

CHAPTER 7

COMBINING THE CENSUS OF AGRICULTURE WITH THE AQUACULTURAL CENSUS

WCA 2010 provides the option to carry out an aquacultural census in conjunction with the census of agriculture. This chapter discusses the main issues to be considered by countries in taking this approach. A proposal for an integrated census of agriculture and aquaculture is presented, based on the modular approach. The use of common concepts and definitions for the two censuses is discussed, and the potential for using a single core questionnaire for the collection of data for both censuses is highlighted.

Introduction

7.1. Aquaculture has become increasingly important in many countries, and there is a growing demand for data on the structure of the aquacultural production industry. Some countries collect aquacultural data as part of a general fisheries census, covering both capture fisheries and aquaculture. However, there is a strong interest in many countries to link aquaculture with agriculture by carrying out the agricultural and aquacultural censuses together.

7.2. Agriculture and aquaculture are seen to be closely related because:

- Aquaculture involves the raising of fish in captivity or cultivation of aquatic plants, which is analogous to raising of livestock or cultivation of crops under agricultural production.
- Aquaculture is often integrated with agricultural production, such as in rice-cum-fish culture.
- Aquaculture and agriculture commonly share the same inputs, such as machinery and labour.

7.3. Apart from the close links between agriculture and aquaculture, there are other advantages in carrying out a joint agricultural/aquacultural census:

- The cost of data collection for the two censuses is reduced.
- It can help to provide a link between agricultural and aquacultural data, enabling a wider analysis of data in both censuses.
- It makes it easy to apply standard concepts and definitions in the two censuses.
- There would be organizational benefits in having one enumeration team responsible for data collection in both censuses.

7.4. In the past, the only aquacultural data included in the agricultural census programme were a few items on aquacultural production carried out by agricultural holdings in association with agricultural production. This covered aquacultural activities integrated with agricultural production, or sharing the same inputs with agricultural production (see paragraph 11.292). Aquacultural data collected in this way have three main limitations:

- Aquaculture carried out independently of agricultural production is not included.
- Only limited data on the basic characteristics of aquacultural activities are collected, such as area, type, source of water, and type of organism. Data such as machinery and labour relate specifically to inputs used for agricultural production, which exclude many aquacultural inputs. Also, area of holding may not fully reflect land used for aquaculture.

- The statistical unit for an agricultural census is the agricultural holding, whereas aquacultural data should relate to the economic unit of aquacultural production.

7.5. WCA 2010, like the previous programmes, covers only agricultural production units, with aquacultural data limited to activities associated with agriculture. However, for the first time, WCA 2010 provides the option to conduct an aquacultural census at the same time as the agricultural census to cover all aquacultural production. Countries are strongly urged to take this option if aquaculture is an important economic activity.

7.6. It is not possible, in this document, to fully describe the concepts, definitions and methodology for aquacultural censuses. This chapter focuses on the main issues to be considered by countries in carrying out the two censuses together, with particular reference to the use of the modular approach. More information on the collection of aquacultural statistics may be found in *Guidelines on the Collection of Structural Aquaculture Statistics* (FAO, 1997b).

Scope of the aquacultural census

7.7. According to ISIC (Rev. 3.1), agriculture and aquaculture are separate economic activities. Aquacultural production represents activities under ISIC Class 0502, whereas agricultural production is covered under the three ISIC Groups: 011, 012 and 013 (UN, 2004b). An aquacultural census therefore covers economic units in ISIC Class 0502, whereas an agricultural census covers economic units in ISIC Groups 011, 012 and 013. Statistically, the two censuses are separate, but operationally, they can often be combined into a single field enumeration system. Such a joint census is referred to as a census of agriculture and aquaculture.

7.8. Aquaculture is the farming of aquatic organisms such as fish, crustaceans, molluscs and plants, as opposed to other forms of aquatic exploitation such as capture fisheries. For more information on the definition of aquaculture, see paragraphs 11.292–11.295. A clear distinction is made between aquaculture and capture fisheries. Data on capture fisheries are rarely collected along with an agricultural census because it is analogous to hunting and gathering, which is usually out of scope of the agricultural census.

Statistical unit for the aquacultural census

7.9. The statistical unit for the aquacultural census is the aquacultural holding, defined in a similar way to an agricultural holding as follows:

“An aquacultural holding is an economic unit of aquacultural production under single management, comprising all aquaculture facilities without regard to title, legal form, or size. Single management may be exercised by an individual or household, jointly by two or more individuals or households, by a clan or tribe, or by a juridical person such as a corporation, cooperative or government agency. The aquacultural holding’s aquaculture facilities are located in one or more separate areas or in one or more territorial or administrative divisions, providing the facilities share the same production means, such as labour, buildings and machinery.”

7.10. Agricultural holdings and aquacultural holdings are distinct establishment units operating in different industries under the SNA/ISIC framework (see Appendix 1). However, they may be closely related in that they may be part of the same enterprise; for example, a household may contain both an agricultural holding and an aquacultural holding. An agricultural holding and an aquacultural holding may also share the same inputs such as land, machinery and labour; for example, as in rice-cum-fish culture.

7.11. An agricultural holding may have some own-account aquacultural production as a secondary activity. However, this should be small-scale compared with the agricultural holding’s principal agricultural production activity. If aquaculture is as important, or nearly as important, as the agricultural production activity, two units should be formed: an agricultural holding and an aquacultural holding. The same situation applies to an aquacultural holding also engaged in own-account agricultural production activities.

Basic approach for the aquacultural census

7.12. It is recommended that aquacultural censuses use the same modular approach as for agricultural censuses, with the core module providing a limited set of key data on the structure of aquacultural holdings and a sample-based supplementary module providing more detailed structural data. This approach offers a cost-effective way of producing a wide range of aquacultural data.

7.13. The agricultural census core items relate to basic structural data, such as household size and land use, and these should also be included in the aquacultural census. It is recommended that one additional aquaculture-related item – area of aquaculture by type of site – be included in the core aquacultural census module (see paragraph 7.20). The use of a common set of core items for the agricultural and aquacultural censuses may make it possible to conduct the core modules of the two censuses using the same questionnaire.

7.14. The sample-based supplementary module should include the same aquacultural items as under Theme 10 of the agricultural census (see paragraphs 11.297–11.311). A typical aquacultural module would also include items from other themes such as crops and economic activity of household members.

Methodology for a census of agriculture and aquaculture

7.15. This section presents a broad outline of the methodology for the joint census of agriculture and aquaculture and discusses the implications for the item definitions of combining the two census operations. Information on tabulations for a census of agriculture and aquaculture is given in Chapter 12.

Core module

7.16. The frame for the core modules of the census of agriculture and aquaculture can be created in various ways:

- Use a frame of households from the population census to provide the basis for identifying agricultural holdings and aquacultural holdings in the household sector in the census of agriculture and aquaculture.
- Include additional questions in the population census to identify households engaged in own-account agricultural production and/or own-account aquacultural production.
- Develop a frame of agricultural and/or aquacultural holdings from administrative sources, such as business registrations. This may be applicable for the non-household sector.

7.17. Usually, a combination of frames is used for a census of agriculture and aquaculture. The methodology used for the joint census will depend on the type of frame. If the frame for the household sector is based on households from the population census, the core modules would be conducted as follows:

- Construct the basic frame of households for the census of agriculture and aquaculture from the list of households enumerated in the population census (if the census of agriculture and aquaculture is carried out soon after the population census) or updated lists of households in population census EAs (if the census of agriculture and aquaculture is carried out some time after the population census).
- In the census of agriculture and aquaculture, ask each household some screening questions to identify households that are involved in crop, livestock or aquacultural production activities. Use this information to identify all agricultural holdings and all aquacultural holdings.
- Enumerate all agricultural holdings and aquacultural holdings to collect the core data for the census of agriculture and aquaculture.

7.18. An important element in integrating the agricultural and aquacultural censuses is the use of common items, concepts and definitions for the two censuses. Minor changes are needed to make some items applicable to both agricultural holdings and aquacultural holdings. For example, the “agricultural holder” in Items 0003 and 0004 could be renamed the “holder”, to describe the main decision-maker for either an agricultural holding or an aquacultural holding. Also, Item 0006 (main purpose of production) would need to be amended for the aquacultural census to cover income from aquacultural production.

7.19. More substantial changes may be needed for Item 0007 (area of holding according to land use types) and Item 0008 (area of holding). Area of holding in an agricultural census excludes bodies of water used for aquaculture but not owned by the holding, such as seawater (see paragraph 11.44). This is of special interest in an aquacultural census, and the definition of area of holding should be modified for a census of agriculture and aquaculture. For the purposes of measuring area of holding in the census of agriculture and aquaculture, the area of a body of water should be defined as the surface area of the water body. Also, bodies of water should be separately identified under “Other land” in the land use classification.

7.20. It is recommended that one additional aquaculture-related item be included in the core module of the aquacultural census. This item is the same as supplementary Item 1001 (see paragraphs 11.297–11.300).

0017 AREA OF AQUACULTURE BY TYPE OF SITE (for the holding)

- *Land-based*
 - *Arable land*
 - *Non-arable land*
- *Inland open water*
- *Coastal and sea water*

Supplementary modules

7.21. Census supplementary modules for the census of agriculture and aquaculture should be based on frames provided by the core modules. The supplementary modules could be surveys of agricultural holdings, aquacultural holdings, or both agricultural holdings and aquacultural holdings. For example, an aquacultural module would be based on a frame of aquacultural holdings, whereas a household food security module might cover both agricultural holdings and aquacultural holdings.

7.22. The supplementary items listed in Chapter 4 should provide the basis for designing the supplementary modules for the census of agriculture and aquaculture. Aquacultural items should be the same as in a standard agricultural census, except for Item 1001, which is recommended for inclusion in the core module. For other supplementary items, the concepts and definitions depend on the scope of the supplementary module. For a module that covers specific agricultural holdings only, the concepts and definitions given in Chapter 11 would be applicable. However, for a module covering aquacultural holdings, some changes would be needed:

- **Theme 01: Land.** If the definition of area of holding is changed to include bodies of water, additional aquacultural parcels would need to be defined. Parcels could consist of bodies of water. Special procedures would be needed for Item 0101 (location of parcel) where a parcel is not located in an administrative division, but in the sea. Item 0105 (presence of shifting cultivation) and Item 0106 (years since land cleared) would not be applicable to parcels consisting of bodies of water.
- **Theme 02: Irrigation and water management.** In a standard agricultural census, the concept of irrigation refers to providing land with water to improve crop production. This concept may be widened to also include the provision of water for aquaculture.
- **Theme 05: Agricultural practices.** As it stands, this category of items refers only to practices used for crop and livestock production. This would need to be expanded to cover aquaculture. Item 0505 should include machinery and equipment used for aquacultural production. Some additional practices specific to aquaculture may also be included.

- Theme 06: Agricultural services. These items should also cover services for aquaculture. Items 0601–0604, relating to the use of credit facilities, should include credit for aquacultural purposes. Items 0605-0606, relating to sources of information and extension services, would also need to cover services for aquaculture.
- Theme 07: Farm labour. Item 0814, relating to work on the holding, should include work in connection with aquaculture. Items 0821 and 0822, relating to employees on the holding, should include labour used for aquacultural production. Item 0823, relating to contract work on the holding, should also include work for aquacultural production.

7.23. The need for data specific to agricultural holdings or to aquacultural holdings should also be considered in developing census supplementary modules. For example, in an agricultural/aquacultural practices module, separate data may be needed on machinery used for: (i) only agriculture; (ii) only aquaculture; and (iii) both agriculture and aquaculture. Questionnaires need to be carefully designed to ensure that those needs can be met.

7.24. The sub-holding and sub-holder concepts may also need to be reviewed for a census of agriculture and aquaculture. A sub-holding is normally defined on the basis of an own-account agricultural production activity managed by a particular person (see paragraph 3.44). This may need to be widened to cover both agricultural and aquacultural activities.