

Template for the NMR

Farm Structure Survey 2010  
Survey on agricultural production  
methods 2010

**National Methodological Report (NMR)**

According to Art. 12 of Regulation (EC) No 1166/2008 of the European Parliament and of the Council of 19 November 2008 published in the Official Journal of the European Union L 321, p.14 of 1 December 2008

Member State: Iceland

# **FARM STRUCTURE SURVEY 2009/2010 SURVEY ON AGRICULTURAL PRODUCTION METHODS 2009/2010 NATIONAL METHODOLOGICAL REPORT**

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## SUMMARY

In compliance with Regulation (EC) 1166/2008<sup>1</sup>, Statistics Iceland conducted the Farm Structure Survey (including the Survey on Agricultural Production Methods and Other Gainful Activities), covering all national holdings, in 2010. The action is defined as the beginning of a regular collection of agricultural data with the use of this survey. This action has not been administered previously by the national statistical institute.

A range of administrative data sources was used for the action, however, the situation in Iceland is characterised by some shortcoming in this area. The lack of a business and a farm register, as well as the lack of any other complete data source with an overview of holdings, proved to be a complication. Administrative data sources that were utilized, such as tax registers, have units identified through individual identity numbers. In cases where more than one person from the same holding are registered that holding has multiple entries. Linkages between individuals, to establish complete holdings, had to be made after the data collection of the survey, as a part of a data clean-up phase. Time restrictions and lack of resources made it impossible for this work to be done at an earlier stage.

Agricultural holdings in Iceland are subject to the obligation of providing information on livestock to a Livestock Register administered by an official authority. Surveillance agents of this authority visit holdings to verify the information that has been provided. This register proved to be an important administrative source for the Farm Structure Survey, as it could be used for determining whether holdings were within thresholds of livestock, and data handling both for purposes of verifying responses and for procedures of filling in for missing values in the survey. The register in question is however subject to the same aforementioned limitations as the Tax register, as figures that rightfully belong to the same holding can appear more than once on different identity numbers. This furthermore could cause a mismatch between units in the two registers (with actual unit being the holding but registered unit being an individual).

Agricultural Tax Returns (available, at the time of the survey, for the year of 2009) were used for making the census of holdings. In an attempt to make up for gaps in the census caused by the time lag between availability of tax returns and the date of the survey, VAT Returns (available for 2010 at the time of the survey) were used, providing entries of value-added tax from all agricultural activity. The merged database was still insufficient for a complete coverage and a finalized census could only be ensured after Agricultural Tax Returns for 2010 had been released, in November 2011 (which was after the end of data collection period). New units due to under coverage in the frame were treated as missing units in the data.

The census (which was based on individuals from the Agricultural Tax Register and VAT) consisted of 3,241 respondents. This would correspond to 2,699 holdings after the phase of data handling and clean-up (as previously described). The survey vehicle was mixed mode: web, paper questionnaire, and telephone interviews. The data collection period started on the 17<sup>th</sup> of January 2010, when personalized log-in information for the web-based module was sent out to respondents, and ended on the 1<sup>st</sup> of June, with the last telephone interviews.

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<sup>1</sup> Regulation of the European Parliament and of the Council of 19 November 2008 on farm structure surveys and the survey on agricultural production methods.

## 1. CONTACTS

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## 2. SURVEY METHODOLOGY

### 2.1 National legislation

Statistics Iceland operates in accordance with the Icelandic law on Statistics Iceland and official statistics which is aligned with the United Nations Fundamental Principles of Official Statistics, the European Statistics Code of Practice, and the Icelandic Act on the Protection of Privacy regarding the processing of personal data. Furthermore, Statistics Iceland has laid out its own Rules of Procedure for Treating Confidential Data.

The national regulation that offers the legal basis for this action does *not* directly address specific matters concerning: scope and coverage, frequency of the census and time reference, responsibility for the census, administrative and financial provisions, obligations of the respondents with respect to census, identification, protection and obligations of enumerators. The national regulation *does* grant right of access to administrative data.

### 2.2 Characteristics and reference period

The *EU list of characteristics* was followed for this action. No additional information was collected for national purposes.

The following GENERAL characteristics, from the *EU list of characteristics*, were collected:

- Utilised agricultural area:
  - For owner farming;
  - For tenant farming;
  - For share farming or other modes;
- Organic farming:
  - The total utilised agricultural area of the holding on which organic farming production methods are applied and certified according to national or European Community rules;
  - The total utilised agricultural area of the holding that is under conversion to organic farming production methods to be certified according to national or European Community rules;
  - Area of the holding on which organic farming production methods according to national or European Community rules are either applied and certified or under conversion to be certified:
    - Cereals for the production of grain (including seed);
    - Potatoes;
    - Fresh vegetables, melons and strawberries;
  - Organic production methods applied to animal production and certified according to national or European Community rules:
    - Bovine animals;
    - Pigs;
    - Sheep and goats;
    - Poultry;

- Other animals.

Changes in definitions of GENERAL characteristics, from the *EU list of characteristics*: NONE.

The following GENERAL characteristics, *from the EU list of characteristics*, were not collected with the survey, as they were gathered from ADMINISTRATIVE DATA SOURCES:

- Latitude (within an arc of 5 minutes or less);
- Longitude (within an arc of 5 minutes or less);
- Legal personality of the holding.

The following GENERAL characteristics, from the *EU list of characteristics*, were not collected, as they were NOT EXISTENT in Icelandic agriculture:

- Organic farming:
  - Area of the holding on which organic farming production methods according to national or European Community rules are either applied and certified or under conversion to be certified:
    - Dried pulses and protein crops for the production of grain (including seed and mixture of cereals and pulses);
    - Sugar beet (excluding seed);
    - Oil seed crops;
    - Pasture and meadow, excluding rough grazing;
    - Fruit and berry plantations;
    - Citrus plantations;
    - Olive plantations;
    - Vineyards;
    - Other crops (fibre crops, etc.);
- Destination of holding's production:
  - Household consumes more than 50% of the value of the final production of the holding;
  - Direct sale to final consumers represents more than 50% of the total sales of the holding.

The following LAND characteristics, from the *EU list of characteristics*, were collected, for the reference period of the year 2010:

- Arable land:
  - Cereals for the production of grain (excluding seed):
    - Barley;
    - Other cereals for the production of grain;
  - Potatoes;
  - Fodder roots and brassicas (excluding seeds);
  - Industrial crops:
    - Rape and turnip rape;

- Seeds and seedlings;
    - Aromatic plants, medicinal and culinary plants;
  - Fresh vegetables and strawberries, of which:
    - Outdoors or under low (not accessible) protective cover;
    - Market gardening;
    - Under glass or other (accessible) protective cover;
  - Flowers and ornamental plants;
  - Plants harvested green:
    - Temporary grass;
    - Other plants harvested green;
  - Arable land seed and seedlings;
  - Other arable land crops;
- Permanent grassland:
  - Pasture and meadow, excluding tough grazing;
  - Rough grazing;
  - Nurseries;
- Fallow land:
  - Fallow land without any subsidies;
- Other land:
  - Wooded area;
    - Of which short rotation coppices;
  - Other land (land occupied by buildings, farmyards, tracks, ponds, quarries, infertile land, rock, etc.);
  - Mushrooms, irrigated area, energy crops and genetically modified crops:
    - Mushrooms;

The following LAND characteristics, from the *EU list of characteristics*, were not collected, as they are deemed NOT EXISTENT in Icelandic agriculture:

- Arable land:
  - Cereals for the production of grain (including seed):
    - Common wheat and spelt;
    - Durum wheat;
    - Rice;
  - Dried pulses and protein crops for the production of grain;
    - Of which peas, field beans and sweet lupins;
  - Sugar beet;
  - Industrial crops:
    - Tobacco;
    - Hops;
    - Cotton;
    - Sunflower;
    - Soya;
    - Linseed (oil flax);
    - Other oil seed crops;
    - Flax;
    - Hemp;
    - Other fibre crops;

- Other industrial crops not mentioned elsewhere;
  - Fresh vegetables and strawberries, of which:
    - Open field
  - Plants harvested green:
    - Green maize;
    - Leguminous plants;
    - Other plants harvested green not mentioned elsewhere;
- Fallow land:
  - Fallow land subject to payment of subsidies, with no economic use;
- Permanent grassland:
  - Permanent grassland no longer used for production purposes and eligible for the payment of subsidies:
- Permanent crops:
  - Fruit and berry plantations:
    - Fruit species, of which:
      - Fruit of temperate climate zones;
      - Fruit of subtropical climate zones;
      - Berry species;
      - Nuts;
  - Citrus plantations;
  - Olive plantations;
    - Normally producing table olives,
    - Normally producing olives for food;
  - Vineyards, of which normally producing:
    - Quality wine;
    - Other wines;
    - Table grapes;
    - Raisins;
  - Nurseries;

The following LAND characteristics, from the *EU list of characteristics*, were not collected, as the production is deemed NON-SIGNIFICANT in Icelandic agriculture:

- Arable land:
  - Cereals for the production of grain (including seed):
    - Rye;
    - Oats;
    - Grain maize;
- Flowers and ornamental plants:
  - Outdoors or under low (not accessible) protective cover,
- Plants harvested green:
  - Other plants, harvested green:
    - Green maize;
    - Leguminous plants;
- Other plants harvested green not mentioned elsewhere;
- Kitchen gardens;
- Other permanent crops:
  - Of which Christmas trees;
- Permanent crops under glass;

- Other land:
  - Unutilised agricultural land;
- Genetically modified crops;
- Mushrooms, irrigated area, energy crops and genetically modified crops:
  - Irrigated area:
    - Total irrigable area;
    - Total cultivated area irrigated at least once during the previous 12 months;
- Energy crops (for the production of bio-fuels or other renewable energy):
  - Of which on set-aside area;
- Genetically modified crops.

The following LIVESTOCK characteristics, from the *EU list of characteristics*, were collected, for reference date: October 31<sup>st</sup>, 2010:

- Equidae;
- Bovine animals:
  - Bovine animals, under one year old, male and female;
  - Bovine animals, one but less than two years old, male;
  - Bovine animals, one but less than two years old, female;
  - Male bovine animals, two years old and over;
  - Heifers, two years old and over;
  - Dairy cows;
  - Other cows;
- Sheep and goats:
  - Sheep (all ages);
  - Breeding females;
  - Other sheep;
  - Goats (all ages);
  - Breeding females;
  - Other goats;
- Pigs:
  - Piglets having a live weight of under 20 kilograms;
  - Breeding sows weighing 50 kilograms and over;
  - Other pigs;
- Poultry:
  - Broilers;
  - Laying hens;
  - Other poultry:
    - Turkeys;
    - Ducks;
    - Geese;
- Livestock not mentioned elsewhere.

Changes in definitions of LIVESTOCK characteristics, from the *EU list of characteristics*: NONE.

The following LIVESTOCK characteristics, from the *EU list of characteristics*, were not collected, as they are deemed NOT EXISTENT in Icelandic agriculture:

- Poultry:
  - Other poultry:
    - Ostriches;
- Bees.

The following LIVESTOCK characteristics, from the *EU list of characteristics*, were not collected, as they are deemed NON-SIGNIFICANT in Icelandic agriculture:

- Poultry:
  - Other poultry, not mentioned elsewhere;
- Rabbits, breeding females.

The following MACHINERY characteristics, from the *EU list of characteristics*, were collected, for reference date: October 31<sup>st</sup>, 2010:

- MACHINERY:
  - Belonging exclusively to the holding:
    - Four-wheel tractors, track-laying tractors, tool carriers;
    - Cultivators, hoeing machines, rotary hoes and motor mowers;
    - Combine harvesters;
    - Other fully mechanised harvesters;
  - Machinery used by several holdings:
    - Four-wheel tractors, track-laying tractors, tool carriers;
    - Cultivators, hoeing machines, rotary hoes and motor mowers;
    - Combine harvesters;
    - Other fully mechanised harvesters;
- EQUIPMENT:
  - Equipment used for renewable energy production by type of energy source:
    - Wind;
    - Biomass;
      - Of which bio-methane;
    - Solar;
    - Hydro-energy;
    - Other types of renewable energy sources.

Changes in definitions of MACHINERY characteristics, from the *EU list of characteristics*: NONE.

The following LABOUR characteristics, from the *EU list of characteristics*, were collected, for reference date: October 31<sup>st</sup>, 2010:

- Farm work on the holding:
  - Holder:
    - Gender;

- Age;
    - The farm work on the holding (apart from housework);
  - Manager:
    - Gender;
    - Age;
    - The farm work on the holding (apart from housework);
    - Training of manager;
    - Agricultural training of manager;
    - Vocational training undertaken by manager during the last 12 months;
  - Members of sole holder's family carrying out farm work for the holding:
    - Members of sole holder's family carrying out farm work for the holding: male:
      - The farm work on holding (apart from housework);
    - Members of sole holder's family carrying out farm work for the holding: female:
      - The farm work on the holding (apart from housework);
  - Non-family labour regularly employed:
    - Non-family labour regularly employed: male:
      - The farm work on the holding (apart from housework);
    - Non-family labour regularly employed: female:
      - The farm work on the holding (apart from housework);
    - Non-family labour employed on a non-regular basis: male and female;
    - Total number of equivalent full-time working days of farm work during the 12 months preceding the day of the survey, not included under previous categories, undertaken on the holding by persons not employed directly by the holding (e.g. contractors' employees);
- Other gainful activities:
  - Other gainful activities of the holder who is also the manager:
    - As his/her major occupation;
    - As his/her subsidiary occupation;
      - If other gainful activities are carried out:
        - Activities directly related to the holding;
        - Activities not directly related to the holding;
  - Other gainful activities of the spouse of the sole holder;
    - As his/her major occupation;
    - As his/her subsidiary occupation;
      - If other gainful activities are carried out:
        - Activities directly related to the holding;
        - Activities not directly related to the holding;
    - Non-family labour force, employed directly on a regular basis and involved in other gainful activities that are directly related to the holding:
      - As his/her major occupation;
      - As his/her subsidiary occupation.

Changes in definitions of LABOUR characteristics, from the *EU list of characteristics*:

- Farm work on the holding:
  - Holder:
    - More than one person can be defined as a holder of a farm.
  - Manager:
    - More than one person can be defined as a manager on a farm.

The following OTHER GAINFUL ACTIVITY OF THE HOLDING (directly related to the holding) characteristics, from the *EU list of characteristics*, were collected, for reference date: October 31<sup>st</sup>, 2010:

- List of other gainful activities:
  - Tourism, accommodation and other leisure activities;
  - Handicraft;
  - Processing of farm products;
  - Production of renewable energy;
  - Wood processing (e.g. sawing);
  - Aquaculture;
  - Contractual work (using production means of the holding);
    - Agricultural (for other holdings);
    - Non-agricultural;
  - Forestry;
  - Other;
- Importance of the other gainful activities directly related to the holding;
  - Percentage of the final output of the holding.

All SUPORT FOR RURAL DEVELOPMENT characteristics, from the *EU list of characteristics*, were left out, as they are deemed NOT APPLICABLE to Icelandic agriculture.

The following AGRICULTURAL PRODUCTION METHODS characteristics, from the EU list of characteristics, were collected:

- Tillage methods:
  - Conventional tillage (mouldboard plough or disk plough);
  - Conservation tillage (low tillage);
  - Zero tillage (direct seeding);
- Soil conservation:
  - Soil cover in winter:
    - Normal winter crop;
    - Plant residues;
    - Bare soil;
  - Crop rotation;
    - Share of arable area out of planned crop rotation;
- Animal grazing:
  - Grazing on the holding:
    - Area grazed during the reference year;
    - Amount of time for which animals are outdoors on pasture;

- Common land grazing:
    - Total number of animal grazing on common land;
    - Amount of time for which animals are grazing on common land;
- Animal housing:
  - Cattle
    - Stanchion-tied stable – with solid dung and liquid manure;
    - Loose housing - with solid dung and liquid manure;
    - Loose housing – with slurry;
    - Other;
  - Pigs:
    - On partially slatted floors;
    - On completely slatted floors;
    - On straw-beds (deep litter-loose housing);
    - Other;
  - Laying hens:
    - Battery cage (all types);
      - Battery cages with manure belt;
      - Battery cage with deep pit;
      - Battery cage with stilt house;
      - Other;
- Manure application:
  - Utilised agricultural area on which solid/farmyard manure is applied:
    - Total;
    - With immediate incorporation;
    - Utilised agricultural area on which slurry is applied:
      - Total;
      - With immediate incorporation on injection;
    - Percentage of the total produced manure exported from the holding;
- Manure storage and treatment facilities:
  - Storage facilities for:
    - Solid dung;
    - Liquid manure;
    - Slurry;
    - Use of:
      - Slurry tank;
      - Lagoon;
    - Are the storage facilities covered?
      - Solid dung;
      - Liquid manure;
      - Slurry;

The following AGRICULTURAL PRODUCTION METHODS characteristics, from the *EU list of characteristics*, were not collected, as they are NOT EXISTENT in Icelandic agriculture:

- Irrigation:
  - Irrigated area:
    - Maize (grain and green);

- Rice;
- Dried pulses and protein crops for the production of grain;
- Sugar beet (excluding seed);
- Sunflower;
- Fibre crops (flax, hemp, other fibre crops)
- Fruit and berry plantations;
- Citrus plantations;
- Olive plantations;
- Vineyards;
- Irrigation methods employed:
  - Drop irrigation;
- Source of irrigation water used on the holding:
  - On-farm surface water (ponds and dams);
  - Off-farm surface water from lakes, rivers or watercourses;
  - Other sources.

The following AGRICULTURAL PRODUCTION METHODS characteristics, from the *EU list of characteristics*, were not collected, as they are deemed NON-SIGNIFICANT for Icelandic agriculture:

- Landscape features:
  - Linear elements maintained by farmer during the last 3 years, of which:
    - Hedges;
    - Tree lines;
    - Stonewalls;
  - Linear elements established during the last 3 years, of which:
    - Hedges;
    - Tree lines;
    - Stonewalls;
- Irrigation:
  - Irrigated area:
    - Average irrigated area the last three years;
    - Total cultivated area irrigated at least once during the previous 12 months;
    - Cereals for the production of grain (including seed) (excluding maize and rice);
    - Potatoes;
    - Rape and turnip rape;
    - Fresh vegetables, melons and strawberries – open field;
    - Temporary grass and permanent grassland;
    - Other crops on arable land;
  - Irrigation methods employed:
    - Sprinkler irrigation;
    - Surface irrigation (flooding, furrows);
  - Source of irrigation water used on the holding:
    - Off-farm water from common water supply networks.

The following AGRICULTURAL PRODUCTION METHODS characteristics, from the *EU list of characteristics*, were not collected, as they are deemed NON-SIGNIFICANT for Icelandic agriculture, basing on definition of the Methodological Manual, revision 8:

- Irrigation:
  - Volume of water used for irrigation per year.

## 2.3 Survey organisation

The questionnaire was based on the regulation of the FSS and SAPM. First the main concepts, descriptions and terms in the regulation were translated into Icelandic by the Survey Unit, with the help and support from various sources. The Survey Unit in close cooperation with the Business Statistics Unit constructed the questionnaire and developed an appropriate web form. Various subject matter experts were consulted with regards to the wording of the questions, the key terms and to comment on the work, at various stages.

The questionnaire was pretested using both expert panels and cognitive pretesting methods. Two expert panels were used for pretesting the questionnaire. First a panel of experts in data collection methodology and official statistics assessed the web questionnaire in a focus group setting. A second focus group assessed the paper questionnaire. Based on the expert group's recommendations, changes were made to the questionnaire. Cognitive pretesting was applied with think-aloud protocols and non directive probing. Pretesting was performed on site, i.e. a representative of Statistics Iceland visited farms in the vicinity of the capital region (previously contacted and had accepted to be a part of the pretesting group) with a laptop computer with an internet connection. There the farmers (or the manager of the farm) were asked to complete the questionnaire and a cognitive interview was conducted.

The survey was organized as a mixed mode survey (CAWI, PAPI, CATI) using Don Dillmans tailored design method as a blueprint for all promotional material as well as questionnaire design and layout. The data collection part of the project was conducted by the Survey Unit with the Business Statistics Unit providing expert advice, e.g. in the training of interviewers for the subject matter of the project and also when questions arose during the data collection, either from the providers of the data or the interviewers.

Apart from the promotional material sent from Statistics Iceland to the units which were approached to participate, the census was promoted in an article written for the biweekly newsmagazine of the Icelandic Farmers Association when the web questionnaire had been opened for a few weeks.

The interviewers that were hired to conduct the CATI phase of the data collection were hired on the bases of their knowledge on farms and farm based work.

## 2.4 Calendar (overview of work progress)

<i>September 23 – December 17, 2010</i>	Semi weekly meetings of a designated Project Group, with representatives from Survey Unit, Business Statistics Unit and IT Unit. The meetings involved the outlining of the project, designing the questionnaire for all three modes, and mediating consultation from interest groups and experts on relevant subject matters;
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<i>December 2 – December 16, 2010</i>	Cognitive testing of questionnaire;
<i>January 17, 2011</i>	Introductory letters with personalised log-in information sent out to participants;
<i>February 14, 2011</i>	Reminder/thank-you postcards sent out to all respondents;
<i>March 2, 2011</i>	Paper questionnaires sent out to remaining non-responders;
<i>March 28 – June 1, 2011</i>	Telephone interviews made with remaining non-responders;
<i>June 1, 2011</i>	Data collection closed;
<i>June – November, 2011</i>	Preliminary data processing, with cleaning up of the data;
<i>November 12, 2011</i>	Agricultural Tax Return for 2010 became available, allowing a revision of the census;
<i>November 13, 2011 – March 30, 2012</i>	Second stage of data processing, with imputation of missing values;
<i>March 31, 2012</i>	First dissemination of data;
<i>April, 2012 – January, 2013</i>	Post-dissemination treatment of data;
<i>January 31, 2013</i>	Second dissemination of data.

## **2.5 Population and frame**

For the task of making a census of agricultural holdings, the population frame of the census was constructed using Agricultural Tax Returns, VAT Returns and Annual Livestock Surveillance Reports:

- Agricultural Tax Returns: were available for the year 2009 at the time of the census. Tax returns have to be delivered to the tax authorities by anyone operating in agriculture, and hence all individuals that have turned in these reports are defined as part of the target population. Tax returns for 2010 became available in November 2011 enabling a revision of the population frame based on that data in the final clean-up and imputation phase of the census;

- VAT Returns: were available from 2010 at the time of the census, and could thus be used to provide updated information on individuals returning value-added tax in the field of agriculture;
- Semi-annual Livestock Surveillance Reports from The Icelandic Food and Veterinary Authority: A count of livestock on farms, verified by surveillance representatives who visit the farms once a year. The data was used to determine which farms were subject to FSS.
- National register: used to link addresses. Also used for collecting additional background information on identity numbers.

The definition of an ‘agricultural holding’ as stated in Article 2 of Regulation 1166/2008 was followed. However, as there exist no registers of holdings in Iceland, the census was individual-based. Original census size was 3,241 individuals. A revised census consisted of 2,699 holdings.

## **2.6 Survey design**

No samples (neither for the FSS nor the SAPM) were used, as the data collection was a census of all the farms in Iceland with a minimum production in agriculture. The enumeration was exhaustive.

## **2.7 Sampling, data collection and data entry**

### **2.7.1 Drawing the sample –for SAPM and/or OGA, if applicable**

NOT APPLICABLE.

### **2.7.2 Data collection and data entry**

Data was collected using a mixed mode strategy, starting with the most inexpensive mode first and ending with the most expensive mode last.

First a pre-notification letter was sent to all units in the population frame describing that an invitation to a web survey would be sent to the recipient after a few days. In the invitation letter the units were provided with a web address for the web questionnaire as well as login name and a password.

For sample units that did not respond through the web, a paper questionnaire was sent, along with a return envelope (which did not need a stamp). This was done approximately two weeks after the original invitation to the web questionnaire. The paper questionnaire was printed on high quality paper, in colour and designed (e.g. routing, layout and question text) in accordance with Don Dillmans tailored design method in order to increase the likelihood of response to the paper questionnaire. Answers from the paper questionnaire were entered in to a database by three employees of Statistics Iceland.

Finally, for those sample units who neither answered the paper questionnaire nor the web questionnaire, a computer assisted telephone interview (CATI) was attempted.

Data from paper questionnaires was handpicked into a data file by employees of the survey unit.

For data collected by CATI and CAWI the Blaise survey software was used.

### 2.7.3 Use of administrative data sources

The following data sources were used for the collection of characteristics, otherwise not collected in the survey, or in other cases, characteristics collected also in the survey where administrative data were used for validation and imputation:

Data source:	Characteristics:	Details:	Also asked in survey? (y/n)
Registers Iceland	Latitude and Longitude	Information obtained through a <i>developing project</i> on an Address Register, by Statistics Iceland and Property Register. Coded in ISN93 format (can be transformed into other formats by Statistics Iceland if requested). PROBLEMS: data is based on home addresses of holders, which in some cases did not match the location of the holding. Some manual corrections were required.	No
	Greenhouses	Information on glass houses obtained through Property Register. Used for evaluation of collected data and imputation.	Yes
	Work Force	Number of individuals on holdings. Collected for imputation purposes in case of missing items.	Yes
Agricultural Tax Returns	SCOPE	2009 reports used for making the population frame, and 2010 report used for revising the population frame by removal of units and adding units for imputation purposes. Used also for the purposes of imputation and evaluation of results.	N/A
	Other gainful activities	Production and activity figures used for determining other gainful activities on holding.	Yes
VAT Returns	SCOPE	Agricultural section of 2010 report used in determining the census.	N/A
Land Register	Land code	Used for the purpose of locating/identifying farms. Used for identifying duplicates, in which cases responses were merged.	No
Livestock Surveillance Reports	Arable Land	Information on harvest used for the purpose of estimation of the characteristic of grassland, and evaluating results of size of grassland, collected via FSS.	Yes
	Livestock, VARIOUS	Used for the purposes of sampling frame, imputation and evaluating results from FSS.	Yes
Pay-as-you-earn register	Manager: characteristics	Information on persons paying salaries, used for imputation to determine characteristics of managers.	Yes
	Workers: number of, and characteristics	Information on salaries used for determining amount of workforce and characteristics.	Yes

Beintfrabyli.is, a web-based, centralised marketing web for farms	Type of production: VARIOUS	Voluntary database of farmers, where information on activities on specific farms is listed. Used for determining types of production.	Yes
	Other gainful activities: VARIOUS	The database is also used for determining other types of gainful activities on farms.	Yes
Tourism accommodation statistics	Other gainful activity: TOURISM	Reports collected on places of accommodation used to determine which holdings are involved in other gainful activities: tourism.	Yes
“Vottunarstofan Tún”	Organic production: VARIOUS	“Tún is an accredited body, committed to providing high quality services to primary producers and processors in agriculture and fisheries.” This is a comprehensive source and authority on certifying organic production. As results in questionnaire frequently did not match this administrative data, the administrative data was used exclusively for the final results.	Yes

Identification numbers, which are present both for holders and legal units were used to link data from different data sources. Home addresses and land codes were used to link holders, as holdings in Iceland can have multiple holders.

## 2.8 Specific topics

### 2.8.1 Common Land

Unfortunately, Statistics Iceland is unable to provide reliable data on the size of common land, or coverage of shared/common land as defined in the Methodological Manual V.9, under characteristic 1.03.01.03.

The appropriate question on shared land was introduced in the questionnaire, but due to a specific understanding on shared land common among farmers in Iceland the entirety of shared areas were accounted for in their responses (including hills and mountains, for sheep herding) and Statistics Iceland had no resource to identify a specific common land for the purpose of recalculating and correcting for duplicates in the data.

Results on shared land will not be included in the publication of the results at Statistics Iceland.

No units for common land (A\_2\_1) are accounted for, as the maintenance of municipalities of common land is deemed to be minimal.

### 2.8.2 Geographical reference of the holding

Geo-reference of the holding was obtained with the use of National Register (for home address) and Land Register (for land codes).

### **2.8.3 Volume of water used for irrigation**

Data on irrigation was not collected. As special irrigation systems are commonly not needed for outdoor crops, due to frequent rain, outdoors irrigation methods were deemed as non-significant. As it was the understanding of Statistics Iceland that irrigation for glass houses was out of scope (in accordance with definition of Methodological Manual, version 8) that data was not collected either. Ways of extracting the relevant data from administrative sources could not be exploited for lack of resources.

### **2.8.4 Animal housing**

Due to a misunderstanding the questions on animal housing were inadequate for the purposes of the model questionnaire, as they only addressed number of spaces in the animal houses and not the number of animals. This was discovered only after the data collection phase. However, through consultation with field experts on agriculture it was determined that spaces of animal houses were commonly fully occupied and hence that the data from the question was useful.

### **2.8.5 Common land grazing**

It was apparent from the data collected that the two questions on common land grazing were widely misunderstood. Furthermore there was no way to compensate for that data loss. Variables M\_4\_2\_1 and M\_4\_2\_2 were thus omitted thus could not be delivered.

### **2.8.6 Other issues**

A volcanic eruption of April of 2010 in the south region of Iceland critically affected the operation of several farms, resulting in loss of livestock and inability to reply to the survey.

## **2.9 Response-burden policy**

Every farm in the frame were sent a pre-notification letter as well as an introductory letter about the survey. The introductory letter also contained information about the web survey, its web address, login number and password. Every farm (both respondents and non-respondents) received a postcard one week after the initial sending of the introductory letter. This was to remind the recipients of the survey and to increase the completion rate of the web survey.

During the PAPI phase of the data collection, no attempts were made to increase the response rate other than the principles that guided the layout and question design which were used to increase the likelihood of the respondents completing the paper questionnaire.

During the CATI phase of the data collection refusal aversion tactics were used by the interviewers to gain cooperation. In addition call-backs were used for units that the interviewers had been unable to contact. Call-backs with refusal conversions were not attempted in the data collection phase as it was unclear if that would result in a smaller non-response bias or only higher response rate.

During the last part of the CATI phase an increased effort was made to target and gain cooperation from large farms, based on information from registers. Also some effort was made to contact farms that had promised to deliver data but had not fulfilled their promise.

Addresses for mailings were based on the newest possible information available from the national register as well as the business register.

In the beginning the emphasis was to gain cooperation with the farms and encouraging them in a friendly manner to respond. As the data collection period drew to a close more emphasis was made on the fact that participation was compulsory for the farms. This was for example highlighted in the letter that accompanied the paper questionnaire and the interviewers which conducted the CATI's also referred to this fact in the latter stages of the CATI phase of the data collection. No legal action was taken against farms that refused participation. Every interviewer had been trained in conducting telephone interviews in a professional manner as well as they were all trained in using refusal avoidance techniques when requesting participation from the units in the frame. Finally, they all received task specific training in the topic of farming and related subjects in order to be more proficient in conduction interviews for the FSS and SAPM.

Special measurements were used to gauge subjective response burden of the respondents in the FSS and SAPM. These measurements were in the form of two questions which appeared at the end of the questionnaire in all modes. This approach was based on the recommendations in the Handbook for Monitoring and Evaluating Business Survey Response Burden, albeit in a shorter form. The first question was on a five point rating scale about how burdensome or easy the respondent felt the task of answering the questionnaire was. If the answer was that it was a burdensome task a follow-up question appeared in which the respondent checked the reasons for why he thought the questionnaire was burdensome. The reasons offered were unclear layout of the questionnaire, vague concepts and explanations of the concepts in the questionnaire, the questions called for complex calculations, available information did not fit the questions posed in the questionnaire or that it was difficult to decide which was the right response option given was the correct one.

### **3. ACCURACY AND RELIABILITY OF THE DATA COLLECTED**

#### **3.1 Data processing, analysis and estimation**

##### **3.1.1 Estimation and sampling errors – for SAPM and/or OGA, if applicable**

NOT APPPLICABLE: census used for SAPM and OGA.

##### **3.1.2 Non sampling errors <sup>(1)</sup>**

- Types of errors

- Due to the lack of a Business Register / Farm Register a census had to be constructed from Tax Registers and Farm Livestock Surveillance, on individual basis. This led to a considerable amount of over-coverage and some amount of under-coverage. The over-coverage was mainly due to multiple questionnaires per holding (in some cases leading to multiple responses) (estimated % not available). Such duplicates were identified from registers by addresses and land codes. Cases of multiple responses were treated by uniting them. Some under-coverage was due to a time lag between the survey and the available Agricultural Tax Registers from 2009. A release of Agricultural Tax Returns for 2010 in November 2011 allowed for a revision of the census for imputation (estimated % not available). Information from VAT Reports which were available for 2010 at the time of the survey was used to adjust the census. Cases of misclassification came up in analysis of non-responses, and some cases were removed from the census before the imputation phase (estimated % not available). All missing units are accounted for by the use of imputation and administrative data.
- Measurement errors (ii): Implausible answers were determined with the use of administrative data sources, as well as with the help of relevant experts. There are indications of reoccurring misunderstanding regarding some of the questions. These misunderstandings have largely been related to difficulties with concepts for the context of Icelandic agriculture. This appears to be present for the cases of:
  - *Utilised agricultural area*, for share farming or other modes (understood as including highlands, in the cases of sheep farming; presently it seems possible that there are duplicates in this data, and Statistics Iceland has not been able to verify or correct the data yet); *organic production* (misunderstanding unclear, but results were not reliable and were eventually replaced completely with data from the authority of organic labelling in Iceland); *common land grazing* (misunderstanding unclear). It was not possible to correct for these errors.

**There is a variety of interpretations to the concept of non-response. Please provide information about following cases:**

- Unit non-response: Pending, while results from the Survey on Agricultural Production Methods are unavailable. This information will be available with unit the updated version of the Quality Report along with the next data transmission.
- Item non-response: Pending, while results from the Survey on Agricultural Production Methods are unavailable. This information will be available with unit the updated version of the Quality Report along with the next data transmission.
- **Other (please specify)**

### **3.1.3 Methods for handling missing or incorrect data items**

Completion and correction methods were applied in cases of missing values and implausible values. No follow-up interviews were conducted and no re-weighting was applied. Administrative data was used for compensating for missing values where it was available. The main tool that was used for the data handling was the computer program R. This procedure was done by specialists within the Business Statistics Unit, in co-operation with subject experts.

See: appendix II for Notes on the Imputation Process for the Farm Structure Survey for Iceland.

### **3.1.4 Control of the data**

Controls of the data during the process of the filling out of the web-based questionnaire by the respondents involved a summary of land size, as filled out by the respondents, appearing on the screen at the end of the questionnaire and respondents being asked to verify the given information.

Control of the data during the data processing phase involved checks that were done by experts within the Business Statistics Unit. The aim of this work was to fill in information for missing or evidently incorrect values, with the lowest possible level of aggregation. Some of the available fields in the administrative data sources needed to be combined in order for them to match the fields of the Farm Structure Survey. This needed to be done for the case of horses and corn. This procedure did not present any problems. In other cases, fields in the administrative data sources were already combined beyond the requirements of the Farm Structure Survey and needed to be split into appropriate items. Whenever the Farm Structure Survey asked for subcategories of registered numbers optimal split was used, basing on sum of squares. Generally the rule was applied that where administrative data was available that in cases where absolute deviation from administrative data was higher than 2x the standard error the administrative data was used instead of data provided by respondents. However, some cases of deviation of livestock numbers were considered to be reliable due to slaughtering in between reports and the Farm Structure Survey.

## **3.2 Evaluation of results**

**Have comparisons been made (micro/macro level) with other data sources (for example administrative data, crop production surveys, animal surveys, labour force surveys)?**

Comparisons have been made with the following administrative data sources (see also: Section 2.7.3.):

- Registers on individuals and addresses;
- Land Register;
- Agricultural Tax Returns;
- VAT Return;
- Livestock surveillance Reports;
- Organic labelling authorities;
- Pay-as-you-earn Register;
- Commercial Register for farms;
- Tourism accommodation statistics.

	Survey		
	FSS (excl. OGA in case of sample survey)	OGA (if sample survey)	SAPM (if sample survey)
Initial list of units	(3,320) <sup>2</sup>		
Initial sample	N/A		
Number of holdings with completed questionnaires (incl. Eventual imputed questionnaires):	2,699		
Number of units under the threshold applied *	85		
Holdings with ceased activities:	318		
- (If information is available) of which definitely ceased, i.e. the land is abandoned			
- (If information is available) of which holdings with change of the manager			
Unit Non-response:			
- Refusals – not corrected	0		
- Refusals – corrected (imputed)			
Number of records transferred to Eurostat *			
Common land units (A_2_1)	-	NA	NA

\* Units that do not meet the national threshold criteria (in some countries there could be completed questionnaires for them, in others – not). In case it's impossible to provide this information, a short explanation about the reasons to be provided.

\*\*The number of holding with completed questionnaires for FSS 2010 may be different from the number of records transferred to Eurostat in case that very low national threshold is applied.

	From FSS 2007	From FSS 2010	Difference in %	Comments
Number of holdings;	N/A		N/A	
UAA (A_3_1), ha;	N/A		N/A	
Arable land, ha;	N/A		N/A	
Permanent grassland (B_3), ha;	N/A		N/A	

<sup>2</sup> Initial census was based on individuals in agriculture, as no registers of holdings was available. Holdings were defined and respondents united in the phase of the treatment of the data.

Permanent crops (B_4), ha;	N/A		N/A	
Wooded area (B_5_2), ha;	N/A		N/A	
Unutilised Agricultural area (B_5_1), ha;	N/A		N/A	
Fallow land (B_1_12_1 + B_1_12_2), ha;	N/A		N/A	
LSU in LSU;	N/A		N/A	
Cattle (C_2), head;	N/A		N/A	
Family Labour force - in persons;	N/A		N/A	
Family Labour force - in AWU;	N/A		N/A	
Non family labour force - in persons;	N/A		N/A	
Non family labour force - in AWU	N/A		N/A	

### 3.3 Data Revision Policy

The policy of Statistics Iceland is to correct disseminated statistics in cases when a fault is discovered. All major faults will warrant a specific press release but minor faults call for a note in previous press releases and statistical tables that a revision has been made.

For both external trade in goods and national accounts preliminary statistics are published on a regular basis and revised on pre-specified occasions when more exact data are available.

In all 42 revisions due to faults were performed in 2010 on Statistics Iceland's website.

## 4. ACCESSIBILITY AND PUNCTUALITY

### 4.1 Publications

First results have been published in tables on the website of Statistics Iceland as well as in a specific publication. The tables are available on the website:

*<http://www.statice.is/Statistics/Fisheries-and-agriculture>*

The date for the publication has not yet been determined. Publication will contain some brief outlining of meta-data regarding survey mode and response rate.

### 4.2 Timeliness and Punctuality

The last day of the reference period of the survey was the end of the year 2010. The final results have not been published before the dissemination of the data to Eurostat.

Delivery date for the first results was March 31, and the first data on FSS and OGA was delivered on March 30. The delivery of the second dataset was delayed until the 4<sup>th</sup> of February due to unforeseen complications regarding labour force and land variables.

## **5. CONFIDENTIALITY AND SECURITY**

### **Statistics Iceland's Rules of Procedure for Treating Confidential Data**

#### **Article 1**

##### **Confidential data – public data**

In these Rules of Procedure, the terms confidential data, confidential information and confidential matters refer to data, information and requests which Statistics Iceland and its employees are to keep secret. Data or information of this sort may not be passed on to third parties, neither verbally, in writing nor electronically, and regardless of whether public or private parties are involved, cf. however Article 2.

Public data or information refers to items which there is no requirement to keep secret and which may be published according to laws, rules or tradition.

The term administrative registers refers to registers or data banks which are maintained by government authorities for their operations, which regard specified natural or legal entities, and which might be used for statistical purposes. The data in such registers may be either confidential data or public data.

The term administrative records refers to information which is compiled due to the needs of public administration but which might also be used for statistics.

External users have no access into Statistics Iceland's database. Applications for access to micro-data for research purposes in the responsibility of a standing committee consisting of the directors of the institute.

## **REFERENCES**

- Methodological notes available
- Main scientific references

## **ANNEXES**

- Questionnaire(s)
- Formulas applied for estimation methods and calculating sampling errors
- Other

## ENDNOTES

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- (<sup>i</sup>) *Non-sampling error* is the error attributable to all sources other than sampling error. Non-sampling errors arise during the planning, conducting, data processing and final estimation stages of all types of survey.
- (<sup>ii</sup>) *Measurement error* can be thought of as the difference between the value collected during the survey and the true (individual) value. These errors may result from: the survey instrument (the form or questionnaire), the respondent, the information system (respondent's report-keeping system), the mode of data collection (face to face interviewing, telephone interviewing, self-administered mail survey, diary surveys, administrative records, direct observation, and electronic observation), and the interviewer.