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Lessons learned from the implementation of the WCA 2010 and issues for WCA 2020¹

Abstract

This paper presents an overview of the progress made towards implementation of the 2010 World Programme for the Census of Agriculture (WCA 2010) promoted by FAO which covers the agricultural censuses and surveys undertaken during the period 2006-2015. Besides reporting on the current status around the world, the paper focuses on practices of Asian and Pacific countries. The paper reviews the application of the new futures of WCA 2010 by countries in the region, lesson learnt and possible issues to be addressed in WCA 2020.

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I. INTRODUCTION

1.1 Background

FAO prepared and issued in 2005 a programme for the 2010 round of agricultural censuses, which covers the period 2006-2015. It is the ninth decennial programme of agricultural censuses of the series which started in 1930. After its formation in 1946, FAO assumed responsibility for agricultural censuses, and has so far promoted and completed six rounds beginning with the programme for the 1950 round. FAO's role in the programme is to: issue standards and guidelines for taking agricultural censuses; provide technical assistance to countries in undertaking censuses; and summarize census related data and metadata obtained from countries for international comparisons. The lessons learnt from each round are ploughed back in the development of the design of the next round.

The 1930 and 1940 agricultural censuses aimed to provide comprehensive data on agricultural production activities, but were difficult for many countries to implement. From 1950, the content of agricultural censuses was limited to data on the structure of agricultural holdings, such as land use, farm size, area of crops grown, structure of livestock herds, farm machinery, and agricultural inputs. Over the years, the content of the agricultural census has widened to include new areas of interest; the 2000 round included data on gender and the environment [FAO, 1995].

The 2010 programme provides guidance on 12 themes and 87 data items including many completely new or significantly modified data items [FAO, 2005]. An indicative classification of crops based upon Common Product Classification was suggested to be used for greater international comparability of data collected through agricultural census. A modular approach to collection of data through integrated planning of surveys was proposed. Greater coordination between population and agricultural censuses was advocated to gain cost-efficiencies and to increase the scope of data collection. A community survey on agricultural infrastructure was advocated to be carried out with the agricultural census to make data available for decentralized planning and targeted area development.

1.2 Importance of the census of agriculture

A census of agriculture is a statistical operation for collecting, processing and disseminating data on the structure of agriculture, covering the whole or a significant part of the country. Typical structural data collected in a census of agriculture are size of holding, land tenure, land use, crop area harvested, irrigation, livestock numbers, labour and other agricultural inputs. In an agricultural census, data are collected directly from agricultural holdings, but some community-level data may also be collected.

The agricultural census data is useful for a variety of economic and social fields including monitoring progress towards the Millennium Development Goals, and in analyzing poverty, food security and gender issues. Other uses of agricultural census data include planning and policy making and improving current agricultural statistics.

The main objectives of the census of agriculture are: (a) To provide data on the structure of agriculture, especially for small administrative units, and to enable detailed cross-tabulations; (b) To provide data to use as benchmarks for current agricultural statistics; (c) To provide frames for agricultural sample surveys; (d) To provide data to help monitor progress towards global development targets, in particular the MDGs. The WCA 2010 advocated a census not as an isolated exercise but as centre piece in the system of agricultural surveys. [FAO, 2005].

II. OVERVIEW OF THE IMPLEMENTATION OF WCA 2010

2.1 Advocacy and Training

In order to promote the implementation of the new recommendations of the 2010 WCA Programme by countries, FAO organized a series of round table technical meetings in all regions to present and discuss the recommendations with the national leaders of the agricultural censuses. The roundtable meetings were organized in Bangkok, Thailand (2005), Chile, Santiago de Chile (2008), Egypt, Cairo (2008), Budapest, Hungary (2009). In addition, specific capacity building workshops on special subjects like Sampling for Agricultural Censuses and Surveys (Accra, Ghana 2010; Bamako, Mali 2011; Montevideo, Uruguay 2011; Amman, Jordan 2011; Bangkok, Thailand 2012) and Linking Population and Housing Censuses with Agricultural Censuses (Nouméa, New Caledonia 2012; Amman, Jordan 2012) were also organized for the benefit of member states. These series of capacity building workshops are still ongoing. FAO also provides direct technical assistance to a large number of countries in conducting their censuses through field projects.

2.2 Overview of progress of the WCA 2010 round in the world

A considerable number of countries around the world have already conducted their agriculture census during the 2010 round (2006-2015). A review of the implementation of agricultural censuses for this round, based on information available to FAO, shows that so far, out of a total of 192 FAO member countries 98 countries have already conducted an agricultural census and about 30 are planning to carry out one during the next three years. This is expected to result in an unprecedented rate of participation of countries in a WCA round. The last record related to 122 participating countries in WCA 2000 round. The number of countries that conducted an agricultural census during a rounds since 1960 ranges between 90 and 122.

Globally, the pace of implementation of the 2010 round by countries is in line with past trends. The figure of 98 countries that already have carried out a census during the first 7 years of the 2010 round, represents a promising end of the round result. Europe is the leader with 77% of countries which had already conducted a census, followed by South America with 69% of countries, North and Central America with 59% of countries, Oceania with 48%, Asia with 44% of countries and Africa with 24% of countries. Table 1 presents a comparative picture of the implementation of agricultural censuses during various rounds in all regions.

Table 1: Trend in participation of countries in the WCA rounds
(number of countries)

Region	Round					
	1960	1970	1980	1990	2000	2010 (Census conducted until 2012)
Total number of FAO members at the end of each round*	109	132	154	173	189	199 ²
Total number of participating countries to the census round	100	111	103	90	122	98
Africa (54)	28	25	23	20	25	13
North and Central America (27)	19	23	18	16	14	16
South America (13)	11	10	7	7	8	9
Asia (45)	19	19	21	14	29	20
Europe (39)	17	24	22	20	29	30
Oceania (21)	6	10	12	13	9	10

*The number in the brackets in the first column is the current number of the FAO member countries in each region

² 192 FAO member countries + 2 FAO associate members (Tokelau, Faroe Island) + EU + 4 French territories

2.3 Overview of the WCA 2010 round in Asia and the Pacific

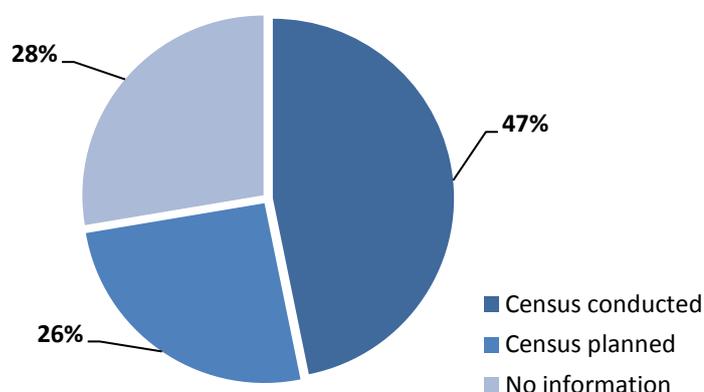
Asia and the Pacific region here refers to the 47 countries and territories covered by FAO Regional Office for Asia and Pacific. Out of these 47 countries and territories 27 are represented in APCAS as of April 2010 (22 are APCAS members countries, while 5 territories are represented by USA and France).

Table 2 below, prepared on the basis of information available to FAO, presents Asian and Pacific countries which have already conducted an agricultural census and those which are planning one in the current decadal round (2006-2015). Out of 47 countries and territories, 22 have conducted an agricultural census, 12 are planning to carry out one before the end of the round, and on 13 countries no information was available to FAO at the time of writing the paper.

Table 2: Agricultural Censuses in Asia and Pacific region in the 2010 WCA round (2006-2015)

Asia and Pacific (47) ³		
Census conducted (2006-2011)		Australia (2011), Bangladesh (2008), Bhutan (2009), China (2007), Cook Islands (2011/2012), Fiji (2009), India (2010/11), Japan (2010), Korea Rep. of, (2010), Lao PDR (2010/2011), Myanmar (2011/2012), Nepal (2011/2012), Niue (2009), Pakistan (2010), Russian Federation (2006), Samoa (2009), Vanuatu (2007), Viet Nam (2007 and 2011/2012), American Samoa (2007), Guam (2007), Northern Mariana Islands (2007), Mongolia (Population census 2012).
Census planned	2012- 2013	Cambodia (2013), Indonesia (2013), Iran (2013), New Zealand (2012), Philippines (2012), Solomon Islands (2012), Sri Lanka (2013), Timor Leste (2012/2013), Thailand (2013), Tonga(2012/2013).
	2014-2015	Malaysia (2015), Afghanistan (2014).
Information not available		Dem Rep.of Korea, Kazakhstan, Uzbekistan, Micronesia, Marshall Islands, Nauru, Palau, Papua New Guinea, Tuvalu, Kiribati, Maldives, New Caledonia, French Polynesia.

Chart 1. Agricultural Census in Asia and the Pacific region in the 2010 WCA round (2006-2015)

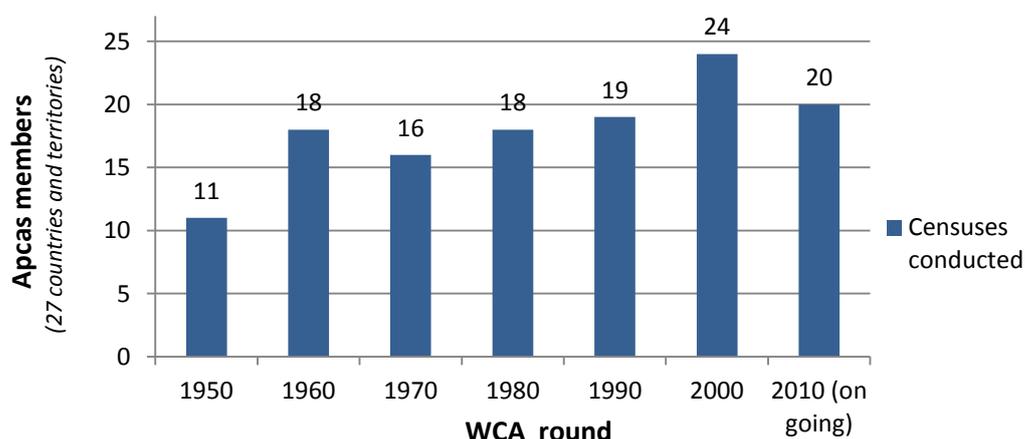


* APCAS member countries or territories.

³ Asia and Pacific region includes 47 FAO member countries and territories.

The Table in **Annex 1** shows participation of Asia and Pacific countries in the WCA rounds starting from 1950. APCAS countries and territories are marked by asterisk. The chart below illustrates the participation of APCAS countries and territories.

Chart 2. Censuses conducted in APCAS countries and territories



FAO recommends to countries to conduct a census of agriculture at least once every ten years. A study has revealed that a large number of countries in Asia and the Pacific have established regular periodicity and are largely self-dependent for funds for agricultural censuses. Some of these countries such as Australia, Japan, India (since 1977), New Zealand (since 1990), Republic of Korea (since 1995) and Viet Nam (since 2000) are conducting an agricultural census every 5 years. Other countries which are undertaking censuses regularly are American Samoa, Indonesia, Iran, Nepal, Pakistan, Philippines, and Republic of Korea. Annex 1 provides information on years of censuses. The review of status of the 2010 WCA round shows that near 100 percent participation of the APCAS countries and territories is to be expected for WCA2010; up to now out of 27 members 20 have already conducted an agricultural census and 7 are planning to conduct one during the rest of the period of the round.

It was recommended by the 2010 WCA Programme that countries take agricultural censuses as close to 2010 as possible. It seems that most countries are making an effort to adhere to this recommendation. Out of 47 Asian and Pacific countries/territories, 15 have followed the recommendation and conducted their agricultural census in the middle of the period (2009-2012). Bangladesh, China, Russian Federation, Vanuatu, American Samoa, Guam and Northern Mariana Islands have conducted their census in the beginning of the period (2006-2008). Twelve Asian and Pacific countries are planning to conduct a census at the end of the period (2013-2015). While there may be administrative and financial constraints which decide the timing of the census taking, a convergence in the timing of census taking by different countries increases the international comparability.

III. IMPLEMENTATION OF THE NEW FEATURES OF 2010 WCA IN ASIA AND THE PACIFIC

3.1 New features of the WCA 2010

The new features recommended by FAO in 2010 WCA Programme include: (1) modular approach which recommends collection of data on key structural variable through a core module by complete enumeration and use of more detailed thematic modules including detailed variables by sampling, (2) integration of the census operation into a comprehensive programme of censuses and surveys, including linkages with population census, and (3) collection of community-level data [FAO, 2005].

The implementation of the WCA 2010 round is still ongoing and not all countries have provided their reports to FAO perhaps because the results are not released yet, so it is too early to present a complete account of the adoption and application of the recommendations on the new features by countries. Nonetheless, a review of experiences of selected Asian and Pacific country in implementing some new features of WCA 2010 is presented below. Some country examples are presented at the end of the section. These examples may cover more than one feature of the programme.

3.2 Modular approach and integrated approach to survey planning

The modular approach to data collection was advocated as a strategy to meeting increasing data demands from the agricultural census within a budget constraint. In Asia and Pacific region, as per information available up to now, the following countries have already adopted the modular approach to census planning: India (2011), Lao PDR (2011), Myanmar (2010), Nepal (2011), Pakistan (2010), Vanuatu (2007).

A review indicates that there does not exist a unique design to implement the modular approach which can be applied to all county situations. Each country has the liberty to decide its own survey architecture and the related sampling designs based upon the structure of its agriculture, administrative set-up, data demands, and availability of human and financial resources. The important aspect is that on key structural variables the data are updated at least decennially at the lowest administrative level.

In recent years, increasing efforts have been made towards greater integration of statistical activities, i.e. to ensure that each statistical operation is carried out, not in isolation, but as part of a coherent set of data collection activities within the national statistics system (NSS). This integration is being argued to ensure unification of economic, social and environmental dimensions of human activity. The conceptual difficulty in implementing this is that the statistical unit for the three sets of data are different. Whereas economic data are collected with agricultural holding as the unit; the social data are collected with household as the unit; and the environmental data relate to land parcels. Increasing use of remote sensing and technologies related to geographical information systems provide options to meet this challenge.

Methodological and conceptual integration in data collection and storage substantially increases the scope of analysis. Even if surveys are carried out at different points in time for different statistical units, an integrated planning has the potential to reduce the response burden which is an important dimension of quality of survey design, and avoids existence of conflicting data.

It is noted that in some countries of the region, viz. India, Pakistan and Mongolia where livestock sector is important in agriculture, separate crop and livestock censuses are carried out. While such approach may have a logical basis and a historical background, this makes it difficult to integrate crop and livestock data. Such integration, particularly in countries where agriculture is mostly household based, could facilitate the studies and policies focusing on integrated crop- livestock based livelihood strategies.

Selected Country Examples

Indian programme for agricultural (crop) census

It is a programme established since 1970/71 and comprises three phases:

Phase 1: Re-tabulation of land records to get a list of holdings.

Phase 2: (Main Census) carried out in 20 percent of sample villages focusing on structural variables

Phase 3: (Input Survey) carried on a sample of farmers, stratified by size, in a sub-sample of 7 percent of the villages for collecting data on livestock, machinery, credit, pesticides. This phase is implemented a year after the agriculture census.

In the states where land records do not exist (13 % of geographical area of the country) a similar methodology is applied with the difference that holding sampling frame is prepared through a listing operation carried out by door-to-door enquiry.

Lao, People Democratic Republic of, Agricultural Census (2011)

The census was developed based on the WCA guidelines given in A System of Integrated Agricultural Censuses and Surveys; Volume 1: World Programme for the Census of Agriculture 2010 (FAO 2005), taking into account the national circumstances. The census plan had three components:

Village component: a survey of all villages in the country to collect data on rural infrastructure and services from the village head.

Household component: a survey of all private households in Lao PDR to collect basic data on crops and livestock.

Sample farm household component: a sample survey of 41 660 households, well distributed across districts and selected in two stages, to collect detailed data on agricultural activities.

Nepal Agricultural Census 2011/2012

The country has a large number of small holdings which practice subsistence agriculture. Nepal has been using the approach of getting sampling frame for agricultural census from their population census. For the latest population census they extended the scope of the agriculture section in the population census to get better sampling frames for designing their agricultural census.

The enumeration work for agricultural census was carried out in two phases similar to that of the 2001/2002 census. In the first phase (January to March 2012) enumeration was carried out in 59 districts in Tarai and Hill areas. The remaining 16 Mountain districts were enumerated during April to June 2012 to avoid the harsh winter weather.

Myanmar Agricultural Census (2010)

Settlement and Land Records Department implemented core module (limited to key structural variables) by complete enumeration covering more than 3 million agricultural holdings in Myanmar during 15th February to 31st March of 2009. The supplementary enumeration was conducted from 15th February to 31st March of 2011 mainly based on two stage-sampling method. The census design for supplementary modules was:

- ✓ Small Crop Holdings (Sample holdings based on re-listing in selected sample villages)
- ✓ Large Agricultural Holdings (Complete enumeration on core module data items)
- ✓ Urban Agricultural Holdings (Complete enumeration on core module data items)
- ✓ Aquaculture Holdings (Complete enumeration on core module data items)

Pakistan has been undertaking agricultural censuses periodically since 1960. The last one conducted in 2010 was linked to their land records system. Pakistan also conducts a livestock census every five years after each agricultural census. For the 2010 agricultural census, an in-depth study was undertaken to consider the new approaches recommended in the World Programme for the Census of Agriculture 2010.

The modular approach is already used for livestock items in Pakistan. Follow-up surveys on milk production, animal slaughtering and commercial poultry are based on the data collected through livestock census. This was continued in the 2010 census.

Vanuatu programme for agricultural census 2007 was conducted in two phases:

Phase 1 was a listing undertaken for all household in Vanuatu whether residing in urban or rural areas. The data was collected from all households on gender; agricultural activities (whether engaged in crop gardening, in cash crops such as coconut, kava, cocoa, coffee, vanilla, and pepper, in fishing or in forestry and logging activities); and number of livestock kept as of listing day such as cattle, pigs, goats sheep, chicken, etc. The results of Phase 1 listing were used to select the sample enumeration areas for Phase 2.

Phase 2 was planned to be a series of sample surveys focused on selected crops and livestock, e.g. coconut, cocoa, coffee, kava, vanilla, pepper, and cattle. There were separate questionnaires for each agricultural activity. Information from commercial farms/holdings was also collected in the Phase 2.

3.3 Linking Population and Housing Censuses with Agricultural Censuses

The guidelines contained in the WCA 2010 programme and those from United Nations Statistics Division (UNSD) on Population and Housing Censuses advocated for a stronger coordination between the two censuses. The guidelines have been further elaborated in the form a joint publication of FAO and UNFPA entitled, "Guidelines for Linking Population and Housing Censuses with Agricultural Censuses" [FAO/UNFPA, 2012].

Most countries collect basic data on occupation, industry of employment, and status in employment for all persons in the households as part of their population census. This information could be useful in identifying the potential households where one or more members may be operating agricultural or aquaculture holding. The coordination between agriculture and population census, extended or otherwise, can take several forms:

- ✓ Use common concepts, definitions and classifications;
- ✓ Sharing field material e.g. boundaries/definitions of enumeration area;
- ✓ Using the data from the population census to provide a frame for the household component of the agricultural census;
- ✓ Making use of agriculture related data from the population census for preparing a sampling design for agricultural census;
- ✓ Collecting additional agriculture related data in the population census;
- ✓ Linking data from the two censuses;
- ✓ Conducting the two censuses as a joint field operation.

During the current WCA (2006 – 2015), so far about 9 countries from Asia and Pacific region are reported to have used the approach of designing their agricultural census based on agriculture related information collected in the population census. The countries are: Afghanistan (2011), Cambodia (2008), Cook Island (2011), Fiji (2007), Nepal (2010), Niue (2006), Mongolia, Vanuatu (2009) and Timor Leste (2011). Based on a study of population census questionnaires available on the UNSD website and national country websites, we identify a set of agricultural related questions included in the recent population censuses which are presented in **Annex 2**. The conclusion is that the extent of use of population census for collection of agriculture related information varies across countries.

Selected Country example

Fiji - Agricultural Census 2009

Fiji consists of a large number of islands. These islands are split into 4 Divisions with 15 Provinces that are divided into 86 Districts. The 2009 census of agriculture was conducted using a Multiple Sampling Frame (MSF) approach for estimates at district level. The Enumeration Areas (EAs), used by the Fiji Island Bureau of Statistics (FIBOS) for the Population Census 2007, were the basis for land use

stratification, but these areas were adjusted depending on the uniformity of the land use. Fiji successfully conducted its census of agriculture using a nontraditional methodology based on Multiple Sampling Frame approach which best suits its situation. Even in this case, information collected during the population census was critical in designing the agricultural census and a more coordinated planning of the two censuses would have provided more useful data for optimizing the design.

3.4 Community-level data

The importance of multi-faceted Community-level data, at the village or the commune level, is being increasingly realised in the countries for assessing the infrastructure and services available to agricultural holdings and to help in formulating, executing and evaluating community projects. Given the strong demand for data with the communities as statistical unit, a community-level component had been included in the WCA 2010, and countries were encouraged to include this component in their agricultural censuses programmes according to national circumstances and data requirement. The cost of collection of this type of information was foreseen as marginal and far outweighs its benefits.

Selected Country examples

China collected data from communities in its 2007 agricultural census through a special questionnaire which was canvassed to collect data at village level as part of listing operation.

Indonesia is regularly collecting Village Level Information through special survey module (*Podes*) which is attached to Population Census, Agricultural Census and Economic Census, each one of which follows a decadal frequency. Thus the *Podes* survey is carried out 3 times in a decade. In addition to serving many other uses these data are utilized for identifying poor villages and to monitor diversion of agricultural land to non-agricultural purposes. Such data are also used for preparing village profiles, classification of settlements into rural and urban area, compiling indices and atlases of different types. A village potential module is expected to be included in the 2013 agricultural census in Indonesia in line with the past practices.

In **Pakistan** the *mouza* censuses are undertaken every five years to collect community-level data. They are used for frame construction in agricultural and livestock censuses and for compiling *mouza* data. A wide range of data are collected and considered very useful. The community-level data are planned to continue to be collected in *mouza* censuses.

In National Agricultural Census 2011/2012 of **Nepal** the community questionnaire was administrated to collect information at the *ward* (PSU) level. The items included in the questionnaire were: information on socio- economic conditions, community infrastructure and services and development projects.

IV. COVERAGE OF DATA ITEMS

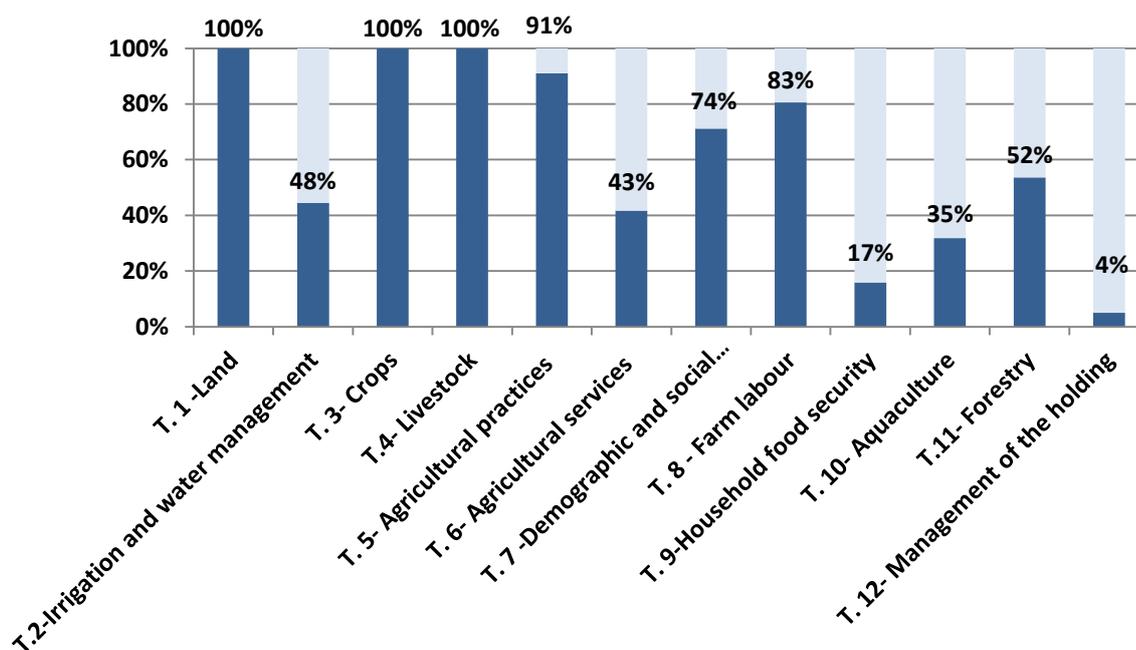
4.1 Coverage of Data Themes

The modular approach of WCA 2010 Programme recommended inclusion of at least 16 core data items in all censuses, carried out by complete enumeration or by large sample. The programme provided an expanded list of 87 data items grouped under 12 themes for specialized surveys. This approach was intended to provide flexibility to member countries to prepare a phased programme for agricultural census and surveys.

Out of 22 Asian and Pacific countries which have already conducted an agricultural census during the current round (WCA 2010), 20 census questionnaires were available to FAO. An analysis of these questionnaire indicated that all countries have included in their censuses the recommended core census items. The Chart 3 below provides an indication of representation of various themes in the census questionnaire. While most countries include in their censuses themes relating to Land, Crops, Livestock, Farm labour and Farm demography, the themes which seem to be under-represented in the agricultural census of Asia and the Pacific are:

- ✓ Theme 02. Irrigation and water management
- ✓ Theme 06. Agricultural services (credit, loan, access to markets)
- ✓ Theme 09. Food security
- ✓ Theme 12. Management of the holding (sub-holding)
- ✓ Theme 10/11. Forestry and aquaculture may seem to be under represented but there importance is not same for all countries.

Chart 3. Items covered in Asia and Pacific region by themes



4.2 Agricultural services and practices

Agricultural services items have been included for the first time in the WCA 2010 Programme. Countries have followed the program and started to collect data on this aspect. About 43 percent of countries collected data on agricultural services. Traditional items concerning use of fertilizers, pesticides, machinery and equipment, and non-residential buildings along with new items such as use of organic agricultural practices, use of genetically modified crops were combined in a separate theme ‘‘Agricultural practices’’. About 91 percent of countries have collected data on selected items from this theme.

4.3 Household Food Security

Food Security was also included for the first time in WCA 2010. It was recognized that household food security is a multi-dimensional phenomenon, but two screening type questions to identify existence of problems related to food security at household level were recommended. Only about 17 percent of countries have collected data on this theme through their agricultural censuses. The reasons for this low acceptance of this type of questions are not well known. Nonetheless, it should be noted that combining of information on food security status of the household with resource endowment and agricultural practices offers a great opportunity to analyse structural causes of hunger in the agricultural households, and offer remedies by way of changes in agricultural practices, particularly for small and marginal farmers whose nutritional status is largely determined by their production.

4.4 Gender and Management of the Holding

Most countries collect data on gender of the holder which provides a potential for a detailed analysis of several other structural agricultural variables. Some countries in Asia have prepared a detailed Gender Report based on their censuses. Sporadically, difficulties in collecting gender sensitive data are reported. For example, in Pakistan during the preparation of the 2010 agricultural census an in-depth study was carried out, and it was felt that gender should be an element of the agricultural census but there were major operational difficulties in collecting these data.

Items on management of the holding (identification of sub-holdings and sub-holders along with their characteristics) is also a new items in the WCA 2010. These items provide useful basis for measuring the role of women in agriculture. As indicated in the WCA 2010, the concepts of sub-holding and sub-holders are complex and may not be suitable for all countries. In Asia, only one country viz. Laos is reported to have collected data on farm management by ‘‘Identification of first manager’’ and ‘‘Identification of second manager’’ in their 2010/11 Census of Agriculture. It is to be examined if this concept is equal to sub-holding or of a substitute manger.

4.5 Use of agricultural censuses for collecting data on aquaculture, forestry and fisheries

The recommended list of data items allows countries to include some items concerning aquaculture and forestry. About 35 and 52 percent of the countries included in their questionnaires items on aquaculture and forestry, respectively. Out of these countries, some went far beyond the item list recommended in the Programme and included separate modules for aquaculture and forestry activities, depending upon importance of these themes for the country.

Country examples

During its 2010 Census of Agriculture and Forestry **Japan** investigated agricultural and forestry activities at the same level of details. An integrated questionnaire for agricultural and forestry activities named ‘‘Questionnaire for Survey of Agriculture and Forestry Management Entities’’ was used to collect information on area of forest land by tenure of land, forest labour force broken down by temporary/permanent, sex and number of days worked, sales of forestry product, forestry work conducted, production of raw material from forest, and entrusted forestry work.

Mongolia developed an integrated programme to conduct in a coordinated manner census of cropping, sample survey of livestock household and establishments and census of forestry, fishing and hunting.

Myanmar has included a separate aquaculture module in the set of questionnaires used for its 2010 Census of Agriculture. Along with items recommended in Theme 10 of the Programme (area of aquaculture, type of water, source of water, type of organism cultivated), the questionnaire collected information on labour force (both family members and hired) in aquaculture activities, and equipment used for aquaculture.

Cambodia has also developed a separate questionnaire for aquaculture activities for its first Agricultural Census to be held in 2013. It is intended to collect data on area under aquaculture, type of aquaculture, type of water used, type of production and facility, main species cultured, household involvement in hired labour.

Samoa provides an example on inclusion of a module about fisheries into the agricultural census questionnaire. In the 2009 Census of Agriculture of Samoa the following items about fisheries were collected: type of fishing (inshore fishing and offshore fishing), equipment used for fishing, number and duration of fishing trips during the last months, share of sales, involvement of household members in fishing activities.

V. CURRENT POLICY ISSUES FOR WCA 2020

The main purpose of any data collection exercise is to support the policy making and monitoring activities of development. Thus agricultural censuses should not only focus of traditional structural data items, they should provide answers to some burning national and international policy issues as well, e.g. livelihood and food security of small holders and family farms, capital formation in agriculture and urban agriculture.

5.1 Livelihood Security of Small Holders

A sizeable portion of agricultural activity in Asia is carried out on small and marginal farms (See Table 3 below). Their characterization, definitions, identification and the measurement of their activities is a pre-requisite for preparing policies which promote their welfare, besides development of the agriculture sector. Countries adopt varying criteria for coverage and classification of agricultural holdings in their census and surveys, which make international comparisons difficult. Often collection, classification and tabulation of data from agricultural census and surveys are not carried out to adequately reflect the role played by small farmers. There is a need to consider requirement of data for policies for small farmers at the time of planning agricultural surveys. The marginal cost for provision of such additional data will perhaps not be significant.

Table 3: Average size and fragmentation of agricultural holding during (1995-2005)

Countries by continent <i>(Number of countries covered is given in parenthesis)</i>	Average area per holding <i>(hectare)</i>	Average number of parcels per holding
World Total (114)	5.5	3.5
Africa (25)	11.5	3.0
America, North and Central (14)	117.8	1.2
America, South (8)	74.4	1.2
Europe (29)	12.4	5.9
Asia(29)	1.0	3.2

Asian agriculture with average area of one hectare per holding distributed in 3 to 4 parcels contrasts completely to the global situation. A study of 14 countries in Asia indicated that 77.2 percent of agricultural holdings were below one hectare and these accounted for 13.5 of the operated area. If we extend the limit to two hectare, over 88 percent holdings accounting for nearly 30 percent of agricultural land gets covered. In five Pacific countries, viz. American Samoa, Cook Island, Guam, Marina Island (north) and Samoa, 35 percent of holdings with one hectare and below manage only 5 percent of total area [FAO, 2009].

It has been observed that given irrigation facilities small agricultural holdings tend to adopt intensive cultivation, growing up to four crops a year, optimizing the land use to improve their household food security situation or to augment their income from agricultural activity. The livelihood of households dependent on small farms is more susceptible to shocks arising out of vagaries of weather or pest attacks. Due to the subsistence type of agriculture, the small farmer household is more vulnerable to food insecurity situation even in the event of slight drought. Small farmers have fewer coping strategies than medium or large farmers. Small holders usually lack resources to invest in their land or livestock. Many a type of farm technology and machinery are unsuitable for adoption at small scale. Often small scale farms adopt an integrated crop and livestock system. In many countries there may exist specific crop and/or livestock species raised by small farmers, e.g. millets and poultry, pig, sheep and goat rearing. The macro-economic and sectoral policy instruments do not affect the large and the small farmers in the same ways.

The agricultural policies and executive actions cannot be effective if they ignore these features of the agriculture sector, particularly those relating to supply of agricultural inputs, technology dissemination, marketing arrangements and credit. Thus there is a need for information to carry out an analysis of the policy options to evaluate their possible impacts on the well-being of the small farmers, before making a choice.

A review of the definition of agricultural holdings adopted for the agricultural census indicates that countries often adopt an operational definition of agricultural holding for the purpose of census and surveys. While these thresholds may be necessary to keep the workload under a manageable limit and to stay within the budget constraint. The adoption of thresholds in surveys, usually based on scale of operation and/or purpose of production, i.e. size of land plot, number of livestock, participation in market usually leave a part of small scale or family agriculture out of the surveys purview [FAO, 2011]. What is needed is the complete coverage of agriculture activity at the listing stage. Once the complete universe is defined, one can design a separate survey with a small sample and perhaps different questionnaires for small subsistence type farms. The questionnaires for small holdings may need a greater focus on food security, livelihood, social protection, extent of dependence on market for food supplies, alternative sources of employment etc.

5.2 Data on capital formation in agriculture

The investments in agriculture decide the productivity of farm labour. These investment can come from both public and private sector initiatives. The public sector capital formation in agriculture mostly comes through government investments in irrigation infrastructure and land improvements. The private sector investments take place in the form of purchase of agricultural machinery, creation of minor irrigation infrastructure such as wells, augmentation of breeding/laying livestock units etc. The availability of data on these aspects is particularly weak and the next programme will need to consider appropriate strategies to improve availability of data on these aspects.

In WCA 2000 round only 36 out of 114 reporting countries around the world have collected data on machinery and equipment. In the current round in Asia and Pacific region out of 23 countries 14 have collected data on these items, which means about 60 percent of the countries. Out of these, more countries asked information on stock of machinery than use of machinery.

5.3 Urban agriculture

In some countries the practice of urban agriculture (back yard farming, kitchen gardens, rooftop gardens etc.) is seen as a viable alternative for providing nutritional security to urban dwellers. It has been observed that many agricultural censuses do not cover urban areas. In case there exists this kind of potential, there would be need to consider coverage of this sector of agriculture in the statistical programmes like agricultural censuses. In countries where linkage of population and agriculture census is planned, this could be a feasible method of collecting initial data on this aspects. This initial data could be the basis of designing in-depth surveys on this aspect.

5.4 Role of Women in Agriculture

Given that the approach of sub-holder has not been found suitable in Asia, there is a need to consider alternative methods to increase the availability of data for gender related studies. Cross- tabulation of data by sex of holder indeed offers great opportunity in this regard.

VI. GLOBAL OPPORTUNITIES

Global Strategy to Improve Agriculture and Rural Statistics has been prepared to enable countries to collect at least the internationally identified minimum core set of data, which is critical to policy making at national level and global monitoring. At its 41st session in February 2010, the UNSC endorsed the technical content and the strategic directions of the Global Strategy which now has been translated into a Global Action Plan [FAO, 2012]. Following the same logical framework regional implementation plans are being prepared to implement the activities at regional and country level. The support is planned to be provided through research, training and technical assistance.

The main idea of the strategy is to bring together the efforts of the resource partners and the national agencies like National Statistics Office and the Ministries of Agriculture to have a unified vision for development of agriculture statistics. After a country has been selected for activities under the Global Strategy an In-depth Assessment of the existing agriculture statistics system (a kind of SWOT Analysis) will be carried out involving all stakeholders— both users and producers of statistics. This analysis of the national statistics system will provide basis for development of a Sector Strategic Plan for Agricultural and Rural Statistics (SSPARS). This plan will be prepared in a manner that will mainstream agriculture statistics into the National Strategy for Development of Statistics (NSDS). This plan will ensure alignment of efforts of donors, governments and other stake holders as it will be a kind of road map for development.

At the stage of Country Assessment and at the stage of preparation of SSPARS, it will be important to consider the “architecture of the survey system” in its entirety, including linkages between agriculture census, regular satellite surveys and *ad hoc* surveys. It will be important to give due consideration to linkage of agriculture surveys with demographic and social surveys. This integrated planning is expected to provide cost-effective solutions to managing large data demands within a budget constraint and will avoid conflicting data. In preparing the national survey calendar, the countries should give due consideration to establishment of master sampling frames and means to keeping it updated, if needed by relying on administrative processes.

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Annex 1**Participation of countries in WCA rounds
in Asia and Pacific region**

Asia and Pacific region	Round						
	1950	1960	1970	1980	1990	2000	2010 (Census conducted or planned until 2012)
47 countries and territories	18 censuses	20 censuses	20 censuses	23 censuses	25 censuses	31 censuses	24 conducted, 10 planned
Afghanistan*	-	-	-	-	-	2003	2013-2014
American Samoa*	1950	1960	1970	1980	1990	1998/2003	2007
Australia*	1950	1960	1971	1980	1990	2001	2011
Bangladesh* (1960: refers to East Pakistan)	-	1960/62	-	1977	-	1996/1997	2008
Bhutan*	-	-	-	-	-	2000	2009
Cambodia *	-	-	-	-	-	-	2013
China, People's Rep. of*	1950 (Taiwan only)	-	-	-	-	1997	2007
Cook Islands	1950 (some special estimate)	-	-	-	1988	2001	2011/2012
DPR Korea	-	-	-	-	-	-	-
Fiji*	1950 (some special estimate)	1960	1968	1978	1991	-	2009
French Polynesia*	-	-	-	-	1995/1996	-	-
Guam*	1950	1960	1970	1978	1988&1993	1998&2003	2007
India*	1954	1961	1971	1977&1981	1986&1991	2005/2006	2010/2011
Indonesia*	-	1963	1973	1983	1993	2003	2013
Iran, Islamic Rep. of*	-	1960	1974	-	1988&1993	2003	2013
Japan *	1950	1960	1970	1980	1990&1995	2000	2010
Kazakhstan	-	-	-	-	-	-	-
Kiribati	1950 (some special estimate)	-	-	-	-	2005	-
Korea Rep. of*	-	1961	1970	1980	1990	2000	2010
Lao PDR *	-	-	1973	-	-	1998/99	2010/2011
Malaysia *	1950	1960	-	1977	-	2004/05	2015
Maldives	-	-	-	-	-	-	-
Marshall Islands	-	-	1970	1980	-	-	-
Micronesia	-	-	1970	1980	-	-	-
Mongolia	-	-	-	-	-	2000	2012(livestock census)
Myanmar *	1953/195	-	-	-	1993	2003	2010/2011

	4						
Nauru	-	-	-	-	-	-	-
Nepal *	-	1962	1972	1981	1992	2001/02	2011/2012
New Caledonia*	-	-	-	-	1991/1992	2002	-
New Zealand *	1950	1960	1972	1980	1990&1994	2002	2012
Niue	-	-	-	-	1989	-	2009
Northern Mariana Islands*	-	-	1970	1980	1990	1998&2003	2007
Pakistan *	-	1960	1973	1980	1990	2000	2010
Palau	-	-	1970	1980	1989	-	-
Papua New Guinea	1951	1961/1962	-	-	-	-	-
Philippines *	1948	1960	1971	1981	1991	2002	2012
Russia Federation	-	-	-	-	-	-	2006
Samoa	1950	-	-	-	1989	1999	2009
Solomon Islands	1950	-	-	-	-	-	2012
Sri Lanka *	1952	1962	1973	1982	-	2002	2013
Thailand *	1951	1963	-	1978	1988/93	2003	2013
Timor Lest	-	-	-	-	-	-	2012/2013
Tonga	1950	-	-	1985	-	2001	2012/2013
Tuvalu	1950	-	-	-	-	2002	-
Uzbekistan	-	-	-	-	-	-	-
Vanuatu	1950	-	-	1983	1994	-	2007
Viet Nam *	-	1960/1961	-	-	1994	2001	2007(next 2011/2012)

*APCAS member countries and territories.

Annex 2

Examples of practices in Asian and Pacific countries on inclusion of additional agricultural questions in the Population and Housing Censuses

WCA 2010 ROUND
COUNTRY (CENUS YEAR):
AFGHANISTAN (2011)
Q1. Does any member of this household own any land that can be used for agriculture? (1) <i>Yes</i> (2) <i>No</i>
Q2. How many "gerib" of agricultural land do members of this household own? (1) <i>If less than 1, record "000"</i> (2) <i>If 995 or more, record "995"</i> (3) <i>If unknown, record "998"</i>
Q3. Does this household own any livestock, herds, other farm animals, or poultry? (1) <i>Yes</i> (2) <i>No</i>
Q4. How many of the following animals does this household have: (1) <i>__Cattle/Milk cow/Bulls</i> (2) <i>__Horses/Donkey/Mules</i> (3) <i>__Goats</i> (4) <i>__Sheep</i> (5) <i>__Chickens</i> (6) <i>__Ducks/turkeys</i>
CAMBODIA (2008)
Q1. Does any member of this household engaged in the following activities ? (1) <i>Crop growing</i> (2) <i>Livestock farming</i> (3) <i>Other activities: Fishing, Other household based production or services</i>
COOK ISLANDS (2011)
Q1. What type of agriculture activity is this household mainly engaged in? <i>Include raising livestock, floriculture, etc.</i> (1) <i>Subsistence only</i> (2) <i>Commercial only</i> (3) <i>Subsistence and commercial</i> (3) <i>No agriculture</i>
Q2. Apart from raising animals what crops does your household grow? (1) <i>Vegetables</i> (2) <i>Fruit and trees crops</i> (3) <i>Flowers</i> (4) <i>Other, specify</i>
Q3. If your household is engaged in commercial, did your sales of crops in the last 12 months exceed NZ \$ 1000? (1) <i>Yes</i> (2) <i>No</i>
Q4. Does your household consume/use coconuts? (1) <i>Yes fill details below</i> (2) <i>No</i> (a) <i>Coconut use</i> (b) <i>For human consumption</i> (c) <i>Animals</i> (d) <i>Other use</i>
Q5. What fishing activity is this household mainly engaged in ? a) <i>Engaged in: (1) Subsistence (2) Commercial (3) No fishing activity</i> b) <i>Location: (1) Only in reef (2) Only outside reef (3) Both in and outside reef</i>
Q6. Is this household engaged in pearl farming even if only one member of household? (1) <i>Yes</i> (2) <i>No</i>
Q7. How many items of fishing equipment are owned by the members of this household ? (1) <i>__Speargun</i> (2) <i>__Canoe</i> (3) <i>__Boat</i> (4) <i>__Fishing rod imported</i> (5) <i>__Fishing rod local</i> (6) <i>__Fishing net</i> (7) <i>__Scuba(full set)</i> (8) <i>__Hooka(full set)</i> (9) <i>__Outboard motor</i>
Q8. How many items of farm machinery are owned by members of this household? (1) <i>__Tractor</i> (2) <i>__Rotary hoe</i> (3) <i>__Mist blower</i> (4) <i>__Grass cutter</i> (5) <i>__Motor mower</i> (6) <i>__Disc</i> (7) <i>__Plough</i> (8) <i>__Tyne</i> (9) <i>__Slasher</i> (10) <i>__Knapsack</i>

FIJI (2007)
<p>Q1. What is the type of tenure of the land this household occupies? <i>(1) Freehold (2) Lease from state (3) Lease from NLTB (4) Occupy without legal arrangement, state or freehold land (5) Occupy native land with formal or informal arrangement (6) Occupy through traditional village tenure (7) Other, specify ___</i></p>
<p>Q2. Apart from this site being the residential quarters for this household, are there any other land uses or regular activities carried out on this site by this household? <i>(1) Run a shop canteen (2) Farm for household (3) Farm produce for sale (4)</i></p>
<p>Q3. How many of the following livestock and pets does this household own? (state number) <i>(1) ___Cows (2)___Pigs (3)___Goats (4)___Horses (5)___Poultry (6)___Dogs (7)___Cats</i></p>
MONGOLIA (2010)
<p>Q1. Does your household have any livestock or domestic animals? <i>For registration as agricultural household</i> <i>(1) Yes, (2)No.</i></p>
<p>Q2. Did your family cultivate in 2010? <i>(For registration as agricultural household)</i> <i>(1) Yes, (2)No.</i></p>
<p>Q3. What is the number of livestock and domestic animals owned by your household? <i>(in the main form)</i> <i>(1) ___Pig, (2) ___Poultry, (3)___ Reindeer, (4) ___Donkey, (5) ___Bees(hives), (6)___Rabbit.</i></p>
<p>Q4. What is the area sown in 2010(m²)? <i>(1) ___Total, (2)___Cereals, (3) ___Potato, (4)___Vegetables. <i>(in the main form)</i></i></p>
NEPAL (2011)
<p>Q1. Does your household operate any land for agricultural purpose? <i>(1)Yes, (2) No</i></p>
<p>Q2. What is the total area of the land in different local units? <i>(1) ___Bigha, (2)___Katha,, (3)___Dhur, (4)___Ropani, (5)___Ana, (6)___Paisa</i></p>
<p>Q3. Does your household raise livestock/poultry for agriculture purpose? <i>(1) Yes, (2) No.</i></p>
<p>Q4. What is the number of livestock/poultry raised by your household? <i>(1) ___Cow, (2)___Buffalo, (3) Yak/Nak/Chauri, (4))___Horses, (5)___Sheep, (3)___Goats, (4)___Cattle, (5)___Chicken, (6)___Duck, (7)___Other.</i></p>
NIUE (2006)
<p>Q1. How many pigs does this household own in total? <i>(1) Males (2)Females</i></p>
<p>Q2. How many pigpens does the household own in total?</p>
<p>Q3. Over the last 12 months how many plantations did the household have in total?</p>
<p>Q4. How many plantations were eaten by pigs?</p>
TIMOR LESTE (2010)
<p>Q1. Did any member of this household operate land for purposes of crop production during the last 12 months? <i>(1) Yes (2) No</i></p>
<p>Q2. Did any member of this household do livestock rearing during the last 12 months? <i>(11July 2009 to date)</i> <i>(1) Yes (2) No</i></p>
<p>Q3. In the last 12 months (11 July 2009 – to date) did your household grow any crops, either temporary or permanent, to support the household? Write (1) or (2) for each crop. <i>(1) Yes (2) No</i></p>

<p><i>__Rice, __Maize, __Cassava., __ Végétales, __Fruits (temporary), __Fruits (permanent), __Coffee, __Coconut, __Other temporary crops, __Other permanent crops.</i></p>
<p>Q4. What is the number of livestock currently owned by your household? <i>(1) __Chickens, (2)__Pigs, (2) __Sheep, (3)__Goats, (4)__Horses (5)__Cattle</i></p>
<p>VANUATU (2009)</p>
<p>Q1. Does this household have any livestock? (state number in appropriate box) <i>(1) Cattle (2) Pigs (3) Goats (4) Horses</i></p>
<p>Q2. Which of the following cash crops are grown by the household? <i>(1) None (2) Kava (3) Coconut (4)Cocoa (5) Coffee (6) Sandal (7) Pepper (8) Vanilla (9) Other</i></p>
<p>Q3. Land tenure <i>(1) Customary (2) Rural Lease (3) Urban Lease (4) Occupy with informal arrangements (5) Other</i></p>
<p>Q4. Has this household been involved in fishing in the last 6 months? <i>a) Marine (1) No (2)Subsistence only (3) Sale only (4) Both b) Fresh water (1) No (2)Subsistence only (3) Sale only (4) Both</i></p>