
UNITED KINGDOM - Census of Agriculture 2010 – Explanatory notes

1. Historical Outline

In the United Kingdom, the collection of statistics is a devolved activity. The Scottish and Welsh Governments and the Northern Ireland Assembly have responsibility for their own agricultural policy and data provision.

Domestic arrangements in the UK mean that agricultural policy, data collection methods, and data availability can vary slightly between the four countries. As the data supplier to the EU, the Department for Environment Food and Rural Affairs (DEFRA) tries to harmonise the data collection methodologies where possible but ultimately, as long as the data meets the requirements specified in Regulation (EC) No 1166/2008, DEFRA has limited powers to influence the methodologies chosen in these countries.

2. Legal Basis and Organization

The Department for Environment, Food & Rural Affairs (DEFRA) is responsible for collating data from each of the four countries of the United Kingdom (England, Scotland, Wales and Northern Ireland), and for transmitting the final datasets to Eurostat. DEFRA is also responsible for the collection of agricultural statistics in England.

There is legislation throughout the United Kingdom (UK) to deal with the collection of agricultural data to meet national and EU requirements but this legislation used varies throughout the UK. All four countries also have access to some administrative data sources to facilitate data compilation.

In England, the legal bases for the collection of agricultural statistical data are the Agricultural Statistics Act 1979 (as amended by the Agriculture (Amendment) Act 1984). This legislation does not need to be updated or amended to allow for new surveys or for additional questions. In principal it is a statutory requirement for all occupiers to complete and return their questionnaires although in practice only the most important surveys such as the June Census/Survey are marketed as being compulsory.

In Scotland, the Agricultural Act 1947 (“the 1947 Act”) authorises the Scottish Government to collect statistics on Scottish agriculture from agricultural holdings. The 1947 Act requires occupiers of agricultural land or the owners of livestock to provide statistics on agriculture to the Scottish Government at any time or times in any year, in relation to a list of topics such as crops, labour and livestock numbers. The 1947 Act is not specifically tied to any one survey.

In Wales the legal basis for the collection of agricultural statistics data are the Agricultural Statistics Act 1979, as amended by the Agriculture (Amendment) Act 1984, that imposes a statutory requirement on all occupiers to complete and return their questionnaires. The powers enshrined in this Act were devolved to the National Assembly for Wales following the Government of Wales Act 2006. There is also a requirement to minimize the burden on respondents wherever possible. This is in accordance with EU Council Regulation (REC) No. 322/97 on Community Statistics and Office of National Statistics guidelines in “Statistical Surveys Guide to Best Practice”. All data on cattle has been sourced from the Cattle Tracing System.

In Northern Ireland the Agricultural Statistics Order 2004 authorises the Department of Agriculture and Rural Development (DARD) to demand response to a specific list of questions that encompasses those asked in the Census. The Order requires occupiers of agricultural land or the owners of livestock to furnish to DARD, at any time or times in any year, such returns as may be prescribed in relation to a list of topics such as crop areas and livestock numbers. It is not specific to any one survey.

3. Reference Period or Date

The reference period is July 2009 to June 2010 (2009/2010 crop year), although the livestock numbers have a reference date of 1 June 2010. The reference period for the information on Rural Development Support is the calendar years 2008, 2009 or 2010.

4. Enumeration Period

The Survey of Agricultural Production Methods questionnaires sent out 1 March 2010 (Sep 2010 in Wales). With the exception of Wales, SAPM data collection ended at the end of April 2010.

Farm Structure Survey questionnaires were posted late May 2010, targeted final reminders in early August 2010 that include a duplicate survey form. Data collection for Census ceased at the end of December 2010, and in early January 2011 Call Centre staff stop data cleansing and respondent follow-ups.

5. Definition of the Statistical Unit

EC Regulation 1166/2008 defines the statistical unit as an agricultural holding. "Agricultural holding" or "holding" means a single unit, both technically and economically, which has a single management and which undertakes agricultural activities listed in Annex I to the European Parliament and Council Regulation (EC) No 1166/2008 within the economic territory of the European Union, either as its primary or secondary activity. In addition, the EU regulation determines thresholds of size.

UK applied the maximum allowed threshold – 5 ha of utilised agricultural area; or ten cattle, 50 pigs or ten breeding sows, 20 sheep, 20 goats, 1,000 poultry. The application of thresholds has minimal impact on the estimates of land and livestock but does considerably reduce the number of holdings

6. Geographic Coverage

Covered the entire country.

7. Exclusions and Cut-Off Thresholds

The UK implemented thresholds for inclusion in the survey for the first time in 2010. These were based on the EU thresholds and with additional supplementary criteria to pick up on (a) pig and poultry specialists whose sheds were temporarily empty or (b) farmers who had let all of their land when last surveyed. The application of thresholds has minimal impact on the estimates of land and livestock but did considerably reduce the number of holdings and hence holders relative to the estimates of 2007.

The number of holdings reduced in the UK target population from 333,039 to 208,451.

8. Methodology

Use of the FAO Modular Approach

No

Frame

The population was all holdings recorded as "live" on the UK Farm Register in the spring of 2010 that met the minimum thresholds for agricultural activity. The UK added additional criteria to ensure better coverage for pigs and poultry. To determine whether a holding was above the threshold analysis was undertaken against the 2009 holding level dataset in each of the four countries. The application of thresholds

Complete or Sample Enumeration Methods

The Agricultural census was an enumeration of all holdings above pre-defined thresholds. The Survey of Agricultural Production Methods was a large self-completion sample survey.

Sample Design

The Survey of Agricultural Production Methods was a large three-stage stratified random sample of 18,652 holdings.

A 3-step design was used that involved UK region as the primary step followed by farm size and then farm type. Although all four countries used a similar number of farm types the number of units sampled within these strata varied greatly between the countries reflecting their different agricultural populations. The method used to determine farm size also varies throughout the UK, with England and Scotland using a national system based on Standard Labour Requirements, and Wales and Northern Ireland using European Size Units (ESU).

In Northern Ireland a fourth factor, NUTS3 region, was used to help control the distribution across the country. In Scotland, the statisticians were receptive to the fact that they needed to meet precision requirements for the Highlands & Islands NUTS2 (Nomenclature of Territorial Units) region for Statistics, and the other regions combined. Thus after drawing the sample they checked sample sizes for these two regions and then adjusted the overall sample to achieve a more representative balance between the regions.

Collection Method

Data collection varied slightly between each of the four countries in accordance with what administrative systems could be accessed. In general terms, the organic data fields, cattle information, rural development payments and common land data are all collected from administrative systems. For all other items on the main FSS and all SAPM items, most of data were collected via a postal survey.

Most of the data were collected using printed survey forms. All of the forms were returned to a professional data capture company that either keys or scans the questionnaires. Each of the four countries used their own service supplier who then returned the data to the statistics teams.

Each country had their own statistical staff, with responsibility for cleaning and analysing their data. There was a lead statistical analyst who undertook the bulk of the statistical work with support from additional analysts and a survey-support team. When the data were returned to the statistical institution they run a series of validation checks on the data, and it was the role of the survey support team to follow up on these with phone calls. Any records that were flagged with issues (or are partially complete) were contacted via telephone using Computer Assisted Telephone Interview (CATI) technology, where appropriate to ensure data quality.

In England farmers were offered the option to complete the survey on the Internet. Farmers received an email inviting them to take part. The farmers were then able to log into the website and enter their data. Farmers who received the email invitation but did not want to complete an online return could request a paper form. Approximately 10 thousand questionnaires were submitted through the online system.

Questionnaire(s)

EU Regulations require information on holding location and geo-coordinates, legal status, ownership and tenancy, land use and crops grown, irrigation, livestock, organic farming, machinery (mandatory in 2013 FSS), renewable energy installations, other gainful activities, socio-economic circumstances (full and part-time farming), labour force (family, non-family, contractors), agricultural and vocational training of the manager, inclusion in rural development support programmes, soil tillage methods, crop rotation, and erosion protection, livestock keeping places and keeping methods, animal grazing, manure application and manure storage and treatment facilities, maintenance and installation of landscape features.

There were ten questionnaires for the 2010 United Kingdom Agricultural Census. England had three questionnaires (SAPM 2010 form, Irrigation 2010 form, Census 2010 form). Scotland had three questionnaires (Main Census 2010 form, Special Census 2010 form, SAPM 2010 form). Wales had two questionnaires (Census 2010 form, SAPM 2010 form). Northern Ireland had two questionnaires (Census 2010 form, SAPM 2010 form).

Controls to Minimize Non-Sampling Errors

Administrative data were used in place of survey inquiries wherever possible and although the Census was a self-enumerated survey Given that 2010 was a census, coverage errors were minimal for most farm characteristics. In terms of crop areas and livestock numbers measurement errors were negligible. The larger producers are familiar with the surveys as a number of them are sampled every year and their forms are filled in with a good degree of accuracy. It tends to be the smaller farms, whose occupiers were less familiar with the surveys, which produce the errors caught during data validation.

For the Agricultural census the biggest error resulted from non-response. There was significant unit non-response throughout all areas of the UK (over 50 thousand records). Non-response affected all farm types and whilst this varies slightly with farm type, UK level records of non-response by farm type are not compiled.

However, there were a number of efforts made to mitigate the impact of the 33,564 holdings in the UK who did not return a census form. For example, 12,672 had records on cattle that were sourced from the administrative data of the Cattle Tracing System, 10,904 had records that could be sourced from the Rural Development Programme for England grant program and 628 had data sourced from their administrative records of organic activity.

Innovative Methodologies

There was an extensive use of administrative data throughout the UK for information on organic characteristics, cattle, rural development payments, and common land.

In England farmers were offered the option to complete the survey on the Internet.

9. Data Entry, Edits and Imputations, Estimation and Tabulation

Once the data has been captured it is returned to the institutions a number of validation checks were carried out. Survey support teams then worked to correct issues with the data by contacting farmers and/or using additional data about the farm collected from other sources.

Despite the best efforts there was some non-response, thus a degree of imputation was required for the core FSS items. For SAPM no attempt was made to estimate for non-response. Labour and diversification items were mainly imputed using donor imputation, whereas the land and livestock items were imputed using a ratio raising process.

For the data items collected from administrative data they were considered to offer complete coverage and the data were used in the supplied form.

For the surveyed items, a series of validation checks were run against the data. Any records that were flagged with issues, or were partially complete, were investigated. Additional information such as comments farmers have written on the form, data from other surveys or administrative data systems were used try to resolve these issues. Where existing data was not available farmers were contacted via telephone to resolve the issues. Where a common problem arised global updates have been applied to streamline the process, for example many farmers omit the section totals so the section total was calculated as the sum of its components.

For land-use and livestock imputation was done on an annual basis using a ratio raising methodology. The data were stratified according to farm size. For non-responders, farm size was based on the last recorded response to DEFRA's annual June survey. In a small number of cases some minor crops had to be imputed manually. The data for holdings for which there was no previous survey, data were populated using donor imputation. Each holding was assigned a donor record and all of the labour and diversification data from that holding. Any holding with a complete and clean FSS 2010 record was eligible to be a donor.

10. Data Dissemination and Use

There are a number of publications produced by each of the four UK administrations that relate to the situation in their own country.

11. Census Data Quality

Comparisons of the FSS with other data sources for the reference year are not really possible. The items collected on the FSS survey forms are not collected elsewhere, with sufficient coverage or a large enough sample to permit comparisons. Winter sown cereal crop areas can be compared against those from the "December Survey of Agriculture" but the sample size for this survey is quite small. Generally the best method of comparison is against census data from previous years. Land, livestock and point in time estimates for labour are collected at every June. Thus land-use and livestock for the 2010 FSS can be compared to those for the 2009 June Agricultural Survey to check the year-on-year changes. For the labour components these can be cross-referenced against point-in-time estimates from the June Survey. In general however the data were judged to be comparable with information from earlier years and there were no significant issues noted.

12. Data Source

Eurostat:

http://ec.europa.eu/eurostat/statistics-explained/index.php/Agricultural_census_2010

13. Contact

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Supplementary contacts within the devolved administrations of Scotland, Wales and Northern Ireland.

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Website

Statistics: <https://www.gov.uk/government/statistics>

- England: www.defra.gov.uk/statistics/foodfarm
- Scotland: www.scotland.gov.uk
- Wales: www.wales.gov.uk/statistics
- Northern Ireland: www.dardni.gov.uk