A National Statistics publication for Scotland

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Riaghaltas na h-Alba
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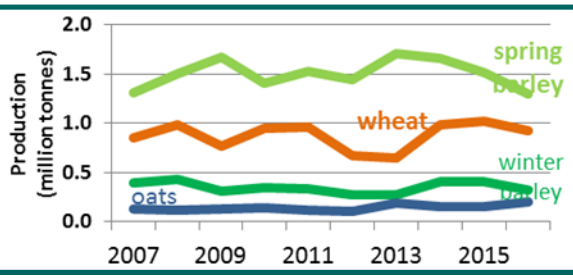
AGRICULTURE, ENVIRONMENT AND MARINE

Final Estimate of the Cereal and Oilseed Rape Harvest 2016

14th December 2016

1. Main findings

Production from: 3.10 mt 11% to: 2.75 mt **Cereals** Area ↓ 3% to 428,000 ha Yield ↓ 8% to 6.4 t/ha	Production from: 1.93 mt 16% to: 1.63 mt **Barley** Area ↓ 7% to 287,000 ha Yield ↓ 10% to 5.7 t/ha
Production from: 406 kt 19% to: 329 kt **Winter barley** Area ↓ 7% to 48,000 ha Yield ↓ 13% to 6.8 t/ha	Production from: 1.52 mt 15% to: 1.30 mt **Spring barley** Area ↓ 7% to 239,000 ha Yield ↓ 9% to 5.4 t/ha
Production from: 1.02 mt 9% to: 0.93 mt **Wheat** Area ⇔ 110,000 ha Yield ↓ 9% to 8.4 t/ha	Production to: 201 kt 33% from: 152 kt **Oats** Area ↑ 22% to 31,000 ha Yield ↑ 9% to 6.4 t/ha
Production from: 148 kt 31% to: 102 kt **Oilseed rape** Area ↓ 14% to 31,000 ha Yield ↓ 20% to 3.3 t/ha (not included in cereals total, and not shown on the chart)	

Contents

Area, yield and production definitions

Cereal and oilseed rape crop areas represent the amount of area that has been used to grow a particular crop, which is intended for combine-harvesting and the production of grain or oilseeds. Area estimates are derived from the June Agricultural Census and specifically exclude any areas of cereals which are not intended for combine harvesting. “Whole crop” cereals are harvested without extracting the grain, and are used as a source of animal feed.

Average yields are expressed in tonnes per hectare and represent the amount of cereal grain or oilseed that is extracted from one hectare of combine-harvested area. As the moisture content of cereals and oilseeds can vary from year-to-year and farm-to-farm, depending on the level of rainfall, average yields are adjusted to a standard moisture content of 14.5 per cent for cereals and nine per cent for oilseeds. This adjustment ensures there is consistency in estimates of the amount of dry matter which can be extracted from cereal grain and oilseeds.

Production estimates are derived by multiplying crop areas (in hectares) and average yields (in tonnes per hectare). They represent the total tonnage of cereal grain and oilseed that is combine-harvested from the planted area. This tonnage does not include the weight of straw and other plant material which is produced as a by-product and used for other purposes.

When discussing production and area we are referring to estimated totals. When discussing yield we are referring to estimated averages.

Cereal production is estimated to have fallen by 348,000 tonnes between 2015 and 2016, to 2.75 million tonnes. The overall decrease in production this year is due to a three per cent decline in areas, which has been driven by reduced areas of barley. Overall estimates of yield have fallen to 6.4 tonnes per hectare.

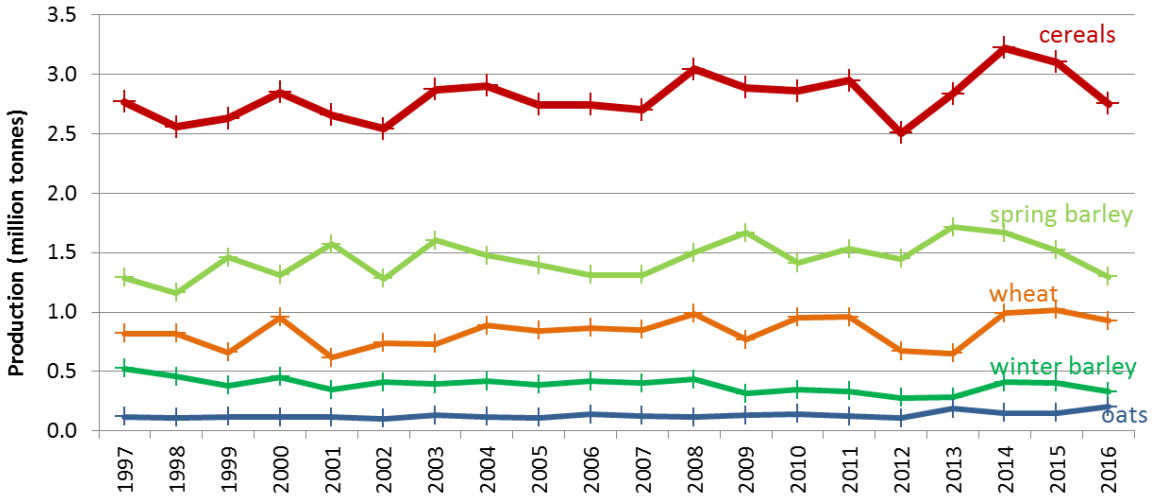
Yields for spring barley and oilseed are higher than estimated in early (first) estimates released in October, and lower for wheat, winter barley and oats. The average cereal yield is less than one per cent lower than previously estimated.

The recent 10-year average yield is five per cent above the previous decade's. Long term increases are likely to be due to improved efficiency in practices, development and use of high yielding varieties.

These estimates indicate that, compared with final estimates from the 2015 harvest:

- Spring barley production decreased by 15 per cent to 1.3 million tonnes due to a seven per cent decrease in planted area and a nine per cent decrease in the average yield.
- Winter barley production fell by 19 per cent to 329,000 tonnes due to a seven per cent reduction in area and a 13 per cent reduction in average yield.
- Wheat production decreased by nine per cent to 926,000 tonnes due to a nine per cent decrease in yield. Planted area remained unchanged.
- Oat production increased by 33 per cent to 201,000 tonnes due to a 22 per cent increase in area and a nine per cent increase in yield.
- Oilseed rape production fell by 31 per cent to 102,000 tonnes due to a 14 per cent decrease in area and a 20 per cent fall in yield.

Chart 1: Cereal Production Trends, 1997 to 2016



Harvest Conditions

There was no one explanation for why the 2016 harvest was relatively poor. There was a three per cent reduction in the overall sown area, probably partly due to expected poor returns and partly due to greening requirements. High winds spoilt the oilseed harvest, but there were no particular meteorological issues affecting the cereals. There was however less than ideal weather at several stages of the cycle, and the relatively wet weather last winter possibly meant the seed beds were less than ideal. A low expectation of price may also have led some farmers to reduce inputs, but the lack of warmth and sunlight during the summer meant that this yielded smaller grain.

2. Comparison against provisional estimates

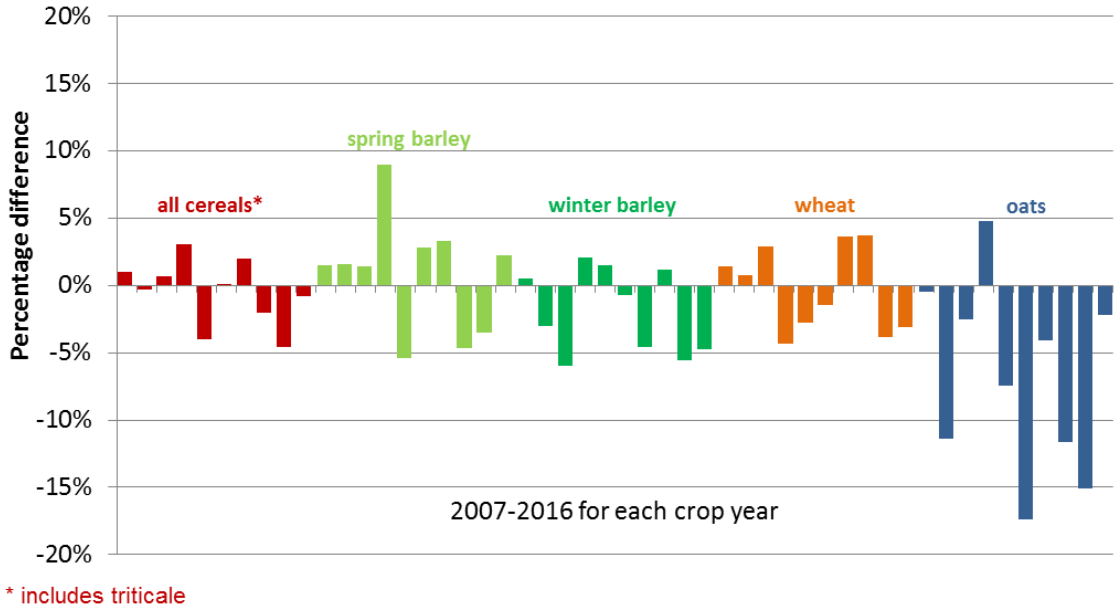
Yields for spring barley and oilseed rape have been revised upwards since the release of early estimates in early October, and for winter barely, wheat and oats have been revised downwards, resulting in equivalent changes in production.

- Overall cereal production is estimated at 2.75 million tonnes; 21,000 tonnes or 0.8 per cent below provisional estimates.
- The estimated decrease in production of spring barley (down 15 per cent) is less than suggested by provisional estimates (17 per cent).
- Winter barley production was expected to fall by 61,000 tonnes, but has instead fallen by 77,000 tonnes compared to 2015.
- Wheat has fallen much more than expected, down 9.1 per cent rather than the 6.5 per cent initially estimated.
- Oats had a slightly smaller increase than expected, and oilseed a slightly smaller reduction.

Overall, in the past the difference between provisional and final estimates has been typically around five per cent or lower. Chart C shows the differences in yields between the two estimates over the last ten years. Yield estimates of individual cereal crops do sometimes vary by more than five per cent.

This year the revision to overall cereal yield was 0.8 per cent. In most years, the largest differences between provisional and final production estimates are for oats, with the largest difference being 17 per cent in 2012. This year the largest difference was for winter barley at 4.7 per cent.

Chart C: Cereal Production, Comparison of Provisional v Final Estimates, 2007 to 2016 (final estimates minus first estimates, as percentage difference)



Global supply of cereals is set to surpass 2.57 billion tonnes, according to the Food and Agriculture Organization of the UN[1], a result that comes despite a decline in EU soft wheat production due to poor weather.

[1] http://www.fao.org/worldfoodsituation/csdb/en/

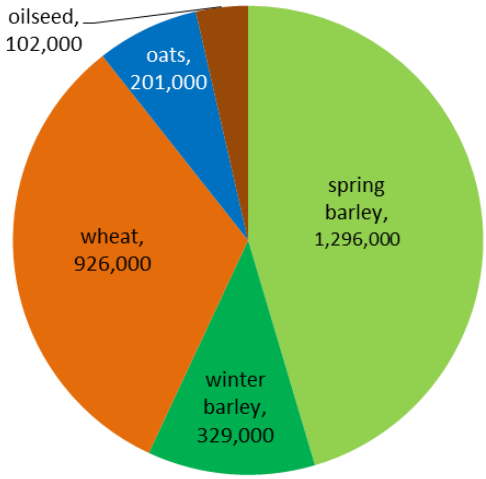
3. Cereals

Production

Total cereal production in Scotland is estimated to have fallen in 2016 by 348,000 tonnes to 2.75 million tonnes. With the exception of the weather-hit 2012 harvest, this is the lowest since 2007. While the volume of the harvest was poorer than expected, industry experts collecting data have reported no particular concerns over quality.

In 2015 cereals were estimated to have accounted for about 11 per cent of farm output.

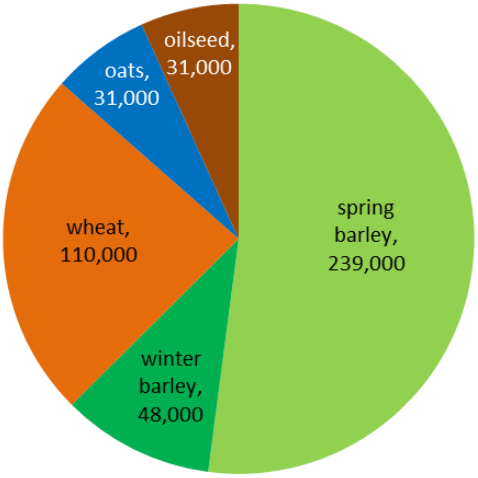
Chart 2: Production (tonnes)



Area

The total cereal area fell three per cent compared to 2015. About 428,000 hectares of cereals were grown in 2015/16. Areas have ranged between 398,000 hectares in 2006 and 476,000 hectares in 1997.

Chart 3: Area (hectares)

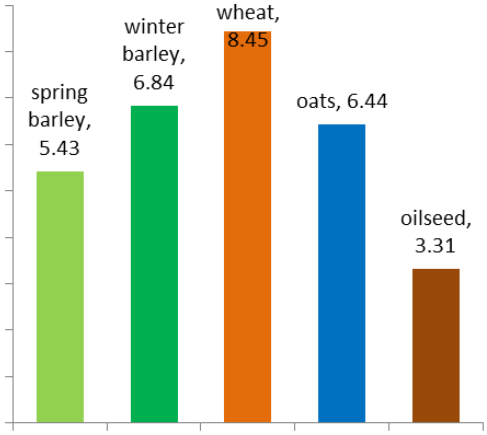


Yield

The overall yield estimate for Scottish cereals is the third lowest in the last decade, at 6.4 tonnes per hectare. The yields for all crops in this report are estimated to have fallen, with the exception of oats.

The long term trend of increasing yields remains, with the recent ten-year average of 6.5 tonnes per hectare five per cent above the previous ten-year

Chart 4: Yield (tonnes/hectare)



average. This long term increase is likely to be due to an improved efficiency in farming practices as well as development and use of higher yielding crop varieties. The shorter term variations in cereal yields are more likely to be influenced by weather and other conditions during the growing season

Other cereals

Triticale is a marginal crop in Scotland, grown on around 600 hectares. Because there are relatively few farms growing triticale it is difficult to provide reliable yield estimates. However, for the same reason, variances in yield have little impact on overall cereal production. Triticale production is not discussed in this release, but is included in the overall cereal estimates.

Rye is increasingly being grown, though mainly for anaerobic digestion.

Oilseed, though not a cereal, is also shown for comparison in the above charts, though is not included in calculations and commentary about cereal totals.

Charts

Chart 5 shows the areas estimated from the June Agricultural Census as bars and the estimated production and estimated average yield as lines. Area is presented in hundreds of hectares, production in thousands of tonnes and yield in tonnes per hectare.

Chart 6 shows the year-on-year change of areas, total production and average yield. This allows the drivers of fluctuations in production to be more easily distinguished and gives a sense of the typical fluctuations from year to year. In chart 6 all measures are presented as the percentage change compared to the previous year.

In the following sections similar charts are used to display the results for each crop group, though the scales of the chart axes are not the same in every case.

Chart 5 - Total Cereals: Area, Yield and Production

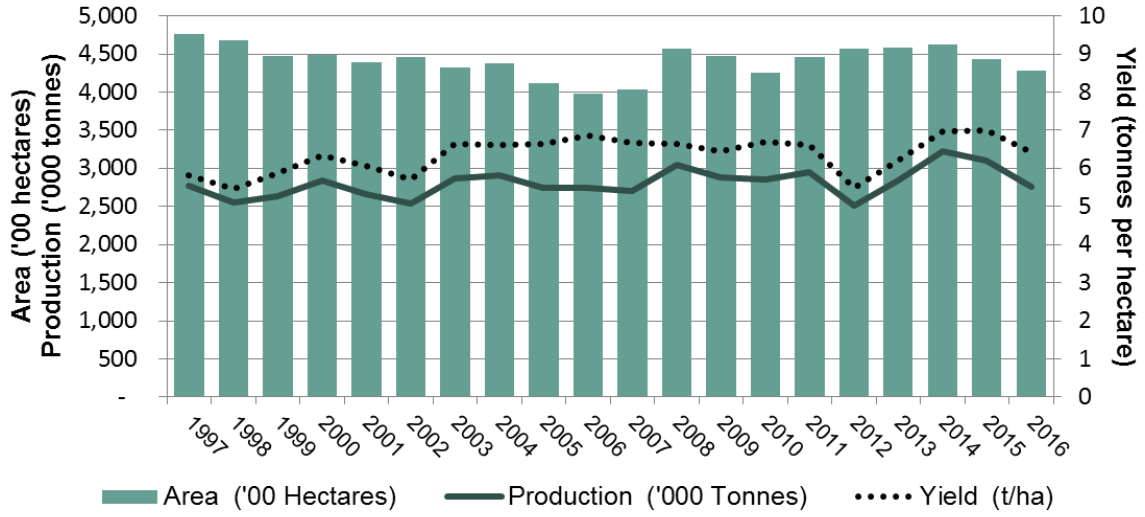
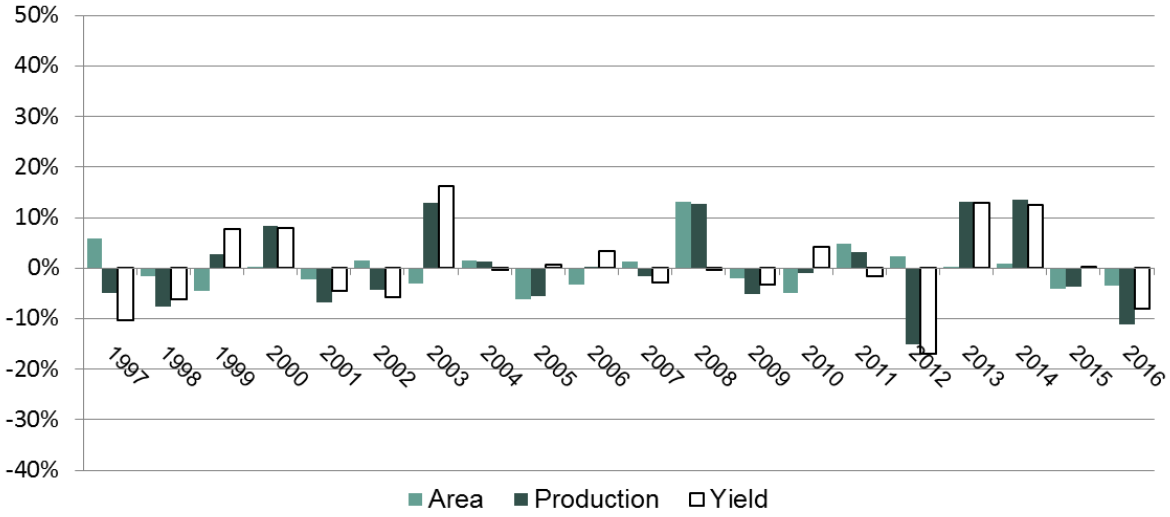


Chart 6 - Total Cereals Year-on-Year Change: Area, Yield and Production



4. Barley

Barley is the predominant cereal crop grown in Scotland, contributing about a quarter of the UK barley production, particularly spring barley which accounted for almost 35 per cent of the UK total, according to provisional UK figures. Despite a strong association with the Scottish whisky industry, as a key ingredient, most Scottish barley is used as animal feed.

Spring Barley Estimates **(charts 7 and 8)**

Spring barley production is estimated to have fallen by 15 per cent in 2016. Over the last 20 years, spring barley production has been following a generally increasing trend. Production reached the highest level over the period in 2013, at 1.71 million tonnes. However, in the last three years spring barley production has fallen, by 49,000 tonnes in 2014, a further 144,000 tonnes in 2015, and another 224,000 tonnes in 2016, to 1.30 million tonnes.

This year's estimate is 24 per cent lower than the high of 2013, and is the lowest production since 2002.

The area of spring barley varies considerably depending on the planting of winter crops, but in 2016 the figure of 239,000 hectares was the lowest since 2007. The average yield for spring barley in 2016 has been estimated at 5.4 tonnes per hectare, well down on last year's 5.9 and on the ten-year average of 5.7.

The longer term trend in yield is an increasing one, with the average over the most recent decade seven per cent higher than over the previous 10 years.

Chart 7 - Spring Barley: Area, Yield and Production

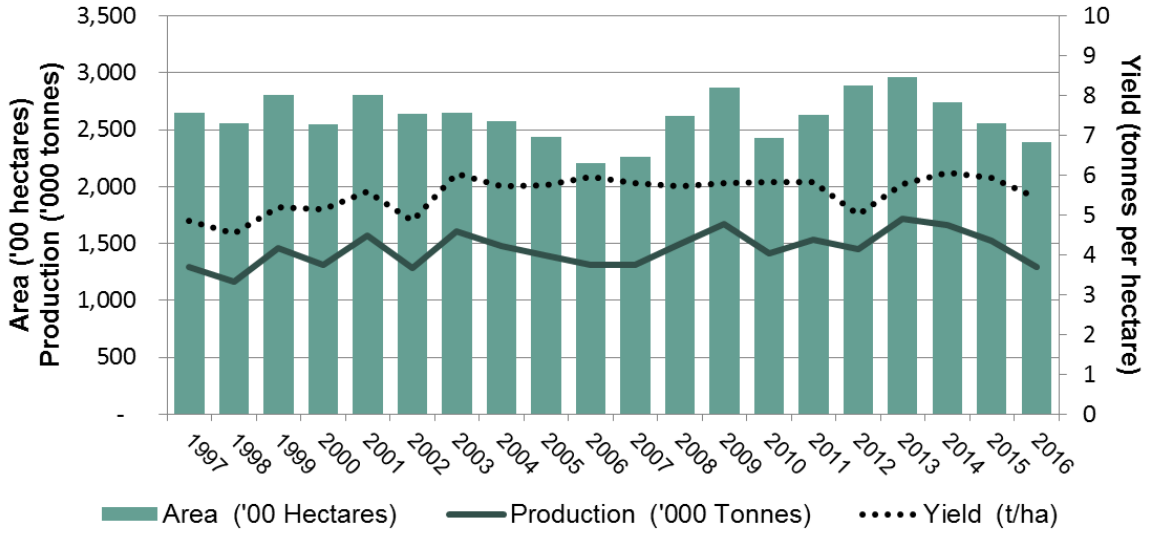
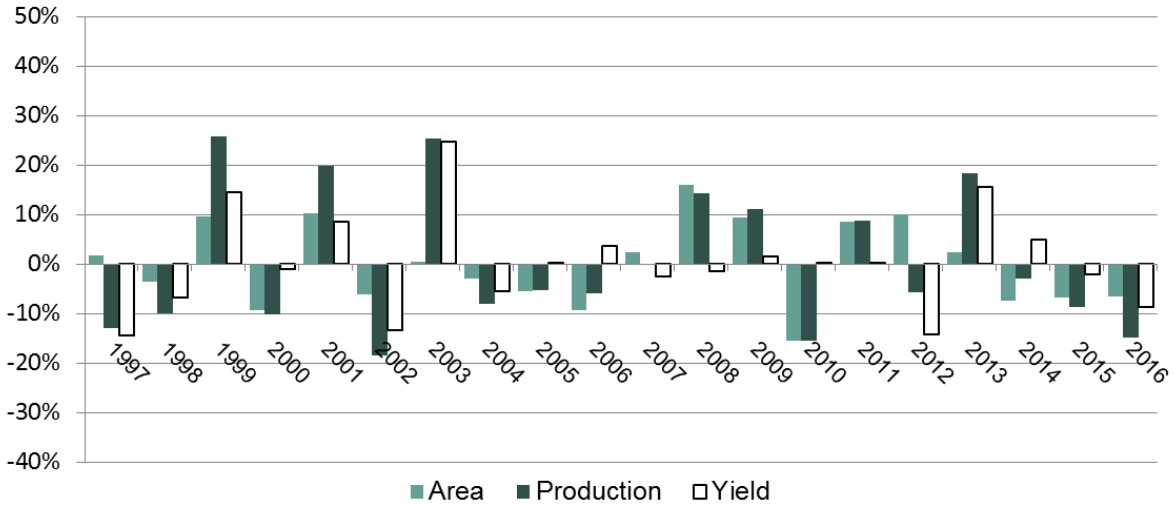


Chart 8 - Spring Barley Year-on-Year Change: Area, Yield and Production



Winter Barley Estimates **(charts 9 and 10)**

2016 production is estimated to have decreased by 19 per cent to 329,000 tonnes. This year's estimated fall has been driven by a 13 per cent fall in yield and a seven per cent reduction in area.

Winter barley yields have fluctuated considerably in recent years, often affected by the weather. However, the recent ten-year average is four per cent higher than that of the previous decade. The average yield for winter barley in 2016 is estimated at 6.8 tonnes per hectare, lower than last year's 7.8 and than the ten-year average of 7.2.

Chart 9 - Winter Barley: Area, Yield and Production

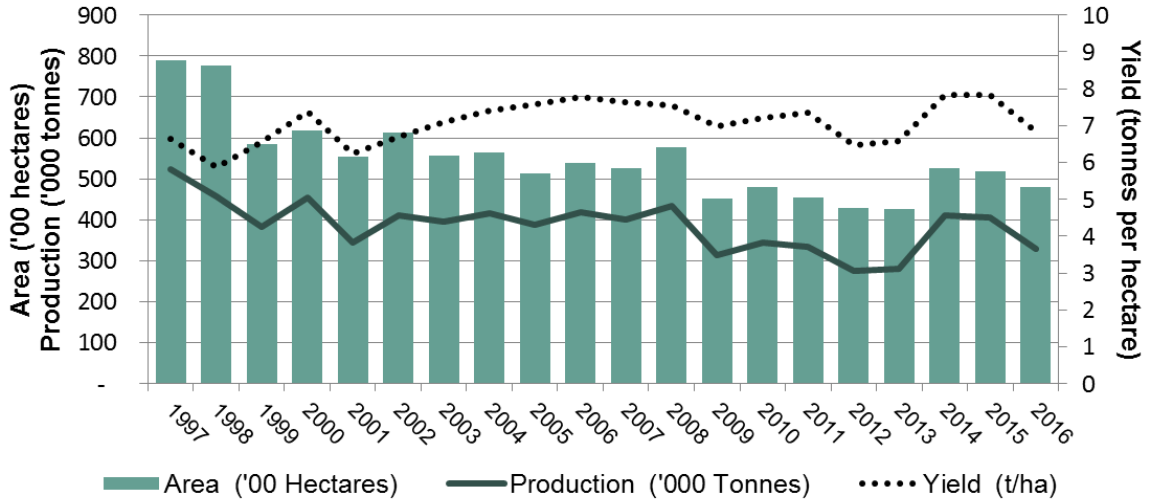
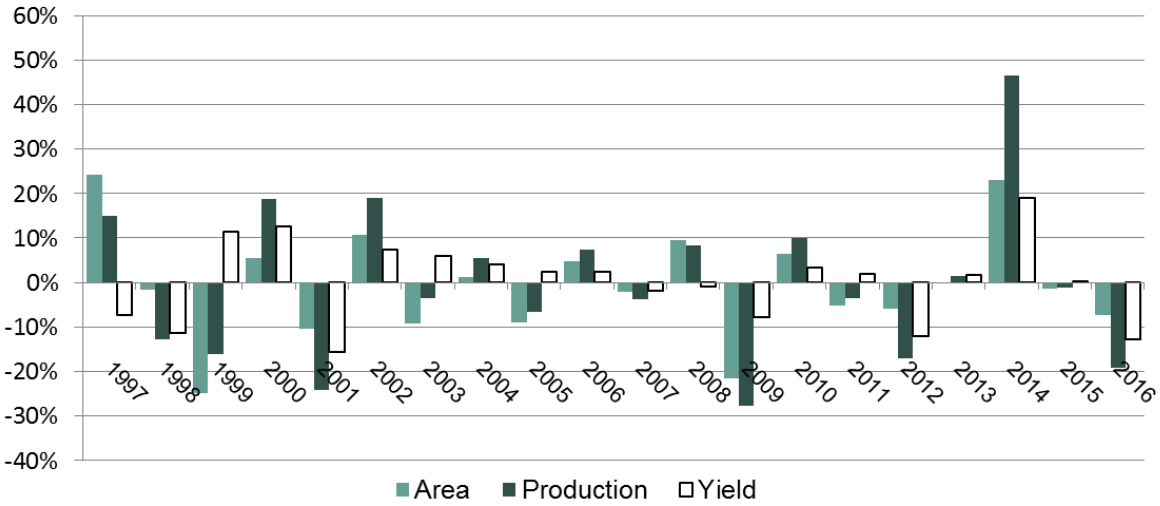


Chart 10 - Winter Barley Year-on-Year Change: Area, Yield and Production



5. Wheat

Scottish wheat is mostly soft wheats; used predominantly for distilling, but is also used for animal feed. Scotland imports hard wheats for milling (for bread making) as our climate does not suit hard wheat varieties.

Wheat Estimates (charts 11 and 12)

While the area of wheat production has remained constant in the last few years, production this year is estimated to have fallen nine per cent to 926,000 tonnes. Wheat yields were estimated to have fallen by nine per cent, in line with falls in barley yields.

Long-term increase in wheat yields has not been as great as in barley, with the latest ten-year period only being two per cent higher than the previous ten years. At 8.45 tonnes per hectare, this year's estimated yield is still above the ten-year average of 8.32.

Chart 11 - Wheat: Area, Yield and Production

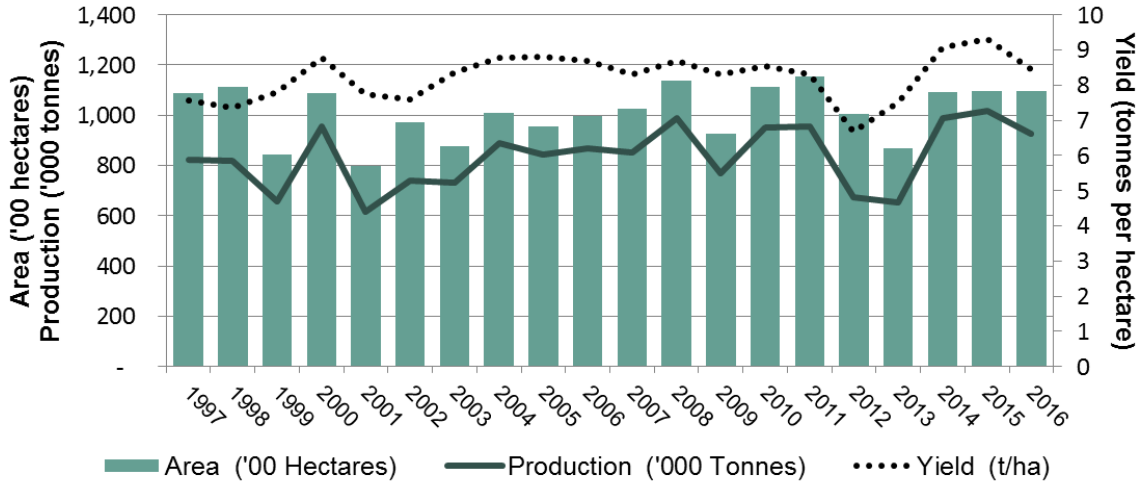
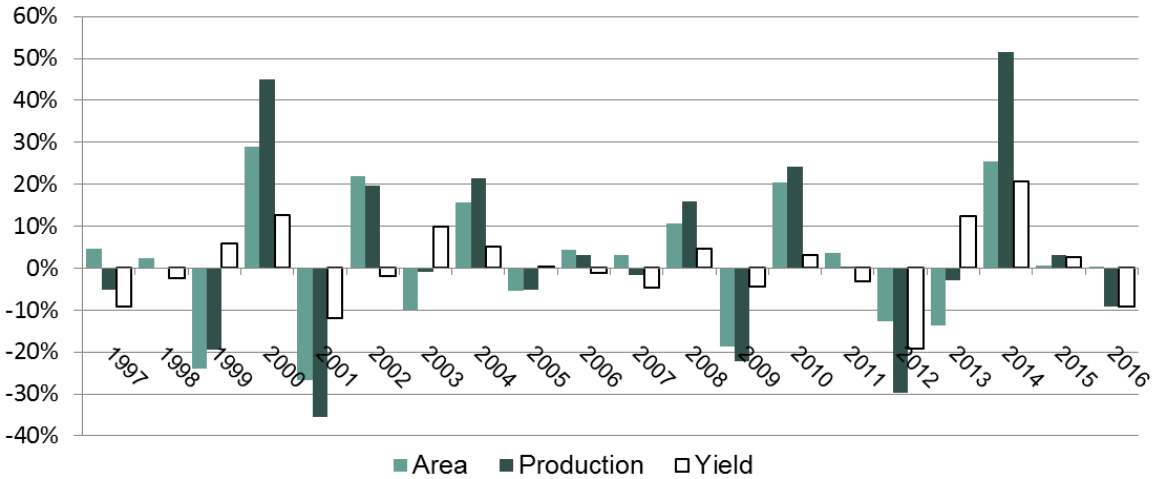


Chart 12 - Wheat Year-on-Year Change: Area, Yield and Production



6. Oats

The majority of oats grown in Scotland are used for milling and further processing for breakfast cereals, oatcakes, porridge oats and oatmeal for secondary processing outwith Scotland. The majority of the remainder is used as specialist feed for horses.

Oats Estimates **(charts 13 and 14)**

Oat production is estimated to have increased by 33 per cent this year due to a 22 per cent increase in area grown and a nine per cent increase in yield. Production has fluctuated considerably in recent years, with a previous high of 187,000 tonnes in 2013. This year's estimate would break the 200,000 tonne mark for the first time since the fall in oat production in the 1970s. Spring oats make up around two thirds of oat production.

This year's average yield is estimated at 6.4 tonnes per hectare, the highest on record, and applied to the second highest area since 1989. The increase in yield is in line with the general increasing trend in oat yields, which has seen a six per cent increase in the average for the last ten years, compared to the previous decade.

Chart 13 - Oats: Area, Yield and Production

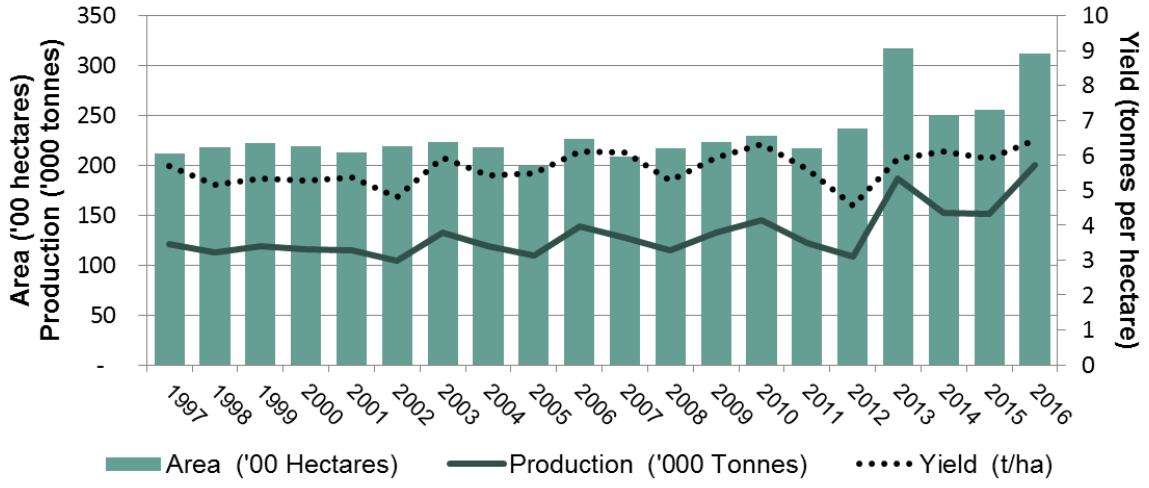
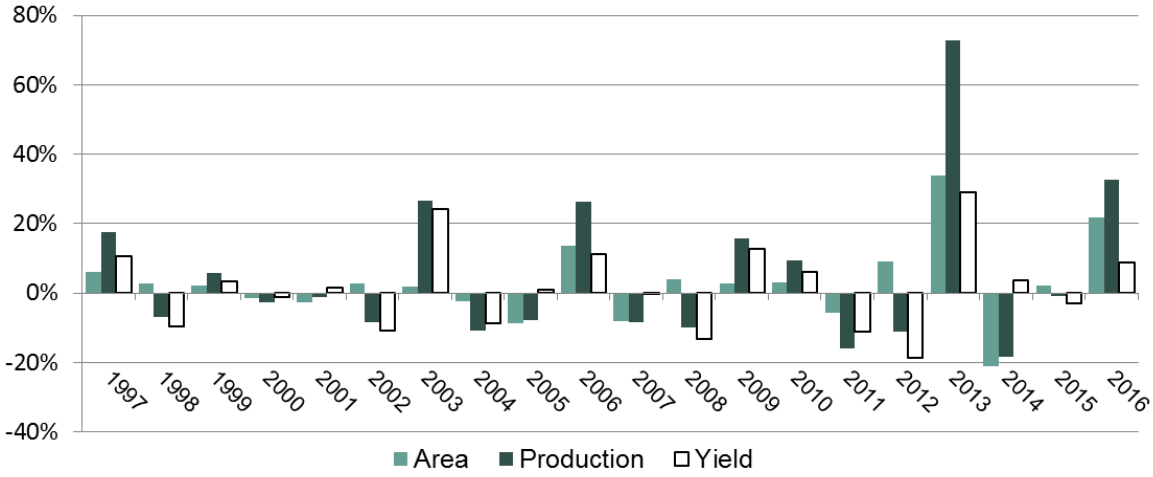


Chart 14 - Oats Year-on-Year Change: Area, Yield and Production



7. Oilseed Rape

The majority of Scottish oilseed rape is winter oilseed rape and is mainly exported for biofuels, with a very small amount processed in Scotland for edible oil.

Oilseed Rape Estimates **(charts 15 and 16)**

Estimated oilseed rape production in 2016 decreased by 31 per cent to 102,000 tonnes, the lowest production volume since our records began in 1992. This was due to a 14 per cent reduction in area, and a 20 per cent drop in yield to 3.3 tonnes per hectare. This year's yield was affected by strong winds around harvest-time.

Over the last 20 years, oilseed rape production has fallen. This is in due to the fall in areas grown outweighing general increases in yields achieved. Fluctuations in yield have been more marked in recent years. In 2015, yields improved to their highest level on record, which partly explains why this year's fall is so large.

Chart 15 – Oilseed Rape: Area, Yield and Production

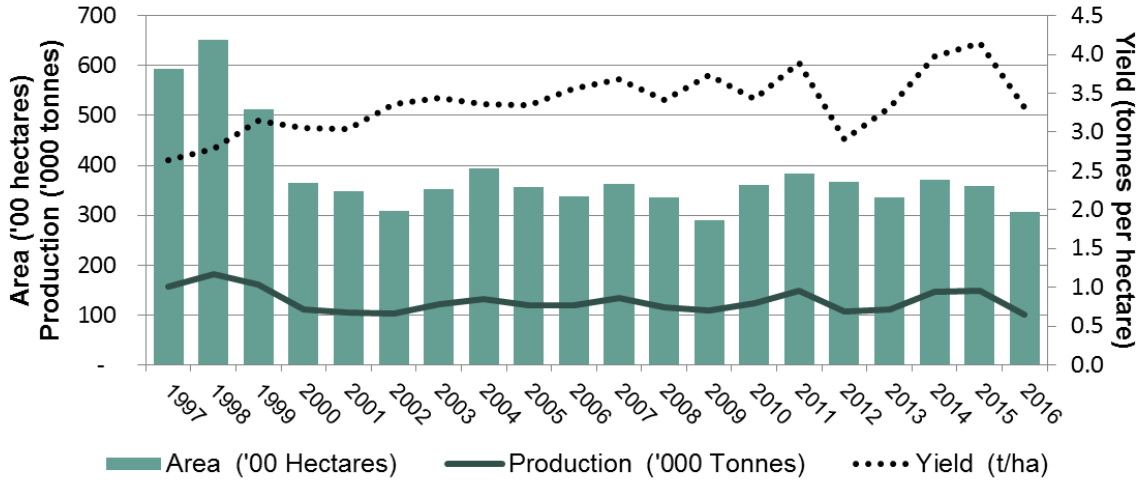
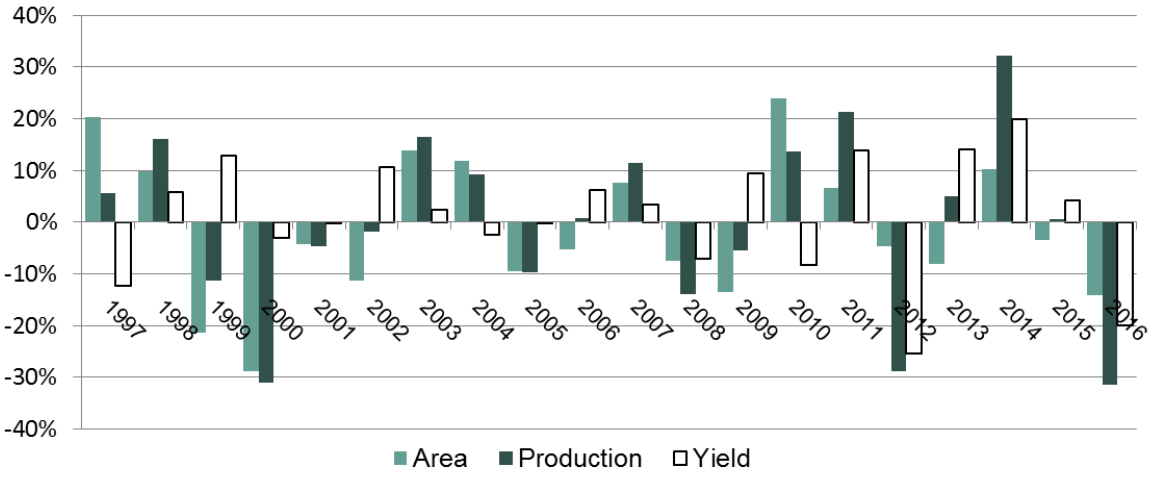


Chart 16 – Oilseed Rape Year-on-Year Change: Area, Yield and Production



8. Methodology and Quality Note

This section provides a summary of information on these statistics against five dimensions of quality, based on the European Statistical System (ESS) quality framework: Relevance; Accuracy; Timeliness and Punctuality; Accessibility and Clarity; and Comparability. The Scottish Government adheres to the Code of Practice for Official Statistics and the National Statistician's guidance on quality. In addition the Scottish Government provides its own guidance on quality, which is available to view at the Scottish Government's Statistics internet pages.

Further information on quality:

- Code of Practice for Official Statistics
- National Statistician's Guidance on Quality
- Scottish Government's Corporate Policy Statement
- Scottish Government Guide to basic quality assurance
- European Statistics Code of Practice (including quality framework)

Methodology

The 2016 final estimates of production are based mainly on final yield results from the 2016 Cereal Production Survey (CPS) and final crop areas from the 2016 June Census. The CPS is a disproportionate stratified random sample of around 630 farms in Scotland, stratified by region. The construction of the sample is based on the Neyman Allocation which apportions larger sample sizes to the strata with the most variation in yields.

In 2016, the number of holdings submitting a return for Spring Barley was 275, Winter Barley was 100, Wheat was 148, Oats was 93 and Oilseed Rape was 63. For some regions relatively few returns were received for some crops.

Totals of sample production and sample crop area for each stratum (i.e. crop and region combination) are used to derive a sample estimate of yield. These yield values are applied to national crop areas from the June Agricultural Census to provide national estimates of production. Where sample sizes for strata are insufficient to calculate production results national average yield estimates for the crop are used to calculate estimates of production.

2016 regional results for winter oats, triticale and spring oilseed rape were generally based on national averages.

The Cereal Production Survey is carried out by Rural Payments & Inspections Division (RPID) and Rural and Environment Science & Analytical Services (RESAS) within the Scottish Government (SG). The survey is carried out by

telephone with forms mailed to farms on request. Completed returns are analysed by RESAS.

The data undergo several validation processes as follows; (i) checking for any obvious errors on the paper survey forms upon receipt, (ii) cross checking against Census area data and internal validation within survey forms to ensure totals match, (iii) results are standardised to 14.5 per cent moisture content for cereals and nine per cent moisture content for oilseed rape (iv) assessing data for any extreme yield values and removing if necessary, (v) if required, area offices are contacted to ensure that data is correct.
Additional quality assurance is provided at the later stages by utilising expert knowledge within the Scottish Government.

Data quality and assurance measures used for June Census area data are contained in Final Results from the 2016 June Agricultural Census.

Provisional Estimates – published on 6th October 2016

The provisional estimates were derived from yield values of individual growers collated by several industry bodies**.** More information on the methodology and results of the 2016 first estimates of the cereal and oilseed rape harvest can be found in the first estimates of the cereal and oilseed rape harvest release.

Relevance

The degree to which the statistical product meets user needs for both coverage and content.

The cereal estimates are produced for a wide range of purposes. The statistics help the government to form, monitor and evaluate policy, and to assess the economic well-being of the cereal sector. They are also required by law by the Statistical Office of the European Communities, as the information is essential for management of the EU markets. These early provisional estimates are timed to enable provision of data for an EU regulatory deadline. Specific regulations are listed on pages 3 to 5 of our 2014/16 annual statistics plan.

The production estimates also feed into the UK cereals balance sheet, which provides an independent, unbiased, timely and comprehensive picture of the supply and demand position of the UK cereal market. The balance sheet is also the prime tool for tracking new developments in the UK cereals industry and determining their impact on the market. The balance sheet is widely used by policy makers, the EU Commission and the wider cereals industry. The balance sheets are published by the Home Grown Cereals Authority (HGCA).

User Feedback

Though we are not aware of any unmet user needs in relation to these statistics, the Scottish Government is always interested to here from users about what is most relevant to them and welcomes feedback from users of these statistics. Contact details are available from the Agriculture Statistics contacts webpage.

Details of both current and past user consultations are available on the Agriculture Statistics consultations webpage.

Accuracy

The closeness between an estimated result and the (unknown) true value.

The number of agricultural holdings surveyed in the CPS was 628 in 2016. Usable returns were received for 342 of these; a response rate of 54 per cent. Although 342 holdings participated, many holdings grow more than one crop. The total number of returns received for all crops combined was 691, this equates to five per cent of cereal crop numbers, and nine per cent of the relevant planted areas in Scotland.

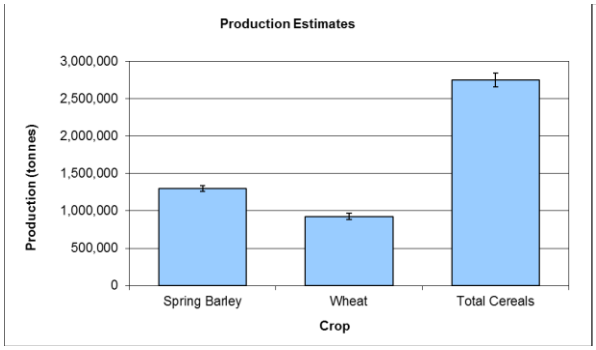
The results from the CPS have a margin of error associated with them, reflecting the error resulting from sampling. Sampling error is the difference between the estimate derived from a sample survey and the true value that would result if a census of the whole population were taken under the same conditions.

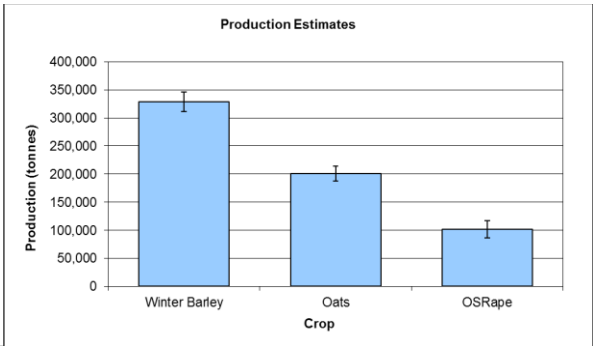
The sampling error can be estimated and used to produce confidence intervals around the survey results. These intervals tell us the range of values within which the true value lies, with a given degree of confidence. The intervals below are 95 per cent confidence intervals; this means that if the sample survey was repeated a large number of times, 95 per cent of the resulting estimates would lie within the intervals around our sample estimates. For example, there is a 95% chance that the true production value for all cereals in Scotland will lie within the range of 2.752 million tonnes ±120,000 tonnes. Charts A and B, below, show the main production estimates marked with the upper and lower bounds of the associated confidence intervals. This is shown on two charts with different scales to allow results to be viewed clearly.

Table A – 95% Confidence Intervals for 2015 CPS Estimates

Crop	Number of Holdings (June Census)	Sample Size	Sampling %	Production ('000 tonnes)	Confidence Limits ('000 tonnes)	Confidence Limits (%)
Total Cereals[1]	8,614	628	7.29	2,752	±120	±4.36
Spring Barley	7,154	275	3.84	1,296	±39	±2.99
Winter Barley	2,009	100	4.98	329	±20	±6
Wheat	2,846	148	5.20	926	±41	±4.43
Oats	1,783	93	5.22	201	±20	±10.18
Oilseed Rape	1,058	63	5.95	102	±9	±9.27

Charts A and B - Production Estimates with Confidence Intervals: 2016





Area data are sourced from the June Agricultural Census and are assumed to be accurate as farmers face financial penalties for supplying incorrect information.

Comparison of provisional and final results

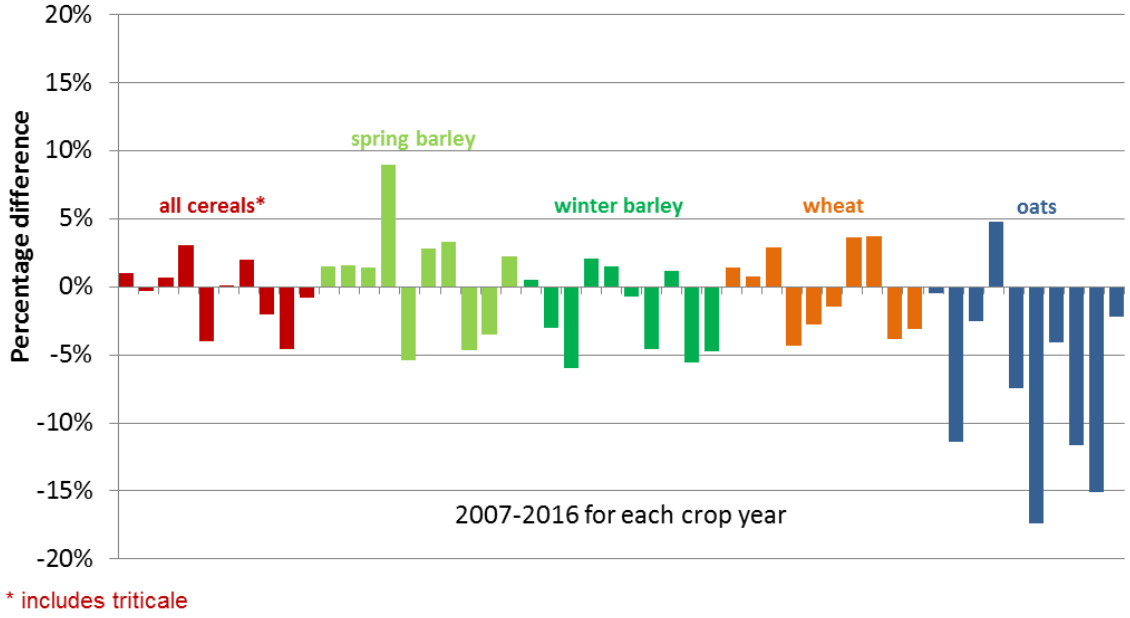
This section compares past provisional estimates of the harvest to the final estimates of the harvest. Provisional estimates are derived from averaged yield estimates of growers, collated through the cooperation of several organisations within the agricultural sector, applied to crop area estimates from the June Agricultural Census. Final estimates are derived from average yields from the Cereal Production Survey (CPS). The purpose of this section is to quantify the size and direction of the differences between the two estimates in order to give an indication of the robustness of these provisional estimates.

The results from the CPS have a margin of error associated with them, reflecting the error resulting from sampling. Sampling error is the difference between the estimate derived from a sample survey and the true value that would result if a census of the whole population were taken under the same conditions. The intervals were calculated as 95 per cent confidence intervals, meaning that there was a 95 per cent chance that the true population value was within the resulting interval.

The 2016 first estimates of overall production, and for each of the crops, were within these 95 per cent confidence intervals. This suggests that initial 2016 figures from the Crop Report Meeting provided a reasonable estimate of Scottish cereal production.

It can be seen from Chart C that in the last ten years the provisional estimate of the total cereal harvest has been within five per cent of the final estimate. In 2016 the difference between total cereal estimates from the two sources was 0.8 per cent. In most years, the largest differences between provisional and final production estimates are for oats, with the largest difference being 17 per cent in 2012. This year the largest difference was 4.7 per cent for winter barley.

Chart C: Cereal Production, Comparison of Provisional v Final Estimates, 2007 to 2016 (final estimates minus first estimates, as percentage difference)



Revisions

There are no revisions to previous years' data this year

Timeliness and Punctuality

Timeliness refers to the lapse of time between publication and the period to which the data refer.

To provide reliable estimates of the year on year changes in production, the CPS is carried out at the same time each year. The reference date for the CPS, the date at which respondents are asked for production information, is the 31st October each year. However, respondents are asked to make estimates for any crop still to be harvested. Typically, at the end of October the vast majority of the Scottish cereal and oilseed rape harvest is complete, allowing for reliable estimates to be made.

The release of results is completed within six weeks of this date, to allow sufficient time for data collection, processing, quality assurance and compilation and dissemination of final results.

Punctuality refers to the time lag between the actual and planned dates of publication.

The results of the 2016 CPS were released on the scheduled date of 14th December 2016.

Accessibility and Clarity

Accessibility is the ease with which users are able to access the data. It also relates to the format(s) in which the data are available and the availability of supporting information.
Clarity refers to the quality and sufficiency of the metadata, illustrations and accompanying advice.

These statistics are made available online at the Scottish Government's statistics website in accessible formats (html and pdf versions are available) www.gov.scot/agricstats
All data tables are made available in excel format to allow users to carry out further analysis. Methodological notes and additional notes to tables, identifying specific quality issues, are included in this document, which is available online and linked to from all National Statistics outputs containing cereal production estimates. Links to other UK Agriculture Statistics outputs are available at www.gov.uk/government/organisations/department-for-environment-food-rural-affairs/about/statistics

Comparability

The degree to which data can be compared over time and domain.

Results for England, Wales and Northern Ireland are compiled on a comparable basis with Scottish estimates.

The EC regularly produces estimates of cereal and oilseed production both EU-27 countries and individual countries. Further information on EC cereal statistics is available at the Eurostat website.

Typically EC results are published later than Scottish or UK results due to the additional time required to collate, validate and analyse data from several countries. Users interested in comparing results between countries should evaluate the relevant methodologies of sources used.

Respondent Burden **(the estimated overall cost to respondents)**

The estimated respondent burden is calculated as the total number of survey responses (A), multiplied by the median time taken to respond to the survey (B), multiplied by the median average hourly wage of typical respondents (C).

(A x B x C)

(A) The 2016 Cereal Production Survey (CPS) surveyed 342 holdings.

The time taken to respond to the survey varies with each respondent. Scottish Government (SG) Rural Payments and Inspections Directorate

(RPID) staff conducting the 2014 survey were asked to provide estimates of the average time taken to administer the telephone survey. The median time to respond in hours was calculated from these responses.

(B) The median time taken to respond to the survey is 0.083 hours.

Respondents to the CPS are usually farm owners themselves or farm managers. Both are usually full-time workers.

(C) The estimated median hourly pay rate for full-time employees in Scotland in 2016 was £9.53 (source: Scottish Agriculture Hours and Earnings Survey)

The respondent burden for CPS data collection in 2015 was

342 X 0.083 X £9.53

= £271

Related publications

First estimates of the Cereal and Oilseed Rape Harvest

Economic Report on Scottish Agriculture (ERSA) contains Cereal usage figures derived from the CPS survey. These were last published in June 2014.

Agriculture statistics publications contains all published results from Scottish Government agricultural surveys.

8. Reference Tables

Table 1: Cereal Area, Yield and Production 2015 and 2016

	2015			2016[2]			% change 2015/2016		
	Area (000 ha)	**Yield** (t/ha)	**Prod.** (000 t)	**Area** (000 ha)	**Yield** (t/ha)	**Prod.** (000 t)	**Area**	**Yield**	**Prod.**
Wheat	110	9.3	1,019	110	8.4	926	0.0%	-9.2%	-9.1%
Winter Barley	52	7.8	406	48	6.8	329	-7.3%	-12.7%	-19.1%
Spring Barley	256	5.9	1,521	239	5.4	1,296	-6.6%	-8.7%	-14.7%
Total Barley	308	6.3	1,927	287	5.7	1,625	-6.7%	-9.6%	-15.7%
Oats	26	5.9	152	31	6.4	201	21.8%	8.8%	32.6%
Total Cereals[1]	**444**	**7.0**	**3,101**	**428**	**6.4**	**2,752**	**-3.4%**	**-8.1%**	**-11.2%**
Oilseed Rape	36	4.1	148	31	3.3	102	-14.2%	-20.1%	-31.4%

(1) Includes Triticale
(2) Basis of Production Estimates. The estimates of production are based on crop areas from the respective June Censuses, along with crop yield estimates from the Cereal Production Surveys.

Table 2: Cereal Area, Yield and Production 1997 to 2016

Year	Total cereals[1]			Spring barley			Winter barley			Wheat			Oats		
	Area (Hectare)	Yield (t/ha)	Production (Tonnes)	Area (Hectare)	Yield (t/ha)	Production (Tonnes)	Area (Hectare)	Yield (t/ha)	Production (Tonnes)	Area (Hectare)	Yield (t/ha)	Production (Tonnes)	Area (Hectare)	Yield (t/ha)	Production (Tonnes)
1997	**475,958**	5.81	2,766,710	265,212	4.86	1,289,532	**78,893**	6.64	**523,763**	108,655	7.56	820,943	21,185	5.71	120,932
1998	468,154	**5.46**	2,556,349	255,822	**4.54**	**1,160,886**	77,705	**5.89**	457,320	111,172	7.37	819,316	21,784	5.16	112,470
1999	447,236	5.88	2,629,266	280,546	5.20	1,459,163	58,442	6.56	383,414	84,476	7.80	659,177	22,278	5.34	118,971
2000	448,720	6.34	2,846,939	254,718	5.15	1,311,105	61,678	7.38	455,349	108,853	8.79	956,432	21,927	5.28	115,874
2001	438,623	6.06	2,656,550	280,786	5.59	1,570,617	55,319	6.24	345,045	**79,680**	7.74	**616,970**	21,333	5.37	114,630
2002	445,512	5.70	2,540,349	263,914	4.85	1,279,984	61,234	6.70	410,268	97,192	7.60	738,662	21,907	4.79	**104,897**
2003	431,720	6.63	2,870,410	264,920	6.05	1,603,596	55,649	7.11	395,428	87,498	8.36	731,351	22,340	5.95	132,822
2004	438,039	6.61	2,904,878	257,462	5.72	1,473,709	56,348	7.40	416,719	101,126	8.78	888,156	21,831	5.44	118,688
2005	411,329	6.65	2,742,230	243,298	5.74	1,396,231	51,341	7.58	388,938	95,595	8.81	841,744	**19,955**	5.49	109,505
2006	**398,050**	6.87	2,744,088	**220,639**	5.95	1,313,527	53,762	7.76	417,444	99,681	8.70	867,053	22,682	6.10	138,391
2007	403,493	6.67	2,699,921	226,019	5.80	1,312,003	52,625	7.63	401,377	102,744	8.30	852,603	20,868	6.08	126,887
2008	456,547	6.65	3,043,330	262,322	5.72	1,500,118	57,612	7.55	435,085	113,797	8.68	987,256	21,720	5.27	114,515
2009	447,554	6.44	2,887,132	287,011	5.81	1,668,240	45,149	6.97	314,527	92,482	8.30	767,651	22,299	5.95	132,570
2010	425,496	6.71	2,857,814	242,364	5.82	1,410,270	48,010	7.20	345,615	111,436	8.55	953,239	23,000	6.31	145,117
2011	446,181	6.60	2,948,871	262,948	5.83	1,532,979	45,477	7.34	333,623	**115,412**	8.29	956,985	21,715	5.61	121,826
2012	456,902	5.48	**2,507,016**	289,222	5.00	1,446,950	42,816	6.46	**276,511**	100,637	**6.69**	673,288	23,672	**4.57**	108,249
2013	458,219	6.19	2,836,836	**296,444**	5.78	**1,713,548**	**42,694**	6.57	280,511	86,840	7.52	652,933	**31,728**	5.89	187,021
2014	462,123	6.97	**3,221,284**	274,377	**6.07**	1,664,905	52,507	7.82	410,765	109,023	9.07	989,347	25,050	6.10	152,924
2015	443,564	**6.99**	3,100,624	255,878	5.94	1,520,756	51,808	**7.84**	406,169	109,562	**9.30**	**1,019,182**	25,615	5.92	151,569
2016	428,348	6.43	2,752,412	238,899	5.43	1,296,481	48,031	6.84	328,766	109,594	8.45	925,992	31,210	**6.44**	**200,936**

(1) Includes Triticale

Lowest value in series

Highest value in series

Table 3: Oilseed rape Area, Yield and Production 1997 to 2016

	Area (Hectare)	Yield (t/ha)	Production (Tonnes)
1997	59,341	2.6	156,479
1998	65,117	2.8	181,587
1999	51,173	3.1	161,070
2000	36,406	3.0	110,993
2001	34,850	3.0	105,893
2002	30,901	3.4	103,823
2003	35,163	3.4	120,847
2004	39,316	3.4	131,906
2005	35,591	3.3	119,117
2006	33,743	3.6	120,030
2007	36,334	3.7	133,657
2008	33,623	3.4	114,902
2009	29,043	3.7	108,605
2010	36,002	3.4	123,334
2011	38,388	3.9	149,627
2012	36,611	2.9	106,420
2013	33,653	3.3	111,652
2014	37,073	4.0	147,570
2015	35,797	**4.1**	148,491
2016	30,731	3.3	**101,862**

Lowest value in series

Highest value in series

Table 4: Regional Production Estimates by Crop 2007 to 2016

Crop	Region	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Change since 2015	Change since 2015 (%)
Total Cereals	North East	802,784	941,831	932,639	874,701	957,593	839,960	948,585	1,060,532	950,180	835,527	-114,653	-12.1
	North West	195,732	237,657	218,342	212,988	227,186	192,847	210,234	215,332	203,092	196,239	-6,854	-3.4
	South East	1,433,271	1,591,155	1,464,531	1,475,422	1,518,020	1,209,637	1,414,053	1,667,435	1,709,136	1,500,630	-208,505	-12.2
	South West	268,134	272,688	271,620	294,702	246,073	264,572	263,963	277,985	238,216	220,016	-18,200	-7.6
	All	**2,699,921**	**3,043,330**	**2,887,132**	**2,857,814**	**2,948,871**	**2,507,016**	**2,836,836**	**3,221,284**	**3,100,624**	**2,752,412**	**-348,212**	**-11.2**
Spring Barley	North East	475,657	588,277	629,606	551,615	644,595	584,727	691,714	709,866	622,998	542,973	-80,025	-12.8
	North West	141,813	172,649	167,527	153,393	169,638	149,283	157,325	159,443	150,010	138,020	-11,990	-8.0
	South East	529,130	585,758	690,933	533,713	576,634	529,601	689,542	642,499	625,805	504,709	-121,096	-19.4
	South West	165,404	153,434	180,174	171,549	142,112	183,338	174,968	153,096	121,944	110,779	-11,164	-9.2
	All	**1,312,003**	**1,500,118**	**1,668,240**	**1,410,270**	**1,532,979**	**1,446,950**	**1,713,548**	**1,664,905**	**1,520,756**	**1,296,481**	**-224,275**	**-14.7**
Winter Barley	North East	172,867	182,472	136,192	152,141	133,527	119,635	127,372	174,251	159,008	127,635	-31,373	-19.7
	North West	9,797	12,063	8,654	7,832	8,556	7,024	9,012	12,115	10,971	8,639	-2,332	-21.3
	South East	177,055	198,485	143,623	151,035	160,807	133,745	123,321	192,206	197,115	156,192	-40,924	-20.8
	South West	41,658	42,065	26,057	34,607	30,733	16,107	20,806	32,192	39,074	36,301	-2,774	-7.1
	All	**401,377**	**435,085**	**314,527**	**345,615**	**333,623**	**276,511**	**280,511**	**410,765**	**406,169**	**328,766**	**-77,403**	**-19.1**
Total Barley	North East	648,524	770,749	765,798	703,756	778,122	704,363	819,086	884,118	782,006	670,608	-111,398	-14.2
	North West	151,610	184,712	176,181	161,225	178,194	156,307	166,337	171,558	160,981	146,659	-14,322	-8.9
	South East	706,185	784,243	834,556	684,748	737,441	663,346	812,863	834,706	822,920	660,901	-162,020	-19.7
	South West	207,062	195,499	206,231	206,156	172,845	199,445	195,773	185,289	161,018	147,080	-13,938	-8.7
	All	**1,713,380**	**1,935,204**	**1,982,767**	**1,755,885**	**1,866,602**	**1,723,461**	**1,994,059**	**2,075,670**	**1,926,925**	**1,625,247**	**-301,678**	**-15.7**
Wheat	North East	126,737	146,841	141,131	144,675	154,766	122,012	100,154	152,263	140,273	123,476	-16,797	-12.0
	North West	30,409	36,877	26,692	36,759	34,806	26,334	30,246	32,184	27,527	30,398	2,871	10.4
	South East	652,212	742,307	552,817	703,342	711,691	479,249	478,853	733,227	790,884	718,955	-71,929	-9.1
	South West	43,246	61,231	47,012	68,463	55,722	45,693	43,680	71,673	60,498	53,163	-7,335	-12.1
	All	**852,603**	**987,256**	**767,651**	**953,239**	**956,985**	**673,288**	**652,933**	**989,347**	**1,019,182**	**925,992**	**-93,190**	**-9.1**
Spring Oats	North East	21,051	19,780	21,328	23,147	21,653	11,547	28,029	21,536	24,817	38,206	13,390	54.0
	North West	10,831	13,277	13,344	13,257	13,250	9,320	13,051	10,442	13,330	18,121	4,791	35.9
	South East	32,541	30,797	45,837	44,185	27,932	39,392	88,581	47,416	49,541	65,770	16,229	32.8
	South West	9,835	10,187	15,227	13,999	11,923	16,352	20,940	15,641	11,658	15,403	3,745	32.1
	All	**74,258**	**74,041**	**95,735**	**94,588**	**74,759**	**76,611**	**150,601**	**95,034**	**99,346**	**137,501**	**38,155**	**38.4**
Winter Oats	North East	5,071	3,422	2,184	2,342	2,241	1,525	1,126	2,565	3,000	3,218	217	7.2
	North West	2,683	2,669	1,241	1,655	916	872	582	1,126	1,229	1,011	-217	-17.7
	South East	39,559	30,359	31,228	41,893	39,765	27,036	32,563	50,332	44,514	54,836	10,322	23.2
	South West	5,317	4,023	2,183	4,639	4,144	2,205	2,150	3,867	3,480	4,370	889	25.6
	All	**52,629**	**40,474**	**36,835**	**50,529**	**47,067**	**31,638**	**36,420**	**57,890**	**52,223**	**63,435**	**11,211**	**21.5**
Total Oats	North East	26,121	23,202	23,512	25,489	23,894	13,072	29,154	24,100	27,817	41,424	13,607	48.9
	North West	13,514	15,946	14,584	14,912	14,167	10,192	13,632	11,567	14,559	19,132	4,574	31.4
	South East	72,101	61,157	77,065	86,078	67,698	66,428	121,144	97,748	94,055	120,606	26,551	28.2
	South West	15,152	14,210	17,409	18,638	16,067	18,557	23,090	19,508	15,138	19,773	4,635	30.6
	All	**126,887**	**114,515**	**132,570**	**145,117**	**121,826**	**108,249**	**187,021**	**152,924**	**151,569**	**200,936**	**49,367**	**32.6**
Triticale	North East	1,402	1,039	2,198	781	811	513	191	51	84	19	-64	-76.9
	North West	200	121	885	93	19	14	19	23	26	50	24	92.2
	South East	2,773	3,448	93	1,254	1,190	613	1,193	1,755	1,277	168	-1,109	-86.8
	South West	2,675	1,748	968	1,444	1,439	877	1,420	1,515	1,561	0	-1,561	-100.0
	All	**7,050**	**6,356**	**4,144**	**3,573**	**3,459**	**2,018**	**2,822**	**3,344**	**2,948**	**238**	**-2,711**	**-91.9**
Spring Oilseed Rape	North East	491	1,642	448	1,222	561	256	443	131	358	346	-12	-3.5
	North West	38	119	343	416	275	34	373	56	173	125	-48	-27.7
	South East	522	1,579	2,941	2,441	1,694	839	3,320	906	1,022	717	-305	-29.9
	South West	47	183	262	363	351	293	350	226	110	35	-75	-67.9
	All	**1,098**	**3,523**	**3,994**	**4,441**	**2,881**	**1,421**	**4,487**	**1,319**	**1,664**	**1,223**	**-441**	**-26.5**
Winter Oilseed Rape	North East	49,173	37,627	47,613	41,395	49,345	40,443	44,819	46,904	43,382	27,030	-16,352	-37.7
	North West	5,962	4,082	5,866	6,192	7,483	5,000	6,272	7,867	7,540	6,583	-957	-12.7
	South East	74,622	67,763	49,371	70,001	86,982	58,157	55,319	89,375	93,809	64,927	-28,883	-30.8
	South West	2,801	1,907	1,761	1,304	2,937	1,398	755	2,106	2,096	2,099	3	0.2
	All	**132,559**	**111,380**	**104,611**	**118,893**	**146,746**	**104,998**	**107,166**	**146,251**	**146,827**	**100,639**	**-46,188**	**-31.5**
Total Oilseed Rape	North East	49,664	39,268	48,061	42,617	49,906	40,698	45,263	47,035	43,740	27,376	-16,365	-37.4
	North West	6,000	4,202	6,210	6,608	7,758	5,034	6,645	7,923	7,714	6,709	-1,005	-13.0
	South East	75,144	69,342	52,312	72,442	88,676	58,996	58,639	90,281	94,831	65,643	-29,188	-30.8
	South West	2,849	2,090	2,023	1,667	3,288	1,691	1,105	2,332	2,206	2,134	-72	-3.3
	All	**133,657**	**114,902**	**108,605**	**123,334**	**149,627**	**106,420**	**111,652**	**147,570**	**148,491**	**101,862**	**-46,629**	**-31.4**

Table 5: Cereals - Comparison of Provisional and Final Estimates 2007 to 2016

(Percentage differences are of Final minus Provisional)

Area

	Total cereals			Spring barley			Winter barley			Wheat			Oats		
Year	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference
2007	401,410	403,493	**0.5%**	224,140	226,019	**0.8%**	52,860	52,625	**-0.4%**	101,790	102,744	**0.9%**	21,520	20,868	**-3.0%**
2008	455,830	456,547	**0.2%**	261,890	262,322	**0.2%**	57,520	57,612	**0.2%**	113,649	113,797	**0.1%**	21,670	21,720	**0.2%**
2009	447,554	447,554	**0.0%**	287,011	287,011	**0.0%**	45,149	45,149	**0.0%**	92,482	92,482	**0.0%**	22,299	22,299	**0.0%**
2010	424,492	425,496	**0.2%**	241,758	242,364	**0.3%**	47,939	48,010	**0.1%**	111,269	111,436	**0.1%**	22,299	23,000	**3.1%**
2011	446,181	446,181	**0.0%**	262,948	262,948	**0.0%**	45,477	45,477	**0.0%**	115,412	115,412	**0.0%**	21,715	21,715	**0.0%**
2012	456,901	456,902	**0.0%**	289,222	289,222	**0.0%**	42,816	42,816	**0.0%**	100,637	100,637	**0.0%**	23,672	23,672	**0.0%**
2013	458,219	458,219	**0.0%**	296,444	296,444	**0.0%**	42,694	42,694	**0.0%**	86,840	86,840	**0.0%**	31,728	31,728	**0.0%**
2014	461,477	462,123	**0.1%**	274,377	274,377	**0.0%**	52,507	52,507	**0.0%**	109,023	109,023	**0.0%**	25,050	25,050	**0.0%**
2015	443,127	443,564	**0.1%**	255,642	255,878	**0.1%**	51,770	51,808	**0.1%**	109,476	109,562	**0.1%**	25,613	25,615	**0.0%**
2016	428,348	428,348	**0.0%**	238,899	238,899	**0.0%**	48,031	48,031	**0.0%**	109,594	109,594	**0.0%**	31,210	31,210	**0.0%**

Yield

	Total cereals			Spring barley			Winter barley			Wheat			Oats		
Year	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference
2007	6.61	6.67	**1.0%**	5.72	5.80	**1.5%**	7.59	7.63	**0.5%**	8.18	8.30	**1.4%**	6.11	6.08	**-0.5%**
2008	6.67	6.65	**-0.3%**	5.63	5.72	**1.6%**	7.79	7.55	**-3.1%**	8.61	8.68	**0.8%**	5.95	5.27	**-11.4%**
2009	6.40	6.44	**0.7%**	5.73	5.81	**1.4%**	7.41	6.97	**-6.0%**	8.07	8.30	**2.9%**	6.10	5.95	**-2.5%**
2010	6.51	6.71	**3.0%**	5.34	5.82	**9.0%**	7.05	7.20	**2.1%**	8.94	8.55	**-4.3%**	6.02	6.31	**4.8%**
2011	6.88	6.60	**-4.0%**	6.16	5.83	**-5.4%**	7.23	7.34	**1.5%**	8.53	8.29	**-2.8%**	6.06	5.61	**-7.5%**
2012	5.48	5.48	**0.1%**	4.87	5.00	**2.8%**	6.51	6.46	**-0.8%**	6.79	6.69	**-1.5%**	5.53	4.57	**-17.4%**
2013	6.07	6.19	**2.0%**	5.60	5.78	**3.3%**	6.88	6.57	**-4.6%**	7.25	7.52	**3.6%**	6.15	5.89	**-4.1%**
2014	7.11	6.97	**-2.0%**	6.36	6.07	**-4.6%**	7.74	7.82	**1.1%**	8.75	9.07	**3.7%**	6.91	6.10	**-11.6%**
2015	7.32	6.99	**-4.6%**	6.16	5.94	**-3.5%**	8.30	7.84	**-5.6%**	9.67	9.30	**-3.8%**	6.97	5.92	**-15.1%**
2016	6.47	6.43	**-0.8%**	5.31	5.43	**2.3%**	7.19	6.84	**-4.7%**	8.72	8.45	**-3.1%**	6.58	6.44	**-2.2%**

Production

	Total cereals			Spring barley			Winter barley			Wheat			Oats		
Year	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference	Provisional	Final	Percentage Difference
2007	2,653,398	2,699,921	**1.8%**	1,281,338	1,312,003	**2.4%**	401,066	401,377	**0.1%**	833,014	852,603	**2.4%**	131,425	126,887	**-3.5%**
2008	3,042,256	3,043,330	**0.0%**	1,474,441	1,500,118	**1.7%**	448,081	435,085	**-2.9%**	978,518	987,256	**0.9%**	128,937	114,515	**-11.2%**
2009	2,872,228	2,887,132	**0.5%**	1,645,541	1,668,240	**1.4%**	334,338	314,527	**-5.9%**	745,969	767,651	**2.9%**	135,970	132,570	**-2.5%**
2010	2,872,228	2,857,814	**-0.5%**	1,289,851	1,410,270	**9.3%**	337,987	345,615	**2.3%**	994,322	953,239	**-4.1%**	137,657	145,117	**5.4%**
2011	3,067,714	2,948,871	**-3.9%**	1,619,867	1,532,979	**-5.4%**	328,803	333,623	**1.5%**	984,421	956,985	**-2.8%**	131,668	121,826	**-7.5%**
2012	2,502,839	2,507,016	**0.2%**	1,407,715	1,446,950	**2.8%**	278,613	276,511	**-0.8%**	683,445	673,288	**-1.5%**	131,009	108,249	**-17.4%**
2013	2,781,049	2,836,836	**2.0%**	1,659,309	1,713,548	**3.3%**	293,944	280,511	**-4.6%**	629,963	652,933	**3.6%**	195,010	187,021	**-4.1%**
2014	3,282,301	3,221,284	**-1.9%**	1,745,867	1,664,905	**-4.6%**	406,166	410,765	**1.1%**	953,905	989,347	**3.7%**	173,022	152,924	**-11.6%**
2015	3,245,525	3,100,624	**-4.5%**	1,574,132	1,520,756	**-3.4%**	429,837	406,169	**-5.5%**	1,059,096	1,019,182	**-3.8%**	178,430	151,569	**-15.1%**
2016	2,773,547	2,752,412	**-0.8%**	1,265,692	1,296,481	**2.4%**	344,822	328,766	**-4.7%**	953,196	925,992	**-2.9%**	205,514	200,936	**-2.2%**

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