

Embargoed until 10:45am – 14 May 2009

## Agricultural Production Statistics: June 2008 (final)

### Highlights

At 30 June 2008 compared with 2007:

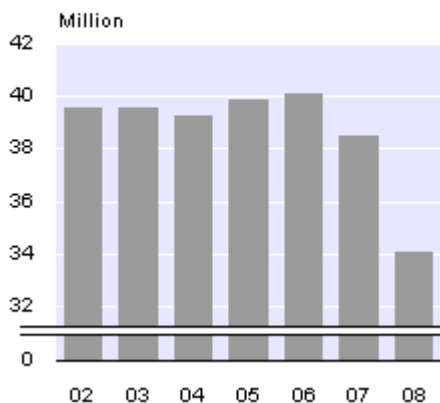
- Sheep numbers fell to 34.1 million, down 11 percent and back to the level recorded in 1950.
- Dairy cattle numbers increased to a record 5.6 million, up 6 percent.
- Beef cattle numbers fell to 4.1 million, down 6 percent.
- Deer numbers fell to 1.2 million, down from 1.4 million.

During the year ended 30 June 2008:

- There were 67,400 hectares of barley harvested, up 31 percent from 2007.

### Total Sheep

At 30 June, 2002–08



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See also [Agricultural Production Statistics: June 2008 \(final\)](#) – Media release.

## Commentary

This release contains final results from the 2008 Agricultural Production Survey. The 2008 survey covered livestock and arable farming, forestry production, and farming practices.

The 2008 survey is part of the current programme of censuses and surveys of agricultural production. This programme began with a census in 2002 and then annual sample surveys were carried out from 2003 to 2006. A census of livestock and arable farming, horticulture and forestry was held in 2007.

Estimates from sample surveys are subject to sampling errors. Refer to the technical notes of this release for further information.

Figures in this release have been rounded. All percentages have been calculated using unrounded figures.

## Livestock

### Sheep

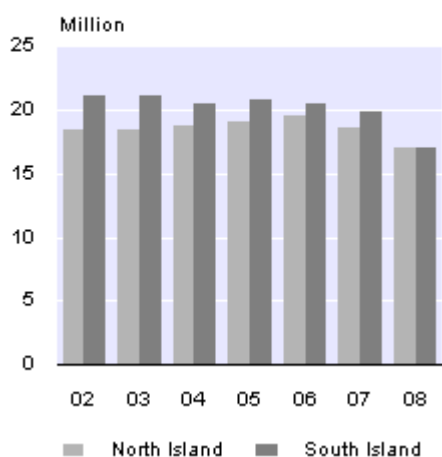
Sheep numbers at 30 June 2008 were 34.1 million. This was a 4.4 million (or 11 percent) decrease from that recorded in 2007. This decrease is the largest annual fall recorded since sheep numbers peaked at 70.3 million in 1982, and has reduced the national flock back to the level recorded in 1950. Drought, market conditions, and competition from other land uses played a significant role in the reduction of sheep numbers.

In 2008, sheep numbers were similar for the North Island and South Island, at 17 million each. In the North Island sheep numbers were down 8 percent on the 2007 figure. Numbers in Manawatu-Wanganui fell 12 percent to 5.9 million. In the Waikato, there was a 18 percent decrease to 2.2 million. With 3.7 million sheep, Hawke's Bay was the only North Island region where numbers increased.

Compared with 2007, numbers in the South Island sheep flock were down 14 percent in 2008. Sheep numbers in the east coast regions of Marlborough, Canterbury, Otago, and Southland all decreased.

### Total Sheep by Island

*At 30 June, 2002–08*



There were 23.5 million ewes (two-tooth and older) put to ram in 2008, 10 percent less than in 2007. There were an estimated 1.5 million ewe hoggets put to ram, down 42 percent on the 2007 figure.

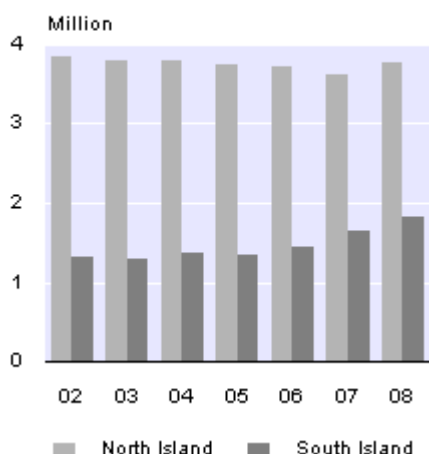
There were 31.0 million lambs tailed in the year to 30 June 2008, down 6 percent on the previous year. Factors that contributed to this decrease included weather conditions, and fewer ewes and ewe hoggets being put to ram in the year to 30 June 2007.

## Dairy

Numbers in the national dairy herd increased to 5.6 million in 2008, which was 6 percent higher than the 2007 figure of 5.3 million. A significant factor that encouraged growth was the expected milksolid payments. These improved at the end of the 2007 season and were followed throughout 2008 by record predicted and achieved payments.

With 3.8 million dairy cattle (up by 145,000 between 2007 and 2008), the North Island is home to two-thirds of the national dairy herd. The South Island however, experienced faster growth in 2008 with its dairy cattle numbers increasing by 173,000 to 1.8 million.

**Total Dairy Cattle by Island**  
*At 30 June, 2002–08*



Waikato remains the largest dairying region with 1.7 million dairy cattle in 2008. This was an increase of 3 percent on the 2007 figure. Canterbury is the second largest dairy region with 832,000 dairy cattle, an increase of 10 percent on the 2007 number.

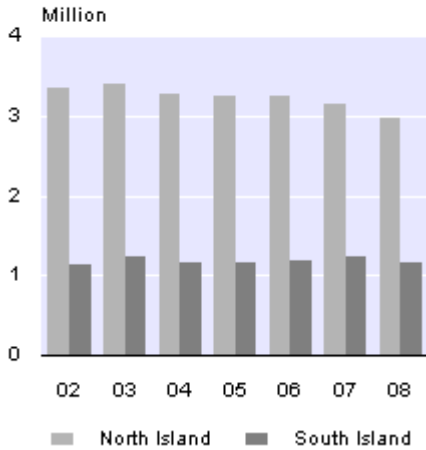
New Zealand had 4.3 million dairy cows and heifers in milk or calf in 2008. This was a 4 percent increase on the 2007 figure. The number of dairy replacement cattle (dairy cows and heifers not in milk or calf, and rising one-year-old dairy cows and heifers) increased 13 percent, to 1.2 million.

## Beef

Beef cattle numbers at 30 June 2008 were 4.1 million, down 6 percent from 2007. Almost three-quarters of all beef cattle were in the North Island.

### Total Beef Cattle by Island

At 30 June, 2002–08



Manawatu-Wanganui, with 583,000 beef cattle, was the largest beef farming region in 2008. This was followed by Waikato and Canterbury, with 576,000 and 534,000 beef cattle, respectively.

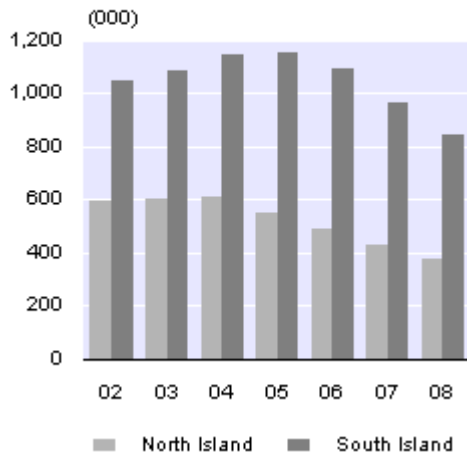
The beef breeding herd declined from 1.2 million in 2007 to 1.1 million in 2008. The number of non-breeding bulls fell 11 percent to 702,000 in 2008, while the number of steers at 1.2 million was at a similar level to 2007.

## Deer

Deer numbers have continued to fall in 2008. There were 1.2 million deer in 2008, down from 1.4 million in 2007. Deer numbers are increasingly concentrated in the South Island, which had 848,000 or 69 percent of all deer in 2008. Canterbury, Otago, and Southland are the largest deer farming regions.

### Total Deer by Island

At 30 June, 2002–08



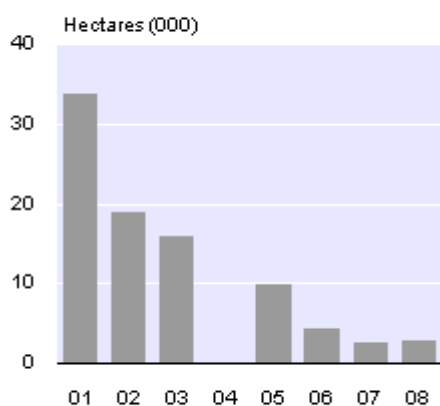
There were 595,000 female deer mated in 2008. This was 13 percent less than in 2007. The fawning ratio was 73 percent, with 494,000 fawns born and still alive at four months in the year to 30 June 2008.

## Forestry

There were 2,700 hectares of new forestry area planted in the year ended 31 March 2008. This was similar to the area planted in the previous year. The South Island, with 1,900 hectares of new forestry area planted, accounted for 71 percent of the total new area planted.

### Total New Area Planted in Production Forest

2001-08



**Note:** Figures for 2001, 2002 and 2003 are for the year to 31 December. Figures for 2005 onwards are for the year to 31 March.

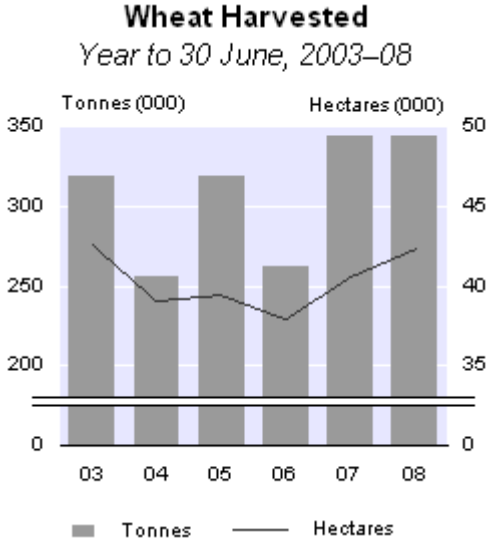
There were 33,100 hectares of forestry replantings in the year to 31 March 2008. Of these, replantings in the North Island represented 68 percent, with 22,500 hectares of forestry replanted.

The area of exotic forest harvested in the year to 31 March 2008 was 42,700 hectares, a similar level to the previous year. Waikato (with 8,300 hectares) and the Bay of Plenty (with 9,200 hectares) accounted for 41 percent of the total area harvested.

# Grain crops

## Wheat

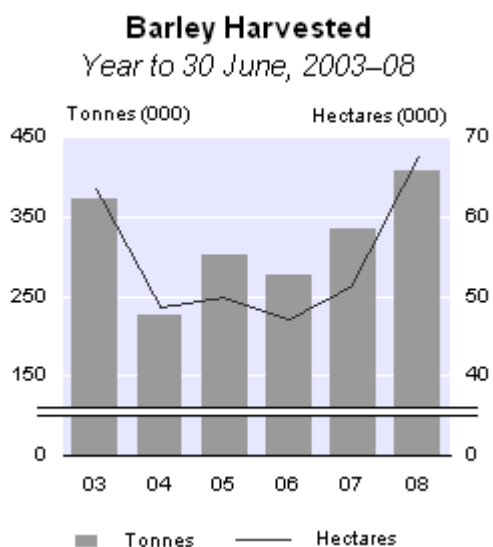
Wheat production during the year to June 2008 was similar to 2007 in both tonnage and area harvested. There were 42,300 hectares and 343,400 tonnes harvested in 2008. Canterbury is the main wheat growing region, with 36,400 hectares and 297,900 tonnes harvested.



## Barley

In the year to 30 June 2008, barley production increased in both area and tonnage harvested. The area harvested increased to 67,400 hectares, which was 31 percent more than the 51,500 hectares harvested in 2007. The tonnage harvested increased 22 percent, to 408,700 tonnes.

The largest barley growing region is Canterbury, where the harvested area increased by 23 percent to 45,200 hectares. The region harvested 282,300 tonnes, 14 percent more than in 2007.



## Maize grain

There were 18,300 hectares of maize grain harvested in the year to 30 June 2008. This was an increase of 7 percent on the 2007 area. The tonnage harvested increased 11 percent, to 205,600 tonnes.

Almost all maize grain harvested was in the North Island. Waikato was the main growing region with 4,800 hectares harvested in 2008. It was followed by Bay of Plenty and Gisborne, with 3,500 and 2,800 hectares, respectively.

## Changes between provisional and final results

Provisional results of the 2008 Agricultural Survey were released on 10 February 2009.

Changes between the provisional and final results for estimates at the national level			
	Provisional	Final	% change
Breeding ewes 2-tooth and over put to ram	23,362,000	23,485,500	1
Ewe hoggets put to ram	1,469,600	1,470,100	0
Lambs born to ewe hoggets	1,099,600	1,092,600	-1
Lambs born to ewes	29,815,500	29,927,600	0
Total sheep	33,894,200	34,087,900	1
Total lambs	30,915,200	31,020,200	0
Dairy cows and heifers in milk or calf	4,339,700	4,347,700	0
Total dairy cattle	5,563,100	5,578,400	0
Calves born alive to dairy heifers/cows	3,482,300	3,500,200	1
Beef cows and heifers in calf	1,095,900	1,103,600	1
Total beef cattle	4,119,100	4,136,900	0
Calves born alive to beef heifers/cows	976,900	978,100	0
Female deer mated	596,900	594,800	0
Total deer	1,213,000	1,223,300	1
Fawns born on the farm	506,500	494,200	-2
New area planted in forestry (hectares)	2,700	2,700	-2
Area replanted in forestry (hectares)	33,100	33,100	0
Exotic timber harvested (hectares)	42,100	42,700	1
Exotic timber harvested (cubic metres)	18,906,800	19,204,100	2
Wheat harvested (tonnes)	345,300	343,400	-1
Wheat harvested (hectares)	42,500	42,300	0
Barley harvested (tonnes)	409,200	408,700	0
Barley harvested (hectares)	67,000	67,400	1
Maize grain harvested (tonnes)	210,400	205,600	-2
Maize grain harvested (hectares)	18,500	18,300	-1

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**Next release ...**

*Agricultural Production Statistics: June 2009 (provisional)* will be released on 9 February 2010.

# Technical notes

## Background

This release contains final results from the 2008 Agricultural Production Survey. This survey is part of an ongoing programme of agricultural production statistics conducted in partnership with the Ministry of Agriculture and Forestry. The current agricultural statistics programme began with an agricultural production census in 2002 and was followed by yearly sample surveys from 2003 to 2006. An agricultural production census was held in 2007.

## Target population

The target population for the 2008 Agricultural Production Survey was all businesses engaged in 'agricultural production activity' (including livestock, cropping, horticulture and forestry) or that owned land intended for agricultural activity. The target population included businesses that were engaged in agriculture or forestry production as a secondary activity.

The target population was defined in terms of the Australian and New Zealand Standard Industrial Classification 2006 (ANZSIC06) classification. It specifically included businesses classified as:

- A01 Agriculture
- A0301 Forestry (excluding native forestry)

and parts of:

- L671200 Non-residential property operators
- M691000 Scientific research services (agriculture-related research that involves land holding (excluding universities))
- P802300 Combined primary and secondary education (agricultural high school operation)
- P802400 Special school education (special needs education involving agricultural production activity)
- P810200 Higher education (agriculture-related research undertaken by universities that involves land holding)
- R912100 Horse and dog racing administration and track operation
- R912900 Other horse and dog racing activities (racehorse training and racing stables operations)
- R892200 Nature reserves and conservation parks operation.

The target population specifically excluded:

- A019300 Beekeeping
- part of A019900 Other livestock farming nec (worm farming, pet breeding, dog breeding, cat breeding, bird breeding (except poultry, game birds, ostriches and emus))
- A017100 Poultry meat (except growers who also produce eggs for human consumption).

## Population frame

The 2008 Agricultural Production Survey includes all units identified on Statistics New Zealand's Business Frame as having agricultural activity. The Business Frame is a list of businesses in New Zealand, based on their registration for goods and services tax (GST) with Inland Revenue. In the case of agriculture, the Business Frame includes:

- those units registered for GST (and filing a non-zero GST return) that have indicated involvement in agricultural activity (as defined above)
- those businesses with more than \$200,000 of GST sales or purchases, or that are an employer, whose main activity is not agriculture but that have indicated some secondary agricultural activity.

The compulsory registration level for GST is \$40,000, so there is a partial and unquantifiable coverage of units below this level.

Responses from farmers and foresters in the 2008 Agricultural Production Survey have resulted in an estimated eligible population of 60,600 enterprises.

## Time series consistency

### Population changes

Users should note that while there is consistency in the frame from which the population has been drawn for Agricultural Production data collections from 2003 to 2008, there are differences for data collections prior to 2003.

From 1981 to 1991, the population was sourced from an agricultural directory. This was maintained by Statistics NZ by tracing transfers of farming, horticulture and forestry land. In 1992, this agriculture directory was merged with Statistics NZ's Business Frame. For the 1992 and 1993 surveys, population units were drawn from the Business Frame by industrial classification. In the 1994 Agricultural Production Census, for the first time the population was extracted using both the industrial classification and GST registration information.

Between 1994 and 1996, the population was all businesses, sourced from the Business Frame, that were registered for GST and classified to agriculture. The 1999 Agricultural Production Survey population was sourced solely from AgriBase (a geospatial database owned and managed by AgriQuality New Zealand Ltd). The population for the 2000 Horticulture Production Survey was sourced from the Business Frame, supplemented by AgriBase and growers' lists. For the 2002 Census, the population was sourced from the Business Frame and the Inland Revenue Client Register. These sources were checked against industry lists and AgriBase to ensure all large units were included in the population. The Business Frame was used for the 2003, 2004, 2005 and 2006 surveys, the 2007 Census and the 2008 survey.

### Survey content changes

Users should note that there have been changes to the core information gathered in agricultural production collections.

Since 1994, agricultural production collections have gathered information on livestock and arable farming, horticulture and forestry with the following exceptions:

- In 1999 the survey collected information on livestock and arable farming only.
- In 2000 the survey collected horticulture production information only.
- In 2004, 2006 and 2008 the surveys collected information on livestock and arable farming, and forestry (horticulture production information was not collected).

## **2008 questionnaire changes**

### **Land use**

The land use question was expanded to ask about the harvested exotic forest area awaiting restocking.

### **Grain and seed crops**

This question was expanded to include a separate category for clover seed. A category for fresh and process peas was included in this question.

### **Fertiliser**

The fertiliser question was expanded to include separate categories for 15 percent potassic superphosphate, 30 percent potassic superphosphate, and dolomite.

### **Controlled burning**

This question was expanded to ask about the burning of crop residue from wheat, barley, oats and other standing vegetation.

### **Land cultivated or direct drilled**

This question was expanded to ask about the land area cultivated out of pasture.

## **Past questionnaire changes relevant for 2008**

### **Forestry**

The reference date for forestry production estimates changed to 31 March in the 2005 Agricultural Production Survey. This change was made to allow the forestry section of the Agricultural Production Survey to align more closely with the National Exotic Forest Description survey (NEFD) run by the Ministry of Agriculture and Forestry.

For the 2002 Census, and the 2003 and 2004 surveys, the year ended date was 31 December. For agricultural production collections prior to the 2002 Agricultural Production Census, the year ended date was 30 June.

### **Fawns**

Since the 2005 survey, the data relates to fawns born on the farm that were alive at four months. This change takes into account industry recommendations. In 1994, 1995, 1996, 1999, 2003, and 2004, data related to fawns weaned on the farm. In 2002, data related to fawns born on the farm.

### **Deer**

Users should note that deer figures since the 2004 survey are not directly comparable with 2002 and 2003 figures. Improvements made to the questions about deer in the 2004, 2005 and 2006 surveys have resulted in improved deer number estimates. While it is not possible to quantify the exact extent of the previous undercoverage, Statistics NZ estimates an undercount of about 70,000 deer at 30 June 2002, and 50,000 at 30 June 2003.

## Sample design

For the 2008 Agricultural Production Survey, a stratified sample design was used to select a sample from the population. In selecting this sample, the population was stratified by regional council area, ANZSIC group, and size group. The size groups were determined as follows:

- For those businesses that had previously responded to one or more of the agricultural production censuses or surveys since 2002, the most recent production data was used to form size groups. The variables used to form size groups covered a range of livestock and cropping variables. Typically three size groups were formed: small, medium and large.
- For new businesses or those businesses that did not respond to the 2002 to 2007 agricultural collections, a random sample was taken.

The 2008 Agricultural Production Survey has a sample size of 30,000.

## Reliability of sample survey estimates

This release contains statistics from the 1981- 1996, 1999 and 2002 -2008 Agricultural Production collections as well as the 2000 Horticultural Production data collection. All the results from these collections are subject to non-sampling error.

Non-sampling error arises from biases in the patterns of response and non-response, inaccuracies in reporting by respondents, and errors in the recording and classification of data. Statistics NZ adopts procedures to detect and minimise these types of errors, but they may still occur and are not easy to quantify.

As the 1991-1993, 1995, 1996, 1999, 2003-2006 and 2008 are sample surveys, not censuses, the results from these collections are also subject to sampling error. Sampling error arises from selecting a random sample of businesses and weighting the results, rather attempting a complete enumeration.

## Imputation

Values have been imputed for farmers and foresters who did not return a completed questionnaire. Imputation involves replacing missing items with values based on other information available.

The method of imputation used is random 'hot deck' imputation. A proportion of non-respondents were estimated as ineligible. The remaining non-respondents were grouped into imputation cells based on regional council area, ANZSIC06 (Australian and New Zealand Standard Industrial Classification 2006) group, and prior years' production data. Each non-respondent was then randomly assigned to a respondent in the same imputation cell, and the farm production data of the respondent was copied across to the non-respondent. In order to improve the imputation process, respondents with uncharacteristically high levels of agricultural activity were removed from their respective imputation cells, as it was considered unlikely that any of the non-respondents would have similar characteristics to them.

Horticultural businesses were not surveyed in the 2008 Agricultural Production Survey. Values for non-horticultural variables for these units were imputed based on responses to the 2007 Agricultural Production Census.

<b>Imputation levels and sampling errors for the 2008 Agricultural Production Survey</b>		
	Sampling errors at 95% confidence interval (%)	% of total estimate imputed
Breeding ewes 2-tooth and older put to ram	2	18
Ewe hoggets put to ram	7	24
Total sheep	2	19
Lambs born to ewe hoggets	6	19
Lambs born to ewes	2	20
Total lambs	2	20
Dairy cows and heifers, in milk or calf	3	23
Total dairy cattle	2	23
Calves born alive to dairy heifers/cows	3	31
Beef cows and heifers in calf	3	18
Total beef cattle	2	19
Calves born alive to beef heifers/cows	2	25
Female deer mated	5	15
Total deer	4	16
Fawns born on the farm	4	18
Area of new forestry plantings (hectares)	13	15
Area of forestry replantings (hectares)	1	1
Exotic timber harvested (hectares)	3	2
Exotic timber harvested (cubic metres)	3	2
Wheat tonnage harvested	12	25
Wheat area harvested (hectares)	11	25
Barley tonnage harvested	7	22
Barley area harvested (hectares)	8	21
Maize grain tonnage harvested	8	30
Maize grain area harvested (hectares)	12	31

## **Response rates**

The estimated proportion of eligible businesses that responded to the 2008 Agricultural Production Survey was 84 percent. These businesses represent 85 percent of the total estimated value of agricultural operations.

## **Revisions**

In some cases, data collected before the 2008 Agricultural Production Survey may be revised. This revision usually results from the correction of information provided by survey respondents. Revised figures are indicated in the tables by an 'R'.

## **Confidentiality**

Data collected and information contained in this release must conform to the provisions of the Statistics Act 1975. This requires that published information maintains the confidentiality of individual respondents. Figures affected by these provisions have been suppressed and are denoted by 'C'.

## **Quality suppressions**

Data with high sample errors or imputation levels have been suppressed and are indicated by an 'S'.

## **More information**

For more information, follow the [link](#) from the technical notes of this release on the Statistics NZ website.

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## **Timing**

Timed statistical releases are delivered using postal and electronic services provided by third parties. Delivery of these releases may be delayed by circumstances outside the control of Statistics NZ. Statistics NZ accepts no responsibility for any such delays.

## Tables

The following tables are printed with this Hot Off The Press and can also be downloaded from the Statistics New Zealand website in Excel format. If you do not have access to Excel, you may use the [Excel file viewer](#) to view, print and export the contents of the file.

1. Selected livestock numbers, by region
2. Sheep numbers, by region
3. Lamb numbers, by region
4. Dairy cattle numbers, by region
5. Beef cattle numbers, by region
6. Deer numbers, by region
7. Forestry, by region
8. Grain crops, by region
9. Livestock by island, at 30 June
10. Breeding ewes and lambing percentage