



Agricultural Production Statistics: June 2021 (Final)

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Agricultural Production Statistics: June 2021 (Final)

Agricultural Production Survey: June 2021 (Final)

Methodology

Period-specific information

Survey information

This release contains final results from the 2021 Agricultural Production Survey. These final figures are at regional level.

The 2021 survey was part of the current programme of agricultural production statistics that started in 2002. Previous censuses were held in 2002, 2007, 2012 and 2017, with annual sample surveys in 2003–06, 2008–11, 2013–16, 2018, 2019 and 2020.

Responses from farmers and foresters in the 2021 Agricultural Production Survey resulted in an estimated eligible population of 49,300 geographic locations.

2021 questionnaire changes (from 2020)

Horticulture – we did not include questions on the area of fruit trees and vines planted, and the area of vegetables and other horticulture crops harvested.

Irrigation – we did not include questions on area actually irrigated.

Effluent management – we did not include questions on effluent management systems.

Other farming practices – we did not include questions on formal farm nutrient planning documents used by the farm.

Cultivation, direct drilling and pasture renewal – we did not include questions on land area on the farm that was cultivated or direct drilled for any purpose.

Sample design

For the 2021 Agricultural Production Survey, we used a stratified sample design to select a sample from the population. In selecting this sample, we stratified the population by regional council area, ANZSIC06 group, and size group.

We determined the size groups as follows:

- For businesses that had previously responded to one or more of the agricultural production censuses or surveys since 2002, we used the most-recent production data to form size groups. The variables used covered a range of livestock and cropping variables. Typically, three size groups were formed: small, medium, and large.
- For new businesses or businesses that had not responded to any of the 2017 to 2020 agricultural collections, a random sample was taken.

The 2021 survey had a sample size of 30,200 geographic locations.

We optimised the 2021 sample design to produce a specified sampling error for certain combinations of key variables and regions, but not all. Given the dynamic nature of the agricultural sector, the sample errors for 2021 may sometimes be smaller or larger than planned, particularly for sectors that change rapidly.

2021 sampling error and imputation levels

Sampling error and imputation levels for the 2021 Agricultural Production Survey

Description	Relative sampling errors at 95% confidence interval (%)	% of total estimate imputed
Calves born alive to dairy heifers/cows	4	30
Dairy cows and heifers, in milk or calf	4	29
Total dairy cattle	4	28

Description	Relative sampling errors at 95% confidence interval (%)	% of total estimate imputed
Calves born alive to beef heifers/cows	3	23
Beef cows and heifers in calf (age 1–2 years)	9	22
Beef cows and heifers in calf (aged 2 years and over)	3	23
Total beef cattle	3	23
Lambs born to ewe hoggets	6	19
Lambs born to ewes	3	22
Total lambs	3	21
Ewe hoggets put to ram	6	19
Breeding ewes (2-tooth and older) put to ram	3	22
Total sheep	3	21
Fawns born on the farm	5	15
Female deer mated	6	15
Total deer	6	16
Breeding sows (aged 1 year and over)	1	3
Mated gilts	1	0
Total pigs	0	1
Wheat tonnage harvested	5	15
Wheat area harvested (hectares)	5	15
Barley tonnage harvested	7	20
Barley area harvested (hectares)	8	20
Oat grain tonnage harvested	13	19
Oat grain area harvested (hectares)	18	20
Maize grain tonnage harvested	13	19
Maize grain area harvested (hectares)	13	19

Response rates

The estimated proportion of eligible businesses that responded to the 2021 Agricultural Production Survey for this final release was 80 percent.

General information

About the estimates

Figures in this release are rounded. We calculate all percentages in this release using unrounded figures. The figures from the agricultural production surveys may differ from those produced from other sources, such as the National Exotic Forestry Description Survey produced by the Ministry for Primary Industries, the Stock Number Survey from Beef and Lamb New Zealand Limited, and Dairy Statistics from Livestock Improvement Corporation Limited. These surveys use different survey frames and designs.

When converting livestock numbers into stock units, for the various livestock types and class, stock unit conversion ratios from Beef and Lamb New Zealand were used as a guide. These are also known as the 'Economic Service Conversions' and can be found in the definitions section of the Beef and Lamb New Zealand benchmarking tool.

Population frame

The agricultural production surveys include all units identified on Statistics NZ's Business Register as having agricultural activity. The Business Register is a list of businesses in New Zealand, based on their registration for goods and services tax (GST) with Inland Revenue.

The compulsory registration level for GST is \$60,000, so there is a partial and unquantifiable coverage of units below this level.

Survey population

The survey population for the agricultural production surveys is all businesses engaged in 'agricultural production activity' (including livestock, cropping, horticulture, and forestry), or which own land intended for agricultural activity. The survey population includes businesses engaged in agriculture or forestry production as a secondary activity.

Industries in scope

The survey population specifically includes businesses classified to the following ANZSIC06 codes:

- A01 Agriculture
- A0301 Forestry (excluding native forestry).

It also includes 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 survey population specifically excludes:

- 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 changes

For the 2002 Agricultural Production Census, we sourced the population from the Business Register and the Inland Revenue Client Register. We checked these sources against industry lists and AgriBase to ensure all large units were included in the population.

After the 2002 Census, we use the Business Register for the census and survey populations.

Survey content changes

Over the years, we have changed the core information we gather in agricultural production collections.

Since 2002, these collections have gathered information on livestock and arable farming, horticulture, and forestry with the following exception:

In 2004, 2006, 2008, 2010, 2013, 2015, 2016, 2018 and 2021 the surveys collected information on livestock and arable farming, and forestry (we did not collect horticulture production information).

Stats NZ no longer collects information or compiles statistics relating to forestry production. [These statistics can be found on the MPI website.](#)

Please note, Stats NZ does continue to collect information and compile statistics relating to forestry land use.

Past questionnaire changes

Fawns

Since the 2005 survey, the data relates to fawns born on the farm that were alive at four months. In 2003 and 2004, data related to fawns weaned on the farm. In 2002, data related to fawns born on the farm. The change took industry recommendations into account.

Deer

Deer figures since the 2004 survey are not directly comparable with 2002 and 2003 figures. Improvements we 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 under coverage, we estimate an undercount of about 70,000 deer at 30 June 2002, and 50,000 at 30 June 2003.

Reliability of sample survey estimates

This release contains statistics from the 2002–2021 agricultural production collections. All results from these collections are subject to non-sampling error, and sampling error.

Non-sampling error arises from bias in the patterns of response and non-response, inaccuracies in reporting by respondents, and errors in recording and classifying data. Non-sampling error comprises coverage error, measurement error (which arise from respondents, questionnaires, and collection methods), non-response error, and processing error. We use procedures to detect and minimise these types of error, but they may still occur and are not easy to quantify.

Sampling error occurs because we base inferences about the entire population on information obtained from only a sample of that population. As 2003–06, 2008–11, 2013–16, 2018–21 collections are sample surveys, not censuses, the results from these collections are also subject to sampling error.

Imputation

We impute values for farmers and foresters who do not return a completed questionnaire. Imputation involves replacing missing items with values based on other information available.

The method of imputation we use is random 'hot deck' imputation.

The Agriculture Production Survey uses random hot deck imputation. Using this method, we replace missing values of one or more variables for a non-respondent with observed values from a respondent with similar characteristics. The imputation class is formed from common characteristics such as regional council area, ANZSIC06 group, and production data from previous years. We randomly assign each non-respondent to a respondent in the same imputation cell, and the farm production data of the respondent is copied across to the non-respondent.

To improve the imputation process, we remove respondents with uncharacteristically high levels of agricultural activity from their respective imputation cells. It is unlikely that any of the non-respondents would have similar characteristics to them.

Confidentiality

Data collected and information contained in this release must conform to the provisions of the Statistics Act 1975. Published information must maintain the confidentiality of individual respondents. Prior to 2017 figures in tables affected by these provisions are denoted by 'C'. Since 2017 confidentiality has been applied to agricultural statistics using an input perturbation method, which involves adding noise to data at an individual farm level. Figures in output tables no longer have to be replaced with 'C's.

Quality suppression

Data with high sample errors or imputation levels are suppressed and are indicated by 'S' in the table.

More information

[See more information about the Agricultural Production Survey](#)

Statistics in this release have been produced in accordance with the Official Statistics System principles and protocols for producers of Tier 1 statistics for quality. They conform to the Statistics NZ Methodological Standard for Reporting of Data Quality.

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Variables

Agriculture Published Variables (v. 2019)

Name	Range
LC5604	
LC5605	
LC6398	
LC6399	
LC7192	
LC5755	
LC5748	
LC9423	Text
LC6357	
LC6018	
LC8093	
LC5649	
LC9550	
LC9630	
LC9591	
LC9593	
LC5759	
LC5748	
LC6953	
LC7722	
LC7713	
LC7724	
LC6406	
LC6407	
LC9761	
LC8060	
LC5602	
LC4005	
LC4003	
LC4004	
LC4008	
LC4006	
LC4007	
LC4002	
LC4000	

Name	Range
LC4001	
LC4011	
LC4009	
LC4010	
LC4014	
LC4012	
LC4013	
LC8500	
LC8501	
LC8530	
LC5951	
LC5950	
LC9998	
LC5550	
LC5554	
LC5552	
LC5555	
LC5551	
LC5553	
LC6051	
LC9000	
LC9005	
LC8570	
LC6347	
LC6317	
LC9010	
LC9543	
LC9943	
LC7056	
LC7057	
LC7058	
LC7059	
LC7064	
LC4041	
LC4039	
LC4040	
LC8615	
LC8620	
LC8625	
LC7186	
LC8630	
LC7068	
LC7645	
LC7648	
LC6949	

Name	Range
LC7720	
LC7721	
LC9025	
LC9030	
LC8094	
LC5120	
LC5125	
LC5105	
LC9035	
LC9420	
LC7074	
LC7190	
LC9752	
LC9040	
LC9045	
LC9050	
LC9055	
LC6404	
LC6385	
LC6405	
LC6387	
LC6408	
LC4035	
LC4033	
LC4034	
LC8540	
LC8720	
LC7719	
LC7712	
LC7715	
LC7717	
LC6360	
LC6799	
LC9200	
LC9758	
LC7344	
LC7342	
LC7341	
LC7352	
LC7350	
LC7349	
LC9065	
LC5100	
LC9753	
LC5035	

Name	Range
LC7185	
LC6653	
LC6652	
LC6651	
LC7187	
LC7188	
LC7102	
LC7101	
LC7104	
LC7103	
LC5955	
LC5954	
LC7687	
LC7688	
LC7686	
LC7685	
LC7600	
LC7605	
LC7610	
LC7615	
LC7618	
LC7630	
LC5601	
LC5040	
LC5655	
LC5682	
LC5660	
LC7752	
LC7753	
LC8070	
LC6724	
LC6723	
LC6722	
LC6721	
LC6052	
LC6053	
LC7695	
LC7696	
LC8575	
LC6351	
LC6319	
LC6798	
LC6796	
LC5510	
LC9521	

Name	Range
LC9925	
LC9424	
LC9817	
LC6392	
LC4020	
LC4018	
LC4019	
LC4017	
LC4015	
LC4016	
LC9541	
LC9941	
LC9610	
LC5020	
LC9075	
LC6848	
LC5684	
LC6012	
LC8670	
LC6002	
LC6693	
LC6671	
LC6675	
LC6690	
LC6692	
LC6650	
LC6695	
LC6696	
LC6687	
LC6697	
LC6681	
LC6680	
LC6691	
LC6694	
LC6685	
LC6654	
LC9015	
LC7400	
LC7398	
LC7397	
LC6019	
LC6400	
LC6401	
LC8735	
LC7716	

Name	Range
LC7711	
LC6361	
LC6353	
LC9565	
LC4023	
LC4021	
LC4022	
LC6609	
LC7810	
LC6007	
LC5953	
LC5952	
LC9422	
LC9625	
LC4032	
LC4030	
LC4031	
LC8552	
LC8551	
LC8553	
LC9085	
Lambing percentage	
LC6700	
LC6701	
LC6795	
LC5501	
LC5506	
LC5000	
LC5011	
LC5010	
LC6239	
LC5518	
LC5517	
LC5511	
LC5521	
LC5516	
LC5500	
LC9188	
LC6232	
LC8675	
LC9090	
LC9754	
LC5645	
LC6390	
LC8725	

Name	Range
LC5502	
LC6350	
LC6321	
LC6391	
LC6409	
LC6381	
LC6402	
LC6403	
LC6383	
LC8685	
LC6951	
LC7372	
LC7371	
LC7373	
LC6015	
LC6797	
LC9115	
LC7424	
LC7422	
LC7421	
LC5520	
LC4044	
LC4042	
LC4043	
LC7375	
LC7374	
LC7376	
LC7384	
LC7383	
LC7385	
LC5900	
LC5901	
LC4038	
LC4036	
LC4037	
LC9755	
LC8515	
LC6016	
LC8535	
LC6050	
LC5670	
LC5681	
LC5687	
LC7071	
LC7072	

Name	Range
LC7073	
LC7620	
LC7625	
LC9945	
LC5683	
LC5685	
LC9600	
LC6348	
LC6315	
LC8700	
LC9120	
LC8665	
LC9815	
LC9540	
LC9940	
LC8080	
LC8075	
LC4047	
LC4045	
LC4046	
LC6349	
LC6327	
LC6344	
LC6462	
LC5905	
LC5686	
LC9816	
LC8885	
LC8970	
LC6379	
LC6378	
LC9985	
LC5012	
LC6670	
LC5959	
LC5958	
LC7370	
LC7369	
LC7368	
LC8950	
LC9620	
LC9590	
LC5789	
LC6352	
LC6343	

Name	Range
LC5115	
LC6394	
LC7381	
LC7380	
LC7382	
LC7378	
LC7377	
LC7379	
LC9303	
LC5045	
LC9125	
LC8585	
LC6410	
LC8525	
LC8510	
LC6305	
LC9130	
LC9421	
LC7464	
LC7462	
LC7461	
LC9542	
LC9942	
LC8590	
LC6955	
LC6009	
LC8545	
LC7366	
LC7365	
LC7367	
LC5606	
LC5607	
LC9135	
LC9615	
LC9140	
LC6738	
LC6720	
LC8645	
LC5025	
LC7184	
LC7504	
LC7502	
LC7501	
LC9605	
LC5957	

Name	Range
LC5956	
LC6660	
LC6661	
LC9160	
LC4029	
LC4027	
LC4028	
LC5903	
LC5902	
LC4026	
LC4024	
LC4025	
LC5515	
LC9165	
LC9170	
LC7065	
LC7066	
LC7067	
LC8655	
LC7536	
LC7534	
LC7533	
Lc5904	
LC5603	
LC9175	
LC8605	
LC8580	
LC8690	
LC7552	
LC7550	
LC7549	
LC0006	
LC9757	
LC9185	
LC5505	
LC7077	
LC7193	
LC7699	
LC8890	
LC9999	
LC8555	
Total lambs marked or tailed	
LC6013	
LC5750	
LC8095	

Name	Range
LC9595	
LC6580	
LC5751	
LC6954	
LC5752	
LC7714	
LC6731	
LC5753	
LC6003	
LC5600	
LC5609	
LC5675	
LC5608	
LC6356	
LC7640	
LC8730	
LC6727	
LC6345	
LC6307	
LC6346	
LC6309	
LC8600	

Concepts

Agriculture Production Concepts

Name	Description
Arable land	Arable land Capable of being ploughed, fit for tillage (not pasture or woodland).
Bull	Bull An entire (ie not castrated) male cattle.
Calf	Calf A young cattle of either sex between birth and weaning, with eight temporary teeth. Also sometimes refers to animals up to one year old.
Calving percentage	Calving percentage Calculated either by calves weaned to number of cows mated, or calves sold to cows mated in the previous year.
Cow	Cow A mature female cattle beast of any age, but usually over 30 months.
Dairy milking herd	Dairy milking herd Milk-producing cows and heifers, which includes all cows and heifers either in milk or in calf.
Dairy replacement herd	Dairy replacement herd Dairy cows and heifers not currently producing milk and all calves and heifers reared for future dairy breeding and milking.
Dry cow/ewe	Dry cow/ewe A female animal not carrying offspring.
Ewe	Ewe A female sheep.

Exotic timber	Exotic timber Timber harvested from trees which are not native to New Zealand.
Flock	Flock A group of sheep, angora or feral goats, or poultry.
Heifer	Heifer A female cattle having no more than six permanent incisors.
Herd	Herd A group of cattle, horses, or milking goats (or pigs and deer).
Hogget	Hogget A young male or female sheep having no more than two permanent incisors in wear.
Lamb	Lamb A sheep under 12 months of age, or without any permanent teeth in wear.
Lambing percentage	Lambing percentage The number of lambs marked or tailed per ewe mated in the previous year.
Ram	Ram An adult uncastrated male sheep having more than two permanent incisors in wear.
Schedule	Schedule The basic minimum price paid to a farmer by a meat processing company. Based on categories of stock. Usually announced weekly. Variable premiums can apply for particular groups at certain times.
Steer	Steer A male cattle castrated when young. Does not develop secondary sexual characteristics (eg large shoulders) or masculine temperament.
Two-tooth	Two-tooth A sheep with two teeth (a one-year-old).
Wether	Wether A castrated male sheep.