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Crop areas in England sourced from the Basic Payment Scheme and the June Survey of Agriculture 2015-2017 (Experimental Statistics)

This release presents the crop areas that have been claimed and paid under the Basic Payment Scheme (BPS) from 2015-2017 at county/unitary authority (NUTS3) level. This data has not previously been published and is classed as an administrative data source for further analyses. The official crop areas from the Defra June Survey of Agriculture have also been shown for 2016 for comparison and context. The full dataset is available at: <https://www.gov.uk/government/statistics/farming-statistics-crop-areas-in-england-sourced-from-basic-payment-scheme-data-and-the-june-survey-of-agriculture-2015-2017>

Key findings

There is a high degree of matching between the national crop areas between the BPS and the June Survey of Agriculture (see Figure 1). For example, the 2016 English wheat area from BPS of 1.67 million ha compares favourably to 1.68 million ha from the June survey (0.6% difference). The differences are smallest in the wheat and oilseed categories.

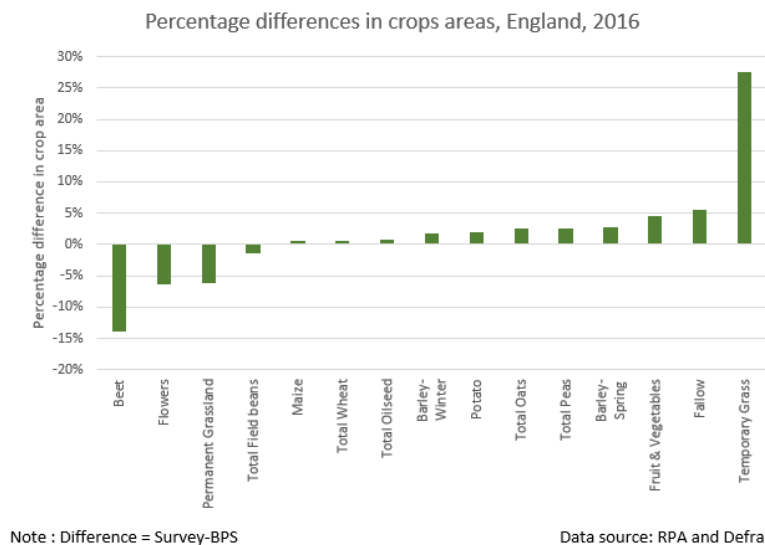


Figure 1 : Percentage differences in England level crops areas

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The grassland areas differ between the two data sources due to the different methods for recording common grazing land between the data sources (Common grazing is not captured in the survey). Temporary grassland also differs in definitions slightly as the BPS temporary grassland includes land for livestock production e.g. outdoor pigs whereas this type of land is recorded elsewhere on the June survey.

At the NUTS1 level, there is still a good level of matching but differences are more marked in several regions (see Figure 2 below). Oilseed and wheat are the most consistently matched, other crops show more variation. Maize has significant differences in several regions, though the North East only produces a small area of maize so this result is fairly spurious.

| Regions (NUTS1) | % differences (Survey-BPS area) | | | | | | |
|---------------------------|---------------------------------|---------------|---------------|------------|-------------------|---------------|-------|
| | Total Wheat | Barley-Winter | Barley-Spring | Total Oats | Total Field beans | Total Oilseed | Maize |
| North East | -2% | 1% | 10% | 4% | -4% | -5% | 102% |
| North West and Merseyside | 13% | 8% | 17% | 17% | 0% | 16% | 12% |
| Yorkshire and The Humber | -1% | 2% | 3% | 1% | 1% | 0% | -7% |
| East Midlands | 1% | 0% | -1% | 6% | 0% | 0% | 11% |
| West Midlands | 3% | 4% | 11% | 2% | -2% | 2% | 4% |
| Eastern | -1% | -1% | 0% | 4% | -4% | 1% | -11% |
| South East (incl. London) | -2% | 3% | -1% | -3% | -1% | 1% | -5% |
| South West | 5% | 3% | 5% | 2% | 4% | 2% | 1% |
| England | 1% | 2% | 3% | 2% | -1% | 1% | 1% |

Data source: RPA and Defra

Figure 2: Percentage differences in the NUTS1 regional crop areas

Definitions

| Variable | Description |
|--------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of SBIs | Number of farm businesses claiming each crop |
| BPS areas (ha) - Area eligible for payment | The maximum area of a parcel that RPA believes is eligible for payment. The land must be at the farmer's disposal with crops established, or intend to be established, on 15th May of the scheme year. |
| Survey areas (ha) | Areas of crops in the ground on 1 June. Includes areas of headlands and ditches. |
| Other cereals | Survey data has not been included for this category as it only includes mixed corn, rye and triticale. The BPS areas cover a much larger selection of crops- a full list of the categories is available in the Excel spreadsheet linked on the front page) |
| Sugar beet | Sugar beet not for stock feeding. |
| Peas | Peas for harvesting dry (for fodder) plus edible peas. The survey area also includes a small area of edible beans (<3,000 ha). |
| Fallow | Survey areas include uncropped arable land and all arable land not in production, including wild bird cover and game cover. |
| Fruit & Vegetables | Survey areas include all soft and top fruit, and all vegetables grown for human consumption. A full list of the categories included in the BPS data is available in the Excel spreadsheet linked on the front page) |
| Flowers | Survey areas include bulbs, flowers, nursery stock and |

| | |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| | Christmas trees. BPS areas only include flowers (a full list is available in the Excel spreadsheet linked on the front page) |
| Temporary grassland | <p>Survey areas include all temporary grass or grass sown within the past 5 years. It does not include land used for livestock production.</p> <p>BPS areas include land that has been in grass or other herbaceous forage for fewer than 5 consecutive years (self-seeded or sown). It also includes land used for livestock production, if it's been used in this way for fewer than 5 years. This includes land used for outdoor pigs.</p> |
| Permanent grassland | <p>Survey areas include grassland sown 5 or more years including areas of Sole rights rough grazing (lower quality grazing land including heathland, moors, hills and scrub). It excludes common grazing land.</p> <p>BPS areas include land which is used to grow grasses or other herbaceous forage for 5 or more consecutive years (self seeded or sown). It includes areas of bracken, salt marshes, reed beds and light scrub (including gorse bushes and briar) if the land is managed so that they are suitable for grazing and grasses and other herbaceous forage remain predominant. Area also includes areas of heather - where these are kept in a state suitable for grazing. It excludes areas of dense scrub which prevent grazing.</p> |

Background

The main data source of crop areas in England is the Defra June survey of Agriculture and Horticulture, a large sample survey which has been running for many years. The Rural Payments Agency (RPA) also collects crop data from farmers who submit claims for the Basic Payment Scheme.

Farmers in England who wish to apply for subsidies from the Basic Payment Scheme (BPS) under the Common Agricultural Policy (CAP) must submit an application to the Rural Payments Agency. The main section of their application is a detailed breakdown of their land (field areas and crops grown in each land parcel). The BPS data has a more complete coverage of the rural landscape in comparison to the June Survey as data is provided by around 85,000 farmers in England. BPS was introduced in 2015 and replaced the Single Payment Scheme (SPS). Under SPS, farmers were not asked for detailed crop breakdowns of their fields, but under BPS the detailed crop data provides a useful insight into which crops are grown across the country.

Which data source should you use?

The two data sources have strengths and weaknesses which should be taken into consideration when deciding which data source to use. The June survey of Agriculture has a long running time series so gives a long term view of changes to the agriculture industry. It is unaffected by changes in administrative data reporting or subsidy systems and as it collects information on all aspects of the farm activity, it gives a holistic picture of farms e.g. cropping, horticultural and livestock activities. However, it is a sample survey so results are subject to a degree of sampling error, particularly at the lower geographical level. The geographical location of the land is also based on a central grid system so all

land on a farm is attributed to one location which makes geographical estimates less reliable.

The Basic Payment Scheme subsidy data is comprehensive so is very robust at low levels and uses land parcel identifiers to locate the land, which more accurately identifies the location. However, the data is only available from 2015 when the subsidy scheme changed so has a much shorter time series.

The full Metadata in the next section gives a more comprehensive insight into the different data sources.

Metadata

June Survey of Agriculture and Horticulture, UK

| | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------|
| Title | | |
| June Survey of Agriculture and Horticulture | | |
| Previous titles | | |
| None | | |
| Topics Covered/ key words | | |
| Detailed information on arable and horticultural cropping activities, land usage, livestock populations and agricultural labour force figures. | | |
| Time Covered | | |
| From 1866 to 1995 as a census. From 1995 onwards, a census every ten years, 2000 and 2010 being the most recent. In the intervening years, smaller sample surveys are conducted. | | |
| Data Source | | |
| Farmers | | |
| Geographic Coverage | | |
| England. The survey only includes farms with farming activity levels greater than the thresholds below: | | |
| Thresholds for the EU Farm Structure Survey | | |
| | Characteristics | Threshold |
| Utilised agricultural area | Arable land, kitchen gardens, permanent grassland, permanent crops | >5 ha |
| Permanent outdoor crops | Fruit, berry, citrus and olive plantations, vineyards and nurseries | >1 ha |
| Outdoor intensive production | Hops | >0.5 ha |
| | Tobacco | >0.5 ha |
| | Cotton | >0.5 ha |
| | Fresh vegetables, melons and strawberries, which are outdoors or under low (not accessible) protective cover | >0.5 ha |
| Crops under glass or other (accessible) protective cover | Fresh vegetables, melons and strawberries | >0.1 ha |
| | Flowers and ornamental plants (excluding nurseries) | >0.1 ha |
| Bovine animals | All | >10 Head |
| Pigs | All | >50 Head |
| | Breeding sows | >10 Head |

| | | |
|-----------------------------------------------------------------------------------------|--------------------------------------|-------------|
| Sheep | All | >20 Head |
| Goats | All | >20 Head |
| Poultry | All | >1,000 Head |
| Hardy nursery stock | | >1 ha |
| Mushrooms | All mushroom holdings to be included | >0 |
| Lowest level of Geography | | |
| NUTS3 and bespoke classifications (e.g. water catchments) in large sample size years | | |
| Breakdowns | | |
| UK countries and NUTS1 each year. Extra breakdowns as above in larger sample size years | | |
| Sample Size | | |
| Between 30,000 and 60,000 holdings | | |
| Frequency of Release | | |
| Annual | | |
| Organisation responsible for the data | | |
| Defra | | |

Methodology

What is the June survey of Agriculture and Horticulture?

The June survey of Agriculture and Horticulture is an annual survey which collects detailed information on arable and horticultural cropping activities, land usage, livestock populations and labour force figures. The survey is compulsory under the Agricultural Statistics Act 1979 and EU legislation. Similar information is collected by the appropriate authorities in Scotland, Wales and Northern Ireland allowing Defra to produce results for the UK.

Background

The June Survey of Agricultural and Horticultural activity has a long standing tradition in England. It was first run in 1866 and since then was carried out as a full Census every year until 1995, when it decreased to a sample survey (although still surveyed around 80% of the farming population). These days, the survey samples between 30,000 and 60,000 holdings each year, dependent on EU requirements. A full Census is now only carried out once every ten years, 2000 and 2010 being the most recent.

Data Uses

- The survey data are used heavily within Defra to make estimates of crop/livestock production and to provide information for management of the EU cereals markets.
- They are used in the farm accounts calculations, income from farming estimates and in the Agriculture in the United Kingdom (AUK) publication.
- The data are also used by animal movement and health divisions to monitor livestock distributions throughout England and the results feed into national and regional inventories of ammonia and greenhouse gas emissions from agriculture.
- June survey data are used heavily by the environmental policy teams who assess the impact of CAP reform on the agricultural industry and the landscape.
- As it is such a large survey, the data can be used to provide low level statistics e.g. at county level, which makes it a powerful tool for researchers and anyone interested in local features.

More information on the [uses and users of the June Survey of Agriculture & Horticulture for England](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/654304/structure-juneusers-24oct17.pdf) are published at the following site:
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/654304/structure-juneusers-24oct17.pdf

Strengths of the data

The June survey of Agriculture has a long running timeseries so gives a long term view of changes to the agriculture industry. It is unaffected by changes in administrative data reporting or subsidy systems and as it collects information on all aspects of the farm activity, it gives a holistic picture of farms e.g. cropping, horticultural and livestock activities. It helps to maintain a strong central farm register as the survey has regular contact with the majority of farms in England.

Limitations of the data

- Sampling errors
As with all sample surveys, the main limitation on the June Survey is that it is (usually) not a Census so estimates have to be made for non-sampled and non-responding holdings. We publish indicators alongside our estimates to give an indication of the scale of the sampling errors and the sampling rate is between 30% -50% of the agricultural population. As it is an online and postal survey, there is also a degree of non-response which may potentially cause a bias in the results. Obviously, the bias is unquantifiable but the response rate is still reasonably high at 70% and we do monitor how the response differs between farm types and size to try and avoid this possibility.
- Consistency of the response due to farmers' interpretation of questionnaire.
The data are also subject to the vagaries of farmers' interpretation of the categories on the form. We try to keep both the paper and online forms as clear as possible, including notes on how to complete the sections, to try and minimise the confusion. The data validation exercise to clean the data prior to processing also helps to keep the data as accurate as possible.
- No annual data at lower level of geography
To generate the dataset needed for producing the low level results, we impute data for non-sampled and non-responding holdings. This imputation procedure, while based on actual response trends, is an estimation procedure so is subject to a degree of error, particularly on the small holdings, which are sampled at a low rate each year. For this reason, in non-census years, we are now unable to produce estimates for geographical levels lower than county or unitary authority. The data are not robust enough below this level and would not give accurate indications of industry trends.
- Farm location data
The farm location is based on a central grid point so all land/livestock is attributed to this one location. This makes geographical estimates less reliable than other systems.

Survey methodology

The sample survey is run every year on 1 June across England. Up until 2010, the survey was mainly postal. Nowadays, over 50% of farmers complete the survey online.

The full survey methodology can be found at:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/182206/defra-stats-foodfarm-landuselivestock-june-junemethodology-20120126.pdf

Suppression of data

Estimates cannot be disclosed where the value is based on less than five holdings as this would breach our confidentiality rules. Where we have to suppress estimates of this nature, we usually have to also suppress the second smallest estimate in the group so that the original estimate cannot be derived from the total. Where estimates are suppressed, the value is represented by the symbol "." in this release. If a value is not present, it is recorded as zero.

Basic Payment Scheme Administrative data

Basic Information

| |
|----------------------------------------------|
| Title |
| Basic Payment Scheme Crop data |
| Topics Covered/ key words |
| BPS, crop area |
| Time Covered |
| 2015, 2016 & 2017 |
| Data Source |
| Rural Payments Agency BPS processing system |
| Geographic Coverage |
| England |
| Lowest level of Geography |
| NUTS3 |
| Breakdowns |
| NUTS3 & NUTS1 by crop code |
| Organisation responsible for the data |
| Rural Payments Agency |

Information on the administrative data

What is the BPS Crop data?

Farmers in England who wish to apply for subsidies from the Basic Payment Scheme (BPS) under Common Agricultural Policy (CAP) must submit an application to Rural Payment Agency (RPA). The main section of their application is a detailed breakdown of their land (field areas and crops grown in each parcel). This data summarises the eligible crops that have been claimed and paid on since 2015, broken down by NUTS3 geographical classification.

Under BPS, a 'farmer' is a person/group of people, or a business that does at least one of the following on their holding:

- produces, rears or grows agricultural products – including harvesting, milking, breeding animals and keeping animals for farming purposes
- keeps some land in a state suitable for grazing or cultivation by keeping it clear of any scrub that can't be grazed.

The BPS scheme was introduced in 2015, replacing the Single Payment Scheme (SPS). Data is now available for 2015, 2016 and 2017, and shows the areas of eligible crops that have been paid to the farmer. Each land parcels has been mapped to NUTS geographical data for England to provide geographical breakdown.

Welsh and Scottish farmers can apply to Rural Payments Wales and Rural Payments and Services respectively.

Why the data are thought to be fit for use in the statistics?

Although the primary purpose of this data is to pay farmers their subsidies, the data provides opportunities for further analysis on the agricultural landscape of England due to the high level of detail collected.

This comprehensive data includes claim data from 90,000 farmers in England in 2015, 86,000 in 2016 and 85,000 in 2017.

This data is released alongside June Survey of Agriculture and Horticulture to aid comparisons.

The quality of the underlying data

It is in the farmer's interest to provide accurate data for their BPS claim as they can be penalised if they over/under declare their land area or claim the wrong crop. Once their claim has been submitted, it undergoes a series of validation checks in the Rural Payment system. These checks include checking size of the land parcels, the ownership of each parcel and the land cover. A proportion of claims are selected randomly for inspection to ensure they are claiming the correct land and crops.

As the source data is taken from the BPS processing system it can be subject to change. This may occur if control systems are updated or if operational processes result in claims being re-worked.

Suppression of data

Totals cannot be disclosed where the value is based on less than five records as this would breach confidentiality rules. Where totals have had to be suppressed, the second smallest total in the group is also suppressed so that the original total cannot be derived from the total. Where totals are suppressed, the value is represented by the symbol ".". If a value is not present, it is recorded as zero.

Strengths and weaknesses of the data

The data reflects the implemented rules of the Basic Payment scheme on the land rather than a pure representation of the land in isolation. As such farms with less than 5ha are not represented in the data. Likewise, the area claimed by a farmer is restricted to the number of entitlements they hold for their land (1ha = 1 entitlement). If a farmer does not have enough entitlements for the land that they are claiming on, then their claim is capped to the number of entitlements held.

No sampling error is present as this data has not come from a survey

Revisions Policy

If any revisions are required to past data we will update the published results as early as possible and provide information about these revisions in the Excel dataset.

Further information

Basic Payment Scheme

<https://www.gov.uk/government/collections/basic-payment-scheme>

June Survey data 2016 used in the comparison:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/636552/structure_june_eng_county_09aug17.xls