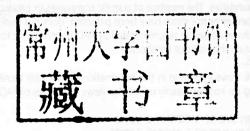
2000 WORLD CENSUS OF AGRICULTURE

Methodological Review (1996-2005)



2000 World Census of Agriculture

Methodological Review (1996-2005)



The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar

The views expressed in this information product are those of the author(s) and do not necessarily reflect the views or policies of FAO.

ISBN 978-92-5-107837-2 (print) E-ISBN 978-92-5-107838-9 (PDF)

nature that are not mentioned.

© FAO 2013

FAO encourages the use, reproduction and dissemination of material in this information product. Except where otherwise indicated, material may be copied, downloaded and printed for private study, research and teaching purposes, or for use in non-commercial products or services, provided that appropriate acknowledgement of FAO as the source and copyright holder is given and that FAO's endorsement of users' views, products or services is not implied in any way.

All requests for translation and adaptation rights, and for resale and other commercial use rights should be made via www.fao.org/contact-us/licencerequest or addressed to copyright@fao.org.

FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org.

FOREWORD

Beginning with the 1950 round, FAO has been preparing and advocating decennial Programmes for the World Census of Agriculture (WCA), and the 2000 Programme was the sixth in the series. These Programmes have provided guidance to countries in conducting agricultural censuses following standard concepts, definitions and classifications, and at the same time have promoted the availability of internationally comparable data on the structure of agriculture.

FAO member countries provide the reports of their agricultural censuses to the FAO Statistics Division. Key data on the structure of agriculture and related metadata obtained through the country reports are then disseminated through the FAO website. At the end of each round, FAO publishes a report consolidating the global information about the census conducted during the round. The report contains a compendium of metadata and key data of country censuses, internationally comparable data on selected variables characterizing the structure of agriculture in the world, and a methodological review of the censuses conducted during the round.

For the WCA 2000 round (1996-2005), the traditional contents of WCA reports have been presented in three separate publications. Two of the publications have already been issued. The first publication, a compendium of metadata and key data, was published as FAO Statistical Development Series 12. The second publication in the series, FAO Statistical Development Series 13, presents internationally comparable data on selected variables characterizing the structure of agriculture.

The current publication, which is the third report in the series, relates to a methodological review of the censuses carried out during the WCA 2000 round. Many of the findings included in the report were already used in preparation of the Programme for the WCA 2010 round. Being part of a series of the similar methodological publications since the inception of the WCA Programme, this book serves as a unique reference document for understanding the evolution of strategies and methods of data collection on structural aspects of agriculture. The material presented in this book is expected to serve as research input for further developments in methodologies of agricultural censuses and surveys.

Pietro Gennari

The Director Statistics Division

ACKNOWLEDGEMENTS

This publication has been possible due to the efforts of a dedicated team of staff and experts led by Mukesh K. Srivastava, Team Leader, Agricultural Censuses and Surveys, who besides conceiving the content and analytical framework of the publication provided technical guidance during the entire process of its preparation.

Basic work of compilation of information for the publication was carried out by Edward Gillin, Senior Statistician, and Paolo Amici, Consultant. Giorgi Kvinikadze, Statistician, produced the first complete draft of this publication, carefully verifying the information from relevant sources, and drawing meaningful conclusions. Adriana Neciu, Consultant, provided research support. The final technical and editorial suggestions made by David Marshall, retired FAO Senior Statistician, led to significant improvement of the report. Tomaso Lezzi and Marianne Sinko carried out the layout of the publication.

ABBREVIATIONS AND ACRONYMS

Agricultural Holding AH

Computer Assisted Personal Interview CAPI Computer Assisted Telephone Interview CATI

FA **Enumeration Area** EU European Union

Food and Agriculture Organization of the United Nations FAO built of State of Annihometer Sent his Attitude of State of State

HH Household

Intelligent Character Recognition **ICR** International Institute of Agriculture IIA

Optical Character Recognition OCR Optical Mark Recognition OMR

PC Population Census

Post Enumeration Survey PES Primary Sampling Unit **PSU** Statistical Development Series SDS

Secondary Sampling Unit SSU United Nations Statistics Division UNSD World Census of Agriculture WCA

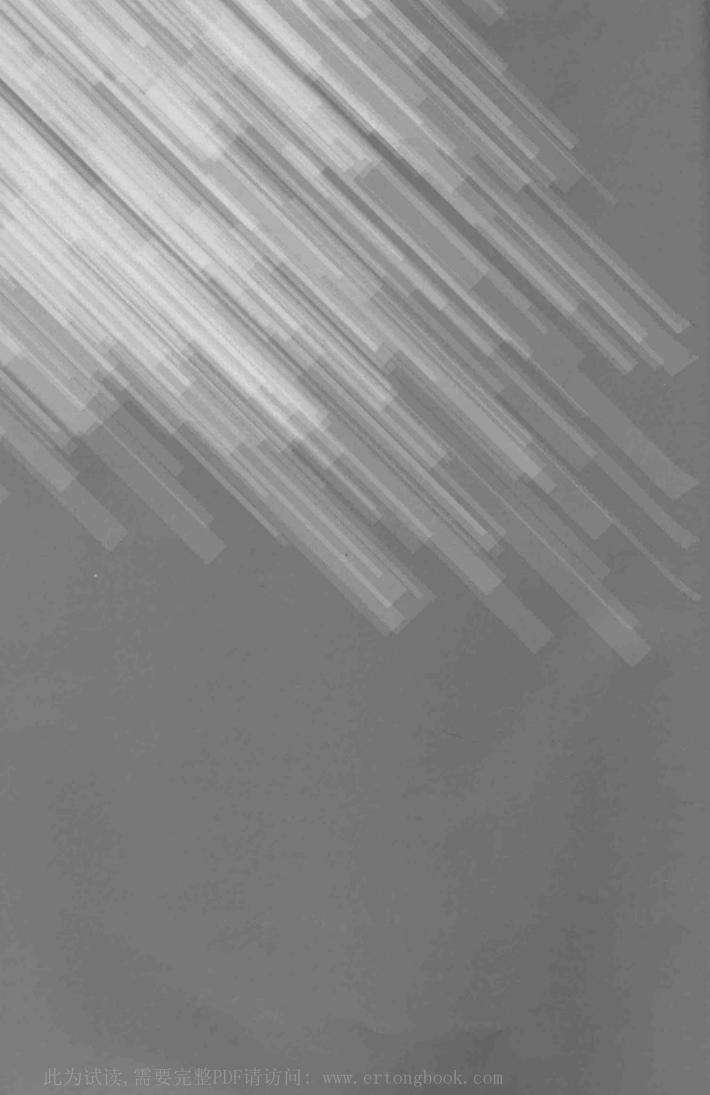
TABLE OF CONTENTS

FOREWORD ACKNOWLEDGEMENTS	vi vii
ABBREVIATIONS AND ACRONYMS	viii
PART ONE	1
Report on the 2000 World Census of Agriculture	1
INTRODUCTION	3
CHAPTER 1: THE PROGRAMME FOR THE WORLD CENSUS OF AGRICULTURE 2000	5
1.1 Historical Evolution of the Programme for the World Census of Agriculture1.2 Basic Characteristics of the WCA 2000 Programme	5
CHAPTER 2: PARTICIPATION OF COUNTRIES IN THE PROGRAMME FOR THE WCA 2000 AND PREVIOUS CENSUS ROUNDS	9
2.1 Historical trends and regularity of census-taking	9
2.2 Participation of the countries in the WCA 2000 round	11
CHAPTER 3: ENUMERATION METHODS AND DATA COLLECTION TECHNIQUES	15
3.1 Enumeration methods: complete versus sample enumeration	15
3.2 Sample designs	16 18
3.3 Data collection te chniques	18
CHAPTER 4: CENSUS FRAMES	21
4.1 Area frames and list frames	21
4.2 Classification of frames used in the WCA 2000 round	22
4.3 Frames used for censuses conducted exclusively by complete enumeration	
and frames used for sampling components of censuses.	23
4.4 Frames used for complete enumeration components of the censuses	STATE OF
with a sampling component	24
CHAPTER 5: COVERAGE	27
5.1 Restrictions on geographical coverage	27
5.2 Restrictions on holdings' coverage	29
Li (Fill (-Bitt) from 0105 JOW mit	
CHAPTER 6: SCOPE	31
6.1 Category 01: Identification	32
6.2 Category 02: General characteristics	32
6.3 Category 03: Demographic characteristics	35
	37
	39
	41
6.7 Category 07: Livestock 6.8 Category 08: Machinery and equipment	45 47
6.0. G-t	
6.40.6	48
	40
CHAPTER T. DATE DESCRIPTION OF THE PARTY AND	51
7.1 Data entry and processing	51
7.2 Classification variables and classes used for tabulations	53

CHA	PTER 8: QI	JALITY ASSURANCE OF CENSUS DATA	63
	8.1. Quali	ty assurance during the preparatory phase of the census	63
		ty assurance during the field work	64
	8.3. Quali	ty assurance after the census enumeration	65
CHA	APTER 9: DI	SSEMINATION OF CENSUS RESULTS	67
	9.1 Time	gap between enumeration and publication	67
	9.2 Coun	try practices	68
CHA		NTEGRATION OF THE CENSUS OF AGRICULTURE WITH OTHER CENSUSES	69
		sus of agriculture and census of population	69
		sus of agriculture and census of forestry	71
		sus of agriculture and aquaculture and/or fishing census.	72
	10.4 Cens	sus of agriculture and community level data.	74
LICT	OF TABLE	THE CONTRACTOR OF THE PROPERTY	
LIST	OF TABLE		10
	Table 2.1	Number of countries having participated in the WCA rounds by region and by round	10
	Table 2.2	Numbers of countries by regularity in census-taking	11
	Table 2.3 Table 2.4	Timing of censuses during the WCA 2000 round	
	Table 3.1	Mode, median and range of variation of the time gap between the last two censuses Number of censuses of the WCA 2000 round by enumeration method	14 15
	Table 3.1		17
	Table 3.2	Number of censuses of the WCA 2000 round by sample design Number of censuses of the WCA 2000 round by different techniques	17
	Table 5.5		10
	Table 4.1	for collecting the census data	19 23
	Table 4.1	Number of complete enumeration censuses by type of census frame	23
	Table 5.1	Number of sample censuses by type of sampling frame	27
	Table 5.1	Number of censuses by coverage Censuses excluding some geographical areas by reason of exclusion	28
	Table 5.2	Censuses excluding some holdings by type of exclusion	29
	Table 5.3	Number of censuses by coverage of census item categories	32
	Table 7.1	Reporting countries by main computer software used for data entry	52
	Table 7.1	Reporting countries by main computer software used for data entry	32
	10016 7.2	and tabulation	52
	Table 9.1	Distribution of number of censuses of the WCA 2000 round according	32
	Tubic 5.1	to the time gap between the end of field enumeration and the publication	
		of census results	67
		EDARENCO : ENRIC	
MA	P		
	Map 1	Countries that conducted an agricultural census during	
		the WCA 2000 round (1996-2005)	12
		PERSON SCORE	
LIST	OF BOXES	C1 Category (N: Identification	
	Box 3.1	Examples of sample design:	18
	Box 5.1	An example of sample enumeration of holdings below the threshold	30
	Box 6.1	Some questions used to identify holding and holder addresses	33
	Box 6.2	Legal status data collected in selected censuses	34
	Box 6.3	Some examples of collecting demographic and employment information	
		on household members	36
	Box 6.4	Some examples of collecting employment data for non-household members	38
	Box 6.5	Some examples of land use classes used by countries	40
	Box 6.6	Some examples of land tenure classes used by countries	42
	Box 6.7	Country practices of data collection on temporary crops	43
	Box 6.8	Country practices of data collection on permanent crops	44
	Box 6.9	Country practices of livestock data collection	46
	Box 6.10	Country practices of data collection on Machinery and equipment	47
	Box 6.11	Country practices of data collection on buildings and structures	49

Box 7.1	Size classes of total area of holding used by some countries	54
Box 7.2	Size classes of total area of agricultural land or its proxies used by some countries	55
Box 7.3	Size classes of livestock numbers used by some countries	57
Box 7.4	Size classes of number of permanent agricultural workers used by some countries	58
Box 7.5	Country practices of classification by land tenure	59
Box 7.6	Legal status classes used by selected countries	59
Box 7.7	Size classes of holder's household used by some countries	60
Box 7.8	Holder's age classes used by some countries	61
Box 7.9	Country practices of classification according to irrigation	62
Box 8.1	Example of good practice in quality assurance	64
Box 8.2	Examples of good practice in quality assurance	65
Box 8.3	Examples of good practice in quality assurance	66
Box 9.1	An example of good practice in reporting census results	68
Box 10.1	Screening questions included in the Population Census to identify agricultural holdings	70
Box 10.2	Population Census and Agricultural Census undertaken as a joint operation	71
Box 10.3	Examples of integration of agricultural and forestry censuses	72
Box 10.4	Examples of integration of agricultural and aquaculture/fishing censuses	73
Box 10.5	Examples of community-level data collection	74
ar Iral bridge		
PART TWO		
Annex - De	tailed tables	75
	ANNEX TABLES	77
	NS USED IN THE ANNEX TABLES A4 AND A6	77
	Comparison of items between the 2000 and 1990 WCA Programmes	78
	Agricultural censuses conducted in the WCA 2000 and previous WCA rounds.	82
	Time-related characteristics of reported censuses of the WCA 2000 round	87
	Enumeration methods and sample designs used in the WCA 2000 round	91
	Enumeration Techniques used during the WCA 2000 round	94
	Census Frames used in the WCA 2000 round	97
Table A7		100
Table A8		103
Table A9	Coverage of census item categories in the WCA 2000 round	108
REFERENCES		111

PART ONE
Report on the
2000 World Census of Agriculture



INTRODUCTION

The first Programme for the World Census of Agriculture (WCA) was developed for the years 1929-1930 by the International Institute of Agriculture (IIA) and implemented in about 60 countries. The 1940 round could not be completed due to the onset of World War II. FAO, having succeeded the IIA, took over the task of organizing the World Census of Agriculture starting from the 1950 round and continued with successive decennial Programmes. The Programme for the WCA 2000 was the eighth decennial international agricultural census Programme.

The Programme for the WCA, on the one hand, serves to promote the availability of internationally comparable data on the structure of agriculture whilst, on the other hand, it provides much needed guidance to countries in collecting the data following standard concepts, definitions and classifications. In many developing countries an agriculture census is a unique source of information on the productive structure of the agricultural sector. An agriculture census lays down the foundations of the agriculture statistics system for a country in the sense that it provides: (1) sampling frames for current surveys and 'ad hoc' specialized surveys, and (2) benchmark data to verify the reliability of data produced by other sources.

With the FAO leadership of the WCA, country participation in this Programme has been increasing over time — from 81 countries in the1950 round to 111 countries in the 1970 round and 122 countries in the 2000 round. Also an increasing degree of regular periodicity of the censuses has been observed among countries, particularly in Europe and Asia. African countries, which earlier depended largely on donor support for the conduct of an agriculture census, are now conscious of the need to conduct an agricultural census at least once every ten years, and are increasingly using their own budget to finance the census.

Out of the 122 countries which conducted an agricultural census during the WCA 2000 round (covering the period 1996–2005), 114 countries provided their reports to FAO. The reports of agricultural censuses received by FAO from member countries serve as the basis for the preparation of internationally comparable data and for studies on methodological issues related to taking an agricultural census.

At the end of each round FAO publishes a report consolidating the global information on structure of agriculture. The report contains a compendium of abstracts of country censuses, internationally comparable data on selected variables characterizing the structure of agriculture in the world, and a methodological review of the censuses conducted during the round.

Keeping in mind the coverage of countries and the available data in the 2000 round, the traditional contents of the report on the WCA 2000 round are now presented in three publications. Two of them have already been issued. The individual country results and the metadata on the country censuses are presented in the publication '2000 World Census of Agriculture: Main Results and Metadata by Country (1996 - 2005)' (FAO, 2010), while internationally comparable data on selected variables are presented in the publication '2000 World Census of Agriculture: Analysis and International Comparisons of Results (1996 - 2005)' (FAO, 2013). The present publication is the third in the series and presents a methodological review of the censuses conducted during the period covered by the WCA 2000 round.

The current publication consists of ten chapters.

Chapter one refers to the basic characteristics of the WCA 2000 Programme. It sets it in the perspective of the previous Programmes and highlights the main changes in methodological developments over time. A summary of the changes in the essential items of the WCA 2000 Programme with respect to the 1990 Programme is provided in Annex Table A1.

Chapter two is centered on the participation of countries in the WCA rounds since the 1930 round. It provides summary information about the number of countries participating in the different rounds. It examines the regularity of census taking and the time gaps between the censuses.

Chapter three investigates different methods and techniques used by countries in census taking. It analyses three main enumeration methods used by countries: complete enumeration, sample enumeration and a combination of both. Various sampling techniques used by countries are summarized to identify the broad trends. Country practices in the use of various techniques for capturing census data (personal interviews, mail, and a combination of both) are also analyzed.

Chapter four reviews the census frames used by countries. It analyses the main types of frames used for complete enumeration and sample enumeration as well as the complete enumeration component of a census conducted by a combination of both methods. Various country practices on the construction of census frames are presented as examples.

Chapter five looks at the extent of the coverage of the different censuses. Ideally a census should cover all holdings in the whole country. However, for different reasons, countries usually restrict the coverage of the census, either excluding some areas (zones/regions) of the country or some types of holdings. Both types of exclusion are analyzed separately.

Chapter six focuses on the census scope and reviews country practices in adapting FAO recommendations to their national situations. Each of the ten categories of census items recommended by the FAO Programme is considered in a separate section.

Chapter seven examines country practices vis-à-vis FAO recommendations with respect to the main classification criteria and the cross-tabulations in census reports. A review of the main data entry and processing software used is also presented.

Chapter eight refers to quality issues related to the census data. Quality checks are classified broadly as: a) quality checks during the preparatory work: b) quality checks during the field work: c) quality checks after the census enumeration. The chapter analyses country practices in applying these types of quality checks.

Chapter nine refers to the dissemination of the census results. It explores the time gaps between the census enumeration and the data disseminations. The use of the web and CD-ROMs to disseminate census results in different ways is specifically analyzed.

Chapter ten analyses the integration of the census of agriculture, during the WCA 2000 round, with other surveys/censuses. Each section is dedicated to country experiences in coordinating the agricultural censuses of the WCA 2000 round with other sources used for the collection of primary data, in particular: population censuses, forestry censuses, aguaculture and/or fishery censuses, and community surveys.

Throughout the whole publication, boxes illustrate particular country examples. A number of summary tables are presented in the text while detailed country level tables are provided in the Annex for reference. The data/information presented in the tables of the Annex have been prepared based on available information. Assumptions have been made only in exceptional cases, and these assumptions have been explained in notes and footnotes, wherever possible.

CHAPTER 1 The Programme for the World Census of Agriculture 2000

1.1 Historical evolution of the Programme for the World Census of Agriculture

While the history of the agricultural censuses starts in 1840 in the United States of America, the idea of a World Census of Agriculture (WCA), a census of agriculture conducted in all countries practically simultaneously, along similar lines and on the basis of the same principles, was conceived only in the early twentieth century by the International Institute of Agriculture (IIA), Rome. The development of this idea led to the first World Census of Agriculture carried out in 1930 under the auspices of the IIA.

It was the intention of the IIA that the WCA 1930 should be the first of a series of World Censuses of Agriculture to be undertaken every ten years. Another WCA, therefore, was planned for 1940. Preparations were made, but the Second World War interfered with the full implementation of the WCA 1940 Programme, leaving it incomplete.

FAO, having succeeded the IIA after the Second World War, launched the WCA 1950 and successive decennial Programmes. Since then, the World Census of Agriculture has become an established international activity. The Programme for the WCA 2000 was the eighth Programme in the series, covering the agricultural censuses to be conducted during the period 1996-2005.

The Programme for the WCA 1930 was designed as the 'Standard Form of Schedule' to be used by all countries. This was a list of items that were considered important for inclusion in a census of agriculture together with some explanatory information. All countries were urged to include in their census all the questions proposed in the Standard Form. The Programme fixed the census year as 1929 for the Northern Hemisphere countries and 1930 for the Southern Hemisphere countries.

Each subsequent Programme was enriched with the experience of the previous Programmes from both the methodological and operational points of view. The next paragraphs of this section briefly describe the evolution of the WCA Programmes from 1940 to 1990.

The WCA 1940 Programme was designed basically in the same format as the 1930 Programme as the 'Standard Form of Schedule'. However, it contained not only a modified form with introductory and explanatory notes, but also recommendations as to the manner of preparing and organizing the census and tabulating and publishing the results. The census year was still fixed – 1939 for the Northern Hemisphere and 1940 for the Southern Hemisphere. This restriction, however, was slightly relaxed, compared to the WCA 1930, allowing countries to choose a year as close as possible to the recommended year in the case of unavoidable circumstances that prohibited the taking of the census in the designated year.

In the WCA 1950 Programme, which was the first Programme developed by FAO, a considerable evolution can be observed regarding the purpose of the census. While the 1930 and 1940 Programmes placed, at the forefront, the determination of accurate and comparable information on the areas under crops, numbers of livestock and quantities of various products entering into the consumption chain, the 1950 Programme brought forward the idea of collecting data on the structural characteristics of agriculture as the primary purpose of the census. This focus on the structural characteristics of agriculture, that change relatively slowly over time, is maintained in all subsequent Programmes. In the 1950 Programme emphasis was put on methodological and operational aspects to make them fit local circumstances. Another new element in the Programme was the existence of both the short list of essential census information, which should be collected by all countries, and an extended list which contained items considered of secondary importance. The 1950 Programme also gave increased attention to the definitions of census items and the tabulation of results.

The WCA 1960 Programme accomplished a quantum jump in census methodology as it introduced the use of sampling methods in census-taking, including post-enumeration sample surveys. The option to use sampling

methods increased the number of countries participating in the census of agriculture. The Programme did not, however, introduce substantial changes in the list of items to be collected or their definitions, but it considerably altered the way they were presented. All the proposed census items were arranged into ten sections according to the subject matter and each section consisted of an introduction, proposed items in the short and expanded lists (short list printed in bold type), definitions and explanatory notes, and the tabulation plan. The issue of the relationship between the agricultural and the population censuses was also raised in the 1960 Programme for the first time.

The WCA 1970 Programme introduced the concept of the place of the census of agriculture in the overall system of agricultural statistics, indicating that: (a) agricultural censuses offer an excellent base and framework for planning surveys to produce agricultural statistics; (b) their data can also be used as a bench-mark and as supplementary information for improving the provision of current agricultural statistics; (c) technical and organizational training of the personnel required for carrying out the agricultural census can be exploited for the purpose of organizing other agricultural surveys. The Programme continued to provide guidance on methodological issues related to census-taking. It elaborated on the use of sampling methods at various stages of the census, including their use in pilot censuses and pre-testing surveys, in post-enumeration surveys for checking the quality of data, in controlling processing errors, in tabulation of results, etc. As regards the items to be collected in the census, the 1970 Programme, while retaining the structure of its predecessor, introduced some additional features. Among the major additions was an entirely new section dealing with the association of agricultural holdings with other industries.

The new recommendations of the WCA 1980 Programme were as follows: the census of agriculture should be used as the basis for the collection of current agricultural data through improved methods; it should be utilized for the development and improvement of an overall Programme of food and agricultural statistics; the concepts, definitions and methods should be harmonized with other related statistical systems to ensure comparability and compatibility; well trained and experienced data-collection staff should be retained; more elaborate tabulations, made possible by advances in electronic data processing, should be produced; each country should have greater flexibility and more freedom in adapting the Programme. For the first time, a special chapter was dedicated to guidelines on the preparation and organization of a census of agriculture. The 1980 Programme was the first to explicitly indicate that it referred to national censuses undertaken by countries during the whole decade centred on the reference year of the round.

The WCA 1990 Programme, while recognizing differences in the level of economic and statistical development, encouraged countries to develop and implement the agricultural census according to their national capabilities and requirements. It had three basic characteristics: (a) care was taken that concepts, definitions and classifications used in the census were harmonized with those used in other data sources, both agricultural and non-agricultural; (b) the scope of the data to be collected during the agricultural census was more limited than in previous Programmes; and (c) extensive cross-tabulations were recommended to ensure the maximum use of the census data. The Programme encouraged a complementary relationship between the agricultural census and more frequent food and agricultural sample surveys as well as with related non-agricultural censuses and surveys.

The next section briefly overviews the basic features of the WCA 2000 Programme and the new elements it introduced.

1.2 Basic characteristics of the WCA 2000 Programme

Changes in the WCA 2000 Programme, compared to previous WCA Programmes, were kept to a minimum. The Programme defined a census of agriculture as 'a large-scale periodic statistical operation for the collection of quantitative information on the structure of agriculture'.

The Programme defined three basic objectives of an agricultural census, to:

 Provide aggregate totals for fundamental structural variables that change relatively slowly, to be used as benchmarks for inter-censal estimates;

- Provide a frame for agricultural sample surveys in the form of lists of holdings with some characteristics useful for stratification;
- Provide data for small administrative units and detailed cross-classifications of farm structural attributes.

The WCA 2000 Programme noted that these basic objectives might be too restrictive for some countries. However, limiting the basic objectives in this way came as a direct result of the negative experiences of many developing countries attempting agricultural censuses with wide objectives but without sufficient statistical capacity and resources. For countries with developed statistical systems and sufficient capacity and resources, some additional objectives were, therefore, proposed. The broader objectives included: obtaining benchmark data for improving current crop production estimates, obtaining detailed data on livestock characteristics (such as type, age, sex, breed, use, etc.), and obtaining detailed data on the characteristics of the agricultural population and on the various inputs used for agricultural production. Countries were cautioned, however, that when adding additional census objectives, they should ensure that the basic objectives would not be adversely affected.

The WCA 2000 Programme considered in detail the organizational aspects of census-taking, giving recommendations concerning the establishment of a legal basis for the census, the creation of a census committee, the designation of an agency responsible for conducting the census, budget preparation, publicity, staff recruitment, cartographic preparation, preparation of the holding list, designing the questionnaires and tabulation plan, preparation of field instruction manuals, training of enumerators and supervisors, pre-testing census instruments and conducting a pilot census, the enumeration process, data processing, quality checks and post-enumeration surveys, and the dissemination of the census results.

From the methodological point of view, the WCA 2000 Programme basically followed the recommendations of its predecessors. The agricultural holding was recommended as the statistical unit of the census. It was defined as 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. The Programme noted, however, that under this approach all land not operated by such agricultural holdings (such as communal grazing land, fallow land under shifting cultivation etc.), which may be important in many countries, would not be covered by the agricultural census.

The activities recommended to be covered by the agricultural census are included in the International Standard Industrial Classification of All Economic Activities, third edition (ISIC) groups 011 (Growing of crops, market gardening, and horticulture), 012 (Farming of animals) and 013 (Growing of crops combined with farming of animals). The WCA 2000 Programme was the first one to provide an explicit link to an international classification in its endeavour to ensure uniformity in concepts, definitions and classifications with those from other data sources. Economic units engaged solely in (a) hunting, trapping and game propagation; (b) forestry and logging; (c) fishing; or (d) agricultural services, were not considered as agricultural holdings and, therefore, considered outside the scope of the census.

The WCA 2000 Programme provided an evaluation of the advantages and disadvantages of using complete or sample enumeration for conducting an agricultural census. It argued that although complete enumeration was desirable if the full objectives of an agricultural census were to be achieved, countries facing capacity and resource constraints should also consider conducting their census on a sample basis. If properly conducted, a sample enumeration may produce even better quality data than a complete enumeration, at the national and higher administrative levels, owing to the reduction of non-sampling errors, though it was also noted that the third objective of providing data for small administrative units could not be easily achieved through sampling. The WCA 2000 Programme, therefore, noted that best solution may be achieved by combining both complete and sample enumeration methods.

Special attention was given to such important issues as census frames, coverage of holdings, data tabulation, and dissemination of census results. The detailed recommendations of the WCA 2000 Programme on these and other topics are considered in the subsequent chapters of the present review.

For the first time the WCA 2000 Programme explicitly introduced the issue of the role of women in agriculture. It admitted that although it was widely recognized that women's participation in agriculture

was of great importance, their contribution to agricultural development was in most cases inaccurately reported and often under-estimated. The WCA 2000 Programme, therefore, placed emphasis on the need to present the census results disaggregated by sex, and to take this requirement into account throughout the process of census planning, questionnaire design, data collection, processing and dissemination. It also recommended that even the smallest agricultural holdings should be included in the coverage of the census to ensure that the role of women is properly reflected.

As in previous Programmes, of the whole range of the data items recommended for the census, a subset called 'essential items' was singled out, identified by an asterisk '*'. These items were considered of priority importance for national and international purposes. Definitions and explanations of concepts were generally the same as those in earlier Programmes. Most definitions related exclusively to agricultural statistics. Other general definitions were those recommended by other United Nations agencies to ensure comparability between agricultural census results and data collected through other sources.

There were some changes between the 1990 and 2000 Programmes as regards the list of data items, both essential and recommended. For instance, a new item 'Purpose of production' was introduced in the WCA 2000 Programme as an essential item. Some items concerning irrigation and drainage, recommended to be collected for the whole holding in the 1990 Programme, were recommended to be collected at the parcel level in the 2000 Programme. Annex Table A1 provides a detailed comparative picture of the items included in the 1990 and 2000 WCA Programmes.

An important innovation of the WCA 2000 Programme was the introduction of a set of items, called 'items with environmental implications' and marked by '#', which were supposed to be useful to countries in dealing with environmental issues. This was done in response to a global public and governmental concern about the environment which had been expressed at many international forums, such as 'The United Nations Conference on Environment and Development (UNCED)' and its follow up (Agenda 21). The Programme, however, noted that many of these items were difficult to collect during the census enumeration and may require special qualified training and instruments and, perhaps, specific surveys.

Shortly after the publication of the WCA 2000 Programme, two supplements were issued: 'Guidelines on Employment' (FAO, 1997a) and 'Guidelines on the Collection of Structural Aquaculture Statistics' (FAO, 1997b). The former was a result of the joint efforts of the FAO Statistics Division and the International Labour Office (ILO), Bureau of Statistics. Its preparation was brought about by the necessity to improve the concepts, definitions and standards used to collect employment information in agricultural censuses and make them compatible with recommended international standards. The latter was a recognition that aquaculture (fish farming) had many similarities to crop and livestock farming and was often conducted at the household level. It was intended to assist countries, particularly in Asia, to improve their current surveys in aquaculture and to provide a framework for those countries planning to develop a database on aquaculture. The publication of this supplement was a result of the joint efforts of the FAO Statistics Division and the FAO Fishery Information, Data and Statistics Unit in response to a decision of the Fifteenth Session of the Asia and Pacific Commission on Agricultural Statistics (APCAS) recommending FAO to give consideration to including aquaculture in the Agricultural Census Programme.