

Statistical Publication

Agriculture Series

A NATIONAL STATISTICS PUBLICATION FOR SCOTLAND



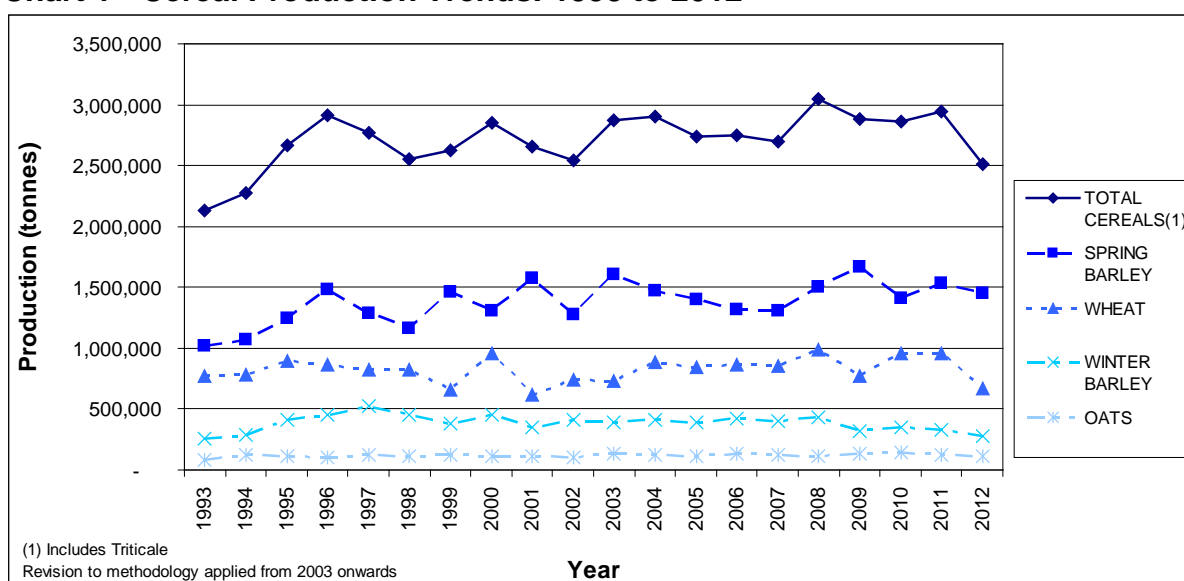
Final Estimate of the Cereal and Oilseed Rape Harvest 2012
20th December 2012

1. Introduction

This publication contains final estimates of the 2012 cereal and oilseed rape harvest with commentary and graphics on longer term trends and regional production. These final harvest estimates update the first estimates published in October.

The statistics are used by government to form, monitor and evaluate policy, and to assess the economic well-being of the cereal sector. The government also uses these results to meet the requirements of Statistical Regulations of the European Commission.

Chart 1 - Cereal Production Trends: 1993 to 2012



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2. Main findings

These final estimates indicate that, compared with the 2011 harvest: (Table 1)

- Cereal Production decreased between 2011 and 2012 by 441,000 tonnes or 15 percent to 2.5 million tonnes. Areas increased by 11,000 hectares or 2 percent while average yields decreased by 17 percent to 5.5 tonnes per hectare.
- Total barley production decreased by 143,000 tonnes or 8 percent to 1.7 million tonnes. This was mostly caused by a decrease in spring barley yields, down 14 percent, despite a 10 percent increase in spring barley area, resulting in a 86,000 tonnes decrease in production. Winter barley production decreased by 57,000 tonnes, due to a 12 percent decrease yield and a 6 percent decrease in area.
- Wheat production decreased by 284,000 tonnes or 30 percent to 673,000 tonnes. Areas decreased by 15,000 hectares or 13 percent and average yields decreased by 19 percent to 6.7 tonnes per hectare.
- The production of oats decreased by 14,000 tonnes or 11 percent to 108,000 tonnes. This decrease was due to a 9 percent decrease in area, alongside reduction in yield of 18 percent.
- Oilseed rape production decreased by 43,000 tonnes or 29 per cent to 106,000 tonnes. This decrease was caused by a 25 percent decrease in yield and a 5 percent decrease in area.

We welcome comments on the content or format of this new publication, which can be sent to:

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3. Commentary

3.1 Harvest estimates for 2012 compared to 2011 harvest estimates (Table 1)

Charts 2, 3 and 4 show a breakdown of the 2012 harvest estimate compared to the 2011 estimates. Table 1, in the appendix, shows a summary of this breakdown.

Chart 2 shows the area of cereals in 2011 and 2012. There was an increase in the area of spring barley (up 10%) and oats (up 9%). Spring barley is the largest crop in Scotland, representing 64% of the total cereal area. When combined with the further 9% for winter barley, total barley accounts for around 73% in total. This is up from 2011, when barley represented 69% of cereal area. The other main cereals grown in Scotland are wheat, accounting for 22% of area in 2011, and oats which accounted for 5%. Further information on cereal area trends can be found in the "Final Results From The 2012 June Agricultural Census"¹ publication.

Chart 2 - Comparison of 2012 harvest to 2011: Area

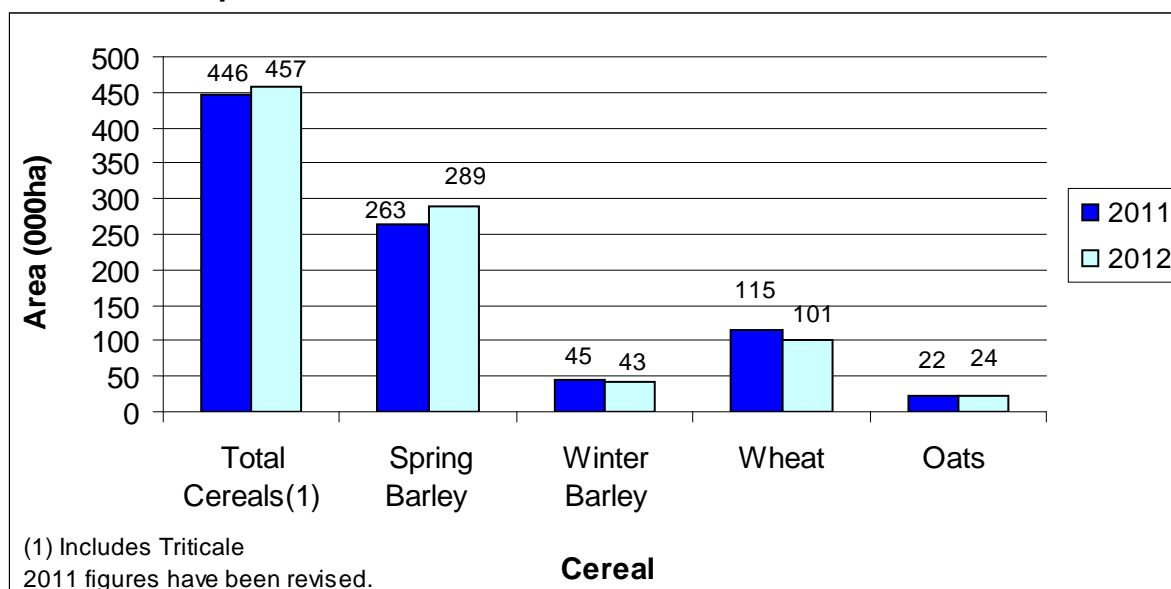


Chart 3 shows that overall cereal yields fell considerably between 2011 and 2012, down 17% overall to 5.5 tonnes per hectare in 2012. Yields have fallen across all crops, with wheat seeing the greatest change over the year (down 1.6 tonnes per hectare). While spring barley represents the largest area of cereals, it can be seen that the yield for spring barley is relatively low compared to other cereals at 5.0 tonnes per hectare in 2012. The yields for winter barley, wheat and oats stood at 6.5, 6.7 and 4.6 tonnes per hectare respectively in 2012.

¹ <http://www.scotland.gov.uk/Publications/2012/09/1148>

Chart 3 - Comparison of 2012 harvest to 2011: Yield

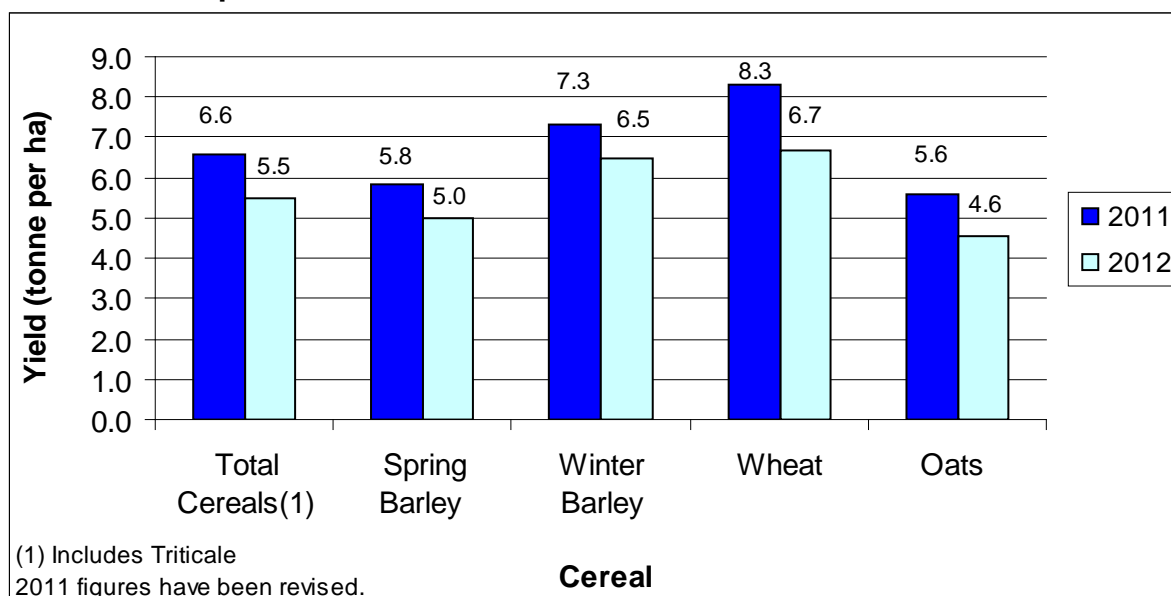
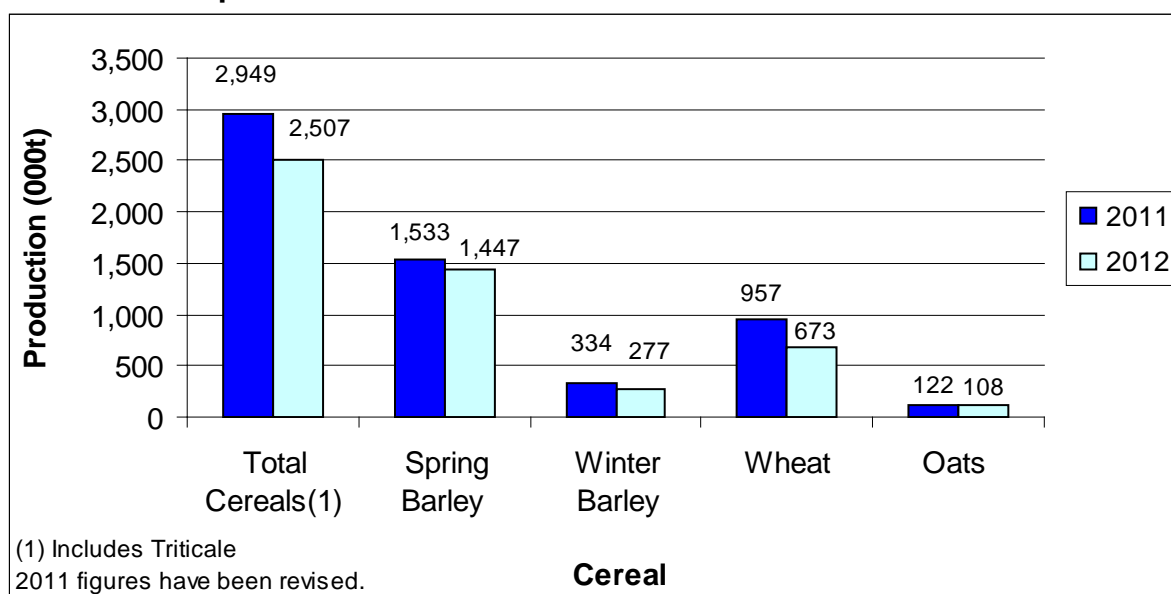


Chart 4 shows that total cereal production decreased 441,000 tonnes or 15% to 2.5 million tonnes in 2012, compared to 2011.

Chart 4 - Comparison of 2012 harvest to 2011: Production



Despite increases in area, reduced yields caused decreases in spring barley (down 6%) and oats (down 11%) to 1.4 million tonnes and 108,000 tonnes respectively. Decreases in both areas and yields resulted in reduced production for winter barley (down 17%) and wheat (down 30%) of 277,000 tonnes and 673,000 tonnes respectively. The combined decreases in production resulted in an overall decrease of nearly half a million tonnes (441,000 tonnes) or 15% for total cereals to 2.5 million tonnes. The relatively low yield for spring barley means that it accounted for 58% of total cereal production compared to 63% of area. In 2012, wheat accounted for 27% of total cereal production.

3.2 Time Series of cereal production (Table 2)

Estimates from 2003 to 2011 have been revised in this release, the methodology and quality note at the back of this release contains an assessment of the impact of these revisions. Though readers should be aware of these revisions, on the whole the difference between original and revised estimates is low and so comparisons over the long term can still be drawn, though comparing between years immediately prior to and after 2003 may not be wholly reliable.

Chart 1 (front page) and Table 2 in the appendix show the trends in cereal production over the past 20 years. It can be seen that total production was at its lowest in 1993 and 1994. This coincides with the introduction of compulsory EC set-aside. Production then increased in 1995 and has fluctuated between 2.5 million and 3 million tonnes ever since, with a high of 3 million tonnes in 2008.

Chart 5 shows total cereal areas and yields for the last 20 years. It can be seen that overall area fell in 1994 following the introduction of compulsory set aside. The overall yield figure in 1994 was also the lowest in the last 20 years and together these two factors resulted in the lowest production over the time period of 2.1 million tonnes. Area then increased to a high of 476,000 hectares in 1997, followed by a downward trend to 2006 and 2007. Overall areas increased in 2008, but fell again in the following 2 years, with a recovery in 2011 and 2012. Despite the decrease in yields in 2012, average yields over the last 10 years were 11% higher compared to the previous 10 years.

Chart 5 - Trends in area and yield (all cereals): 1993 to 2012

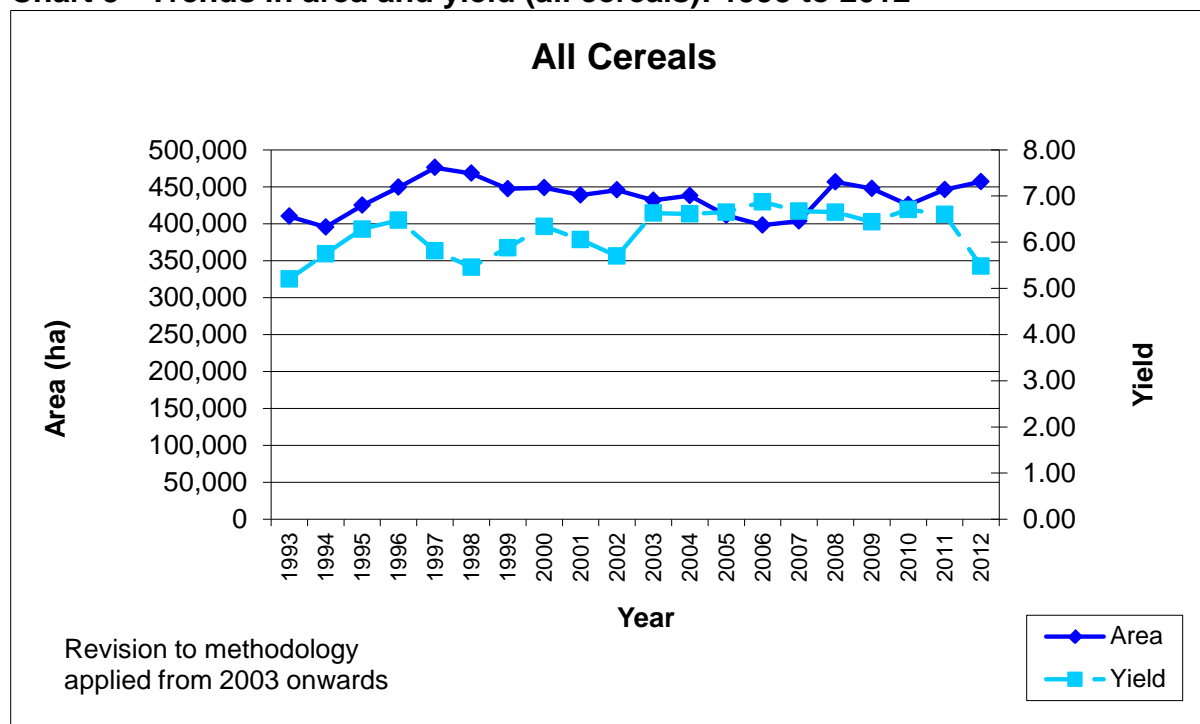


Chart 6, below, shows the trends in areas and yields for wheat. It can be seen that the area of wheat followed a general downward trend from 1993 to a low in 2001. Since 2001 it has been on an upward trend and the area of wheat in 2012 was similar to that 20 years ago, despite a decline of 13% from its peak in 2011. The average wheat yield for the last 10 years has been 8.3 tonnes per hectare, compared to 7.8 tonnes per hectare for the previous 10 years.

Chart 6- Trends in area and yield (wheat): 1993 to 2012

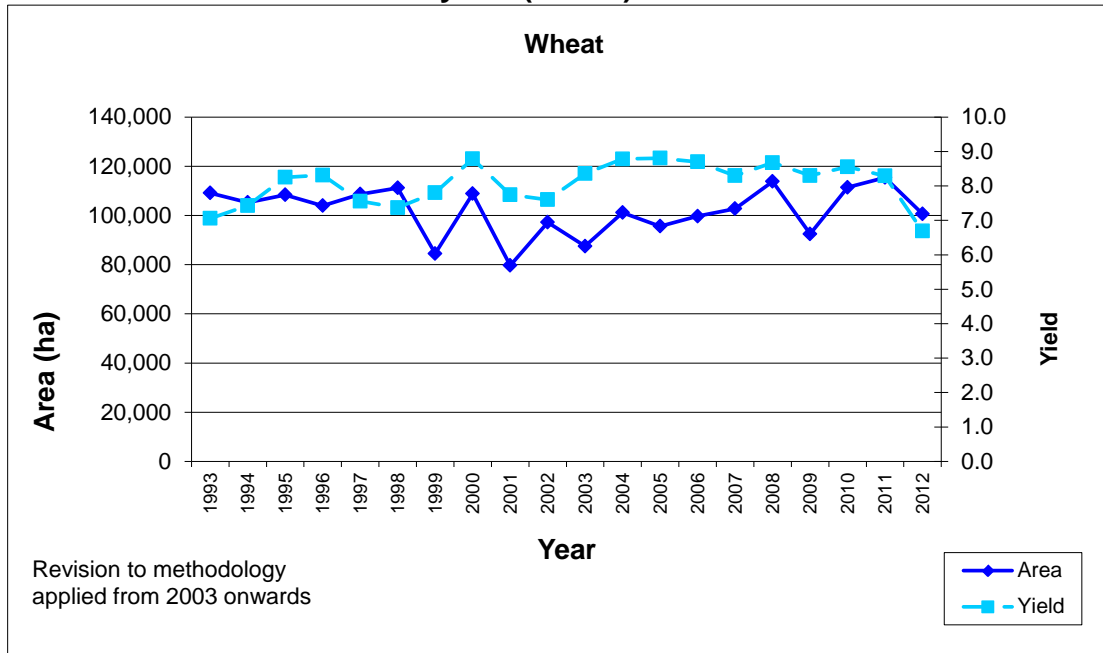
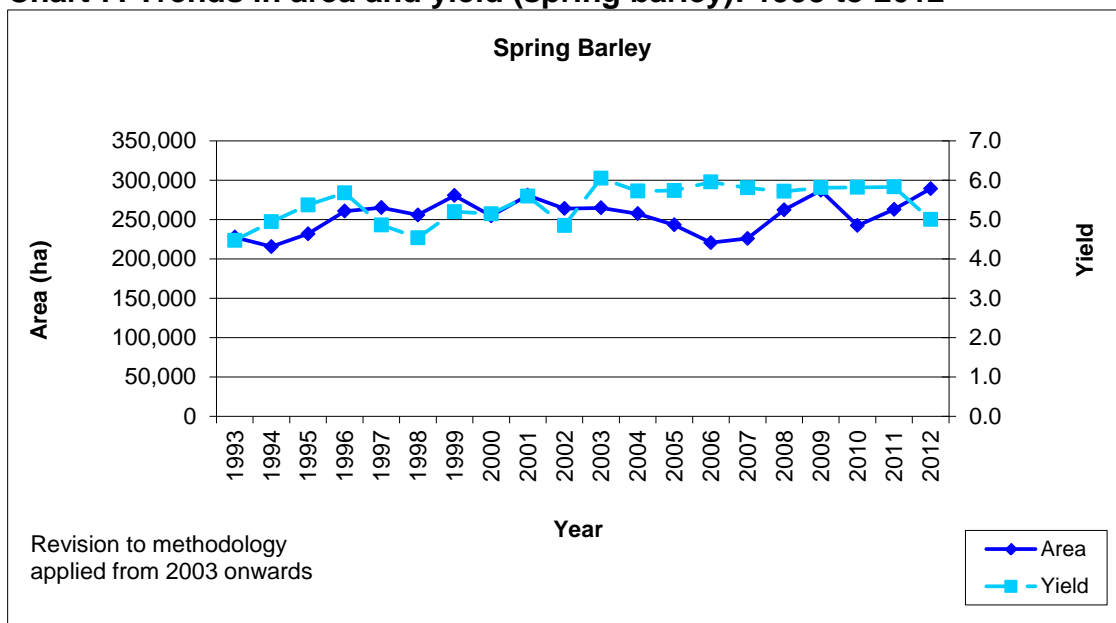


Chart 7 shows that the area of spring barley has fluctuated between 216,000 hectares and 289,000 hectares over the past 20 years. However, average spring barley yields over the last 10 years have been around 13% higher than the previous 10 years.

Chart 7: Trends in area and yield (spring barley): 1993 to 2012



The trends in winter barley area and yield are shown in Chart 8. The chart clearly shows that the area of winter barley fell in 1994 following the introduction of set-aside. This was followed by an increase in area between 1994 and 1997. There was then a large fall in 1999 and winter barley area has been on a general downward trend since then. The average area of winter barley in the last 10 years is 17% lower than the previous 10 years. Average yields in the last 10 years were 12% higher than the preceding 10 years. Winter barley production in 2012 (277,000 tonnes) was 47% lower than the peak production of the last 20 years (524,000 tonnes) in 1997.

Chart 8: Trends in area and yield (winter barley): 1993 to 2012

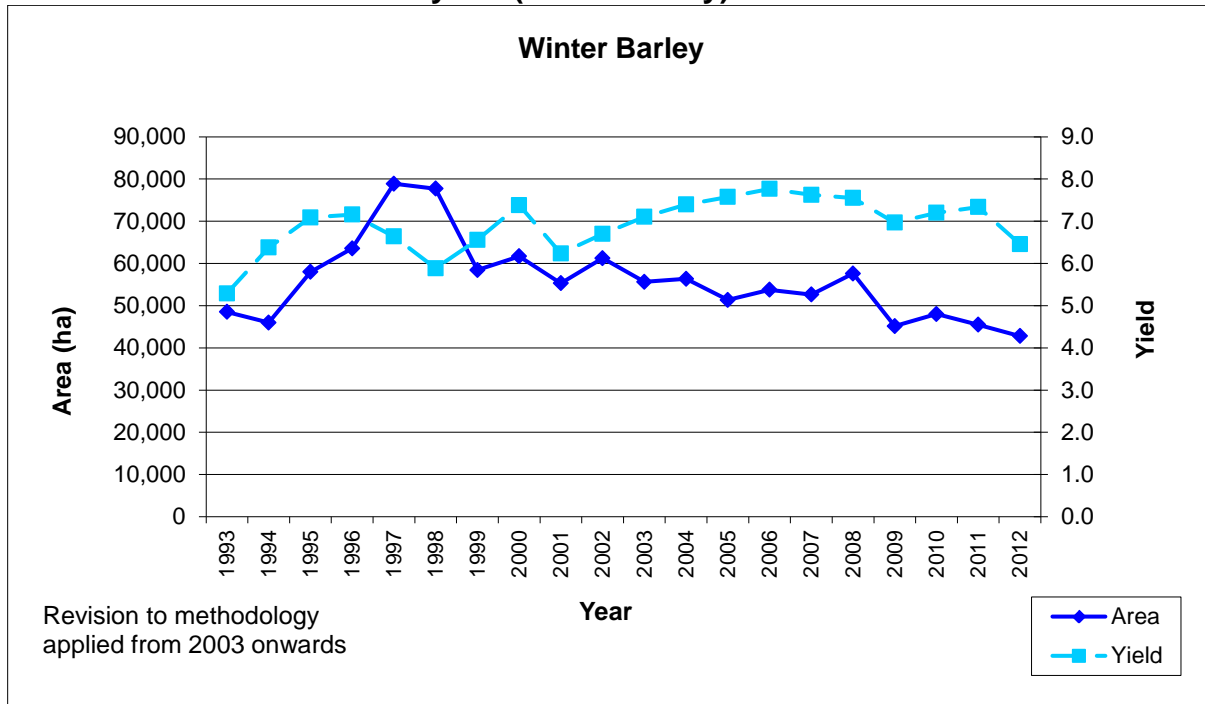
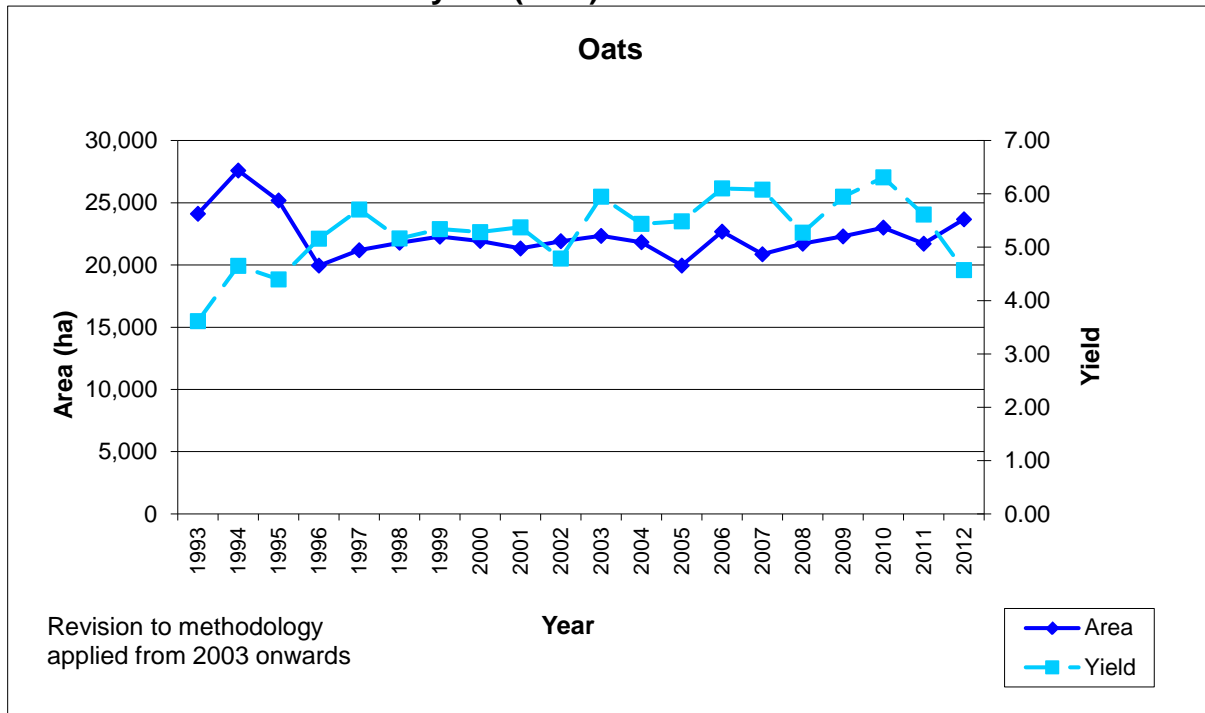


Chart 9 shows that the area of oats fell 28% between 1994 and 1996 and has been fairly stable since. The yield for oats has generally increased over the last 20 years with the yield in 2012 being around 24% higher than in 1993. This means that, despite the fall in average oats area over the past 10 years compared to the previous 10 years, average production has increased by 12%.

Chart 9: Trends in area and yield (oats): 1993 to 2012



3.3 Oilseed Rape Production (Tables 1 & 4)

In 2012, Oilseed rape production decreased by 43,000 tonnes or 29% compared to 2011 to 106,000 tonnes (see Table 1). This decrease was caused by both a 5% decrease in area and a 25% decrease in yield.

Table 4, in the appendix, and Chart 10 show the trends in the production of oilseed rape over the last 20 years. It can be seen that oilseed rape production was higher in the 1990s than it has been in the last 10 years. It should be noted that these production estimates do not include any oilseed rape grown on set-aside land for industrial purposes.

Chart 10 - Trends in the production of oilseed rape: 1993 to 2012

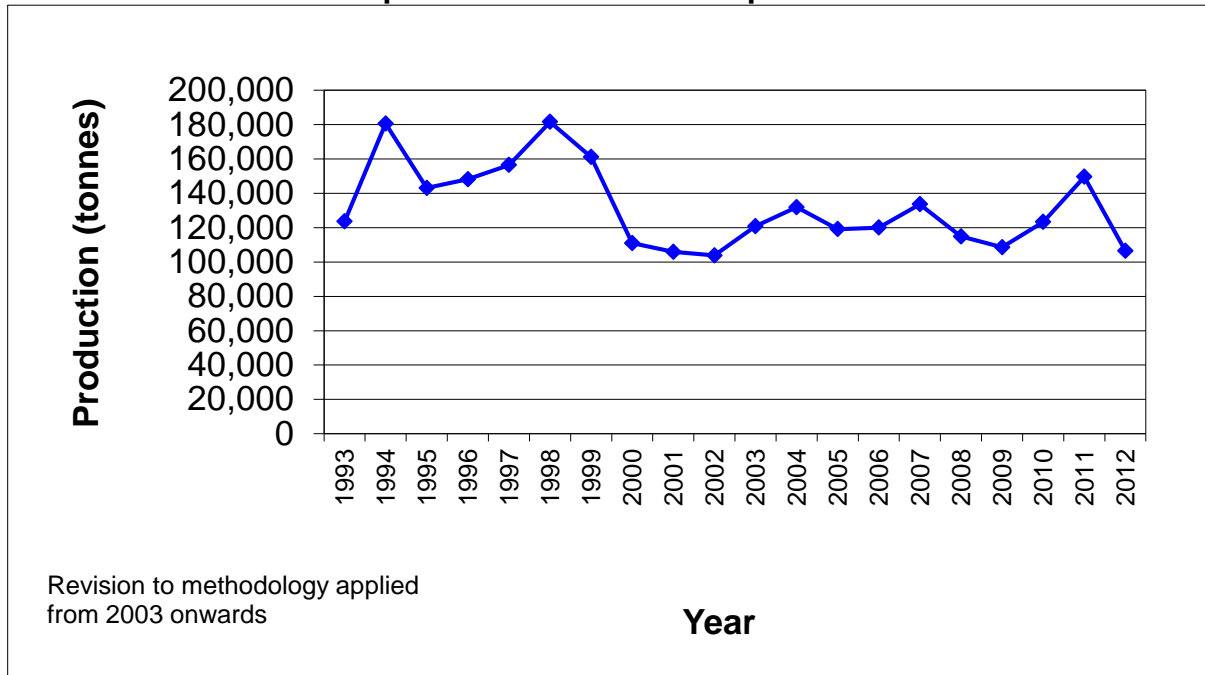
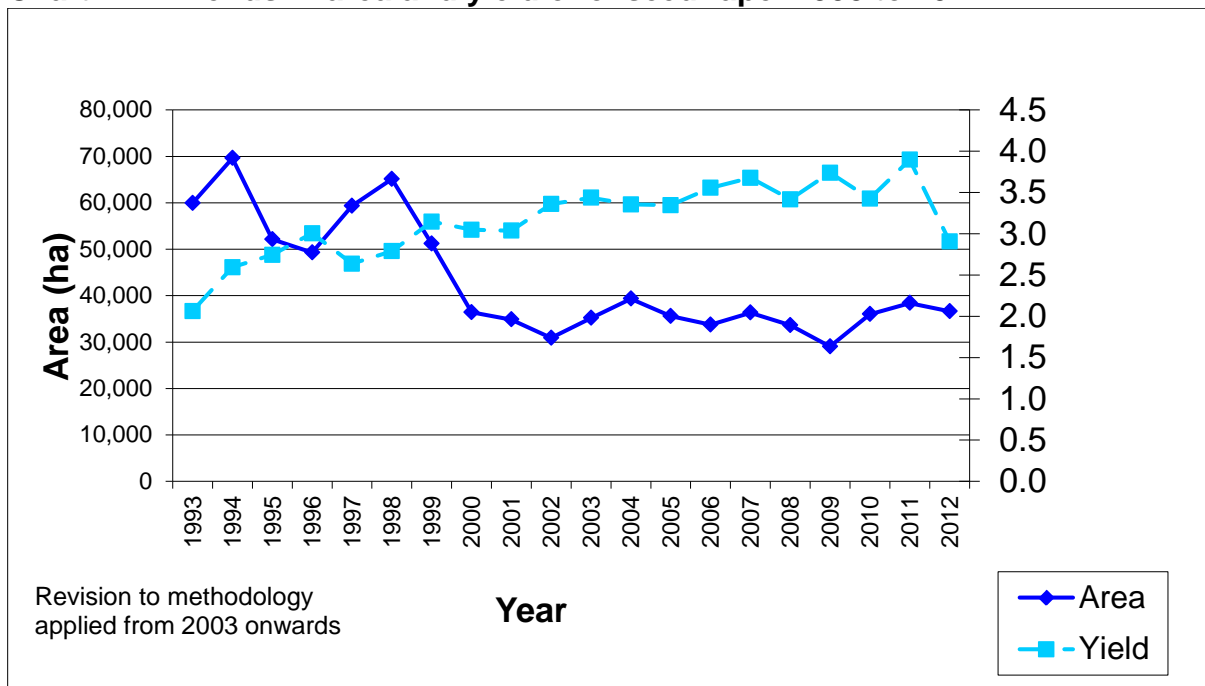


Chart 11 shows a breakdown of production into area and yield. It can be seen that oilseed rape areas fell 44% between 1998 and 2000, and have been relatively stable ever since. From a low in 1993, oilseed rape yields have been on an upward trend, but saw a relatively steep decline in 2012 to a level similar to that of 1998. Despite the recent decline, the average yield for the past 10 years is 22% higher than the previous 10 years.

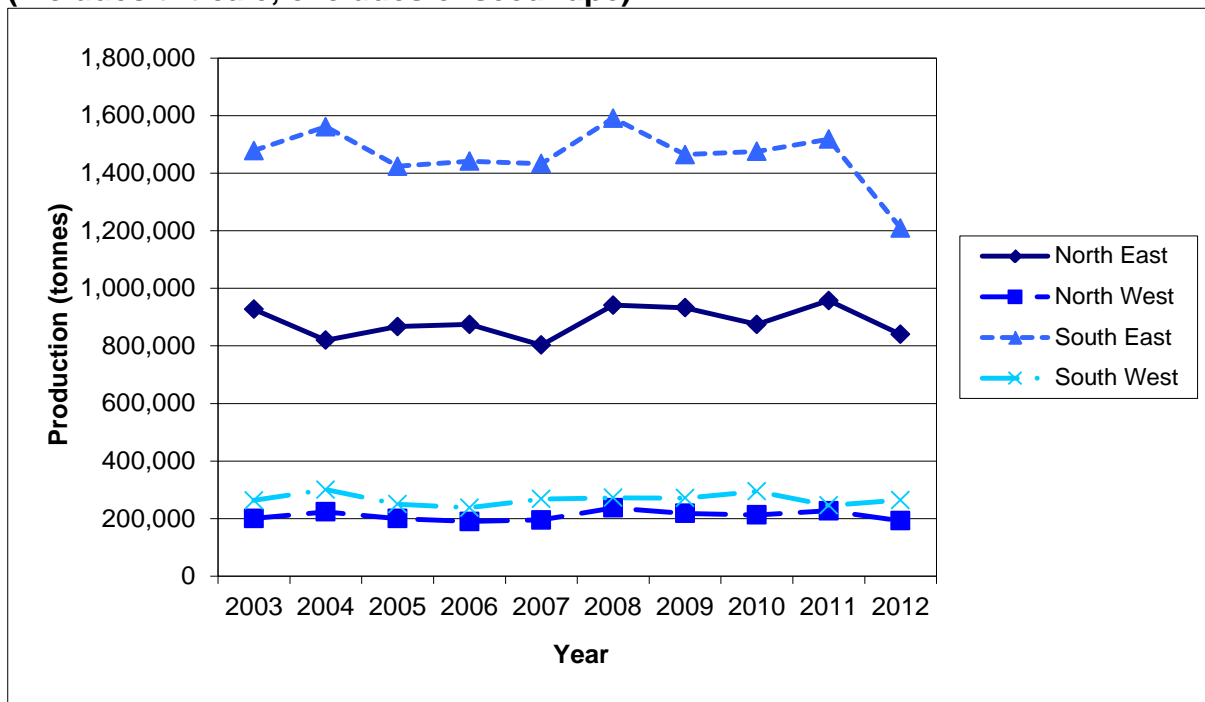
Chart 11 - Trends in area and yield of oilseed rape: 1993 to 2012



3.4 Regional Production Estimates (Table 5)

Chart 12 below shows the total cereal production for each of four regions in Scotland (North East, North West, South East and South West) over the last ten years. Table 5 provides a more detailed breakdown by crop. Chart 12 shows that the South East is the main cereal production region in Scotland, contributing almost half of total production (48%) in 2012. For all regions, between 1993 and 2011 production levels remained relatively constant. Between 2011 and 2012 all regions, except the South West saw a decline in production, this is particularly marked in the South East, where production levels fell by 19%, from 1.5 million tonnes to 1.2 million tonnes, accounting for around two thirds (70%) of the overall decrease in production over the last year. Production in the South West rose by 8%, mostly due to increased areas, and as a result production, of spring barley.

Chart 12 - Regional Cereal Production: 2003 to 2012
(includes triticale, excludes oilseed rape)



4. 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.

Links to Guidance on Quality:

- Code of Practice for Official Statistics
<http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html>
- National Statistician's Guidance on Quality
<http://www.statisticsauthority.gov.uk/national-statistician/ns-reports--reviews-and-guidance/national-statistician-s-guidance/index.html>
- Scottish Government's Corporate Policy Statement
<http://www.scotland.gov.uk/Topics/Statistics/About/QualityCPS/Q/EditMode/on/ForceUpdate/on>
- Scottish Government Guide to basic quality assurance
<http://www.scotland.gov.uk/Topics/Statistics/About/QAGuide>
- European Statistics Code of Practice (including quality framework)
http://epp.eurostat.ec.europa.eu/portal/page/portal/product_details/publication?p_product_code=KS-32-11-955

At the end of this section is an estimate of the total financial cost to respondents of participating in the Cereal Production Survey (CPS), which provides the data that this release is based on.

4.1 The relationship between area, yield and production

Cereal and oilseed rape crop areas represent the amount of area that has been planted with a particular crop, which is intended for combine harvesting and the production of grain or oilseeds. These 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 whole (ie without extracting the grain) and used as source of animal feed.

Average yields are expressed in tonnes per hectare and represents the amount of cereal grain or oilseed that is extracted from 1 hectare of combine harvested area. As the moisture content of cereals and oilseeds can vary from year to year, depending on the level of rainfall, average yields are adjusted to a standard moisture content of 14.5% for cereals and 9% 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 utilised for other purposes.

4.2 Methodology

Final Estimates

The 2012 estimates of production are based mainly on final yield results from the 2012 Cereal Production Survey (CPS) and final crop areas from the 2012 June Census. The CPS is a disproportionate stratified random sample of around 400 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 previous years (results prior to 2012) the CPS sample was stratified by region and size group. To help ensure sufficient sample sizes for most crop types stratification by size group was replaced by crop type in 2012.

In 2012, the number of holdings submitting a return for Spring Barley was 366, Winter Barley was 78, Wheat was 150, Oats was 45 and Oilseed Rape was 42. 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.

2012 regional results were based on national averages for: spring oilseed rape in all regions; winter oats in the North East, North West and South West; winter oilseed rape in the South West; and winter barley in the South West. Estimates of Triticale production are based on estimates from the annual Crop Report Meeting (CRM).

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 9 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 2012 June Agricultural Census²](#).

Provisional Estimates – published on 15th October 2012

The provisional estimates are derived from yield values of individual growers collated by several industry bodies. These industry bodies meet to discuss and quality assure these estimates at the annual Crop Report Meeting (CRM), which in 2012 was attended by representatives from:

- Scottish Government, Analytical Services
- Rural Payments and Inspections Directorate
- CFG Masstock
- Baird Malt Ltd
- Scottish Agricultural College (Now SRUC)
- Agricultural Industries Confederation
- NFU Scotland
- Highland Grain Ltd
- The Agriculture and Horticulture Development Board (which now includes the Home Grown Cereals Authority)

Estimates from growers are collected by several means, either: through area offices of the Scottish Government (SG) Rural Payments and Inspections Directorate (RPID) or area offices of the Scottish Agricultural College (SAC); from agronomists working for commercial bodies; through farming co-operatives; or through the National Farmers Union (NFU), using electronic, paper based or telephone surveys.

Average yields from known harvested areas are collected from all regions in Scotland for each individual crop. For consistency, these average yields are adjusted to a standard moisture content of 14.5% for cereals and 9% for oilseed rape.

Once all the yields have been collated, the industry bodies at the Crop Report Meeting carry out additional quality assurance by comparing resulting yields between different crops and regions within Scotland. This results in an agreed set of yield estimates which are then combined with June Agricultural Census area results to derive the harvest production estimates.

More information on the methodology and results of the 2012 first estimates of the cereal and oilseed rape harvest can be found in the [first estimates of the cereal and oilseed rape harvest³](#) release.

The accuracy of the 2012 first estimates (compared with the final estimates presented here) is assessed in section 4.35.

²<http://www.scotland.gov.uk/Publications/2012/09/1148>

³<http://www.scotland.gov.uk/Publications/2012/10/5226>

4.3 Quality

4.31 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. The provisional estimates (published on 15/10/2012) are timed to enable provision of data for an EU regulatory deadline. Specific regulations are listed on pages 3 to 5 of our 2009/10 annual statistics plan; a link is provided here; <http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/scotstat/Agstat0910>

An updated plan will be available before April 2013.

The production estimates presented here 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. A link to the balance sheets, published by the Home Grown Cereals Authority (HGCA), is provided here; http://www.hgca.com/content/output/99/99/Markets/Markets/Supply_percent20and_percent20Demand.msp

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, <http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/Contacts>.

Details of both current and past user consultations are available on the Agriculture Statistics consultations webpage, <http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/scotstat>.

4.32 Accuracy

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

The number of agricultural holdings surveyed in the CPS was (445) in 2012. Usable returns were received for 422 of these; a response rate of 95%. Although 445 holdings were surveyed, many holdings grow more than one crop. The total number of returns received for all crops combined was 684, this equates to a sampling rate of 5% overall. The 2012 CPS sample covered 5% 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.

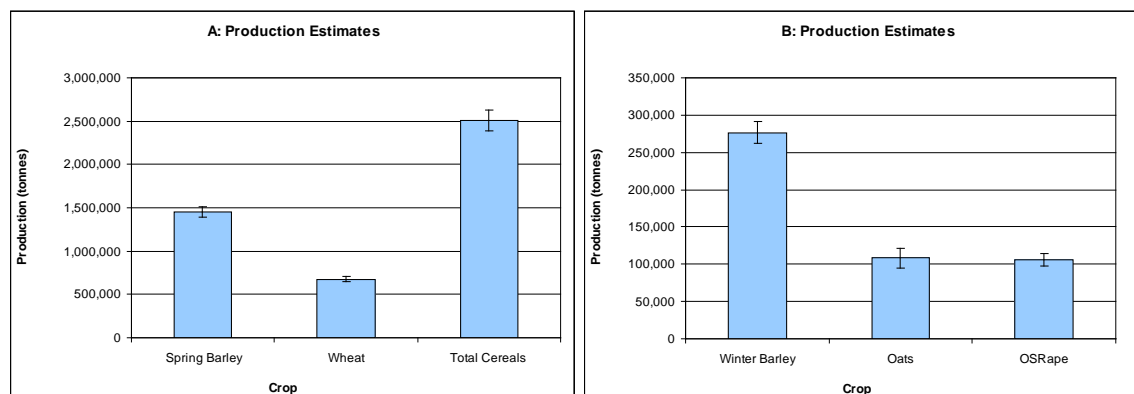
The sampling error can be estimated and used to produce confidence intervals around the survey results. These intervals tell us the range of values within which the true value lies, with a given degree of confidence. The intervals below are 95% confidence intervals; this means that if the sample survey was repeated a large number of times, 95% 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 2.5 million tonnes $\pm 117,000$ 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 2012 CPS Estimates

Crop	Number of Holdings (June Census)	Sample Size	Sampling %	Production ('000 tonnes)	Confidence Limits ('000 tonnes)	Confidence Limits (%)
Total Cereals ¹	14,016	642	4.58	2,507	± 117	± 4.72
Spring Barley	8,214	366	4.46	1,447	± 60	± 4.15
Winter Barley	1,684	78	4.63	277	± 15	± 5.65
Wheat	2,626	150	5.71	673	± 29	± 4.3
Oats	1,438	45	3.13	108	± 13	± 12.59
Oilseed Rape	1,300	42	3.23	106	± 8	± 7.94

¹ includes Triticale, excludes Oilseed Rape

Charts A and B - Production Estimates with Confidence Intervals: 2012

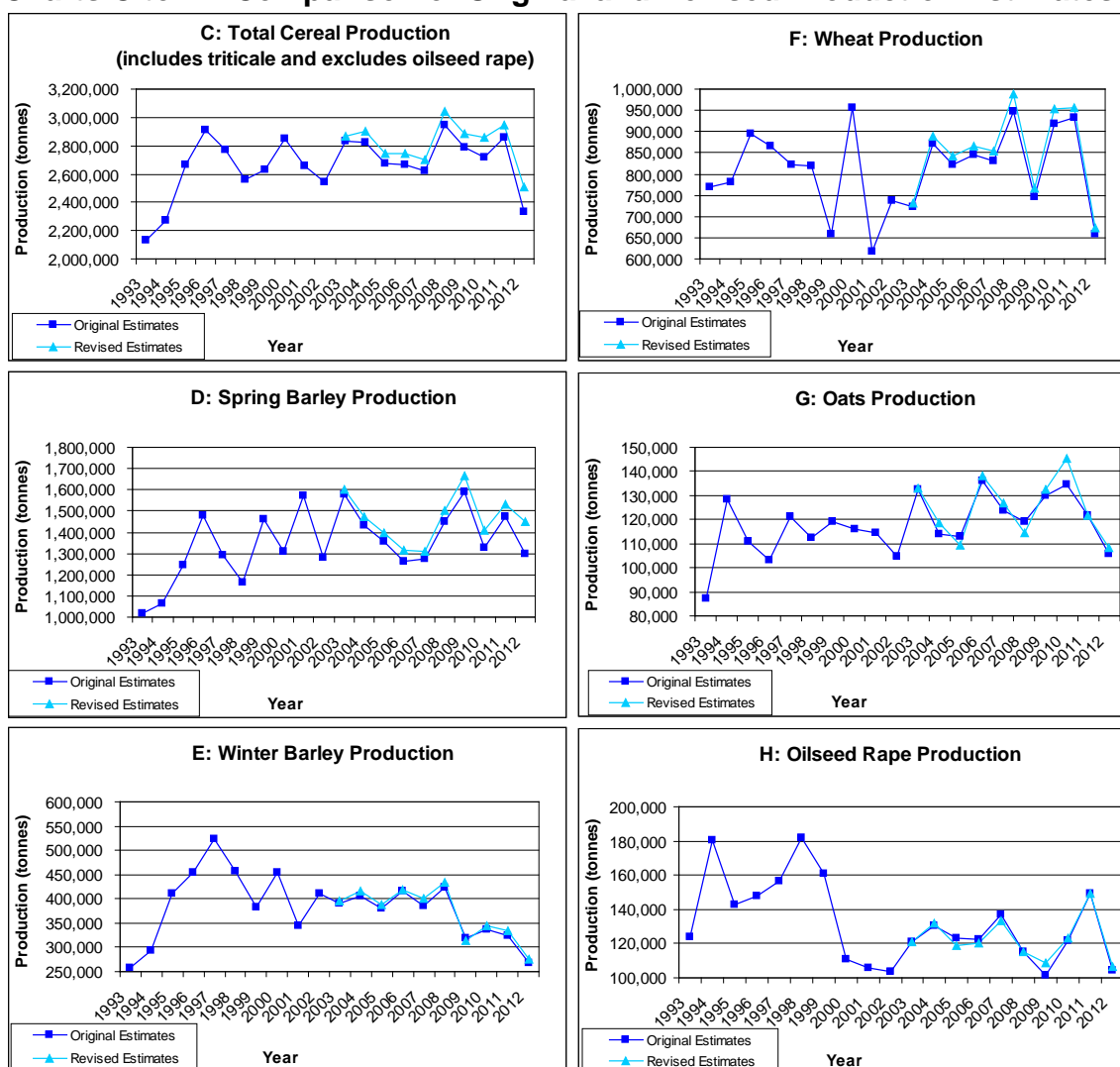


Area data are sourced from the June Agricultural Census and are assumed to be accurate as farmers face financial penalties for supplying incorrect information.

Revisions

In previous years (results prior to 2012) production estimates were based on the mean average of individual yield values for each of the strata. This has been changed to provide more reliable results (see methodology section). Results have been revised from 2003 onwards. At this time it is not possible to revise results prior to 2003. Charts C to H, below, show the impact of the revisions on the production estimates for the main crop groups. Note that the vertical axes of the charts do not start at zero; this is to highlight the variation between years and the differences between results of original and revised estimates.

Charts C to H - Comparison of Original and Revised Production Estimates



In 2012, the revised estimate of total cereal production was 172,000 tonnes (7%) higher than the original estimate. Since 2003 the difference between the resulting estimates of the two methods has fluctuated between 1% and 7%. In 2012 the new revised estimates result in differences of: +147,000 tonnes (up 11%) for spring barley; +9,000 tonnes (up 3%) for winter barley; +14,000 tonnes (up 2%) for wheat; +2,000 tonnes (up 2%) for oats; and +2,000 tonnes (up 2%) for oilseed rape.

4.33 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. 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 two months of this date, to allow sufficient time for data collection, processing, quality assurance and compilation and dissemination of final results. The specific date of release is chosen to coincide with the release of DEFRA's equivalent estimates as Scottish results feed into UK estimates and UK cereals balance sheet.

To help inform users, both those within and outwith the agricultural industry, early (provisional) estimates are provided, based on the results of the annual Crop Report Meeting (CRM). In order to provide timely estimates of cereal and oilseed rape production the CRM is held as early as is practical following data collection by the industry representatives attending the meeting. The progress of the harvest limits how early this meeting can be held. In 2012, due to poor weather, Scotland experienced a late harvest. To allow further harvest progress prior to data collection the Crop Report Meeting was held on the 9th October, when the majority of the Scottish harvest had been completed, the results were published under National Statistics protocols on the 15th October.

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

The results of the 2012 CPS were released on the scheduled date of 20th December 2012.

4.34 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). 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 the Agriculture Statistics series of outputs are available at the following internet address, <http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/Publications>.

4.35 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 latest UK results can be accessed at the following internet address, <http://www.defra.gov.uk/statistics/foodfarm/food/cereals/cerealsoilseed/>.

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 following website: http://epp.eurostat.ec.europa.eu/statistics_explained/index.php/Agricultural_products 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.

Comparison of provisional and final results (Table 3)

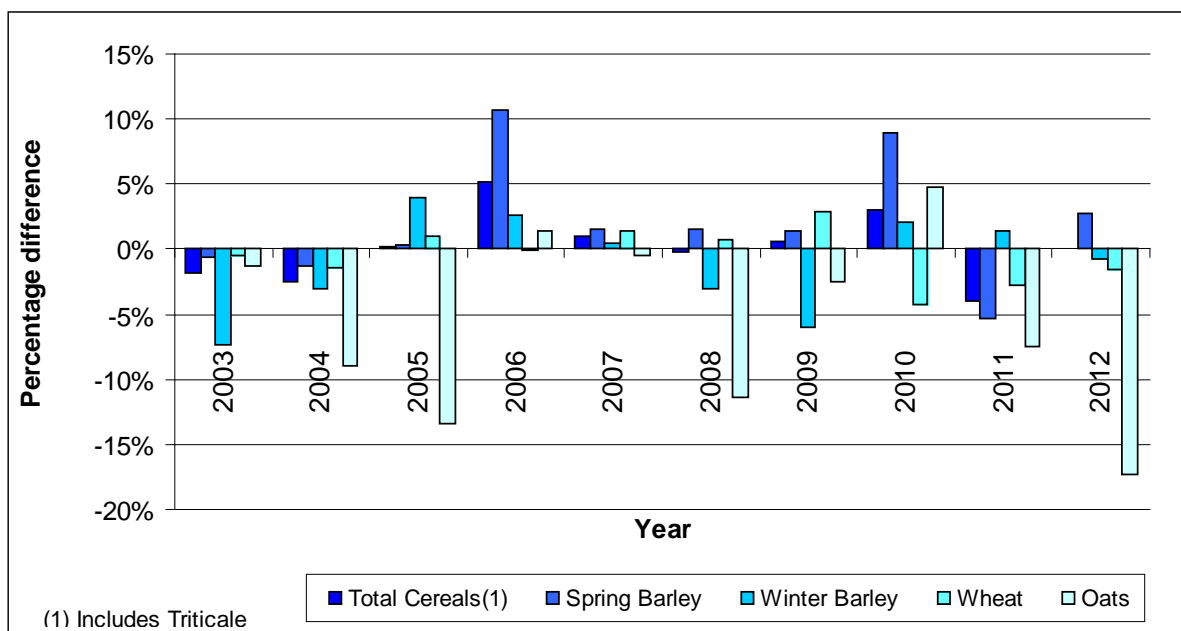
This section compares past provisional estimates of the harvest to the final estimates of the harvest. Provisional estimates are derived from averaged yield estimates of growers, collated through the cooperation of several organisations within the agricultural sector, applied to crop area estimates from the June Agricultural Census. Final estimates are derived from average yields from the Cereal Production Survey (CPS).

Although provisional harvest estimates are not based on statistical methods, they are representative of about 24% of Scottish cereal production and can be used to compare with final estimates. If there were large differences in the estimated values between the two sources this would suggest that, at least, one of the sources provided a poor estimate of actual production.

Prior to 2009, the June Agricultural Census issued two sets of results (provisional and final). This meant that area figures used to calculate the provisional production estimates were slightly different from the final June Agricultural Census areas used to calculate the final production estimates. However, these differences were generally small (less than 1 percent) and were not a main contributor to differences in the production estimates. Since 2009, administrative data on land use from the Single Application Form (SAF) has replaced land data collected through the June census. This has meant that only one set of final results are now issued from the June Agricultural Census – meaning that consistent area figures are available for the provisional and final harvest estimates.

The main reason for differences in the provisional and final production estimates are differences in provisional and final yield estimates. Chart I shows these differences for the last 10 years. It can be seen from Chart I that for the last 10 years the provisional estimate of the total cereal harvest has been within around 5% of the final estimate. In most years, the largest differences between provisional and final production estimates are for oats, with the largest difference being 17% in 2012.

Chart I: Percentage Difference in Cereal Yield (Final v Provisional Estimates): 2003 to 2012



As the results of the provisional and final estimates are similar, this provides additional confidence in the results of the cereal production survey. Estimated production for oats varies considerably between the provisional and final estimates. With the exception of oats, the 2012 provisional estimates all fall within the confidence intervals of the final estimates from the Cereal Production Survey.

4.36 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).

$(A \times B \times C)$

(A) The 2012 Cereal Production Survey (CPS) received 422 responses.

The time taken to respond to the survey varies with each respondent. Scottish Government (SG) Rural Payments and Inspections Directorate (RPID) staff conducting the survey were asked to provide estimates of the average time taken to administer the telephone survey. Estimates were collected from each area office involved in the survey and 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 2012 was £12.52

(Further information on average hourly wages can be found in the [Annual Survey of Hours and Earnings](#)⁴, available on the Office for National Statistics (ONS) website.)

The respondent burden for CPS data collection in 2012 was

$422 \times 0.083 \times £12.52$

$= £440.29$

4.37 Related publications

Results from all Scottish Government agricultural surveys can be accessed here:

<http://www.scotland.gov.uk/Topics/Statistics/Browse/Agriculture-Fisheries/Publications>

⁴ <http://www.ons.gov.uk/ons/rel/ashe/annual-survey-of-hours-and-earnings/2012-provisional-results/stb-ashe-statistical-bulletin-2012.html>

APPENDIX

Table 1 - Cereal Area, yield and production estimates: 2011 & 2012

Crop	2011			2012			% Change 2011/2012		
	Area ² (000 ha)	Yield (t/ha)	Production (000 t)	Area ² (000 ha)	Yield (t/ha)	Production (000 t)	Area ²	Yield	Production
Wheat	115	8.3	957	101	6.7	673	-12.8%	-19.3%	-29.6%
Winter Barley	45	7.3	334	43	6.5	277	-5.9%	-12.0%	-17.1%
Spring Barley	263	5.8	1,533	289	5.0	1,447	10.0%	-14.2%	-5.6%
Total Barley	308	6.1	1,867	332	5.2	1,723	7.7%	-14.2%	-7.7%
Oats	22	5.6	122	24	4.6	108	9.0%	-18.5%	-11.1%
Total Cereals¹	446	6.6	2,949	457	5.5	2,507	2.4%	-17.0%	-15.0%
Oilseed Rape	38	3.9	150	37	2.9	106	-4.6%	-25.4%	-28.9%

¹ Estimates for Total Cereals include Triticale.

² Area estimates are based on final June Census results.
2011 estimates have been revised.

Table 2 - Cereal Area, Yield and Production Estimates: 1993 to 2012

Year ²	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)
1993	410,071	5.20	2,133,990	227,589	4.47	1,018,005	48,515	5.29	256,706	109,134	7.06	770,248	24,109	3.62	87,171
1994	395,286	5.75	2,273,770	215,624	4.94	1,065,494	45,987	6.38	293,244	105,275	7.43	782,057	27,597	4.65	128,352
1995	424,720	6.29	2,669,660	231,934	5.37	1,246,109	57,993	7.09	411,105	108,379	8.25	894,324	25,181	4.40	110,713
1996	449,298	6.48	2,909,649	260,726	5.68	1,480,776	63,566	7.16	455,093	103,974	8.32	864,552	19,950	5.16	102,909
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

¹ Includes Triticale.

² Revisions have been made to estimates from 2003 to 2011.

Table 3 - Cereal Area, Yield and Production (Final v Provisional Estimates): 2012

Crop	First Estimate ⁽²⁾			Final Estimate ⁽³⁾			% Difference		
	Area (000 ha)	Yield (t/ha)	Production (000 t)	Area ² (000 ha)	Yield (t/ha)	Production (000 t)	Area	Yield	Production
Wheat	100,637	6.8	683,445	100,637	6.7	673,288	0.0%	1.5%	1.5%
Winter Barley	42,816	6.5	278,613	42,816	6.5	276,511	0.0%	0.8%	0.8%
Spring Barley	289,222	4.9	1,407,715	289,222	5.0	1,446,950	0.0%	-2.7%	-2.7%
Total Barley	332,038	5.1	1,686,329	332,039	5.2	1,723,461	0.0%	-2.2%	-2.2%
Oats	23,672	5.5	131,009	23,672	4.6	108,249	0.0%	21.0%	21.0%
Total Cereals¹	456,901	5.5	2,502,839	456,902	5.5	2,507,016	0.0%	-0.1%	-0.2%
Oilseed Rape	36,611	3.0	109,989	36,611	2.9	106,420	0.0%	3.4%	3.4%

¹ Estimates for Total Cereals include Triticale.

² Area estimates based on provisional June Census results. Yield estimates based on Crop Report Meeting

³ Area estimates are based on final June Census results. Yield estimates based mainly on Cereal Production Survey

Table 4 - Oilseed Rape Area, Yield and Production Estimates: 1993 to 2012

Year ¹	OILSEED RAPE		
	Area (Hectare)	Yield (t/ha)	Production (Tonnes)
1993	59,925	2.1	123,670
1994	69,612	2.6	180,591
1995	52,121	2.7	143,090
1996	49,290	3.0	148,171
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

¹Revisions have been made to estimates from 2003 to 2011.

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ISSN 2045-5461 ISBN 978-1-78256-310-5

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