngatiarua	25		
Areora	26	Penrhyn	
Tengatangi	27		
		Te Tautua	42
		Omoka	43

II. Crops

Crop	Code	Crop	Code
Apple-star	01	Cauliflower	42
Avocado	02	Celery	43
Banana-cavendish	03	Chilli	44
Banana-ladyfinger	04	Choko	45
Banana-other	05	Courgette/Marrow	46
Breadfruit	06	Cucumber	47
Carambola	07	Eggplant	48
Chestnut	08	Ginger	49
Citrus-grape	09	Kape	50
Citrus-lemon	10	Kumara	51
Citrus-lime	11	Lettuce	52
Citrus-mandarine	12	Maize	53
Citrus-orange	13	Melon-musk	54
Citrus-tangerine	14	Melon-rock	55
Coconut	15	Melon-water	56
Cocoa	16	Okra	57
Coffee	17	Onion	58
Custard apple	18	Parsley	59
Granadilla	19	Peanut	60
Guava	20	Pineapple	61
Jackfruit	21	Potato	62
Kava	22	Pumpkin	63
Litchi	23	Puraka	64
Macadamia	24	Radish	65
Mango	25	Rukau	66
Nono	26	Silverbeet	67
Passionfruit	27	Snowpea	68
Pawpaw-solo	28	Spinach	69
Pawpaw-wild	29	Spring onion	70
Sapodilla	30	Sweet corn	71
Spondias	31	Taro-dry	72
Soursop	32	Taro-wet, flooded	73
Bean-export	33	Taro-wet, raised	74
Bean-snake	34	Tarua	75
Broccoli	35	Tawa	76
Brussel sprout	36	Tomato	77
Cabbage-chinese	37	Turmeric	78
Cabbage-european	38	Vanilla	79
Capsicum	39	Yam	80
Carrot	40	Ornamental Plants	81
Cassava	41	Other Crops	82

III. Household Composition

Relationship to Head of Household	Sex	Marital Status	
Self	1 Male	1 Never married	1
Spouse	2 Female	2 Married	2
Son / Daughter	3	Defacto	3
Daughter in law / Son in law	4	Widowed	4
Grandchild	5	Separated / Divorced	5
Parent	6		

In - laws	7
Other relatives	8
Not related	9

Main Activity Last Week	Extent of Engagement	
Employer (including self - employed)	1 Full time	1
Employed in Govt / Public sector	2 Part time	2
Employed in Private sector	3 None	3
Producing goods / services for family consumption	4	
Voluntary / Community work	5	
Domestic duties	6	
Student	7	
Too young / Retired / Too old	8	
Unemployed	9	

IV. Crop Production

Purpose of Crop Production

Subsistence	1
Semi - subsistence	2
Commercial	3
Others (specify)	4

V. Livestock

Type of Livestock Operation

Commercial	1
Semi-commercial	2
Subsistence	3

Pigs	10	Cattle	20	Goats	30	Horses	40
Weaners	11	Bulls	21	Bucks	31	Stallion	41
Fatteners	12	Cows	22	Does	32	Mares	42
Boars	13	Others	23	Others	33	Others	43
Sows	14						
Others	15						

Chickens	50	Ducks	60
Chicken - broilers	51	Hens	61
Chicken - layers	52		
Chicken - local	53		

VI. Land Operated Household

Location		Land Tenure	
Within village (same island)		1 Borrowed land	1
Outside village (same island)		2 Leased land	2
Outer Island		3 Occupation right land	3
		4 Customary land	4
Soil Conservation Method			
Crop rotation	1		
Mulching	2		
Cover cropping	3		
Inter cropping	4		
Contour farming on sloping land	5		
Others (specify)	6		

VII. Crops Planted and / or Harvested

Method of Planting		Method of Irrigation	
Single row	1	Drip tape irrigation	1
Double row	2	Sprinkler irrigation	2
Mixed crop	3	Irrigation water pump	3
		Water tank	4
Scattered	4	Others	5
Country of Imported Plants and Planting Material			
Australia		1	
New Zealand		2	
Fiji		3	
Tahiti		4	
Others		5	

VIII. Non – Household Labour Input

Type of Labour	
Non - household labour from Cook Islands	1
Foreign labour	2

IX. Household Income and Loans

Proportion of Household Income from Agriculture

About ¼ 1

About $\frac{1}{3}$	2
About $\frac{1}{2}$	3
About $\frac{3}{4}$	4
All	5
None	6

Loans by the Household for Agriculture Purposes

Bank of Cook Islands (BCI)	1
Other Commercial Banks	2
Government Support	3
Other Sources (relatives, farmers association etc)	4

X. Fisheries

Time of Fishing Trips

Day	1
Night	2
Both	3

Main Purpose of Household Fishing Activities

Only for home consumption	1
Mainly for home consumption and some sale	2
Mainly for sale and some home consumption	3
Only for sale	4
Other	5

Proportion of Fish Caught or Collected that is Sold and / or Consumed

None	1
About $\frac{1}{4}$	2
About $\frac{1}{3}$	3
About $\frac{1}{2}$	4
About $\frac{3}{4}$	5
All	6

Type of Fishing Equipment

Spear gun	1
Fishing rod imported	2
Fishing net	3
Scuba full set	4
Canoes	5
Boat	6
Outboard motors	7
Other (specify)	8

XI. Pearl Farming

Details of Labour Input

Sex		Status	
Male	1	Household member	1
Female	2	Non - household member	2
		Foreign labour	3

Type		Other Paid Job	
Paid	1	Full time	1
Unpaid	2	Part time	2
		None	3

Proportion of Household Income from Pearl Farming

None	1
About $\frac{1}{4}$	2
About $\frac{1}{3}$	3
About $\frac{1}{2}$	4
About $\frac{3}{4}$	5
All	6

Loans by the Household for Pearl Farm Operations

Bank of Cook Islands (BCI)	1
Other Commercial Banks	2
Small Business Loan	3
Other Sources (relatives, farmers association etc)	4

XII. Aquaculture

Main Purpose of Household Aquaculture Activities

Only for home consumption	1
Mainly for home consumption and some sale	2
Mainly for sale and some home consumption	3
Only for sale	4
Other	5

APPENDIX F – Conversion Table

Crop		Avg wgt (g)	Unit	Avg wgt (Kg)
1	Abiu (Eggfruit)	Single		
2	Apple Star	Single		
3	Avocado	Single		
4	Banana, cavendish	Single		
5	Banana, cooking (Plantain)	Single		
6	Banana, ducasse	Single	Bunch	26Kg
7	Banana, fei (Utu)	Single	Bunch	10Kg (bluggoe)
8	Banana, ladyfinger	Single	Bunch	20Kg
9	Barbados cherry (Acerola, West Indian Cherry)	Single	Bunch	15Kg
10	Basil	bundle		
11	Bean, climbing (Pole beans)	bundle		
12	Bean, snake	bundle		
		ziplock		
13	Bean, winged (Four-cornered bean)	bag		
14	Bean, yardlong (Cowpea)	bundle		
15	Bele (Rukau viti)	Not Sold		
16	Bitter Melon (Balsam bear)	Single		
17	Breadfruit	Single		
18	Broccoli	Single		
19	Cabbage	Head		
20	Capsicum	Single	Bag	1Kg
21	Cauliflower	Single		
22	Chestnut		Bag	
23	Chilli, birdseye (Tabasco)	Single		

24	Chilli, habanero (Bongo)	Single	5.0g		
25	Chilli, jalapeno	Single	8.0g		
26	Chinese Cabbage	Single	350g	Bag	1.37Kg
27	Chive	bundle	100g		\$5
28	Choko	single	410g		
29	Citrus, grapefruit	single	1000g		
30	Citrus, kumquat	Single	12g		
31	Citrus, lemon	bag			1.47Kg
32	Citrus, lime	bag			600g
33	Citrus, mandarin	bag			1Kg
34	Citrus, orange (Anani matavera)	bag			4.5Kg
35	Citrus, pummelo	Single	910g		
36	Citrus, satsuma	Single	100g		
37	Citrus, tangerine	Single	85g		
38	Cocoa	Single	400g		
39	Coffee	Single	0.15g		
40	Coriander	bundle	100g		\$5
41	Corn	Single	200g	bag	1.1Kg
42	Courgette (Zucchini, Marrow)	Single	90g	bag	1Kg (8-10 courgettes)
43	Cucumber	Single	395g	bag	1Kg
44	Custard Apple (African pride, cherimoya)	Single	500g		
45	Dill	bundle	80g		\$5
46	Dragonfruit	Single	500g	Bag	2Kg
47	Drinking Nut (Nu, Niu)	Single			\$3
48	Durian	Single	2Kg		

49	Eggplant	Single	350g	bag	1Kg	
50	Giant Swamp Taro (Puraka)	Single	5Kg			
51	Ginger			Bag	1Kg	
52	Granadilla (Maratini)	Single				
53	Guava	Single	60g			
54	Herbs (mix)		100g			\$5
55	Polynesian Plum (Spondias)	Single	90g			
56	Jackfruit	Single	10Kg			
57	Kale			bag		
58	Kumara (Sweet potato)	Single	150g	bag	5Kg	
59	Lemongrass (Ti Varani)	bundle	200g			\$2.50
60	Lettuce	Single	200g	bag		
61	Long Kong (Langsat)	Single	20g			
62	Longan	Single	10g			
63	Loquat (Ko'ata)	Single	15g			
64	Lychee (Litchi)	Single	15g			
65	Malayapple	Single	60g			
66	Mango	Single	200g small; 450g large fruit	bag		
67	Mangosteen, purple (Sweet)	Single	65g			
68	Mangosteen, yellow (Astringent)	Single	25g			
69	Maniota (Cassava)	bag	3.5Kg	sack	20Kg	
70	Melon, honeydew	Single	1800g			
71	Melon, rock (Cantaloupe)	Single	1500g			
72	Melon, water	Single	8000g			
73	Mint	bundle	100g			\$5
74	Nono (Noni)	Single	130g			

75	Okra	Single	18g		
76	Parsley	bundle	65g		
77	Passionfruit, purple	Single	90g	Bag	600g (7 fruits)
78	Passionfruit, yellow	Single	90g		
79	Pawpaw, pink lady	Single	900g		
80	Pawpaw, solo sunrise	Single	500g		
81	Pawpaw, solo waimanalo	Single	950g		
82	Pili nut (Canarium)	Single	20g		
83	Pineapple, champarka	Single	2000g		
84	Pineapple, MD2	Single	1600g		
85	Pineapple, ripley queen	Single	800g		
86	Pineapple, smooth cayenne	Single	1700g		
87	Pomegranate (Remuna)	Single	270g		
88	Pumpkin, butternut	Single	1000g		
89	Pumpkin, crown	Single	3000g		
90	Pumpkin, local	Single	5500g		
91	Radish	single	160g		
92	Rambutan	Single	40g		
93	Rollinia	Single	350g		
94	Rosemary	bundle	100g		
95	Rukau, taro	bundle			1.27Kg
96	Rukau, tarua	bundle			1.27Kg
97	Sapodilla	Single	150g		
98	Sapote, pink (Mamey)	Single	500g		
99	Sapote, ross	Single	80g		
100	Sapote, white	Single	25g		
101	Silk Squash (Luffa)	Single	700g		

102	Silverbeet (Swiss chard)	bundle			300g
103	Snowpeas			Bag	300g
104	Soursop (Guanabana)	Single	1850g		
105	Spinach	bundle	200g	Bag	
106	Spring Onion	bundle			150g
107	Starfruit (Carambola)	Single	230g		
108	Surinam cherry	Single	5g		
109	Sweetsop (Naponapo, Tapotapo)	Single	200g		
110	Tamarind			bag	500g @\$6
111	Taro	bag	4Kg	sack	45Kg onion sack
112	Tarua	bag	4Kg	sack	20Kg potato sack
113	Tawa (Pometia)	Single	15g		
114	Tomato , cherry	punnet	250g		
115	Tomato, fresh	Single	150g	bag	1Kg
116	Turmeric (Renga)			bag	1Kg
117	Vanilla	Single			
118	Watercress	bundle	150g		
119	Yam bean (Jicama)	Bag		bag	1Kg
120	Yam, apirika (African yam)	Bag		bag	4Kg
121	Yam, etene	Bag		bag	4Kg
122	Yam, pacific (Pacific yam)	Bag		bag	4Kg
123	Yam, parai	Bag		bag	4Kg
124	Yam, toka	Bag		bag	4Kg

