ANALYSIS

Estimated decline in headline self-sufficiency for UK food production due to the projected reduction in arable crop output in 2024

Analysis using Defra data and previous ECIU analysis to estimate the impact of the wet winter on the UK food production supply ratio measured by volume

Summary

This winter has been unprecedentedly wet, coming at the end of the wettest 18 months in the UK since records began in 1836. This has had a significant impact on farmers' cropping plans, with wet weather preventing the drilling of crops in autumn and spring.

Previous ECIU analysis[1] estimated that the total output for wheat, barley, oats and oilseed rape would decline by up to a fifth, compared to 2023, or around 4m tonnes. This new analysis estimates what this reduction in output could mean for headline self-sufficiency.

We estimate that, compared to the five year average between 2018 and 2022 – the last year for which comprehensive data exists across all farming sectors – this decline in output could reduce headline self-sufficiency across all UK farming sectors from 86% to 78%, when measured by volume. For wheat, the decline is greatest, from 92% to 68% this year. The ratio is relatively stable for barley and oats due to anticipated higher rates of spring planting, but we estimate a steep decline for oilseed rape down to historically low levels, from 75% self-sufficient, to 40% this year.

This steep decline in a single year is not expected to persist, assuming conditions are more benign next year. But it is indicative of the impact that climate change may have on UK food production and self-sufficiency, due to the increased likelihood of the extreme weather we have seen this winter.

[1] https://eciu.net/analysis/reports/2024/analysis-of-uk-farm-cropping-plans-and-estimated-impact-of-the-wet-winter-on-production

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Analysis

Method

We replicated the 'food production to supply ratio by commodity' that Defra publish each year in the Agriculture in the UK publication[2], and the associated dashboard[3]. This measures self-sufficiency across the following sectors and products by volume:

- Sheep (107%)
- Milk (105%)
- Poultry (84%)[4]
- Cereals (101%)[5]
- Eggs (90%)
- Cattle (87%)
- Pigs (69%)
- Oilseed rape (64%)
- Potatoes (63%)
- Sugar beet (57%)
- Fresh veg (55%)
- Fresh fruit (17%)

The rate of self-sufficiency for each in 2022 is given in brackets for illustration. Defra also publish a more comprehensive food production supply ratio measured by value, which was 60% in 2022, and 73% for indigenous type foods. They do not however publish the methodology for compiling this, and it has proved impossible to replicate. Measuring by value is also distorted by higher value processed goods.

We used Excel to create a spreadsheet with all the data on UK production, imports, exports, total supply and the production supply ratio for the period 1988-2022, using the following published data:

- Crops (wheat, barley, oats, oilseed rape, sugar beet, potatoes) - https://www.gov.uk/government/statistical-data-sets/agriculture-in-the-united-kingdom (Chapter 7, crops)
- Fresh vegetables and fruit - https://www.gov.uk/government/statistics/latest-horticulture-statistics
- Meat (poultry, pork, sheep and mutton, beef and veal) - https://www.gov.uk/government/statistics/cattle-sheep-and-pig-slaughter
- Dairy and eggs - https://www.gov.uk/government/statistical-data-sets/agriculture-in-the-united-kingdom (Chapter 8, livestock)

[2] https://www.gov.uk/government/collections/agriculture-in-the-united-kingdom

[3] https://defra-farming-stats.github.io/auk-dashboard/#food-production-to-supply-ratio-by-commodity

[4] The dashboard linked to in footnote 2 gives the ratio for poultry as 96%. However, more recent statistics have revised up the imports for 2022, decreasing the ratio to 84%.

[5] The dashboard linked to in footnote 2 gives the ratio for cereals as 92%, but this includes minor cereals such as rye and triticale. These have been excluded from this analysis due to the absence of crop specific production data for these crops. We have therefore given the self-sufficiency ratio for 2022 for wheat, barley and oats combined.

Dairy and eggs statistics were converted into thousand tonnes from million litres and million dozen respectively to create a composite ratio across all crops and sectors.

The estimated harvest for 2024 for wheat, barley, oats and oilseed rape was then used to estimate the production to supply ratio in 2024, assuming production of all other outputs remain equivalent to 2022. In reality, this will not be the case, and production of several other crops is also likely to be down due to the wet weather.

As the production to supply ratio is a function of imports, exports and total demand, we assumed that exports and total demand for 2024 will be in line with the five year average between 2018 and 2022. The import total is then a function of the gap between demand and UK production minus exports. We used the five year average between 2018-2022 for the aggregated production to supply ratio by commodity across all crops and sectors to establish a baseline for comparison.

Results

We estimate that the aggregated production to supply ratio by commodity will decline from 86% to 78% when comparing the average output between 2018-2022 with the estimated output in 2024, and assessing just the impact of the estimated harvest for these key arable crops[6]. This is set out in Table 1 below. Table 2 provides more detailed results for the crops we looked at in this analysis.

Table 1 – Overall production to supply estimate

	UK production (000s tones)	Total supply (000s tones)	UK production as % of supply (%)
2018-2022 five year average (000s tonnes)	52087	60570	86
Estimated output and production to supply ratio for 2024	46604	60051	78

[6] Due to the weight of arable crops, measuring by volume does mean that reductions in arable output have an outsized impact on the production to supply ratio by commodity. However, the same can be said of lower volume but higher value products such as dairy and fresh fruit, changes in which have an outside impact on the headline production to supply ratio measured by value.

Table 2 – Production to supply estimates by crop

Crop	2018-2022 five year average (000s tonnes unless stated)	Estimated output and production to supply ratio for 2024
All wheat – UK production	13793	10241
Total supply[7]	15071	15071
UK production as % of supply	92%	68%
All barley – UK production	7404	6887
Total supply	6320	6320
UK production as % of supply	117%	109%
Oats – UK production	1017	1024
Total supply	960	960
UK production as % of supply	106%	107%
Oilseed rape – UK production	1429	756
Total supply	1909	1909
UK production as % of supply	75%	40%

[7] Total supply is a function of UK production, plus imports minus exports