

NATIONAL AGRICULTURE CENSUS (NAC)

# FIELD TEAM MANUAL

# PREFACE

The objective of the 2009 Agricultural Census and Statistics Project are to provide reliable and objective information on the current structure of the Agricultural sector of the Economy and establish an on-going system of Agricultural Statistics Unit to enable it to collect, process and disseminate agricultural data on a regular and continuing basis.

The Agricultural Census activities started with the arrival of the FAO Agricultural Statistician /Project Manager in July, 2008. Assistance is being provided through an **FAO project FIJ/89/004**. The regional project **RAS/86/035** is also providing support with training and technical assistance.

As in the past, the Census will be conducted on a sample basis. Given the problems experienced in previous Census rounds (1968 and 1978), Area Sampling Frame, (ASF), will be used as an alternative approach.

As well as providing a suitable sampling frame, the ASF has the added advantage that it can be used to establish an on - going statistics system, one of the main objectives of the project. The Census Agriculture will cover the whole of Fiji and data collection is currently scheduled for June/July, 2009 with the final report expected by April/May 2010.

During the two month period the Census enumerators will visit the sample areas in the country to collect information on Agricultural activities. Agriculture is a major activity in the economy of Fiji in terms of foreign exchange earnings, employment generation and food production.

The census of Agriculture will provide comprehensive statistics on the structure of this vital sector for effective agricultural development planning.

The success of the Census will depend on how the whole operation is planned out, upon the quality of field work performed by the Enumerators and the supervisors and how the support facilities are mobilised.

This manual has been prepared to facilitate the work of field staff(Supervisors and Enumerators) and hence deals at length with concepts and definitions adopted, instructions to complete the various schedules, guidelines for enumerators and other administrative instructions.

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## **INTRODUCTION**

The first agricultural census of Fiji was conducted in 1968, the second one in 1978 and the third in 1991. You are participating in the fourth National Agricultural Census (NAC) of 2009.

This is your manual. It is called the **FIELD TEAM MANUAL**. It is designed to answer almost all questions that may arise while you are conducting the NAC in the field. It explains all phases of the data collection from the beginning to the end. When you face a problem, you can find an answer in it. For this reason it is very important to read this manual very carefully and to be familiar with it. **CARRY IT WITH YOU AT ALL TIMES WHEN YOU ARE WORKING ON THE NAC.**

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

### **1. GENERAL INSTRUCTIONS**

#### **1.1 Objectives of the 2009 National Agricultural Census (NAC)**

The objectives of the 2009 NAC are:

- a. To provide reliable and objective information on the current structure of the agricultural sector of the economy and make an inventory of agricultural resources of Fiji;
- b. To use the results of the NAC to establish an on – going agricultural statistics system to measure the evolution of this sector on a regular and continuing basis. The 2009 NAC will provide reliable data on the agricultural sector that will enable the users at MPI, other public, private and international institutions to make better decisions.

### **2. Team Job Descriptions**

Each enumeration team will include a photo interpreter, (when needed), a team leader or supervisor, four or five enumerators and a driver. Specific duties of each member of the team are as follows.

#### **a. Photo – interpreter:**

- i. He is responsible for locating the Segment (SM) boundaries on the ground and identifying each landmark with the help of maps and enlargements of aerial photographs.
- ii. He has to check, with the supervisor and/or enumerator, the coverage of the total land of each enumerated SM.

#### **b. Supervisor is responsible for:**

- i. The adequate availability of survey materials such as questionnaires, other forms, fuel supply and accommodation facilities.
- ii. The administrative procedures of the whole team.
- iii. The technical aspects of the enumeration. He must check each questionnaire before the team leaves the field and afterwards, before the questionnaires are sent to Suva.
- iv. Participation in actual enumeration and conduct of some of the interviews.
- v. Checking with the photo-interpreter (when he will be available) the coverage of total land with PLASTIC ACETATE GRID and comparing with the “ORIGINAL AREA” measured by the central office staff on the photography enlargement. If the field area and the planimetered area differ by more than 10%, and there is not any reasonable explanation for this, then the enumerator and /or the supervisor must go back to the field and re-enumerate the segment.

#### **c. Enumerator:**

- i. He conducts the interview or the enumeration. A team may include four or five enumerators.
- ii. He conducts the first coverage check of total land using PLASTIC ACETATE GRID.

#### **d. Driver:**

- i. He is responsible for checking and keeping the car in good condition and must work according to the direction and supervision of the supervisor. Daily preparation before each day's work should be done early in the morning so that no time is lost waiting for the vehicle to be checked out and fueled.
- ii. **HE MUST DRIVE THE CAR TO THE PLACES INDICATED FOR THE PHOTO – INTERPRETER AND /OR THE SUPERVISOR AND /OR THE ENUMERATOR.**

You should obtain **complete** and **accurate** data according to the instructions provided in this manual.

We are surveying a very small percentage (about 10%) of the total land area in the country for the 2009 NAC of Fiji. To emphasize the need for accurate data consider the following example:

If during the 2009 NAC, 20 acres of yaqona were incorrectly recorded as dalo, the final expansions could easily be 2,000 too high for dalo and 2,000 acres too low for yaqona.

### **2. CARTOGRAPHY**

It is very important that enumerators, supervisors, coordinators, and all personnel involved in the 2009 NAC field activi-

ties know very well about cartography. Maps and aerial photography are the main material used on the area sampling frame construction, sample selection, and as a basic tool in field data collection. The field staff **MUST** be familiar with these materials.

### 2.1 Cartography

It is the whole science of map making, and thus includes geodesy, photogrammetry, compilation and map reproduction for all maps.

### 2.2 Map

It is a reduced (for example, 100 times), simplified projection onto a horizontal reference plane of parts of the earth's surface. A map should give an accurate description of the terrain and, within limitations of scale, should aim to give as faithful a representation of the terrain as possible. In cartography, generally speaking, two types of maps are distinguished: topographic maps and thematic maps.

### 2.3 Topographic Map

It shows the "NATURAL AND ARTIFICIAL FEATURES" of the terrain, such as hills, rivers, creeks, forests, swamps, etc. and towns, villages, roads, path roads, bridges, canals, power lines, etc. Each topographic map has a "LEGEND" of symbols representing these features of the terrain. One important symbol is called the "CONTOUR LINES" representing the elevations or inequalities (relief) of the land surface.

### 2.4 Thematic Map

It shows one or more "THEME (S) OR SUBJECT(S) such as the distribution of the population over the country or the concentration of energy sources in an area, or the composition of the soil of a region, or the actual use of a province. Topographic maps are used frequently as a base for thematic mapping.

Figure 1. Example of a topographic map

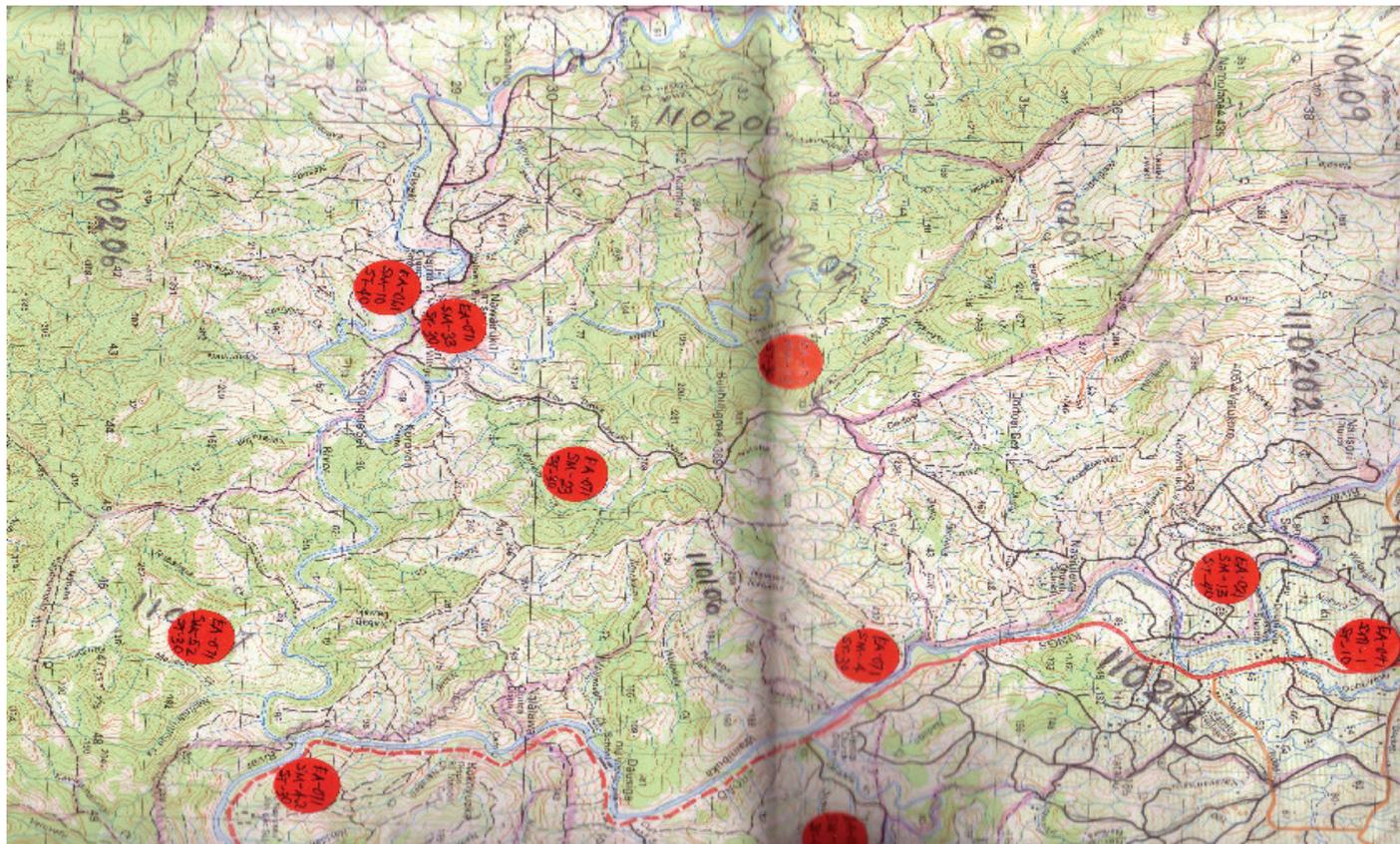
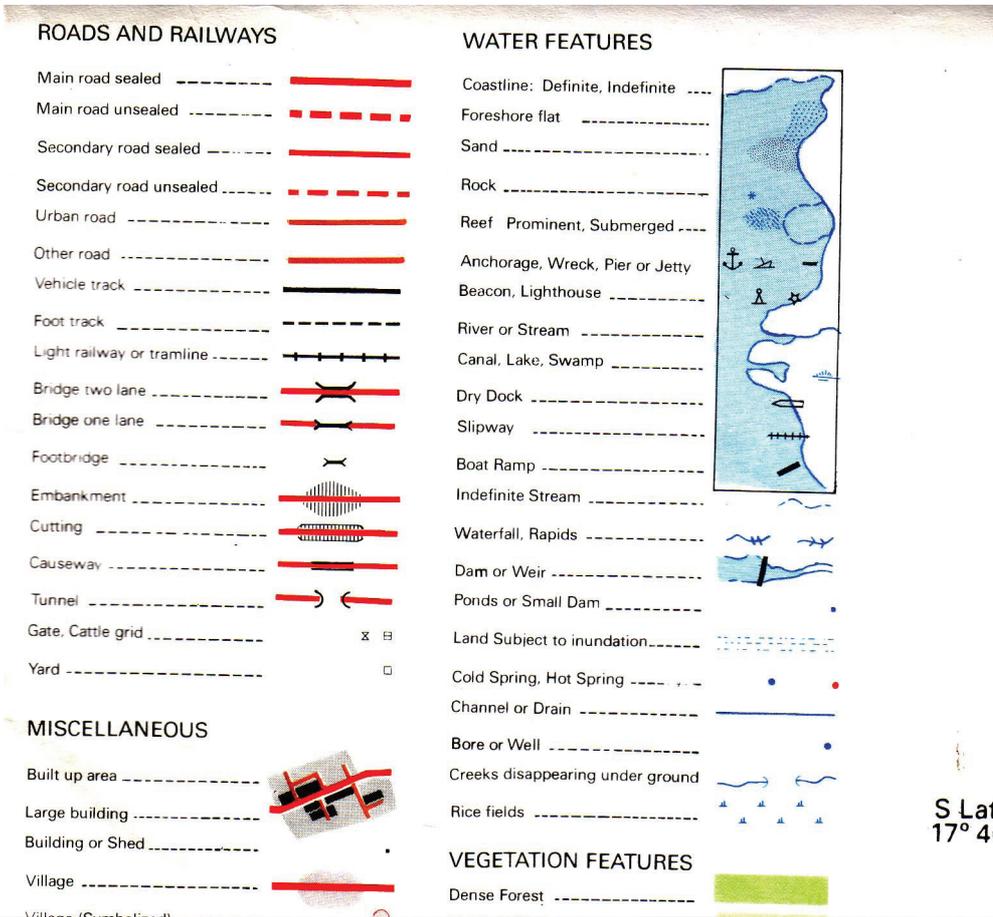


Figure 2. Legend of a topographic map



S Lat  
17° 40'

Figure 3. Example of a contact photograph



## 2.5 Aerial Photogrammetry

It is art of obtaining reliable measurements of the terrain by means of aerial photography. The primary aim of photogrammetry is to serve an aid in terrain mapping. Aerial photography is commonly classified as either vertical or oblique. Here we will deal with vertical aerial photography.

## 2.6 Vertical Aerial Photography

It is assumed to be a central projection on a horizontal plane taken with the camera axis vertical (or as nearly vertical as practicable) in an aircraft. If the terrain is completely flat it is clear that an exactly vertical photograph is the same as map. If differences in height occur, then "RELIEF DISPLACEMENT" becomes apparent.

## 2.7 Interpretation of aerial photographs

This subject is often simply called "PHOTO INTERPRETATION". It could be defined as the study of the image of photographed objects and the deduction of their significance. Any information on the photograph can be obtained on the ground. Differences recorded on the air photos reflect, differences on the ground.

### Appearance of Specific Features:

- a. **Relief:** - This is weakly represented on single air photos. Its essential outlines can only be inferred from cuttings embankments, terraces and similar features. Under the stereoscope and photos of good scale (about 1:10,000) quite small relief features can be seen; e.g. overflow channels or river terraces.
- b. **Rocks and Soil** - : Both bare rock and soil are apt to appear lighter than would be expected from their normal appearance. Freshly turned soil may be medium to dark grey in tone but as it dries out it can change to nearly white. Beaches and sand dunes show the same characteristic whiteness.
- c. **Water** -: Because of its high absorbing properties, water may appear very dark, nearly black on air – photos. In the same way, moist or marshy ground will appear darker than dry areas. Muddy or silty water gives a rather lighter tone. Ripple or wave marking may give a texture to the surface. Shallow water is often inconspicuous, being penetrated by light and allowing bottom details, such as channels and sandbanks to show through. This is important to river and harbour authorities.
- d. **Vegetation - : Woods** - : The rough and chlorophyll rich woods surface cause them to appear dark. Size, tone and texture differences are related to variations in ages/and species of trees. Height can be deduced from shadows. These properties are widely used in forest surveys and inventories.
- e. **Grassland** - A good rule is: the better the quality of the grass, the darker and more even in tone it will appear. A good lawn may show an even, medium grey tone; poorer pasture appears lighter in tone and more mottled in texture due to mixed species and lower chlorophyll content.
- f. **Crops** - : Enormous variety exists here. The most useful asset for specific identification is a detailed knowledge of agricultural techniques and the cropping calendar, for the area.
- g. **Communications** - Roads: a conspicuous light tone exhibited by a road indicates only the nature of its surface NOT its importance. Prominent white roads may have only bare soil or loose gravel. Main roads appear darker because of metalling, oil drip, tyre marks. The class of a road has to be inferred from other evidence such as cut – off corners, cut –and – fill, traffic density, well defined curves and so on. Footpaths and tracks at the other end of the communications range show up better than undisturbed surroundings. Railways are much less conspicuous but associated features such as cuttings, tunnels under – and – over bridges, smooth curves, etc, render them quite unmistakable.
- h. **Towns and built up areas** - : buildings are easy to see but cannot be specified. In cases factories with long chimneys waste ponds rail access are suggestive. Schools can be guessed by their size and adjacent playing fields. Ports can be recognized by docks and berthing ships.
- i. **Archaeological and historic sites** - : This could be striking as visible remains of former banks, ditches, mounds, walls, buildings, even old tree lines.

### Difference on the ground

Photo features can be puzzling even to one with considerable experience. A sensible approach would be to be systematic. The first step is to obtain as much information as possible from other sources. If the approximate location of the photograph is known, books and articles on the areas can be consulted and the exact location identified on a map. This is not difficult. Crudely orient the photograph, if possible, and select on it a pattern or shape which will also be boldly marked on the map e.g. railways, lakes, coastlines or isolated patches of woodland. Search the map for such a feature and once this appears to have been located check the solution carefully against several other points of detail. On the

photograph itself, it is a useful rule to INTERPRET FROM THE WHOLE TO THE PART.

Attempt to define broad distinctions first e.g. the distinction between framed land and rough land, arable and pasture, housing and industry; and then examine the general characteristic setting and distribution of each pattern, or feature (number of occurrences, characteristic setting and associated features) before attempting to make any specific interpretation derived from its size, shape or tone.

## 2.8 Scale

It is the ratio of a distance on a map or a photograph to its corresponding distance on the ground. Scale may be expressed as a ratio 1: 50,000; a representative fraction 1/50,000; or an equivalence 1 cm = 500 ms. When the scale is represented as a fraction, it is very useful to keep in mind the following relation:

$$\frac{1}{R} = \frac{d}{D}$$

Where:

**1 = 1 Unit of distance (meter, centimetre, etc.)**

**R = Number of times of reduction of a distance on the ground to be represented on a map or photograph**

**d = Distance on a map or a photograph**

**D = Distance on the ground**

**1/R = S = Scale of a map photograph.**

If the distance on the ground (D) and its correspondent distance (d) on the map or photograph are known, then it is possible to establish the scale (1/R = S) of that map or photograph. When the scale (1/R = S) of a map or photograph and the distance (d) of two points (A and B) on the map or photography are known, then it is easy to calculate the real distance (D) on the ground between A and B points.

The scale of a given map is uniform throughout its extent. This, however, is not the case in a vertical photograph because areas of the ground lying close to the camera at the time of exposure will appear larger than corresponding areas lying further from the camera. The scale will, therefore, vary from point to point on the photograph, depending upon the elevations and depressions on the ground and upon the tilt of the photograph caused by the aircraft instability and camera orientation errors. The greater the elevation of the ground, the larger will be the scale of the photograph for this area, assuming that the altitude (height) of the camera (aircraft) remains the same. An approximate datum scale can be determined if the focal length and the flying height of the camera lens taking the photographs are known. The datum scale is given by the relationship:

$$\text{Datum Scale} = \frac{1}{R} = \frac{f}{h} = \frac{d}{D} \quad \text{where:}$$

**f = focal length**

**h = flying height**

It is easy to determine the photo scale when a reliable map of an area is available. Two well defined points on the photograph are measured provided these points are also identified on the map. The photographic scale is calculated by the following relationship:

$$\begin{aligned} \text{photo scale} &= \frac{\text{photo distance}}{\text{map distance}} \\ \text{Map scale} &= \frac{\text{photo distance}}{\text{map scale} * \text{photo distance}} \\ \text{photo scale} &= \frac{\text{photo distance}}{\text{map distance}} \end{aligned}$$

If the map scale is 1/50,000 (1: 50,000 or 1 cm = 500 ms ), the map distance 10 cms and the photo distance is 20 cms, then the photo scale will be:

$$\begin{aligned} \text{photo scale} &= \frac{(1/50,000)*20\text{cms}}{10 \text{ cms}} \\ &= \frac{1 * 20 \text{ cms}}{50,000 * 10 \text{ cms}} \\ &= \frac{1}{25,000} \Rightarrow 1 \text{ cm} = 25,000 \text{ cms} \\ \text{or} & 1 \text{ cm} = 250 \text{ ms (or 1: 25,000)} \end{aligned}$$

The photo scale can be changed in photographic laboratory enlarging it or reducing it. The field staff of the 2009 NAC will work with photo – enlargements.

## EXAMPLES

- a. Ground distance between two points (A&B) is 250 metres. The photo distance of the same two points is 5cms. What is the photo scale?  
 $D = 250\text{ms}$  (25,000cms);  $d = 5\text{cms}$ ;  $S = \text{photo scale} = ???$   
 Then  $S = \frac{1}{R} = \frac{d}{D} = \frac{5}{25,000} = \frac{1}{5,000}$
- b. A horizon aerial photograph was taken in 1990. The flying height of the camera was 3,000 metres and the focal length 20 centimetres. What is the photo scale?  
 $h = 3,000\text{ms}$  (3000,000 cms);  $f = 20\text{cms}$ ;  $S = \text{photo scale} ???$   
 Then  $S = \frac{1}{R} = \frac{f}{h} = \frac{20}{3,000,000} = \frac{1}{150,000}$
- c. Calculate the ground distance between points C & D if their photograph distance is 5 centimetres and the scale of aerial photograph is 1: 50,000  
 Then  $S = \frac{1}{R} = \frac{d}{D} = \frac{5}{50,000}$   
 $d = 5\text{cms}$   
 $D = \text{ground distance between C and D} = ???$   
 Then:  $\frac{1}{50,000} = \frac{5\text{cms}}{D}$   
 therefore:  $D = 250,000\text{cms} = 2500\text{ms} = 2.5\text{kms}$

## 2.9 Scales and Areas

It will be very important to manage the relationship between scales and areas while conducting the 2009 NAC. An area is the product of two dimensions: length by width. If the the scale of topographic map or photograph is 1: 10,000  $1\text{cm}=10,000\text{cm}=h$

$1\text{cm} \times 1\text{cm} = 10,000\text{cms}$ $\times 10,000\text{cms}$ $1\text{cm}^2 = 100,000,000\text{cm}^2$ $= 10,000\text{m}^2 = 1\text{ha}$
--

Then the area of one square centimetre ( $1\text{cm}^2$ ) is:  $1\text{cm} \times 1\text{cm} = 10,000\text{cms}$   
 $1\text{cm}^2 = 100,000,000 \text{ cm}^2$   
 $= 10,000\text{m}^2 - 1\text{ha}$   
 $1\text{m} = 100\text{cm} = w$

$1\text{cm} \times 1\text{cm} = 10,000\text{cms}$ $\times 10,000\text{cms}$ $1\text{cm}^2 = 100,000,000\text{cm}^2$ $= 10,000\text{m}^2 = 1\text{ha}$
--

Therefore :  $1\text{cm}^2 = 1\text{m}^2 \times \frac{100,000,000\text{cm}^2}{10,000\text{cm}^2}$

$= 10,000\text{m}^2$   
 1 hectare (since 1ha is equal to 100ms by 100ms)  
 100cms

$100\text{m} \times 100\text{m}$ $= 10,000\text{m}^2$ $= 1\text{hectare}$	100cms
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**CONCLUSION:**  $1\text{cm}^2$  on the map or photograph with scale 1: 10,000 is equivalent to  $100,000,000 \text{ cm}^2$  on the ground or  $10,000 \text{ m}^2$  on the ground or 1 hectare on the ground.

If the scale is 1: 25,000, then  $1\text{cm}^2$  on a map or a photograph is equivalent to 6.25 hectares on the ground (see next figure)

$$1\text{cm}=25,000\text{cm}=250\text{m}$$

$1\text{cm} \times 1\text{cm} = 25,000\text{cms} \times 25,000\text{cms}$ $= 250\text{m} \times 250\text{m}$ <p>Then:</p> $1\text{cm}^2 = 625,000,000\text{cm}^2$ $= 62,500\text{m}^2$ $= 6.25\text{ha}$
--

$$1\text{cm}=25,000\text{cm}=250\text{m}$$

If the scale is 1: 50,000, then 1 cm<sup>2</sup> on the map or photograph is equivalent to 25 hectares (see next figure)

$$1\text{cm}=50,000\text{cm}=500\text{m}$$

$1\text{cm} \times 1\text{cm} = 50,000\text{cms} \times 50,000\text{cms}$ $= 500\text{m} \times 500\text{m}$ <p>Then:</p> $1\text{cm}^2 = 2,500,000,000\text{cm}^2$ $= 250,000\text{m}^2$ $= 25\text{ha}$
---

$$1\text{cm}=50,000\text{cm}=500\text{m}$$

In the 1991 NAC the scales of photo – enlargements are around 1: 4,000, 1: 6,000 and 1: 10,000. If the scale is 1: 4,000, find the ground equivalence (Has) of 1 cm<sup>2</sup> on the photo. What is the equivalence in acres? (complete next figure).

$$1\text{cm}=\text{xxcm}=\text{yy}\text{m}$$

$1\text{cm} \times 1\text{cm} = \text{xxcms} \times \text{yycms}$ $= \text{yy}\text{m} \times \text{yy}\text{m}$ <p>Then:</p> $1\text{cm}^2 = \underline{\hspace{2cm}} \text{cm}^2$ $= \underline{\hspace{2cm}} \text{m}^2$ $= \underline{\hspace{2cm}} \text{ha}$ $= \underline{\hspace{2cm}} \text{acres}$
--

$$1\text{cm}=\text{xxcm}=\text{yy}\text{m}$$

It is important to remember the following equivalence:

1 meter (m)	=	100 centimetres (cms)
1 square meter (m <sup>2</sup> )	=	100 cm * 100 cm
1 square meter (m <sup>2</sup> )	=	10,000 square centimetres (cm <sup>2</sup> )
1 hectometer	=	100 meters (ms)
1 hectare (ha)	=	100 ms * 100 ms
1 kilometre (km)	=	1,000 meters
1 square kilometre (km <sup>2</sup> )	=	1,000 ms * 1,000 ms
1 square kilometre (km <sup>2</sup> )	=	1,000,000 square meters (m <sup>2</sup> )
1 square kilometre (km <sup>2</sup> )	=	100 hectares (has)
1 chain	=	20.117 meters (ms)
1 acre	=	63.6396 ms * 63.6396 ms
1 acre	=	4050 square meters (m <sup>2</sup> )
1 acre	=	0.4050 hectares (has)
1 hectare (ha)	=	2.47 acres

## 2.10 Measuring (Estimating) Distances

Sometimes the farmers or non-farmers do not know the total area of their farms or non farms and /or the magnitude of the areas under crops. Then the field staff will need to calculate the areas using simple methods, namely rectangulation utilizing the length and width of the field and measuring distances through “PACING”. Each enumerator MUST calibrate his step by pacing following these procedures:

- Walk 20 steps and measure the distance and divide it by 20; for example, if the distance is 16 meters divided by 20 = 0.80 meters per step.
- Repeat the above procedure two times more. Assume that the second distance is 16.40 meters divided by 20 = 0.82 meters per step. The third one is 16.20 meters divided by 20 = 0.81 meters per step.
- Calculate the calibrated step adding the above meters per step and dividing by 3.

$$\frac{0.80 \text{ ms / step} + 0.82 \text{ ms/step} + 0.81 \text{ ms/step}}{3} = 0.81 \text{ ms/step}$$

3

EXAMPLE: If the enumerator has a calibrated step of 0.81 meters calculate the area of a rectangular field planted with maize, which length is 60 steps and width 40 steps (see figure 4).

**FIGURE 4**

Length = 60 steps \* 0.81 = 48.6 ms

Length = 60 steps \* 0.81 = 48.6 ms

Area = Length \* Width  
 = 48.6ms\*32.4ms  
 = 1,574.64m<sup>2</sup>  
 = 0.15

Width = 40 steps \* 0.81ms = 32.4 ms

**2.11 Calculating Areas with the Plastic Acetate Grid**

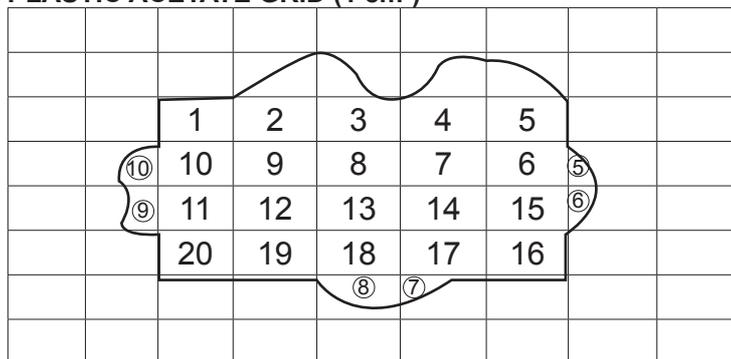
The field staff will have a "PLASTIC ACETATE GRID" containing small squares of 1 cm<sup>2</sup> each (1 cm a side) to measure the areas of farms or non farms, placing it on the photo – enlargement. The squares are counted, either by numerating each one or ticking them one by one and numbering every tenth square and numbering the last whole square. Fractional squares and numbering are to be equivalent to so many entire squares. Or fractional squares are counted and the total number of fractional squares divided by two will give an estimation of the number of whole squares obtained from incomplete squares.

The total number of squares counted (complete squares plus incomplete squares divided by two) is then multiplied by the area represented by one square written on the photo enlargement in red colour.

**EXAMPLE: If the scale of photo enlargement is 1: 6,000 means that 1 cm<sup>2</sup> = 60 \* 60 ms = 3,600 m<sup>2</sup> = 0.36 has. The enumerator counts 20 complete squares and 10 incomplete squares using the plastic acetate grid, placing it on a farm total land. Find the farm area (see figure 5).**

$$\begin{aligned} \text{No of squares} &= 20 \text{ complete squares} + \frac{10 \text{ incomplete squares}}{2} \\ &= 20 \text{ complete squares} + 5 \text{ complete squares (estimation)} \\ \text{Farm Area} &= 25 \text{ squares} * 0.36 \text{ has} = 9 \text{ has} \end{aligned}$$

**FIGURE 5  
 PLASTIC ACETATE GRID (1 cm<sup>2</sup>)**



**3. THE AREA SAMPLING FRAME (ASF) METHODOLOGY**

The AREA SAMPLING FRAME (ASF) methodology is being used to conduct the 2009 NAC. This methodology will also set up the basic sampling structure to establish the on – going Fiji Agricultural Statistics System (FASSY).

The concepts of ASF methodology are very simple:

- divide the total area of the country into N small blocks (known as segments) that have physical boundaries which can be accurately identified on site by the enumerator, without any overlap or omission;
- select a random sample of N. blocks ( segments ) ;
- collect the census data only on the N. selected blocks (segments);
- process (aggregate ) in office field data to obtain sample totals'; and

- estimate POPULATION TOTALS by multiplying the sample totals by the EXPANSION FACTOR  $N/n$ . The minimum requirements for the application of ASF are to have maps and aerial photography.

EXAMPLE: Assume total area of Viti Levu island is 10,000 km<sup>2</sup> and that the MPI Minister needs to know the area of dalo planted during the first semester 2009.

STEP 1: Total area of Viti Levu (10,000 km<sup>2</sup>) is divided in 1,000 small blocks (segments) of 10 km<sup>2</sup> each (see figure 1) Then:  $N = 1,000$

STEP 2: A random sample of 20 small blocks (segments) is selected (see figure 1). Then  $n = 20$

STEP 3: The enumerator goes to the field and finds that 136 farms planted dalo in 15 out of the 20 selected small blocks or segments (this means that in 5 blocks or segments nobody planted dalo) Then: 136 questionnaires were implemented by enumerator (one for each farm with dalo).

STEP 4: In the office the area planted with dalo on the 136 questionnaires is added (15 out of 20 small blocks or segments), getting a total of 125 Has. Then: sample total = 125 Has planted with dalo.

STEP 5: Estimate the POPULATION TOTAL by multiplying the sample Total by EXPANSION FACTOR. Then:

$$\begin{aligned}
 \text{POPULATION TOTAL} &= \text{EXPANSION FACTOR} * \text{sample total} \\
 &= N/n * \text{sample total} \\
 &= 1,000/20 * 125 \text{ Has} \\
 &= 50 * 125 \text{ Has} \\
 &= 6,250 \text{ Has}
 \end{aligned}$$

**CONCLUSION:** The answer to the MPI Minister will be that on Viti Levu Island 6,250 Has have been planted with dalo during first semester /2009

## 4. BASIC TERMS & DEFINITIONS

### 4.1 Reporting Unit.

It is the individual unit or element that belongs to the total universe or population defined for the 2009 NAC for data collection (reporting) purposes. The "FARM" is the reporting unit for 2009 NAC. One questionnaire 'MUST' be filled out for EACH farm.

### 4.2 Universe or Population of the 2009 NAC.

It is composed of all farms (reporting units) existing in Fiji on the census day.

### 4.3 Sampling Unit

It is the unit selected in the sample at random. In 2009 NAC the Segment (SM) is the sampling unit.

### 4.4 Area Sampling Frame (ASF)

It is the complete list of Segments (sampling units) that covers the universe or population of 2009 NAC. This ASF is on topographic maps scale 1:50,000.

### 4.5 Stratum

It is a homogeneous grouping of land areas classified by actual land use characteristics. The process of classification of land areas between different strata is known in sampling as "STRATIFICATION". For the 2009 NAC the total land area of Fiji was classified into nine actual land use strata and their definitions are given in table 1.

**TABLE 1**

## 2009 NAC OF FIJI: DEFINITION OF THE STRATIFICATION BY ACTUAL LAND USE

### 4.6 Enumeration Area (EA)

It is a piece of land of different sizes (from 0.5 km<sup>2</sup> to 200 or more km<sup>2</sup>) defined by the Bureau of Statistics to conduct the 1976, 1986 and 1996 Population Censuses. Most of the times these EAs have physically observable land marks (boundaries) such as roads, streams, rivers, ditches, etc. on the topographic maps scale 1 : 50,000. Each EA is identified by a permanently assigned identification. The Fiji 2009 NAC used these EAs for the stratification, measurements of areas, construction and selection of the SMs in the sample.

### 4.7 Segment (SM)

A SM is a piece of land (block) usually smaller than an EA and always defined by physical landmarks (boundaries) that MUST be observable on the photo-enlargements and on the ground. Each SM is identified by a permanently assigned identification number and is outlined in RED on the aerial photo – enlargements (scale around 1: 10,000, 1: 6,000, and 1: 4,000). In fact each EA has been divided in SMs of around 1km<sup>2</sup> in size . (See last column of table 1).

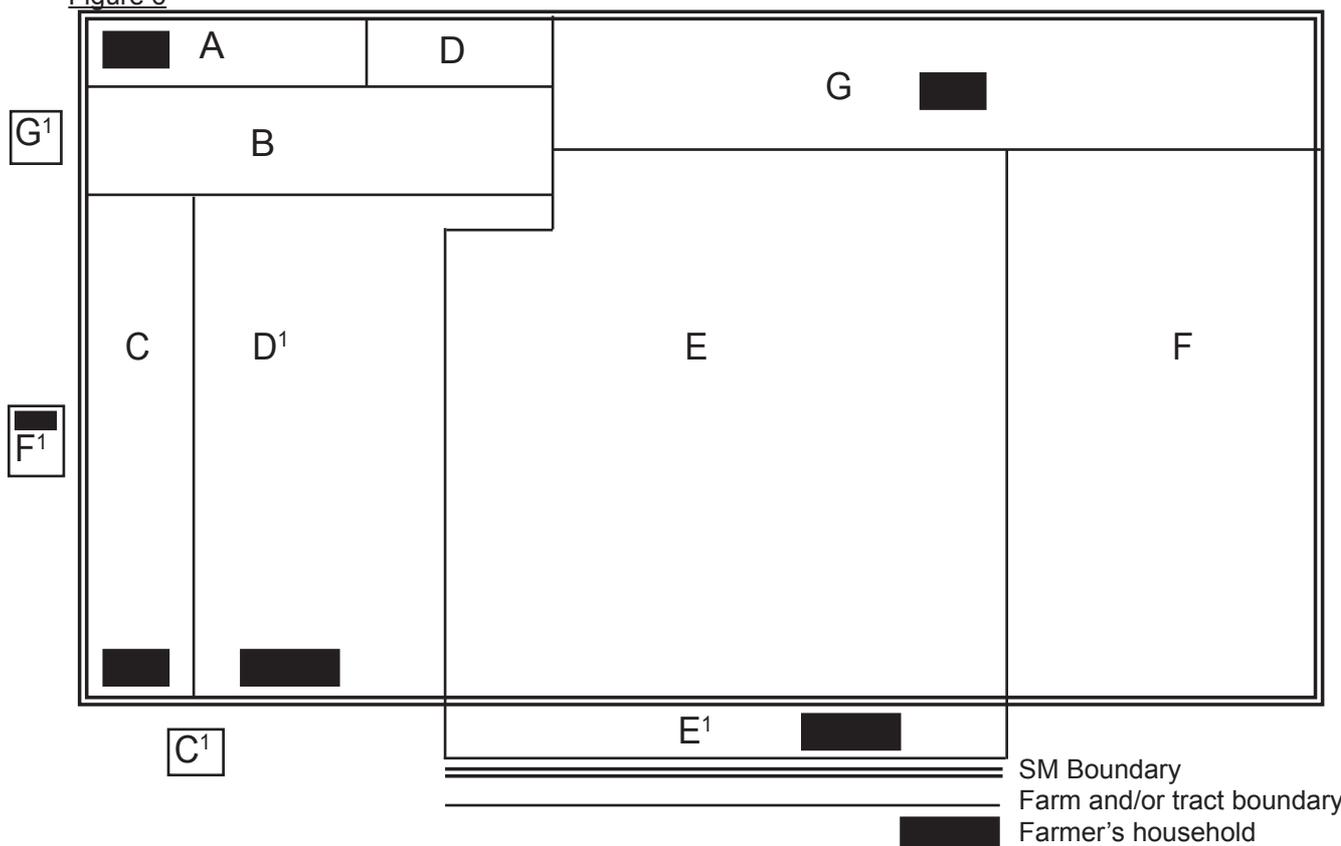
### 4.8 Tract

Table 1

STRATUM	DEFINITION IN WORDS	% OF AREA UNDER	SM SIZE (km <sup>2</sup> )
10	Areas cultivated from 70 to 100 % by temporary, and /or permanent crops.	70 – 100 CROPS	1.0
20	Areas cultivated from 30 to 69 % by temporary, and /or permanent crops.	30 – 69 CROPS	1.0
30	Areas cultivated from 10 to 29 % by temporary, and /or permanent crops.	10 – 29 CROPS	1.0
40	Areas covered from 91% to 100% by improved pastures (planted exotic and pastures (planted exotic and /or native) and /or unimproved native pasture (grazing lands).	91 – 100 PASTURES	1.0
50	Areas covered totally by planted and/or natural forest.	100 FOREST	1.0
60	Non – Agricultural land.	100 NON – AG	NO CENSUS
70	Urban and PeriUrban areas.	100 CITIES	NO CENSUS
80	Special small areas cultivated by crops located only in few places.	100 SPECIAL	Any size
90	List of important farms like big cattle or coconut farms, when their boundaries were possible to be drawn on maps scale 1: 50,000.	100 COMPLETE FARMS	Any size

It is a portion or subdivision of a SM under one management. It is either an entire farm, or a nonfarm area of land. That is, the tract is determined by the definition of a farm and the boundaries of a SM. Then, we also could define a tract as any piece of land entirely surrounded by other land, is composed of one or more tracts. The SM boundaries divide a continuous farm that is overlapping the SM boundaries, in two or more tracts. (see figure 6).

Figure 6



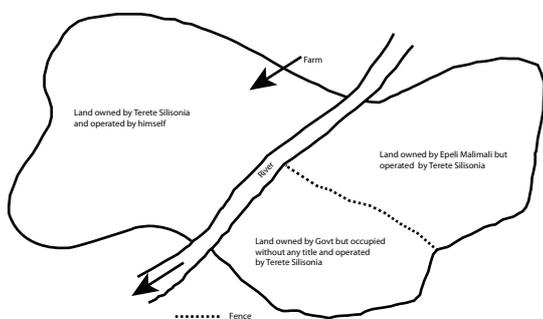
#### 4.9 Farm

It 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, village, or by a juridical person such as a corporation, cooperative or government agency. The farm’s land may consist of one or more tracts, located inside or outside the SM, in one or more separate areas or tikinas, but inside the same province, providing the tracts, share the same “PRODUCTION MEANS” utilized by the farm, such as labour, farm buildings, and machinery or draught animals.

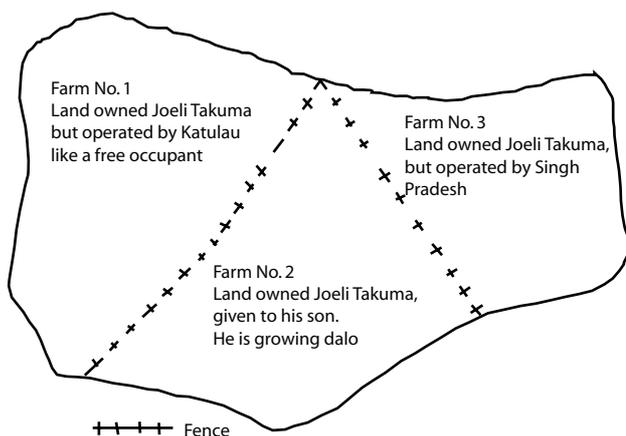
#### 4.10 Characteristics for Identifying a Farm

- a) Any piece of land to be considered as an agricultural farm MUST have at least 50m<sup>2</sup> (approximately 0.01 Has) with at least one of the following land uses on the census day:
- Temporary and permanent crops (pure and mixed stands) and forages;
  - Fallow one year or less;
  - Fallow more than one year, but less than three years;
  - Improved (planted exotic and native) and unimproved pastures.
- b. Any piece of land without any of the conditions mentioned above, but has any of these livestock on the census day, MUST be considered as a farm:
- At least one cattle head;
  - At least one goat, or one pig, or one horse, or one sheep; or
  - At least one poultry.
- c. Any livestock or poultry belonging to managers, administrators, workers, or relatives, that graze or stay in lands of farms where persons are working or staying. In this case, the managers, administrators, etc. are the farmers and the livestock and poultry, the farms. This situation is known as FARM WITHOUT LAND. Also in this category is any piece of land of less than 50m<sup>2</sup>, but it has livestock or poultry.
- d. Any land assigned to managers, administrators, workers relatives for their own utilization for service payments, MUST be considered as an independent farm from the main one that is assigning the land.
- e. If a land is operated independently by a household member for agricultural production, it MUST be considered as a farm different from the farms operated by other household members.
- f. Any land operated by persons who do not have any rights for agricultural use of the land on which the crops, trees or pastures are grown, MUST be considered as a farm
- g. Various economic agricultural production units under the same ownership, or under the same general direction, are considered separate farms if they are operated by different persons.
- h. If a member of a cooperative, religious organization, government agency, clan or village (mataqali), is assigned a separate land for agricultural production (including livestock and poultry) that is operated under the member's management, and for which he/she has general technical economic responsibility, then this land MUST be considered as a farm.
- i. If a cooperative, religious organization, government agency, clan or village (mataqali) has a specified communal land delimited by fencing, or any other form of boundary demarcation, and if its use for agricultural production and specially for grazing purposes is supervised, then this land MUST be considered as a farm.
- j. There are many farms operated by farmers having other occupation (s) in addition to being a farmer.
- k. The farm definition does not consider its land tenure. This means the land conforming the farm could be total or partially owned leased, mataqali or under other forms (see Figure 7).

**Figure 7: One farm with three forms of land tenure**



**Figure 8: Three farms in a land owned only by one person**



L. Economic units engaged solely in the following economic activities are not considered agricultural holdings because these economic activities are outside agriculture:

- Hunting, trapping and game propagation
- Forestry and logging
- Fishing
- Agricultural services

These are considered NON FARM tracts. Other examples of non farm tracts are: lakes, swamps, mangroves, buildings, schools, etc.

#### 4.11 Farmer

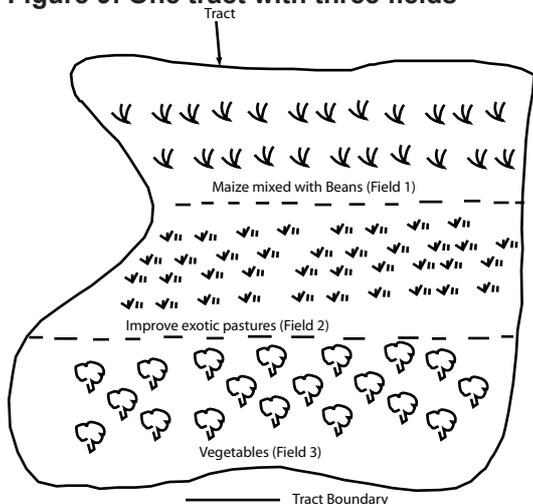
He is a civil or judicial person who exercises management control over the agricultural farm operations and takes major decisions regarding resource use. The farmer has technical and economic responsibility for the farm and may undertake all responsibilities directly, or delegate responsibilities related to day – to – day work management to a hired manager. The work of a farmer can be material, when he conducts directly by himself the physical agricultural activities of the farm, or only intellectual, like in the case of that farmer who lives in the city, and travels periodically to the farm, or not, but takes the major decisions on the farm operation. It is important to take into account the following considerations in the determination of a farmer:

- a. It always MUST be a one – to – one correspondence between a farmer and a farm.
- b. In rural areas, a one – to – one correspondence between a farm (farmer) and a household is quite common. Thus households serve to identify farms.
- c. In most of the cases the farmer is a person. But, in some households can be more than one farmer, when each person operates different(s) piece(s) of land. Then each piece of land becomes a farm. However, if the agricultural operations and the production obtained in all those piece(s) of land are communal for all members of the household, there will be only one farmer and only one farm. In this case, the farmer will be the household member, who spends one person spent equal time, the farmer will be chosen accordingly to this priority: father, mother, elder son and so forth. The other household members participating in the work of the farm will be regarded as members of the labor force of the farm.
- d. When two or more persons belonging to different households operate the same farm, each one will be considered as JOINT farmer. The information related with the farmer household will be collected separately from each household of the joint farmers.
- e. A farmer can operate a land that is owned and /or leased and / or under any other form of land tenure.
- f. A farmer can operate a land without any rights to agricultural use of that land.
- g. A hired manager or administrator will not be considered as the farmer of the farm he is managing. However, if he has livestock and poultry in the land of the farm, which he operates, then he will be considered as a farmer of a farm without land.
- h. When a manager, administrator or any worker of the farm, has received a land for his own use, then he will be considered as a farmer.

#### 4.12 Field

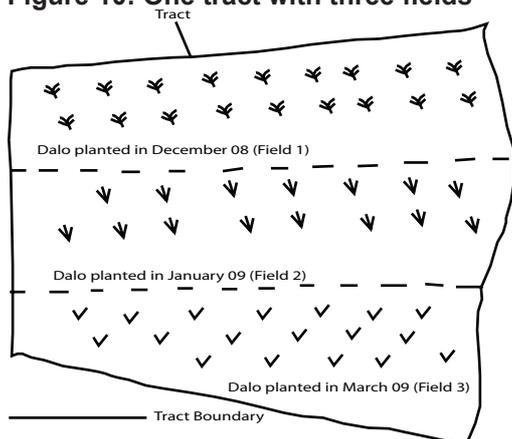
A Field is a continuous piece of land inside a tract devoted to one crop in pure or mixed stand on any other land use. A tract may consist of one or more fields adjacent to each other. If a tract has several crops (or mixed crops), the area of each crop is a field. If the crop has been planted on different dates, or on lands with different land tenures then each of these situations is a field. The most common cases in the identification of fields are the following:

**Figure 9: One tract with three fields**



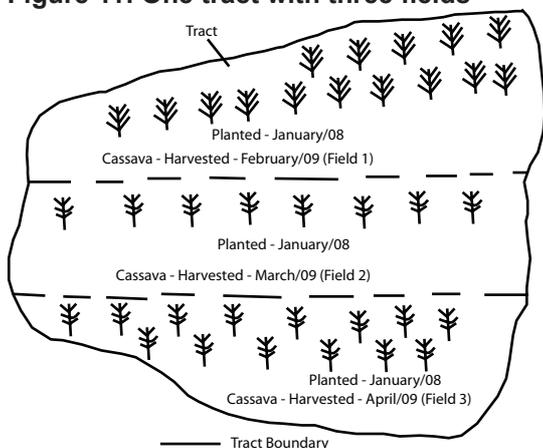
a. In the same tract, there are several crops in pure stand or mixed stand (maize mixed with beans, improved exotic pastures, vegetables).

**Figure 10: One tract with three fields**



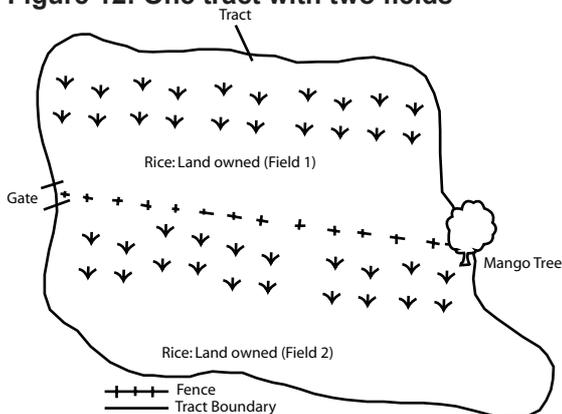
b. In the same tract, there is one crop in pure stand or mixed stand (dalo) planted in different dates (December/08, January/09, March/09)

**Figure 11: One tract with three fields**



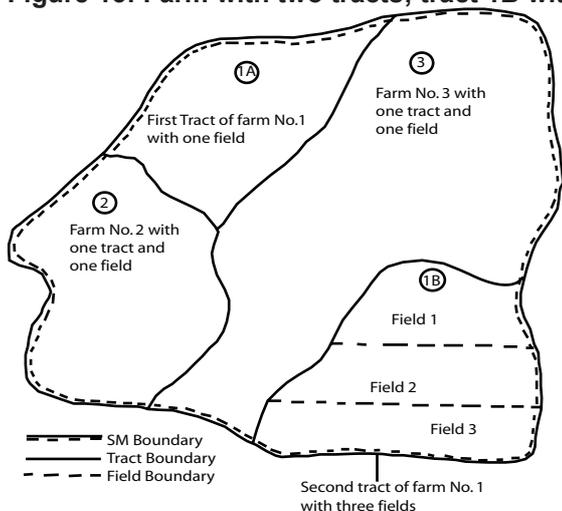
c. In the same tract, there is one crop in pure stand or mixed stand (cassava) planted in a unique date (January/09) but harvested in different dates (February/09, March/09, April/09)

**Figure 12: One tract with two fields**



d. In the same tract, there is one crop in pure stand or mixed stand (rice) but with several forms of land tenure (owned and leased)

**Figure 13: Farm with two tracts; tract 1B with three fields farms 2 and 3 with one tract and one field**



e. A farm can conform by one or more tracts; a tract can have one or more fields

**4.13 Geographical Location of the tracts of the Farm in Relation with SM**

Rigorous application of ASF methodology requires that each sample SM be divided into tracts and that all land within the SM be carefully accounted for as illustrated in figure 9. This is necessary to minimize COVERAGE ERROR. In order to know all characteristics of a farm, it is necessary to collect information, not only from the tracts that are inside the SM, but also from the tracts that belong to a farm are outside of the SM. There are three approaches to do this: CLOSED, WEIGHTED, AND OPEN SEGMENT METHODS.

**a. Closed – Segment Method**

The idea is to collect data on specific items or activities within the boundaries of the sample SMs. This means to collect information only from the tracts located inside the boundaries of selected SM. For example, if information on land use is required, data are collected on the use of all land within the boundaries of each sample SM. Or, if information about cattle is wanted, the goal is to get information about all cattle within the boundaries of the selected SM at the time of the interview.

**b. Open – Segment Method.**

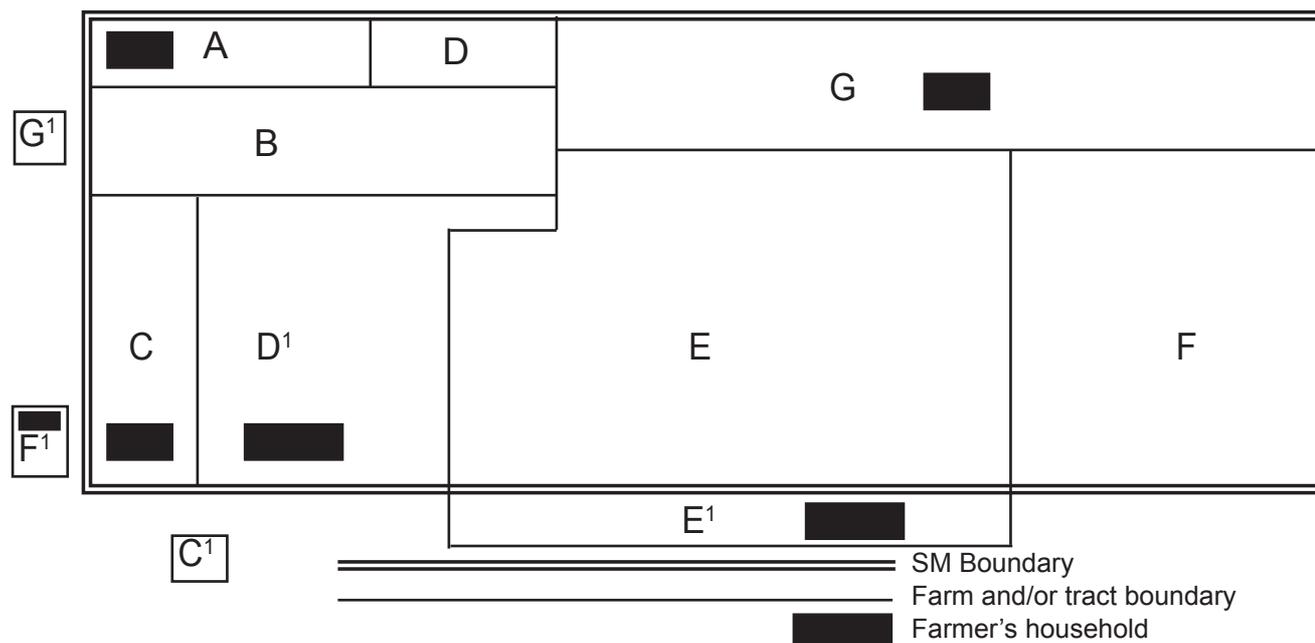
The general idea of the open – segment method is to formulate practical rules that associate every farm in the population with one and only one SM. To do this, a unique reference point, called “HEADQUARTERS” is defined and located for each farm. A farm then belongs to the SM in which its headquarters is located. In most cases the headquarters is defined through the farmer’s household. But, when there is not a household in the farm, the definition and location of the headquarters is more difficult.

**c. Weighted – Segment Method**

The weighted – segment method calls for collecting data from every farm that is within or partly within, a selected SM. The data for each farm are then weighted by the proportion of the entire farm that is within the SM. The closed – segment of the figure 14 is composed of eight tracts. The information MUST be collected only for tracts A, B, C (even if it is a non farm tract), D, D', E, F and G. With reference to figure 14, farms numbered 1 (A), 3 (CC'), 4 (DD'), and 7 (GG') will be assigned by the open – segment method, when the headquarters is the household. In figure 14, information MUST be collected tract by tract for all farms numbered 1 (A), 2 (B), 3 (CC'), 4 (DD'), 5 (EE'), 6 (FF'), and 7 (GG') in 7 Questionnaires.

THE FOLLOWING FIGURE 14 SHOWS HOW THE THREE METHODS WORKS.

FIGURE 14: DIVISION OF A SM INTO TRACTS



DESCRIPTION OF FIGURE 14

TRACT	FARM	DESCRIPTION
A	1	Tract A is an entire farm. The farmer lives on his farm
B	2	Tract B is a farm, but the farmer does not live on his farm or inside the SM .He lives in the city of Suva, where the 2009 NAC enumerator will not go
CC'	3	Tract C is a nonfarm tract. That is, no agricultural operations are performed within it. But, agricultural operations are conducted in tract C'. Two brothers work on the land of this farm No.3.One brother lives on the tract C and the other lives outside this SM ( in other SM).According to previously defined rules that designate one person as the “farmer” of a farm, the brother living in Tract C is the farmer of farm number 3, rather than the brother who helps operate the farm and lives outside the farm in another SM.
DD'	4	Tracts D and D' are composed of parcels of land at two locations within the SM. It is operated by one person who lives in the segment and has no land outside the SM.
EE'	5	Tracts E and E' compose farm number 5. This is an example of a SM boundary crossing a farm and dividing the farm into two tracts. The farmer lives in tract E'.
FF'	6	Tract F is part of farm number 6. The remainder of the farm is tract F' located a few kilometers away from this SM. The farmer lives outside the SM in F'
GG'	7	Tracts G and G' are part of the farm number 7. The farmer lives inside the SM and in tract G.

**IMPORTANT INSTRUCTION:**

IN THE 2009 NAC THE INFORMATION MUST BE COLLECTED FOR ALL TRACTS (TRACT BY TRACT), THAT COMPOSE THE FARM WITH A CLEAR INDICATION IF THEY ARE INSIDE OR OUTSIDE THE SM. ONLY THE INFORMATION OF LAND USE (CHAPTER 4 OF QUESTIONNAIRE NAC3) MUST BE COLLECTED FOR NONFARM TRACTS THAT ARE INSIDE THE SM.LATER ON, THIS INFORMATION WILL BE USED AT THE CENTRAL OFFICE TO APPLY THE CLOSE – SEGMENT AND WEIGHTED –SEGMENT METHODS

**4.14 Census Year**

It is the year from 1 October 2008 to 30 November 2009.

**4.15 Census Day**

It is the day when the census enumerator will effectively conduct the total interview to the farmer.

**4.16 Informant**

The informant is the person from whom data are collected about the farm or the non farm. Normally he is the farmer or the operator of a non farm. But sometimes, it could be a qualified person that knows very well about the information being collected, such as the manager, administrator, competent worker or an old farmer's relative.

#### **4.17 Hectare**

It is another unit used in measuring land area. One hectare is equal to 10,000 square meters (100 ms by 100 ms).

#### **4.18 Acres**

It is another unit used in measuring land area in Fiji. One acre is equal to around 4,050 square meters or 0.405 hectares (63.64 ms by 63.64 ms).

### **5. FIELD ENUMERATION PROCEDURES**

#### **5.1 Assignment Review By the Supervisor**

After receiving all materials and supplies, each supervisor must be responsible to:

- a. Make sure everything that is needed is in enumerator's hands before leaving for the field. For each sample SM assigned make sure you have the manual, contact aerial photography (different scales and years, the photo- enlargement, the topographic map showing the selected SM, questionnaires, copybook, calculator, brown envelope with SM identification, plastic bag, pencil, eraser, plastic acetate grid, green permanent marker, identification card.
- b. Make sure adequate extra supplies are secured.
- c. In a team meeting, lay out the assignment and plan a course of travel. ONLY ONE SM MUST BE ASSIGNED TO EACH ENUMERATOR. Start to visit the enumerators on the field, check the coverage and review the questionnaires. After the enumeration is completed in a SM and the material (questionnaires and photo enlargements) checked and accepted, transfer the enumerator to the next SM. Send the completed SM in brown envelope to MPI provincial office as soon as possible to start the flow of data to Suva for processing.

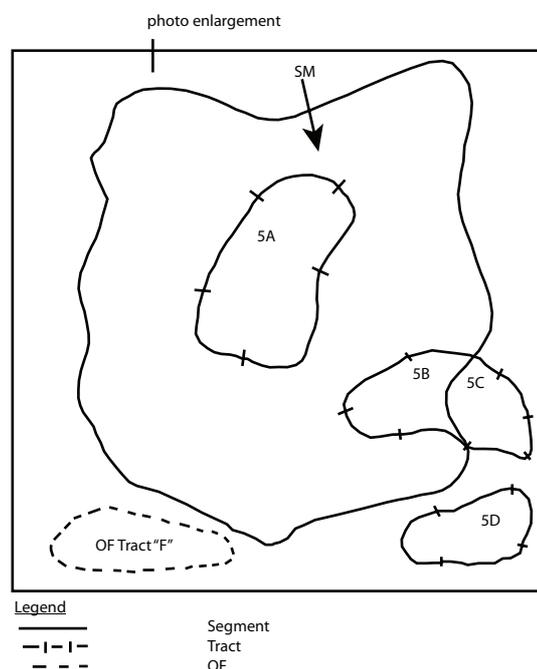
#### **5.2 Segment Enumeration – STEP by STEP Guide for the Enumerator**

- a. Go to the SM as identified on the map with the help of photo – interpreter when available and needed and the supervisor.
- b. Orient the photo – enlargement to physical features at SM sight. Locate all the SM boundaries. If you find difficulties in locating SM boundaries, inform your Supervisor.
- c. Drive/walk around the entire SM if possible and needed. Most of the times you will be able to start immediately the enumeration without driving/ walking around the entire SM. Observe what is inside: land use, crops cultivated, geographic features, dwellings and other buildings. This will be helpful in talking with farmers about the boundaries of the land they operate.
- d. Find a well informed person (the chief of the village for example), who can help to identify boundaries and the farmers of the land inside the segment. If there is a house inside the segment, interview the head of the household.
- e. Identify an easy STARTING POINT on the photo – enlargement and on the field and start the enumeration procedures to find the first farm or non farm.
- f. After the first farm or non farm has been identified, use the photo – enlargement segment questionnaire NAC – 1, farm questionnaire NAC – 2 , or non farm questionnaire NAC - 3, to collect the census information for each farm or non farm and tract by tract.
- g. After the 1st farm or non farm has been identified, draw with a permanent marker the physical boundaries of the tract or tracts that compose the farms or non farms inside the SM, accounting for all the land use. This will assure the coverage of the complete SM (close – segment method). Draw the boundaries over the overlay plastic acetate covering the photo enlargements. Do not draw directly on the photo enlargement hence you will damage it.
- h. If possible, also draw the physical boundaries of the tract or tracts that compose the farms outside the SM. Sometimes, this will not be possible since they could be outside the photo – enlargement. In this case, draw the relative position of the tract encircling it with dashes and write "OF" (out of Photo enlargement).
- i. Do not draw non farm tracts outside the SM, since a non farm by definition is only inside the SM.
- j. After the FARM Boundary has been drawn, on photo enlargement, fill the segment questionnaire NAC 1 according to instructions given in Page 21, No. 7. THIS QUESTIONNAIRE must be implemented on the field simultaneously with farm questionnaire NAC – 2 or non farm questionnaire NAC – 3 and the drawing of tracts on photo enlargement.
- k. Conduct the interview using the farm questionnaire NAC – 2 or non farm questionnaire NAC – 3, according to instructions given in chapter I of this team manual, page 26.

- l. Before starting the interview, qualify the INFORMANT. Normally it is the farmer or the nonfarmer. But in some cases it could be a person who knows very well about the information being collected, like the manager or administrator, a competent worker, or an old farmer's relative.
- m. Check if total land of the farm or non farm tract by tract is more or less equal to the corresponding areas that you will measure on the photo– enlargement, using the PLASTIC ACETATE GRID. If the difference is big, talk carefully with the farmer to find the reasons and get the right data.
- n. Fill columns 6 (inside SM) and 7 (outside SM) of the segment questionnaire NAC – 1 with total land of each tract taking from farm or non farm questionnaires (NAC – 2 or NAC – 3). REMEMBER TO ALWAYS USE HECTARES, so if the information is in acres, make the adequate conversion. (see page 10, measurement)
- o. Thank the informant for the interview. Inquire about other farmers or non farmers in the SM and where they can be contacted for an interview. Ask also for household that are not on sight.
- p. Continue interviewing farmers and non farmers until all land inside the SM is accounted for.
- q. Complete the enumeration of the SM. Make sure all questions on all questionnaires are answered before leaving the SM. Remember that it will not be easy to go back to the SM for incomplete questionnaires or under coverage of land inside a SM.
- r. Check if the total land of each tract in the columns 6 (inside of the SM) and 7 (outside the SM) of segment questionnaire NAC – 1 is equal to the total land of each agricultural tract (Questionnaire NAC – 2, Page 4) or on agricultural tract (questionnaire NAC – 3, page 1). Then add the total land of all tracts in column 5. Now, compare the total land of the SM in column 5 (close segment) with the area that is on the photo – enlargement. If the two areas are very different, inform your supervisor.

Example: Farm No. 5 has 4 tracts. Tracts A and B are inside the SM Tracts C and D are outside the SM but inside the Photo – enlargement. Tract F is out of photo – enlargement, but inside the province and belongs to Farm No. 5. (See figure 15).

**Figure 15 - Photo Enlargement**



## 6. INTERVIEWING TECHNIQUES

The way in which you approach informants determines the success or failure of the interview. Proper interviewing techniques are reviewed below.

### 6.1 Introduction

You must properly introduce yourself to the informants and explain the purpose of the visit. Immediate identification helps avoid being mistaken for being at the village and /or farm for another purpose. Explain the subject and purpose of the 2009 NAC. Here it may be necessary to convince the informant of the usefulness of the 2009 NAC. It will be much easier if the informant is convinced of the importance of the census and believes that their cooperation is needed. Here is where self – confidence on your part is essential.

## EXPLAIN THAT CONFIDENTIALITY OF DATA IS ABSOLUTE

### **6.2 Voluntary Cooperation**

Explain that cooperation on this 2009 NAC is voluntary. Information given by informants in a friendly atmosphere is the best.

### **6.3 Appearance**

As a representative of the government you should be clean and neat.

### **6.4 Place for the Interview**

Sometimes this cannot be controlled, but, if possible, select a place out of the weather with no distractions, noise, etc.

### **6.5 Call Backs**

Do everything possible to obtain all the information in the first visit. Since some villages and / or farms are in hard to reach areas, returns for successive interviews will be limited.

### **6.6 Attendance during Interviews**

Do not conduct interviews in the presence of other people unless the informant gives permission. Sometimes the answers given by the informant are influenced by the person listening.

### **6.7 Probing**

Never suggest an answer. If the informant persists with "I don't know" tell him that you need his best estimate. If some replies seem out of the ordinary, probe and write notes on the questionnaire for the answers that seem unusual. A good probe to use is "What do you mean by that answer?"

### **6.8 Refusals**

A few informants may be hostile or unfriendly. Do not argue with them, do not agree with them. Many will cooperate after "letting off steam". Sometimes it's helpful to talk for a while about other things before beginning the interview. Be sincere when giving praise about his farming operation.

### **6.9 Desirable attributes of the enumerator.**

A successful enumerator must possess certain essential qualifications and characteristics and must undergo training. It is conceded that ability to interview rests not on any single trait, but on a vast complex of them. Habits, skills, techniques and attitudes all are involved. Competence in interviewing is acquired only after careful and diligent study, training and prolonged practice and a good bit of trial and error and plain common sense. There is always a place for individual initiative, for imaginative innovations, and for new combinations of old approaches. The skilful enumerator cannot be bound by a set of rules. Likewise, there is no set of rules which can guarantee to the enumerator that his interviewing will be successful. There are, however, some accepted, general guideposts which may help the beginner to avoid mistakes, learn, how to conserve his efforts, and establish effective working relationships with the informants, to accomplish, in a short time, what he sets to do.

### **6.10 Preparation for the interview**

a. The enumerator should plan his daily routine for interviewing. It is important that the enumerator knows clearly what he wishes and feels able to accomplish. It may be desirable, especially for beginners, to write down these objectives, spell out possible problems and possible modification. In other words, he should plan and decide what is to be accomplished.

b. It is desirable to have advance information about the area of interview and the people to be interviewed. If possible, as it usually is, the enumerator should learn as much as possible about the place where the interview will be conducted and persons to be interviewed. What needs to be known will vary with the situation, but the general principle of knowing the informants holds in all cases. This advantage is available to the local enumerator. If the area involved is one of a cultural group, it is often wise to interview the leaders first to enlist their cooperation and if they see any justification for the interview, to have them recommend the enumerator to others in the group. The principle of interviewing does not only apply to cultural groups. It is also applicable where there exists an organization or an institution. The persons in charge should be approached first and the cooperation secured before interviewing others in the organization or institutions.

c. If possible, appointments should be made in advance. The census purposes, such appointments are made through publications, announcements, etc. of the date the census will begin. In some countries, every household is requested to have somebody present in the house during the time the enumerator is expected to be in that vicinity. The enumerator can also make his own appointment. This means that he should have the knowledge of the daily routine of the informant if a proper time and place are to be chosen. Some experiences in agricultural surveys show that in interviewing the holder it is advantageous to have the wife present. She usually remembers a lot of details involved in the farm operation, especially those pertaining to financial matters.

d. The enumerator should practice taking the informant's point of view. The objective in this practice is to be able to see the problems as another sees them and to feel towards them as he does (this is known as empathy). A substantial amount of emphatic ability is essential for successful interviewing.

e. The enumerator should know himself. Few people realize the extent to which everyone is committed in advance to certain opinions, convictions, attitudes and preconceptions. Everyone has some prejudices whether he realizes this or not; everyone carries with him certain stereotypes, preconceived notions about individuals and groups. There is probably no such thing as a truly open mind, one totally unencumbered by preconceptions, totally perceptive to new ideas. This does not mean, however, that such preconceptions cannot be reduced in number and effect or that they should not be faced and either eliminated or discounted.

### **6.11 Some tips on interviewing**

The adequacy of a technique for collecting data is ordinarily judged in terms of criteria of reliability and validity. Reliability requires that repeated measurements yield results which are identical or fall within narrow and predictable limits of validity. The criterion of validity demands that the measurement be meaningfully related to the objectives. Both these criteria apply not only to the data collection instrument but also to the technique and procedure specified for using the instrument. The reliability and validity of census data depend not only on the design of the questionnaire but also on the manner of administering the instrument, the technique of interviewing. The following are some tips on conducting interviews to aid the information – getter in achieving the two – fold goals of reliability and validity in his data collection. The enumerator should establish a relationship of confidence. The first step is often the most difficult for the enumerator because at the initial contact the informant needs to be motivated to permit the interview. The ideal atmosphere for such motivation is one of mutual confidence. This confidence must not be just one-sided. It must also rest on genuine and deeply felt respect on the part of each for the other person. It is the enumerator's responsibility to take the lead in establishing the relationship of mutual confidence.

Ordinarily the enumerator may follow a sequence of procedure as follows:

- i) Identify yourself by showing an authorization card
- ii) Explain the purpose and objectives of the census
- iii) Explain that this farm was selected by sampling or by chance.
- iv) State the anonymous or confidential nature of the interview as provided by Statistics Act.

In many cases this is enough to secure cooperation and confidence. Most people are only too ready to talk about themselves and to air their views. Common politeness, mixed with curiosity, does the rest. Besides, rural folks are simple and known for their hospitality. The enumerator should help the informant feel at ease and make him ready to talk (motivated). To achieve this end, the interviewer should also be at ease. Show this to the informant by using an informal and natural (conversation) manner of talking. Begin by a conversation on something of mutual interest or easy to talk about, topics such as the ball game or the weather. Carry on such a conversation to allow the informant a little time to get accustomed to the situation. However, this warm- up conversation should not be too prolonged for it may suggest to the informant that the enumerator is reluctant to deal with the real purpose of the interview.

Good interviewing means attaining uniformity in the asking of questions and in the recording of answers. The enumerators are expected to ask all the applicable questions; to ask them in the order given and with no more elucidation and probing than is explicitly allowed and to make no authorized variations in the wording. The manner of asking the question will differ and affect the way it's answered. The enumerator should be warned about this and instructed to adhere to the prescribed wording and not to give any lead by explanations.

It is essential that the informant feels free to talk unhampered by unnecessary interruptions. Once the interview is proceeding, the informant should be allowed to talk freely with little prodding from the interviewer. The enumerator should not dominate nor make prejudicing remarks. The interview must be in a warm and cordial atmosphere. One of the most important qualities which the enumerator should develop is to listen. Listening is a skill which must be learned and practice. Only through proper listening, the enumerator can discriminate between what should and what should not be recorded.

Enough time should be allocated for the interview. The time to be allocated for the interviewer should be sufficient for the informant to ponder on the answers. The informant should not feel that he is being pressed to complete the interview in as short a time as possible. The enumerator should desist cutting the interview short because he is under pressure to complete the census of an area in a definite period. Otherwise the interview will be a hasty one and the informant may be forced to withhold information. The enumerator should keep the interview under control. Quite often informants will avoid certain questions by trying to wander to other topics in the course of the interview. The enumerator should; learn the technique of rationing and putting up timely questions. Some questions are necessary and often unavoidable in some items in the census questionnaire. The informant may run dry of answers and need reticulation. On other occasions he may be engaging in irrelevant accounts of how he happened to use a particular rice variety.

Raising a well – timed questions will put the interview in its proper course. Responses should be recorded during the interview. Experience has shown that the only accurate way to reproduce the responses is to record them during the time of the interview. A good deal of relevant information is almost certain to be lost if the recording is left until the interview has been completed. Completion of the interview does not mean the interview is closed. Even after the usual exchanges of departing remarks, the interview is not yet closed. There are still post – census activities to be done and therefore the informant should already be warned about these at the completion of the interview.

#### **6.12 Some suggestions on resolving common major problems in interviewing.**

Available literature does not provide the enumerator with adequate methods for dealing with all the variables at work during the interview. Much of the available literature consists of rules of thumb presented as lists of “do’s and don’ts” for the enumerator. These do’s and don’ts are compiled and based on interviewing experience derived from a variety of situations over a considerable period of time. They represent practices which have achieved a degree of success in a variety of situations. As yet, there is no integrated theory on which to base a complete understanding of the communication process and the interaction between interviewer and informant. A lot must depend on experience and theory in communication.

### **7. SEGMENT QUESTIONNAIRE NAC – 1 ITEM INSTRUCTIONS**

The enumerator **MUST** get information about all tracts, which belong to a farm, either inside or outside all selected SM. Besides, the enumerator **MUST** get data about all tracts, which compose a non farm and are inside the selected SM. The segment questionnaire NAC – 1 will allow the enumerator to accomplish this purpose. Later on, the supervisor and other field staff will use this questionnaire information to check the census coverage comparing it with other data on photo enlargement and questionnaire NAC – 2 or NAC – 3.

The following example shows how to fill the segment questionnaire NAC – 1.

The enumerator starts to walk on his selected SM located in Ba Province, Vuda Tikina, Vitogo village, stratum = 40, enumeration area = 108 z , segment = 142. The SM has not been subdivided and enumerator finds the following information:

**7.1 The first tract has 10 hectares of total land; it is inside selected SM ad it is operated by Epeli Dogotuki, who does not have more land either inside or outside the Ba province. The land is totally occupied by planted exotic pastures and 30 cattles heads are grazing on it. The enumerator MUST:**

- a. Consider this tract as tract No 1 of farm No. 1
- b. Draw tract 1 boundaries on plastic acetate overlay covering photo – enlargement with green color. Identify it with number 1.
- c. Go to segment questionnaire NAC – 1 and identification information (province, tikina, etc). –Then complete first five columns (see example below).
- d. Conduct the census interview writing the farmer’s answers on questionnaire NAC – 2.
- e. When the interview is over, fill column 6 of segment questionnaire NAC – 1, taking the total land of this tract (always in hectares) from chapter 4 of questionnaire NAC – 2.

**7.2 The second tract has 20 acres. It is operated by Ilisoni Kamisa. The whole tract is inside the selected SM and is planted with maize mixed with beans.**

Mr. Ilisoni Kamisa informs the enumerator that he also has: - Other 30 acres tract inside the SM. There are 40 dairy cattle grazing on it (second tract). - A third tract of five and half acres inside the selected SM is dedicated also to dairy cattle with 6 cows grazing on it. - Mr. Ilisoni Kamisa does not live in Vitogo village. He lives 10 kilometre far from that village in a piece of land of two acres occupied by the house, garden, and other farm installations. From farmer’s information the enumerator concludes that this fourth tract is outside the SM, but inside the Ba province, obviously, it does not appear on the photo- enlargement (fourth tract).

**The enumerator MUST:**

- a. Consider the four tracts conforming farm No 2, even if in tract four the farmer does not conduct agricultural activities.
- b. Draw the first three tract boundaries on plastic overlay covering photo – enlargement. Draw the relative position of tract four with dashed lines, since it is outside SM boundaries and outside (OF) photo – enlargement. Identify each tract on photo – enlargement as: 2A, 2 B , 2 C and OF.
- c. Go to segment questionnaire NAC – 1 and fill its first five columns.

- d. Conduct the census interview writing the farmer's answers on farm questionnaire NAC – 2.
- e. When the interview is over, fill column 6 for tracts 2A, 2 B, 2 C, and column 7 for tract OF of segment questionnaire NAC – 1 taking the total land of each tract (do not forget to convert Acres into hectares) from Chapter 4 of NAC – 2.

**7.3 Continuing the walk through SM, the enumerator finds other land inside SM leased by Rajesh Singh. Its area is 20 hectares planted with coconuts; cattle are grazing under coconut trees. Mr. Singh owns a different piece of land of five hectares inside the SM separated for the land of other farm. Rice was harvested in this area on April/91 and it is being ploughed on the census day to be planted with vegetables (fallow less than one year).**

**The enumerator MUST:**

- a. Consider the two independent pieces of land as two tracts conforming farm No . 3.
- b. Draw the two tract boundaries on plastic overlay covering photo –enlargement. Identify each tract on photo – enlargement as: 3A and 3B.
- c. Go to segment questionnaire NAC – 1 and fill its first five columns.
- d. Conduct the census interview writing the farmer's answers on farm questionnaire NAC – 2.
- e. When the interview is over, fill column 6 of segment questionnaire NAC – 1, taking the total land of each tract (always in hectares) from chapter 4 of questionnaire NAC – 2.

**7.4 Joeli Macuata operates 10 hectares inside selected SM planted with pine trees since three years ago. But Mr. Macuata also informs that he is operating another piece of land outside the SM with 6 hectares of unimproved native pastures. Mr. Macuata shows to the enumerator the precise location of the land with pastures on photo–enlargement.**

**The enumerator MUST:**

- a. Consider the two independent pieces of land (in and out of selected SM) as two tracts conforming farm NO – 4. Remember that although agricultural activities are not performed on tract inside SM, it MUST be considered as part of farm No 4.
- b. Draw both tract boundaries on plastic overlay covering photo – enlargement. Identify each tract on photo – enlargement as: 4A (inside selected SM), and 4B (outside selected SM, but inside photo – enlargement).
- c. Go to segment questionnaire NAC – 1 and fill its first five columns.
- d. Conduct the census interview writing the farmer's answers on farm questionnaire NAC – 2.
- e. When the interview is over, fill column 6 for tract 4 A and column 7 for tract 4B of segment questionnaire NAC – 1, taking the total land of each tract (always in hectares) from chapter 4 of questionnaire NAC -2.

**7.5 Enumerator finds a land of 10 hectares near the sea covered by swamp and mangroves. The segment boundary (Vitogo creek) divides that land into pieces; six hectares are inside the selected SM and the other four hectares are outside. This land is controlled by MPI.**

**The enumerator MUST:**

- a. Consider the land inside SM boundaries (six hectares) as a tract conforming the nonfarm No 5. Do not account for the land outside SM boundaries (four hectares), since they belong to a non farm and accordingly with census rules and definitions, they do not have to be taken into consideration.
- b. Draw the tract boundaries inside SM on plastic overlay covering photo – enlargement. Identify inside tract on photo – enlargement as 5.
- c. Go to segment questionnaire NAC 1 and fill its first 5 columns write in column 5 MPI as the non – farmer.
- d. Conduct the census interview writing the non farmers answers on non farm questionnaire NAC – 3.
- e When the interview is over, fill column 6 of questionnaire NAC – 1 , taking the total land of tract No 5 ( always in hectares ) from non farm questionnaire NAC – 3 . Write in column 8 (remarks) “NON FARM”.

**7.6 Finally, the enumerator finds two hectares occupied by 40 houses, school, gardens and other installations of Vitogo village. Only the chief's daughter of the village has 30 chickens walking around the village**





## NON-FARM QUESTIONNAIRE

Example 2

**2009 (NAC-3)**

**SEGMENT and QUESTIONNAIRE sampling identification**

Question No. ....

Province .....

Tikina .....

Stratum .....

EA No. ....

SM No. ....

SUB SM .....

No. of farm .....

2. Non-farm and Non-farmer identification on Census day

(1) Province	(2) Tikina	(3) Village	(4) Locality	(5) Non-farm Name	(6) Non-farmer's Name

(7) Local Area measurement unit used by the non-farm 1. hectare 2. acre 3. other specify	(8) Tract No. in photos	(9) Tract No. of farm	(10) In	(11) Out	(12) COD	(13) Area of each tract by the land use			
						Natural forest	Planted forests	Non-agricultural land	Total Land of tract

Remarks

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Enumerator Name \_\_\_\_\_ Date \_\_\_ / \_\_\_ / \_\_\_. Supervisor Name \_\_\_\_\_ Date \_\_\_ / \_\_\_ / \_\_\_.  
 Coder Name \_\_\_\_\_ Date \_\_\_ / \_\_\_ / \_\_\_. Data Entry Name \_\_\_\_\_ Date \_\_\_ / \_\_\_ / \_\_\_.  
 \_\_\_\_\_

## **8. FARM QUESTIONNAIRE NAC - 2 ITEM INSTRUCTIONS**

### **8.1 General**

A questionnaire is a communication device that structures a conversation between an interviewer and a respondent. The interview is a conversation with a purpose. Our purpose is to gather the information necessary to give MPI statisticians the best possible indication to estimate the land use and tenure, crops, livestock and other information collected in the 2009 NAC. Each selected SM will have one segment questionnaire NAC - 1 to list all the tracts conforming a farm (tracts inside or outside the selected SM) or a no farm (only tracts inside the selected SM). Then, each segment questionnaire could have one or more sheets depending on the number of tracts existing inside and outside the selected SM. Every farm will have a census questionnaire NAC- 2 (farm with land or without land). Non farm will have a questionnaire NAC - 3. It is the enumerator's responsibility to account for each Questionnaire and interview all farmers and nonfarmers inside each assigned SM.

Ensure that you are completely familiar with the 2009 NAC questionnaire and that you fully understand these instructions before you start work. Write carefully, neatly and legibly. Make sure numbers and decimals are carefully written. Complete all the questions you are required to complete. Make all entries clear and easy to read. Use "Black" lead pencil. DO NOT USE INK. Each answer must be written entirely within the box or space provided. Enter a dash (-) if the question is "NOT APPLICABLE" and a "0" if the answer is none. Never leave an answer cell blank. If an entire question or page or register is "NOT APPLICABLE", do not write dashes (-) in each cell; cross two lines through the entire question page or register Example, the farmer did not plant temporary crops in "Pure Stand" during the census year. After completing a questionnaire quickly look through each column of the questionnaire page by page to see that all the information is complete.

### **8.2 Items of Farm Questionnaire NAC - 2**

- a. SEGMENT (SM) AND SEGMENT QUESTIONNAIRE SAMPLING IDENTIFICATION.
- b. FARM AND FARMER IDENTIFICATION ON CENSUS DAY.
- c. FARMER INFORMATION ON CENSUS DAY AND DURING THE LAST SEVEN DAYS
- d. FARMER'S HOUSEHOLD POPULATION IN THE TOTAL FARM DURING LAST WEEK AND PARTICIPATION IN AGRICULTURAL TASKS
- e. TOTAL LAND AND ACTUAL LAND USE TRACT BY TRACT( IN OR OUT THE SM), OPERATED BY THE FARM ON THE CENSUS DAY.
- f. LAND TENURE OF THE FARM ON CENSUS DAY.
- g. TEMPORARY CROPS IN "PURE STAND" HARVESTED AND/ OR TO BE HARVESTED FROM OCTOBER 2008 TO OCTOBER 2009.
- h. TEMPORARY CROPS IN "MIXED AND INTERPLANTED STAND" HARVESTED AND/ OR TO BE HARVESTED FROM OCTOBER 2008 TO OCTOBER 2009.
- i. PERMANENT CROPS IN "PURE STAND" ON CENSUS DAY.
- j. PERMANENT CROPS IN "MIXED, INTERPLANTED AND ASSOCIATED STAND" ON CENSUS DAY.
- k. SUGAR CANE IN "PURE, MIXED, INTERPLANTED AND ASSOCIATED STANDS" ON CENSUS DAY.
- l. SCATTERED PLANTS, TREES, AND VINES FOR CROPS ON THE CENSUS DAY.
- m. PASTURES ON THE CENSUS DAY.
- n. LIVESTOCK IN THE TOTAL FARM ON THE CENSUS DAY.
- o. EMPLOYMENT IN THE TOTAL FARM DURING LAST WEEK AND MAIN PURPOSE OF THE PRODUCE.
- p. FARM MACHINERY AND EQUIPMENT IN THE TOTAL FARM ON CENSUS DAY AND FROM OCTOBER 2008 TO CENSUS DAY.
- q. USE OF FERTILIZERS IN THE TOTAL FARM FROM OCTOBER 2008 TO CENSUS DAY.
- r. FARM MANAGEMENT IN THE TOTAL FARM FROM OCTOBER 2008 TO CENSUS DAY.
- s. SKETCH OF FARM BOUNDARIES (WHEN IT IS NOT POSSIBLE TO DRAW THEM ON THE PHOTO – ENLARGEMENT).

### **8.3 Specific instructions to Fill the Farm Questionnaire NAC - 2.**

This is the main questionnaire of the 2009 NAC. It MUST have the Information for all tracts that compose a farm with land, either they are inside or outside the selected SM, but within the same Province. This questionnaire has also to contain the information for a farm without land.

### **CONFIDENTIALITY**

**THE STATISTICS ACT PROVIDES FOR THE CONFIDENTIALITY OF THE INFORMATION COLLECTED IN THE 2009 NATIONAL AGRICULTURAL 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.**

# CHAPTER 1. SEGMENT (SM) AND QUESTIONNAIRE SAMPLING IDENTIFICATION

## Instructions

- Leave blank the CODES corresponding to QUESTIONNAIRE No, DIVISION, PROVINCE, DISTRICT, VILLAGE/ SETTLEMENTS..
- Copy the information of STRATUM, EA No, and SM No from the photo –enlargement.
- Leave blank the cells of subdivision of SM (SUB SM).
- Copy the FARM No information from column four of the segment questionnaire NAC – 1. See Example 1.
- Specific instructions: - Province and Tikina – copy the information from the photo –enlargement.
- get the information from the field on village and or settlements.

CHAPTER 1. GEOGRAPHICAL AND SAMPLING INFORMATION		CODE	
Division .....			
Province .....			
District .....			
Village/Settlement .....			
Stratum Number/ Sub Stratum No. ....			/ <input type="text"/> <input type="text"/>
Segment No. ....			
Farm No. ....			(to be filled by the Supervisor)
Intersection ASF-LSF <input type="text"/>		1. Yes Refer to LSF	2. No Continue

FIELD AND DATA PROCESSING STAFF INFORMATION ON ENUMERATION AND PROCESSING DATA			
	Name	Date	Signature
Enumerator	<input type="text"/>	<input type="text"/>	<input type="text"/>
Supervisor	<input type="text"/>	<input type="text"/>	<input type="text"/>
Coder	<input type="text"/>	<input type="text"/>	<input type="text"/>
Input Clerk	<input type="text"/>	<input type="text"/>	<input type="text"/>

# CHAPTER 2. FARM AND FARMER IDENTIFICATION ON CENSUS DAY

## Introduction

This chapter allow you to know the principle characteristics of the farm, farmer and/or non farm, and the person responsible for the land. This Chapter contains fifteen questions, which must be filled following the numeration order. The period of reference for this chapter is on the Census Day.

- Definitions.**
  - See farm and farmer definitions in chapter 4 of this manual (page 4 & 5)
- Period of Reference: it is the Census day.**
  - Get the information from the field for questions 1 through 15.
- Specific Instructions**
  - determine the person/body responsible for managing the farm; where farms are operated by two or more individuals of different households, identify one of the households and one of the joint farmers as the senior farmer. Avoid duplication when collecting data from joint farmers, as some may also operate another farm separately or jointly with others (see example 3).
  - Write the legal status classifying the farmer's answers in one of the categories described below:

## LEGAL STATUS OF FARM

### Definitions

Two types of legal status of farmer are first differentiated: private and government; then a further desegregation is defined:

### PRIVATE FARMER WITH THE FOLLOWING CATEGORIES:

- Individual: where the farm is operated by one person. But there may be more than one farmer in a given household, each operating a separate farm.
- Household: where two or more members of the same household jointly operate the same farm. It is possible that a household member who jointly operates such a farm may also be the farmer of another farm operated by him alone.
- Joint Farmer: when two or more individuals of different households jointly operate such a farm. But separate data should be collected for the household of each joint farmer.
- Corporation: when the farm is operated by juridical persons. Joint stock companies constitute typical

- examples of corporations. No household data are possible.
- Cooperative: includes several kinds of organizations in which the principles of individual, joint ownership, or leasehold, are combined to various degrees.
- Mataqali is organized under Fiji law.
- Other: They are private farmers not specified in any classes mentioned above. Examples are clans, private schools and religion institutions.

**GOVERNMENT FARMERS:** They operate a farm by a central or local government directly or through a special body.

- Determine the type of farming that occurs ; crops, livestock or both (mixed)

## 2. Sex

Put an x in the corresponding box

## 3. Age

### a. Definition

It is the time interval between birth date and census day expressed in complete calendar years.

### b. Period of Reference: it is the census day.

Register the age group corresponding to the number of years .

## 4. Education

### a. Definition

It refers to the highest level of education attained.

### b. Period of Reference: the census day

### c. Specific Instructions

Register the corresponding education level code (only one).

## 5. Race

Register the corresponding race code (only one).

## 6. Religion

Register the corresponding religion code (only one).

## 7. Marital Status

Register the corresponding marital status code (only one).

## CHAPTER 2. GENERAL CHARACTERISTICS OF THE FARM, (on Census Day) and Farmer or Responsible Person of the Farm

1. Name of the Farm		2. Address of the Farm		3. Name of the Enterprise that manages the Farm		4. Farms legal status (If private, please specify by entering the respective code _____ Private <input type="checkbox"/> Govt <input type="checkbox"/>	
5. Name of the Farmer		6. Home Address of the Farmer if different from 2 above.		7. Home Address of Responsible Person from Enterprise		8. Types of farming Crop <input type="checkbox"/> Livestock <input type="checkbox"/> Mixed <input type="checkbox"/>	
9. Relationship of Farmer to Land Owner (Enter Code)		10. Sex of Farmer Male <input type="checkbox"/> Female <input type="checkbox"/>	11. Age group of Farmer in years (Enter Code) 01. 0-9 years 02. 10-19 years 03. 20-39 years 04. 40-59 years 05. 60 years and above	12. Highest level of Education (Enter Code) 01. Primary, 02. Secondary, 03. Tertiary, 04. Agri. College, 05. Never attend sch	13. Race of Farmer (Enter Code) 01. Fijian, 02. Indian, 03. Rotumans 04. Chinese, 05. Others	14. Religion of the Farmer (Enter Code) 01. Methodist/ Catholic, 02. SDA/AOG/Ap- ostolic 03. Hindu, 04. Muslim, 05. Others	15. Marital Status of the Farmer (Enter Code) 01. Never Married, 02. Married, 03. Widowed 04. Divorced, 05. Married but separated
<b>Codes for Column 4</b>		<b>Codes for Column 9</b>	<b>Codes for Column 11</b>	<b>Codes for Column 12</b>	<b>Codes for Column 13</b>	<b>Codes for Column 14</b>	<b>Codes for Column 15</b>

## CHAPTER 3.

### INFORMATION ON FARM HOUSEHOLD MEMBERS

One of the key types of information used to clarify the role of gender in agricultural sector activities is the division of labour for agricultural related tasks. Usually information is collected to that allows the researcher to identify the age and gender of those workers who carry out the different kinds of tasks. In many cases it is also beneficial to collect information about the amount of time spend each day on agricultural sector activities. This questionnaire does not.

## SPECIFIC INSTRUCTIONS:

When the farmer is a PRIVATE INDIVIDUAL PERSON (see definition in chapter 2 it must have information in this chapter. If not, state the reasons in remarks. Some reasons for not having this information in this question may be:

- \* The informant (manager or administrator, worker, etc) is not the farmer, and he does not know the information about the farmer's household.
- \* The farmer or informant are absent.
- \* Refusal to answer this specific question or the whole questionnaire.

When there is not a household at the farm because the farmer lives in a city or out of the country, register the information of the farmer's household in Chapter 3. If it is not possible for any reason, explain this situation in remarks. When a household member lives in FARM A (for example farmer's son), but operates a different FARM B, which is located inside the selected SM, take the following actions:

1. Register the household member's (son) demographic information in Chapter 3 of farm A questionnaire.
2. Open a new questionnaire NAC-2 for farm B, but do not register any information in Chapter 3. Explain reason in remarks. When a household member lives in FARM A (for example farmer's son in law), but operates a different FARM B, which is located outside the selected SM. Take the following actions:
  - \* Register household member's (son in law) demographic information in chapter 3 of FARM A questionnaire.
  - \* Do not open a new questionnaire NAC – 2 for FARM B.

When two or more individuals of different households jointly operate the farm, register separate data for the household of each member of the JOINT FARMER. When the farmer is a legal corporation, cooperative, mataqali, government or any other similar organization like a clan, private school, religion institution, do not collect any information in chapter 3. Cross two lines along the entire page, and explain this situation in remarks. If the respondent is the manager or administrator, a worker, etc., and the farmer does not live at the farm, do not register the information of manager's or administrator's household. But if they (respondents) operate an independent farm, - register their household information in the other farm questionnaire NAC-2.

### 1. Name of Household member

- \* The name will be used to verify the sex of members in the various agricultural sector tasks. Be sure that it is legible.
- \* Register the household members name living in the household during last week (Monday through Sunday).

### 2. Relationship to Head of Household

#### a. Definition

It is the legal relationship between the head of household and the household member.

- b. Register the corresponding codes in column 3, Chp 3..

### 3. Sex

- b. Register the corresponding codes in the column 4, Chp 3. (Codes : Male – 1, Female – 2)

### 4. Age

#### a. Definition

It is the time interval between birth date and census day expressed in complete calendar years.

- b. Period of Reference: it is the census day. Register the age corresponding to the number of years.

### 5. Education ---- for household members of age 10 years or older

#### a. Definition

It refers to the highest level of education attained.

#### b. Period of Reference: the census day

#### c. Specific Instructions

Register the corresponding education level code (only one).

Specific Instructions : For questions 6 and 7 of chapter 3, it is only for persons 10 years and over.

### 6. Main Economic Activity ---- for household members of age 10 years or older

#### a. Definition

It is the kind of work done during the reference period by the person employed (or the kind of work done previously, if unemployed), irrespective of the industry or employment status. For persons reporting more than one occupation, MAIN Economic Activity is determined as the occupation which was most remunerative during the period.

#### b. Period of Reference: the census day

#### c. Specific Instructions

Register the corresponding main economic activity code (only one).

### 7. Participation in Agricultural Sector Tasks (for household members of age 10 years or older)

Twenty-five different tasks related to agriculture production are listed in the table. They are related to crops, livestock, marketing, forestry, hunting and floriculture. The participation of the different members of the household in these tasks should be noted with a tick beside the task in the column below the line number corresponding to the household member. For example, if Tevita is the fifteen year old son of the head of household and his name is on line '03' in the previous table, then his participation in the various tasks should be ticked in column 3. If there are more than 8 household members and member 9 participates in these tasks, put a 9 in the blank cell and tick the boxes beside the corresponding tasks.

### CHAPTER 3. Information on Farm Household Members

3.1 How many household members (including the respondent) do you have as of today? Total : _____ Male : _____ Female : _____						
3.2 Ask for the names of the household members and their characteristics.						
3.2.1 Line No.	3.2.2 Name	3.2.3 Relation to Head of Household (Enter Code)	3.2.4 Sex 1 - M    2-F	3.2.5 Age as of last birthday	For members 10 years old and above	
					3.2.6 Highest Education (Enter Code)	3.2.7 Main Economic Activity (Enter Code)
(1)	(2)	(3)	(4)	(5)	(6)	(7)
01						
02						
03						
04						
05						
06						
07						
08						
09						
10						

**Codes for Column 3** - 01 Head, 02 Wife/Husband, 03 Son/Daughter, 04 Stepchild/Adopted Child, 05 Daughter-in-law/Son-in-law, 06 Mother/Father, 07 Brother/Sister, 08 Grandchild, 09 Grandparent, 10 Other relatives, 11 Non-relative  
**Codes for Column 6** - 01 No Education, 02 Attend Prim., 03 Completed Prim. 04 Attended High Sch., 05 Completed Senior High Sch. 06 Attended/complete Tertiary Sch.  
**Codes for Column 7** - 01 Own Crops/Livestock farm, 02 Own Fisheries activity, 03 Own Forest related activity, 04 Agricultural/Fisheries/Forests activities by other households, 05 Non-agricultural activities, 06 Student, 07 Housekeeping, 08 Unable to work/Cannot work, 09 Other, specify \_\_\_\_\_  
 10 Unknown/Don't know \_\_\_\_\_

3.3 Who participated in the different tasks pertaining to agriculture production in your household during the last cropping and harvesting season? Check the box below the Line Number applicable to Agricultural Tasks.

PARTICIPATION OF HOUSEHOLD MEMBERS IN AGRICULTURAL TASKS (10 YEARS AND OLDER)												
Agricultural Tasks (1)	Line Number of the Household Members Engaged in Agricultural Activities (Tick appropriate box)											
	1	2	3	4	5	6	7	8				
I-01 Land Preparation/Slash & Burning												I-01
I-02 Planting/Seeding												I-02
I-03 Pollinating of Vanilla flowers												I-03
I-04 Managing nursery for annual crops												I-04
I-05 Transplanting annual crops												I-05
I-06 Fertilizer/Applying pesticides, etc												I-06
I-07 Weeding												I-07
I-08 Irrigation/Water Management/Delivery												I-08
I-09 Harvesting/Threshing annual crops												I-09
I-10 Harvesting own perennial crops & fruits												I-10
II-11 Marketing rice/maize/other cereals												II-11
II-12 Marketing vegetables/other annual crops												II-12
II-13 Marketing other perennial crops												II-13
III-14 Feeding/Sheperding cattles, goats and sheep												III-14
III-15 Milking cows/goats												III-15
III-16 Managing Bee Hives												III-16
III-17 Feeding/Managing pigs												III-17
IV-18 Feeding/Managing poultry												IV-18
IV-19 Gathering firewood/Cutting tree branches												IV-19
IV-20 Gathering coconuts, Copra cutting, Husking & drying												IV-20
IV-21 Gathering wild fruits/food												IV-21
V-22 Planting tree seedlings in own/public lands												V-22
VI-23 Hunting wildlife/animals												VI-23
VI-24 Managing Flower Nurseries												VI-24
VI-25 Marketing of flowers/pot plants												VI-25
VI-26 Planting of flowers												VI-26

## CHAPTER 4.

### TOTAL LAND OF FARM

All measurement used in this questionnaire must be in hectares or acres and all information on land area must be the same unit from Chapter 4 to chapter 7. All measurements are to be recorded in to two decimal places (xxx.xx).

### TOTAL LAND AND ACTUAL LAND USE TRACT BY TRACT (IN OR OUT OF THE SM), OPERATED BY THE FARM ON THE CENSUS DAY.

The total number of tracts on the farm (both inside and outside the SM) is entered in the box for question 1, Chpt 4.

#### PART 1

Indicate in the corresponding box the unit of measurement used by placing an X in the box provided.

#### TRACT No ON PHOTO

Copy the same number written on the photo–enlargement and on the first column of the segment questionnaire NAC – 1. Refer to Example 1.

#### TRACT No ON FARM; IN; OUT; CODE

- In the column “TRACT No ON FARM” the new number of each tract is printed. This is the new number that the enumerator has to use in chapter 4 of land tenure and from chapter 5 of temporary crops through chapter 8 of pastures and floriculture.
- Tick the column “IN” if the tract is inside the selected segment or the column “OUT” if the tract is outside. Leave blank the next column of “CODE”. See example 1.
- Use another farm questionnaire NAC – 2 if the farm has more than twelve tracts, registering on it the new tract numbers (example: tract No 13, 14, 15, etc).
- The additional pages may be accounted for by attaching onto the questionnaire.

From this chapter onwards, information is requested only for tracts belonging to the farm. In this chapter there are nine (9) categories of Land Use. Data related to the area has to be registered with two decimals in this table there are lines of 12 tracts. If there are more than 12 tracts open a new questionnaire and follow the instruction as before. The period of reference for this chapter is on the Census Day.

#### Land Use

**On the Census Day, what is the TRACT LAND USE of the farm inside and outside the segment which are under the responsibility of the Farmer?**

- Register in this question, under the title CATEGORIES OF LAND USE, the area by land use.
- For mixed crops register only once the area corresponding to the mixture. Register the area under permanent crops, when there is a combination of permanent crops with temporary crops or pastures. Likewise, write the area of the temporary crops, when the combination is of temporary crops with pastures.

### AREA OF EACH TRACT ACCORDING TO THE LAND USE

#### a. Definitions

#### TEMPORARY CROPS & FORAGES

This includes all land in the open air used for crops with an under – one year growing cycle, which must be newly sown or planted for further production after harvest. Crops remaining in the field more than one year should also be considered temporary crops if harvesting destroys the plant (for example cassava and yams). Crops grown in rotation and destroyed when the land is ploughed should be considered as temporary crops (for example alfalfa, clover, grasses). The forages are considered temporary crops when the plant is destroyed after harvest. Vegetables, flowers, bulbs, and kitchen and market gardens, should also be included in land under temporary crops. Do not include in this category asparagus, strawberries, pineapples, vanilla, passion fruit, bananas, sugar cane and similar crops, since in this 2009 NAC they MUST be considered as permanent crops.

#### FALLOW ONE YEAR & LESS

It is the land lying fallow where a crop was harvested during last season (from October, 2008 to census day), that has been prepared or being prepared (ploughed for example), which will be put under crops soon afterwards. It could be another land use, like pastures or bush, under that land prepared or being prepared, to be put under crops next season.

#### FALLOW MORE THAN ONE YEAR

This is a land at prolonged rest from more than one year to three years before re-cultivation. This land could be used for grazing purposes. Land remaining fallow for more than three years may acquire characteristics requiring it to be reclassified, such as “PASTURES” (if used for grazing) or “FORESTS” (if overgrown with trees that could be used for

timber, firewood, etc), or “NON AGRICULTURAL LAND” (if it becomes wasteland). Land fallow one year and less or fallow from one year to three years, should be distinguished from land abandoned by ‘SHIFTING CULTIVATION’; the former is part of the farm whereas the latter is not. SHIFTING CULTIVATION is a land utilization method; a particular piece of land is cultivated for some years and then abandoned for a period sufficient for it to restore its fertility by natural vegetative growth; it is then re-cultivated. The distinguishing characteristics of shifting cultivation are that neither organic fertilizers nor manure are used to retain soil fertility. As a result cultivated land productivity steadily decreases and it becomes economically preferable to open a new piece of land and abandon the existing one. Abandoned land usually takes a long time to regain fertility by natural processes.

#### **PERMANENT CROPS (NO PASTURES)**

This includes land cultivated with long – term crops which do not have to be replanted for several years after each harvest (sugar cane, coconut, cocoa, citrus, etc.); land under trees and shrubs producing flowers, such as roses and jasmine; and nurseries ( except those for forest trees, which should be classified under “PLANTED FOREST”) A nursery is a piece of land where young plants are cultivated for transplanting and /or sale. Do not forget to include in this category the asparagus, strawberries, pineapples, vanilla, passion fruit, bananas. Be very careful to include in this category the permanent crops “ASSOCIATED” with temporary crops (for example coconuts inter plant with cocoa and associated with cassava, and yaqona); sugarcane associated with beans. Exclude the permanent pastures and meadows and the coconuts mixed with pastures.

#### **COCONUTS WITH PASTURES**

This includes land cultivated with coconuts mixed with pastures for grazing purposes.

#### **PASTURES (INCLUDE GRAZING)**

This included land used permanently (for one year or more) to grow herbaceous forage crops, through cultivation or naturally for mowing or grazing (wild prairie or grazing land) Permanent pastures on which trees and shrubs are grown should be recorded under this heading only if the growing of forage should be recorded under this heading only if the growing of forage crops is the most important use of that area. Do not include temporary forages if harvesting destroys the plant; include them under temporary crops.

#### **NATURAL FOREST**

This includes natural wood logs or timber tracts, constituting part of the farm which have or will have value as wood, timber, other forest products or for protection. Rows, belts, small clumps of natural trees, bamboo and other woody natural vegetation should be included in natural forest. Natural woodland or natural forest used only for recreation purposes should be excluded and reported under the farm “NON AGRICULTURAL LAND”.

#### **PLANTED FOREST**

This includes planted woodlots or timber tracts, constituting part of the farm which have values as wood, timber, or other forest procedures or for protection. Rows, belts, and small clumps of planted trees, bamboo and other woody planted woodland or planted forest used only for recreation purposes should be excluded and reported under the farm “NON AGRICULTURAL LAND”

#### **NON AGRICULTURAL LAND**

This included all other land of the farm, not elsewhere specified, whether or not potentially productive .It covers two land classes:

- Unused and undeveloped land potentially productive for agriculture or forestry, but not yet developed.
- Land in the farm not elsewhere specified.

#### **LAND TENURE**

Land tenure refers to the arrangements or rights under which the farmer operates the land making up the farm. A farm may be operated under one or more tenure forms.

##### **a. Definitions**

#### **FREEHOLD**

Area owned is the farm area for which the holder possesses title of ownership and has the right to determine the nature and extent of its use. It does not include the area owned, but rented to others.

#### **CROWN LEASE**

A State land area held under conditions which enable it to be operated as if owned by the farmer without possessing an ownership title. Land is operated under perpetual and under a long-tem lease, usually ranging from 30-99 years, with a nominal rent.

#### **N.L.T.B. LEASE**

Native land area (administered by N.L.T.B.) held under the same conditions as the Crown Lease.

## **SHARE CROPPING**

Land area rented for a produce share (or the equivalent in money). Technical responsibility for farm management may be exclusively the farmer's or shared with the landlord if the latter contributes tools, fertilizers, etc. Economic risks of operation to income are shared by farmer and landlord.

## **OTHER LEASES**

Some examples include:

- Agricultural labourer operates a piece of land received from the landlord, in return for which he must work, unpaid, for a certain number of days.
- Farmer is granted land use in partial payment for services to government, religious organization or other.
- Land operated under other rental arrangements include areas operated under other rental forms not covered by above items, such as areas of usufructuary mortgages and land operated gratuitously (namely, granted rent free).

## **MATAQALI OWNERSHIP**

Native land area operated by the farmer himself under tribal or village or family basis with certain individual rights held by virtue of membership in the social unit. Ownership title is absent and no rent is paid.

## **AREAS OPERATED UNDER OTHER FORMS OF TENURE**

- Area operated on a squatter basis includes land operated by farmer without ownership title and without paying rent. Land occupied by squatters may be freehold (private), public property or native owned occupied without owner's consent, sometimes tolerated, particularly in public domain.

-Other forms of tenure include land under transitory forms such as trusteeship, land received by members of a collective farm for individual use or land under inheritance proceedings.

### **b.Period of reference: it is the census day**

It is possible that the land is freehold, crown lease, NLTB lease, share cropping or mataqali. This property relates to the potential of the farmer to make changes in the land use or to improve the productivity of the land without someone else's input or approval.

## **PURE STAND CROPS**

This is a single crop cultivated alone in a field. A pure stand crop may be either temporary or permanent.

## **MIXED CROPS**

Mixed crops are two or more different temporary OR permanent crops (but not temporary AND permanent crops) grown simultaneously in the same field. The number, kind and proportions of crops in the mixture will generally vary according to prevailing practices or other factors such as meteorological conditions. Here, it is more difficult to calculate areas and some estimation is needed, including eye estimates of the proportions of area occupied by the component crops. Otherwise the area is evenly divided among the crops present

## **INTERPLANTED CROPS**

A plot or field in which one crop is planted between rows of another crop – for example, sorghum and groundnuts between cotton rows – is referred to as having interplanted crops. Here, the area of the interplanted plot or field is assigned to individual crops in proportion to the area occupied by each crop.

## **ASSOCIATED CROPS**

A temporary crop grown in a compact plantation of permanent crops – a so-called associated crop – should be distinguished from a mixed crop. Normally, the area of the temporary crop is estimated by apportioning the land in a suitable manner

## **UNUSED AND UNDEVELOPED POTENTIALLY PRODUCTIVE LAND**

This includes uncultivated land, comprising part of the farm but not included under the preceding headings, producing some kind of utilizable vegetable product, such as reeds or rushes for matting and bedding for livestock, wild berries, plants and fruits (bread trees). Or land could be brought into crop production with little more effort in addition to that required in common cultivation practices.

## **LAND IN THE FARM NOT ELSEWHERE SPECIFIED**

This includes land occupied by buildings, parks and ornamental gardens, roads and ornamental gardens, roads or lanes, irrigation canals, open spaces needed for storing equipment and products, wasteland, land under water, mangroves, and any other land not reported under previous classes.

## **TOTAL LAND OF TRACT**

The total land of each tract should be equal to total land area under various use classes.

## TOTAL FARM AREA

Total farm area is the combined area of all the farm's tracts. Land owned by the farmer but rented to others should not be included in the total farm area. The farm area includes farmyard and land occupied by farm buildings. Land area of the farmer's house is also included in total farm area if the house is not located off the farm (for example, in a residential area of a city), and is not used solely for residential purposes

The total area of a farm practising shifting cultivation (see definition above) should include area under crops during the reference period and area prepared for cultivation but not sown or planted at the time of enumeration; it should exclude land abandoned prior to the reference period. Farmers having access to communal grazing land should not include their estimated share of such land in their total farm area. Total farm area should be equal to total land area under various tracts and land use classes.

### b. Period of Reference: it is the census day

### c. Specific Instructions

- Remember that this is a key chapter to conduct a good census work and you will have other tools which will help you to account all the farm land: photo enlargement, segment questionnaire NAC-1 .Sometimes you will need to use your copybook. See example 2.
- Register the information on the land use of each tract in the same local area measurement unit indicated in the questionnaire enter hactares or acres.
- Check that the vertical sum of the last column (TOTAL LAND OF TRACT) MUST BE EQUAL to the horizontal (TOTAL FARM) sum of column 3 to 14.

### EXAMPLE 1: CHAPTER, 3

A farm (farm No 2 of the selected SM) is composed of five tracts; three tracts are inside the SM and two outside. The information on the land use on the census day is the following:

*Tract No 1 (identified as 2A on the photo – enlargement and in the segment questionnaire NAC – 1) has: a field with three hectares of improved planted exotic pastures; one house and two stables occupying one hectare. This is inside the SM. The total land of this tract No 1 is 7.5 hectares with the following land use on census day:*

TEMPORARY CROPS AND FORAGES	:	4.50 hectares
PASTURES (IMPROVED & GRAZING)	:	2 .00 hectares
NON AGRICULTURAL LAND	:	1 .00 hectare

*Tract No 2 (identified as 2B on the photo – enlargement and in the segment questionnaire NAC – 1) has: a field with two hectares of vegetables. The total land of this tract No 2 is two hectares and its land use on the census day is:*

*TEMPORARY CROPS AND FORAGES = 2 .00 hectares. It is inside the SM. Tract No 3 (identified as 2C on the photo – enlargement and in questionnaire NAC – 1) has: a field with five hectares of unimproved native pastures. The total land of this tract No 3 is five hectares and its land use on the census day is: PASTURES (IMPROVED AND GRAZING). It is outside the SM.*

*Tract No 4 (identified as 2 D on the photo – enlargement and in the segment questionnaire NAC– 1): it is a piece of land resting for two years and a half, but before the farmer planted dalo. The total land of this tract No 4 is seven hectares and its land use is: FALLOW MORE THAN ONE YEAR, BUT LESS THAN THREE. It is inside the SM.*

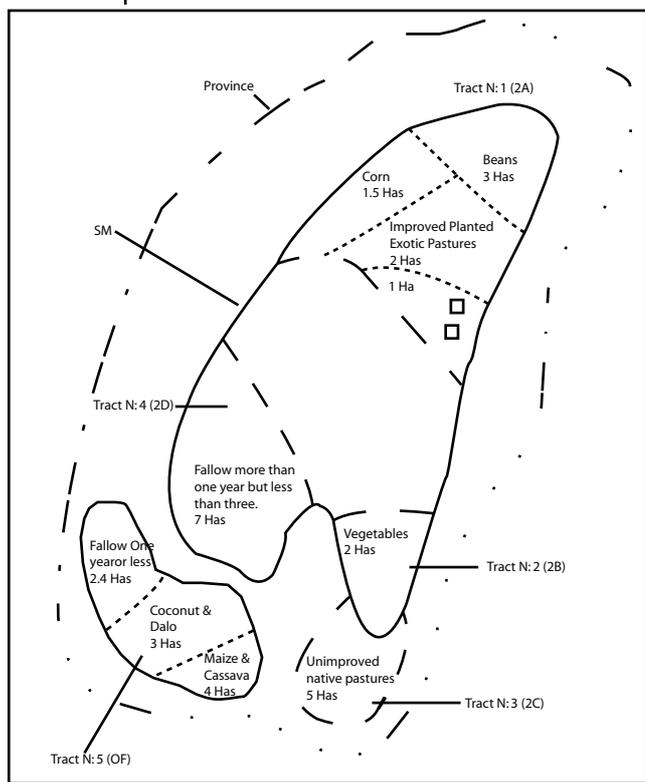
*Tract No 5 ( it is out of the photo – enlargement : OF ) has : a field with 2.4 hectares is being prepared to be planted with cassava (dalo was harvested from field on January / 2009); a field with three hectares of coconuts and dalo; a field with four hectares of maize mixed with cassava, a field with five hectares of coconuts mixed improved native pastures*

The total land of this tract No 5 is 14.4 hectares and its land use on the census day:

PERMANENT CROPS (NOT MIXED WITH PASTURES) :	3.00 hectares
COCONUTS WITH PASTURES:	5.00 hectares
FALLOW ONE YEAR OR LESS:	2 .40 hectares
TEMP. CROPS AND FORAGES:	4.00 hectares

**EXAMPLE 1**

Photo Enlargement



**LEGEND**  
 — Province Boundary  
 - - - Segment Boundary  
 — Tract Boundary  
 - - - Field Boundary

**NON FARM QUESTIONNAIRE NAC – 3 ITEM INSTRUCTIONS**

1. See the non farm definition in chapter 4, number 10, letter L, page 15.
2. The non farm questionnaire NAC-3 has been designed to be filled in with information of tracts inside the selected SM that are part of a farm. They compose a nonfarm.
3. The objective of the non farm questionnaire is to enumerate the complete area inside the boundaries of the selected SM to guarantee its total coverage or its completeness.
4. When a non farmer operates a non farm that has tracts inside and outside the selected SM, register only the areas and the land use of the tracts inside the SM.
5. Example: Mrs Tarita Brando operates three pieces of land located in the Bula village of Nausori near the sea. The information given to the enumerator by Mrs Brando's daughter is:

**FIRST PIECE OF LAND** has ten acres covered also by forest, and some workers are logging it on the census day. Mrs Brando and her family live in Suva. The enumerator identifies this area on the photo-enlargement inside the selected SM (tract 1A)

**SECOND PIECE OF LAND** has ten acres covered also by forest. While the enumerator is drawing its boundaries realizes that the SM boundaries is dividing this area into pieces: one inside the SM with four acres (tract1B) and the other outside with six acres.

**THIRD PIECE OF LAND** has ¼ acre covered by mangroves .Mrs Brando's son fishes crabs in it to sell in Suva hotels.

The enumerator finds on the photo – enlargement that the selected SM is in Tailevu province, Nausori tikina, stratum 30, EA No 2031and SM No 45. It is the first land visited in the selected SM; then the No of NON FARM is 1.

**CHAPTER 4.**

**TOTAL LAND OF THE FARM OR NON FARM CHAPTER 3. TOTAL LAND OF THE FARM OR NON-FARM**

Table 2 - Table of tract land use

What is the area of each tract reported which makeup the Farm (within, outside the **SM** and OFF the photo enlargement)?

Tract Number		Area: ha or acres			Area of each tract according to Landuse operated by the farm on the Census Day										Land Tenure
on photo	on farm	within the SM	outside the SM	Total Area	Temporary crops and Forage	Fallow one year & less	Fallow more than 1 year	Permanent crops (no pastures)	Coco-nuts with pastures	Pastures include grazing	Natural Forest	Plant-ed Forest	Non Ag-riculture Land		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
	Tract 1														
	Tract 2														
	Tract 3														
	Tract 4														
	Tract 5														
	Tract 6														
	Tract 7														
	Tract 8														
	Tract 9														
	Tract 10														
	Tract 11														
	Tract 12														
	<b>Total</b>														
														<b>Codes for Land</b> 1. Freehold, 2. Crown Lease, 3. NLTB Lease, 4. Share cropping, 5. Mataqali 6. Squatter	

## CHAPTER 5. TEMPORARY CROPS OF THE FARM

### 1. Do you have compact temporary crops FROM 1 October 2008 to 30 October 2009 or to THE CENSUS DAY?

- If the answer is YES, register code 1 inside the box and register the information required, according to the instructions given below. Otherwise, if the answer is NO, register the code 2 and go to chapter 6.
- Use one line for registering each crop during the census period which is from 1 October 2008 to the census day of present year.
- There should be enough spaces in the questionnaire for registering the temporary crops. If this number is not sufficient, open a new questionnaire NAC - 2.
- The Temporary crops can be in pure or mixed stand under open land in which they are in pure stand in general.
- Register the information of temporary crops in the same measurement registered in CHAPTER 4.
- Copy the tract No of farm from CHAPTER 4 when that tract has information for temporary crops and forages and /or fallow 1 year and less and the farmer reports that he/she has temporary crops.
- Register the names of the temporary crops reported by the farmer or a qualified informant.
- Use different lines for successive crops. Treat them like different fields, since they were planted or sown and harvested several times, although in the same physical area. Always remember to ask about successive crops since the tendency of the enumerator and farmer is to get and give information on actual season, forgetting about crops planted and harvested during 1st semester, which are not any more on the ground.
- In the case of temporary crops mixed with permanent crops, register in this chapter only the temporary crops, and register the permanent crop in chapter 6, but with the same sequence number given to the mixed crop in chapter 5.
- In the case of temporary crops mixed with forages, register in this chapter 5 only the temporary crops and register the forages in chapter 6 of permanent crops until column 7 of planted area (information on production and sales is not registered), but with the same sequential number given to the mixed crop in chapter 5.
- In the case of temporary crops mixed with permanent crops, register in this chapter 5 only the temporary crops and register the permanent crop in chapter 6, But with the same sequence number given to the mixed crop in chapter 5.
- In the case of temporary crops mixed with pastures, register in this chapter 5 both the temporary crops and pastures, but with the same sequential number given to the mixed crop in chapter 5.
- In the case of very small areas (less than 1 .000 m<sup>2</sup>) with mix of several temporary fruit which are not a regular plantation, consider it as a FRUIT GARDEN and write this as the crop name in column 3; register code 1 in column 5 (crop condition) corresponding to pure stand, and register the planted area in column 11 .

#### Col 1. Number of the Tract

- Register the tract number in which the temporary crop is located. In most of the cases, it will correspond to the tract number registered in chapter 4. \*\*\*

#### Col 2. Number of the Field

- Register the field number in which the temporary crop is located within the tract. One tract can be divided into a number of fields.

#### Col 3. Crop Name

- Register the full names of the temporary crops as they are reported by the Farmer.
- In the case of mixed crops, register only the names of the temporary crops belonging to that mixture.

#### Col 4. Crop Code

- Leave blank the boxes of the column, since they are for office use.

#### Col 5. Crop Condition

- Register the code corresponding to the condition of each crop

Code	Condition
1	Pure stand
2	Mixed stand
3	Interplanted
4	Associated

#### Col 6. Sequential Order of the Mixed Crop

- The sequential order of the mixed crop is control code. The rule to follow is:
  - \* All the crops forming a mixed crop must have the same sequential order number, without regarding if they are permanent, temporary or pastures.
- The boxes belonging to this column must be filled out taking in consideration the above rule, only if in the box (column 5) the code 2 has been registered which corresponds to a mixed crop. Otherwise, leave blank this box.
- The order number of the mixed crop is sequential from 1 to N., This means 1 for the first mixed crop, 2 for the second and so on and so for without considering the order of chapters for permanent or temporary crops. In other



## COMPACT PLANTATION

Thus includes plants, trees and shrubs planted in a regular and systematic manner. Plants, trees and shrubs forming an irregular pattern but dense enough to permit data collection of area planted, are also considered "COMPACT PLANTATION".

## SCATTERED PLANTS, TREES AND VINES

This includes plants, trees, vines and shrubs scattered or isolated to prevent adequate determination of the aggregate area occupied.

**b. Period of Reference:** it is the census day

### c. Specific Instructions

#### 1. Do you have compact permanent crops FROM 1 JANUARY TO THE CENSUS DAY?

- If the answer is YES, register code 1 inside the box and register the information required, according to the instructions given below. Otherwise, if the answer is NO, register the code 2 and go to chapter 7.
- Use one line for registering each crop during the census period which is from 1 January to the census day of present year.
- There are enough spaces in the questionnaire for registering the permanent crops. If this number is not enough, open a new questionnaire NAC - 2.
- The Permanent crops can be in pure or mixed stand under open land in which they are in pure stand in general.
- In the case of permanent crops mixed with temporary crops, register in this chapter only the permanent crops, and register the temporary crop in chapter 5, but with the same sequential number given to the mixed crop in chapter 6.
- In the case of permanent crops mixed with pastures, register in this chapter 6 both the permanent crops and pastures, but with the same sequential number given to the mixed crop in chapter 5. However, for the pastures register the information only for columns 1 to 5.
- In the case of permanent crops mixed with forages, register in this chapter 6 only the permanent crops and register the forages in chapter 5 of temporary crops until column 10 of planted area (information on production and sales is not registered), but with the same sequential number given to the mixed crop in chapter 5.
- In the case of permanent crops mixed with temporary crops, register in this chapter 6 only the permanent crops and register the temporary crops in chapter 5, But with the same sequential number given to the mixed crop in chapter 6.
- In the case of very small areas (less than 1 .000 m<sup>2</sup>) with mixed of several permanent fruits which is not a regular plantation, consider it as a FRUIT GARDEN and write this as the crop name in column 3; register code 1 in column 5 (crop condition) corresponding to pure stand, and register the planted area in column 7.

#### Col 1. Number of the Tract

- Register the tract number in which the permanent crop is located. In most of the cases, it will correspond to the tract number registered in chapter 4.

#### Col 2. Number of the Field

- Register the field number in which the permanent crop is located within the tract. One tract can be divided into a number of fields.

#### Col 3. Crop Name

- Register the full names of the permanent crops as they are reported by the Farmer.
- In the case of mixed crops, register only the names of the permanent crops belonging to that mixture.

#### Col 4. Crop Code

Leave blank the boxes of the column, since they are for office use.

#### Col 5. Crop Condition

- Register the code corresponding to the condition of each crop.

<u>Code</u>	<u>Condition</u>
1	Pure stand
2	Mixed stand
3	Interplanted
4	Associated

#### Col 6. Sequential Order of the Mixed Crop

- The sequential order of the mixed crop is control code. The rule to follow is:
  - \* All the crops forming a mixed crop must have the same sequential order number, without regarding if they are permanent, temporary or pastures. • The boxes belonging to this column must be filled out taking in consideration the above rule, if and only if in the before box (column 5) the code 2 has been registered which corresponds to a mixed crop. Otherwise, leave blank this box.
- The order number of the mixed crop is sequential from 1 to N., This means 1 for the first mixed crop, 2 for the second and so on and so for without considering the order of chapters for permanent or temporary crops. In other words, If the Farm has three permanent mixed crops and four temporary mixed crops, in chapter 5, column 6, must register the mixed temporary crops from 1 to 3 and in chapter 6, column 6, must register the mixed permanent crops from 4 to 7.





## CHAPTER 8.

### PART 1 SCATTERED PLANTS, TREES AND VINES

Refer to chapter 4 on page 37

- What are the number of scattered plants, trees and vines for crops existing on the census day in this tract?
- Definitions: see chapter 4, page 37.
- Period of reference: it is the census day.
- Specific Instructions
- When the area awith plants, trees, and vines is less than 50m<sup>2</sup>, consider them as scattered.
- Follow the pertinent instructions given in the above chapters.
- Do not record the area

### PART 2 PASTURES ON CENSUS DAY

#### WHAT IS THE AREA UNDER IMPROVED EXOTIC, IMPROVED NATIVE, AND UNIMPROVED NATIVE PASTURES ON THE CENSUS DAY?

a. Definitions

#### PASTURES

See definition in Chapter 4.

#### EXOTIC PASTURES

They are varieties of pastures introduced from abroad.

#### PLANTED EXOTIC PASTURES

They include areas actually planted with exotic pasture species such as elephant grass.

#### IMPROVED NATIVE PASTURES

They include areas of pastures not covered under planted exotic and improved native pastures. Pastures under coco-nuts, pines and forest are not included under this category.

**b. Period of reference: it is the census day.**

#### c. Specific Instructions

- Register the information of pastures in hectares or acres.
- Check that the total pastures of last line MUST BE EQUAL TO THE REGISTERED AREA IN CHAPTER 4 IN THE COLUMN UNDER PASTURES (INCLUDE GRAZING). Conduct this check tract by tract.

a. Refer to chapter 3 on page 35

### PART 3 FLORICULTURE ON CENSUS DAY

(for commercial purpose only)

#### a. Definition

The cultivation of flowering and ornamental plants for commercial purposes only. It is concerned with sale of bedding plants, cut flowers, potted flowering plants, foliage plants and flower arrangements. Cultivation of flowers are classified in to the four following categories”

1. ORCHIDS	code: 101
2. ANTHURIUM	code: 102
3. HELICONIA	code: 103
4. ALPININA (GINGER FAMILY)	code: 104
5. FOLIAGE (this includes all leafy flowers, all sorta of palms and crotons).	code: 105

## CHAPTER 9.

### LIVESTOCK IN THE TOTAL FARM ON THE CENSUS DAY

#### IMPORTANT INSTRUCTION

THE INFORMATION TO BE COLLECTED FROM CHAPTER 9 REFERS TO THE “TOTAL FARM”. THIS MEANS THAT THE INFORMATION IS NOT COLLECTED TRACT BY TRACT IN THIS CHAPTER

a. Definitions

#### PART 1

#### LIVESTOCK:

Livestock refers to all animals kept or reared in captivity on the farm, for agricultural purposes. The 2009 NAC will

include cattle, sheep, goats, pigs, horses, honey and poultry.

## **LIVESTOCK POPULATION**

The livestock population refers to animals' numbers present on the farm on the period of reference, regardless of ownership. Livestock population includes livestock temporarily absent or in transit at enumeration day.

### **DAIRY CATTLE**

Dairy cattle refer to animals kept or reared on "COMMERCIAL FARMS" mainly for milking purposes.

### **BEEF CATTLE**

Beef cattle refer to animals kept or reared on "COMMERCIAL FARMS" mainly for meat purposes.

### **NON DAIRY & BEEF FARM CATTLE**

"NON DAIRY & BEEF FARM CATTLE" refers to animals kept or reared on "NON COMMERCIAL FARMS", usually small ones.

**b. Period of Reference:** it is the census day

#### **c. Specific Instructions**

- Remember that livestock data refer to "TOTAL FARM" inside and outside the selected SM.
- Each subtotal by type of livestock and sex MUST BE EQUAL to the sum of the age groups.
- Sometimes it is possible that the informant does not know the cattle classification by sex and age. In this case, register the total of cattle in the last column and explain the reasons in remarks. In the case of other livestock, use the cell of TOTAL.
- When there is no information in chapter 9, cross two lines along the entire page. When there is no information in an entire question cross a horizontal line through it.

### **OTHER LIVESTOCK**

- Pigs, Sheep, Goats, Horses
- Remember that livestock data refer to "TOTAL FARM" inside and outside the selected SM.
- Check that each total by type of livestock and sex MUST BE EQUAL to the sum of the age groups.

## **PART 2**

### **APICULTURE**

Record the number of hives that are part of the apiculture component of the farm and indicate the production during the last year in kilograms of honey. If any honey was sold indicate the amount in kilograms and the value of the honey in dollars.

## **PART 3**

### **POULTRY/AQUACULTURE**

#### **a. Specific Instructions**

- Record the total number of poultry and ducks in column 2 (commercial + home poultry).
- Separate the commercial poultry into breeders, layers and broilers.
- Indicate by a check in the appropriate column(s) the market outlet for the poultry and ducks.

## **PART 4**

### **MILK PRODUCTION**

The quantity and value of milk produced by the farm during the last seven days is recorded by breed. If the cattle are not one of the listed breeds, then record the data for OTHER. The amount of the milk production is divided into home consumption, cattle feed, and sales with all other uses considered to be lost production. For milk that is sold please record the farm gate sales price in dollars per litre.

## **CHAPTER 10.**

### **EMPLOYMENT IN THE TOTAL FARM DURING THE LAST WEEK**

#### **a. Definition of Occupation**

It is the kind of work done during the reference period by the person employed (or the kind of work done previously, if unemployed), irrespective of the industry or employment status. For persons reporting more than one occupation, MAIN OCCUPATION is determined as the occupation which was most remunerative during the period.

#### **Hired Manager or Administrator**

He is a civil or juridical person who takes technical and administrative responsibility to manage a farm on a farmer's behalf. Responsibilities are limited to making day – to – day decisions to operate the farm, including managing and

supervising hired labour. Payment is generally made in cash and / or kind. Where the hired manager shares economic and financial responsibilities in addition to managing the farm, the hired manager or administrator is usually considered a farmer or a joint farmer.

FARMER see definition on chapter 5 page 16.

### **Agricultural Worker**

He or she is a person on farms performing any of a variety of tasks connected with growing crops, breeding and raising livestock, maintaining farm structures and equipment and caring out simple farming tasks.

- b. Period of Reference: last week (Monday through to Sunday)
- c. Specific Instructions

Separate the number of persons 10 years of age and above doing agricultural work on the farm by sex and by type of payment. The types of payment are "none" for the farmer's relatives (spouse, children, grandchildren, brothers, sisters); for all paid workers -- in kind, in cash or in both kind and cash.

## **CHAPTER 11. FARM MACHINERY AND EQUIPMENT IN THE "TOTAL FARM" ON CENSUS DAY.**

### **General Definition**

This item identifies machinery and equipment used by the farm, wholly or partly for agricultural production. All machinery and equipment used exclusively for non agricultural purposes during the reference period are excluded. Only machinery and equipment in usable condition should be reported.

### **a. Definition**

#### **PART 1 OWNED**

It refers to the machinery and equipment for which the farmer possesses title of ownership ON CENSUS DAY and has the right to determine the nature and extent of its use, primarily for agricultural work on his farm. The machinery and equipment may be owned solely by farmer or owned jointly by farmer and others.

- b. Period of Reference: it is the census day
- c. Specific Instructions
  - Include cars, like pick – ups, only if they are used fully or partially for agricultural purposes like transporting the production to the market and the inputs from the market (CODE 33).
  - Cross a vertical line along the column NUMBER, if there is no information.

#### **PART 2 HIRED & / OR BORROWED FROM OCTOBER, 2008 TO PRESENT**

- Remember that this question refers to the same names of machinery and equipment listed on the bottom of the section (TYPE OF MACHINERY) Enter the appropriate code.
- Period of Reference is from October 2008 to the census day.

#### **PART 3 MODES OF TRANSPORTATION USED TO GET TO YOUR FARM**

- Please tick the boxes of any modes of transportation used to get to the farm (could be more than one)

## **CHAPTER 12. FARM MANAGEMENT IN "TOTAL FARM" FROM OCTOBER, 2008 TO CENSUS DAY**

This chapter investigates the farmer's interaction with the Ministry -- both in terms of farm visits by agricultural officers and of visits by the farmer to the Ministry offices. It also addresses key issues for improving production and productivity. The first part relates to the visits; later sets of questions relate to use of improved seeds, use of chemicals and use of mechanization. The role of the Ministry in providing support to these activities is also to be recorded.

## **SPECIAL ENUMERATION SITUATIONS**

### **1. No Qualified Informant Available**

If a qualified informant (farmer or non farmer, manager or administrator, component worker, old farmer's relative) is not available, the enumerator MUST get some information on when the informant will be back and / or to find him. Then the enumerator will prepare a schedule for new visits , if he is still working in the SM. The priority for the enumerator is to work as efficiently as possible and to complete a SM in the schedule time. Within this constraint, if the qualified informant would be available the next day, the enumerator should return the next day for an interview if the team will still be working in the area. If all the other work has been completed by the team in the area and only one or two farms are in need of completion , the priority is to contact some other informed source ( a neighbour for example )for an interview and only as a last resort to record information as much as possible on the questionnaire by direct observation. In any case a questionnaire (NAC 2 or NAC 3) has to be opened with a clear indication on remarks (page 1) on the information sources. Many questions could remain without answers. Inform about this particular farm to your supervisor.

### **2. Crop Land not planted on Census Day (fallow for less than one Year)**

Ask about the crops planted and/ or harvested from October 2008 to the census day. Many enumerators tend to forget to ask these questions.

### **3. Importance of planting and harvesting dates for temporary crops.**

These dates are crucial to help the enumerator to collect the complete information of temporary crops planted and /or harvested from October 2008 to September 2009, especially in areas of shifting cultivation. For example, if the enumerator finds one acre of rice planted in March, 2009 to be harvested in July 2009, he MUST collect information about the crop which was planted and /or harvested from October 2008 to September 2009. Enumerators have a tendency to forget about the previous harvest.

### **4. DO NOT SUBDIVIDE A SM --- THE ENUMERATOR SHOULD NOT SUBDIVIDE A SM FOR ANY REASON.**

If the SM contains too many small farmers that will take too much time to conduct all the interviews, inform your supervisor. The supervisor will report to his coordinator, who will inform the census office in Suva.

## **FIELD REVIEW OF THE QUESTIONNAIRE**

1. All the required fields in register 1 should be filled; namely, stratum, EA, SM, FARM No, and general farmer information (CHAPTER I).

2. Local area measurement unit used by the farmer, (CHAPTER 2, No.2) MUST be indicated and this unit is used throughout the Questionnaire.

3. Check that the Farm No on the photo – enlargement matches with the FARM No in Chapter 2.

4. In Chapter 4 the total land of each tract should be equal to total land under various land use classes.

5. Check that the vertical sum of the last column (TOTAL LAND OF TRACT) MUST be equal to the horizontal sum of the last line of (TOTAL FARM). - Chapter 4

6. Total farm area is the combined area of all farm tracts (applies to Chapter 2 & 4)

7. The total farm area in 4 above MUST be approximately equal to the farm area on the photo – enlargement.

8. In the Chapter 4 total land of each tract MUST be approximately equal to the farm area on the photo – enlargement.

9. Check that in register 5 and 6 the planted area for members of the crop association is registered and recorded only once.

10. The total planted area of chapters 5 and 6 has to be equal or greater than the sum of the areas of columns under temporary crops and forages and fallow one year and less in Chapter 4.

11. Check that the vertical sum of the last column (TOTAL AREA OF SUGARCANE) MUST be equal to the horizontal sum of the last line (TOTAL) Chapter 7. When there is crop association with sugar cane, check that the area is recorded only once.

12. Check that the total pastures of last line MUST equal to the area registered in the column under PASTURES (INCLUDE GRAZING) of chapter 4. Conduct check tract by tract

13. Check the totals of all types of the livestock in chapter 9.

**VILLAGE INSIDE THE SELECTED SM BOUNDARIES** IF THERE IS ONE OR MORE VILLAGES INSIDE THE SELECTED SM BOUNDARIES, THE LAND OCCUPIED BY HOUSEHOLDS, BUILDINGS AND OTHER INSTALLATIONS ARE CONSIDERED AS "NON FARM" TRACT AND A NON FARM QUESTIONNAIRE NAC – 3 "MUST "BE FILLED. WHEN A VILLAGE IS INSIDE THE SELECTED SM, TAKE IN CONSIDERATION THE FOLLOWING: SPECIAL CASES":

a. IF ANY MEMBER OF THE HOUSEHOLD KEEPS POULTRY OR ANY OTHER LIVESTOCK (PIGS, GOATS, ETC) INSIDE THE VILLAGE TRACT, AND "OPERATES" FARM LANDS "INSIDE" THE SELECTED SM BOUNDARIES, CONSIDER THEM TOGETHER (POULTRY AND LAND) AS A NORMAL FARM, THE FARM LAND OUTSIDE THE VILLAGE TRACT, BUT INSIDE THE SELECTED SM, MAY CONFORM ONE OR MORE NORMAL TRACTS. FILL IN A FARM QUESTIONNAIRE NAC – 2 AS USUAL.

b. IF ANY MEMBER OF THE HOUSEHOLD KEEPS POULTRY OR ANY OTHER LIVESTOCK (PIGS , GOATS, ETC) INSIDE THE VILLAGE TRACT, AND "OPERATES " FARM LAND "INSIDE" AND ALSO "OUTSIDE" THE SELECTED SM BOUNDARIES , CONSIDER THEM TOGETHER (POULTRY AND LAND) AS A NORMAL FARM. THE FARM LAND OUTSIDE THE VILLAGE TRACT, BUT INSIDE AND ALSO OUTSIDE THE SELECTED SM, MAY CONFORM ONE OR MORE NORMAL TRACTS. FILL IN A FARM QUESTIONNAIRE NAC – 2 AS USUAL.

c. IF ANY MEMBER OF THE HOUSEHOLD KEEPS POULTRY OR ANY OTHER LIVESTOCK (PIGS, GOATS, ETC) INSIDE THE VILLAGE TRACT, AND "OPERATES" FARM LAND ONLY "OUTSIDE" THE SELECTED SM BOUNDARIES, TAKE THE FOLLOWING ACTIONS: - DO NOT COLLECT ANY INFORMATION ON THE TRACT OR TRACTS OUTSIDE THE SM BOUNDARIES. - CONSIDER THE LIVESTOCK AND /OR POULTRY INSIDE THE VILLAGE TRACT AS "FARM WITHOUT LAND". COLLECT INFORMATION ONLY FOR NAC 1 AND CHAPTER 1, CHAPTER 2, CHAPTER 8, PART 2, AND CHAPTER 8, PART 3, FROM QUESTIONNAIRE NAC – 2.

d. IF ANY MEMBER OF THE HOUSEHOLD KEEPS POULTRY OR ANY OTHER LIVESTOCK (PIGS, GOATS, ETC) INSIDE THE VILLAGE TRACT, AND "DO NOT OPERATE "ANY FARM LAND "INSIDE OR "OUTSIDE" THE SELECTED SM BOUNDARIES, CONSIDER THE LIVESTOCK AND /OR POULTRY INSIDE THE VILLAGE TRACT AS "FARM WITHOUT LAND". COLLECT INFORMATION ONLY FOR NAC-1 AND CHAPTER 1, CHAPTER 2, CHAPTER 8, PART 2, AND CHAPTER 8, PART 3, FROM QUESTIONNAIRE NAC – 2.

## **REFUSALS**

Be courteous and friendly .Make a diligent effort to obtain the farmer's cooperation by explaining the purpose of the 2009 NAC. If a refusal does occur, make your best estimate by observation. Do not try or deceptively try to obtain information. Inform to your supervisor, who will try to get the data.