

Agricultural drought impact Summer 2018

23 July 2018

Contents

Weather introduction.....	3
Overall weather summary.....	4
Dairy impact.....	7
Red meat impact.....	10
Cereals and Oilseeds impact.....	16
Potatoes impact.....	20
Longer-term weather changes.....	22

Weather introduction

Adapting to the vagaries of the weather is part of the day job for farming businesses. Weather influences our decisions. It means regularly reassessing situations, working through different scenarios and adjusting plans. But, at times of extreme weather, the decisions we take can be tougher, the impacts can be more severe and they can be longer lasting.

We've emerged from a wet, long and challenging winter. We now find ourselves in a prolonged dry and warm spell, and this is creating different challenges for different sectors. This briefing pulls together information from across the farming sectors. It includes insight from the latest datasets, anticipates potential impacts, and draws on the views and opinions of our sector experts. It also examines historical parallels, looking at previous prolonged dry spells.

This report looks at climate similarities but is not a forecast of what will happen.

While very much a snapshot of the situation we're currently in, the critical aspect is what the industry is doing in response. Clearly, we can't control the weather but, as an industry, we've proved our resilience time and time again. Farmers are already working through the implications. Many will be crunching the numbers, as they seek to understand the impact on the bottom line of higher costs or reduced yields. Similarly, they will be looking at future budgets and cash flow implications. Where production and availability have been hit, there will be realistic conversations with customers. In the past, we've seen practical solutions over specifications or delivery schedules emerge as a result.

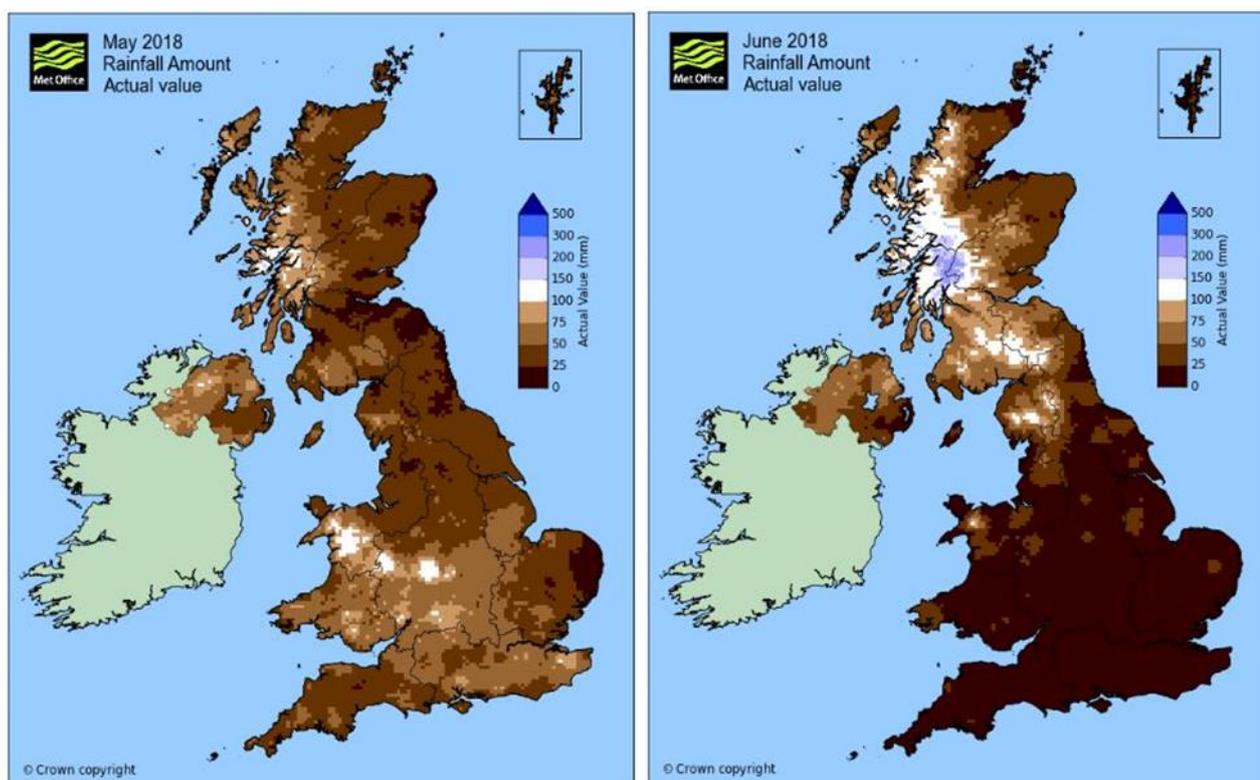
I'd encourage readers to sign up to AHDB's regular Market Intelligence publications to follow how the weather continues to influence production and prices at comms@ahdb.org.uk

Phil Bicknell

AHDB Market Intelligence Director

Overall weather summary

Combined, May and June have been the hottest and fifth driest on record. It is this combination of high temperatures and lack of rain that has led to soil moisture conditions at the end of June being the driest on record, for the UK as a whole.

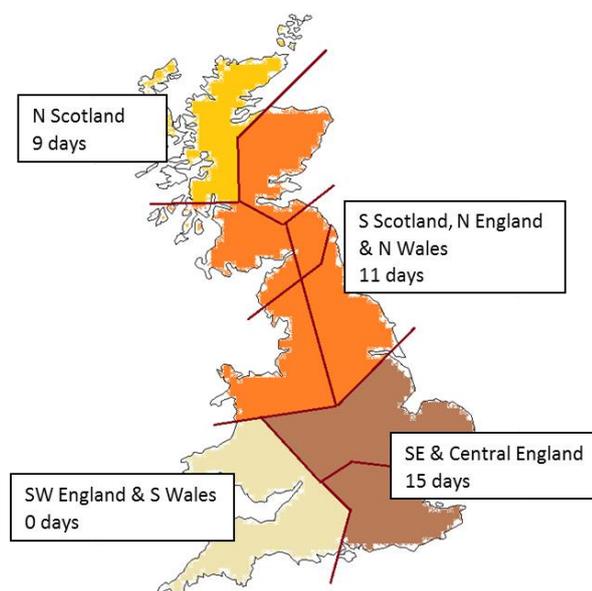


Despite the recent dry, hot spell, the wet spring means river flows in the south east, central and eastern parts of England are reported as normal. They are below normal or exceptionally low in northern and eastern Scotland, North West and South West England, much of Wales and Northern Ireland. Supplies from groundwater sources are generally good.

In the UK, an absolute drought is defined as a period of at least 15 consecutive days, none of which sees more than 0.2 mm of rainfall. South East and Central England reached this level on 30 June, whereas much of the rest of the country had hit 11 consecutive days by the end of June. (July data is not currently available.)

Useful link: www.metoffice.gov.uk/climate/uk/summaries

Consecutive days < 0.2mm rainfall at 30th June 2018



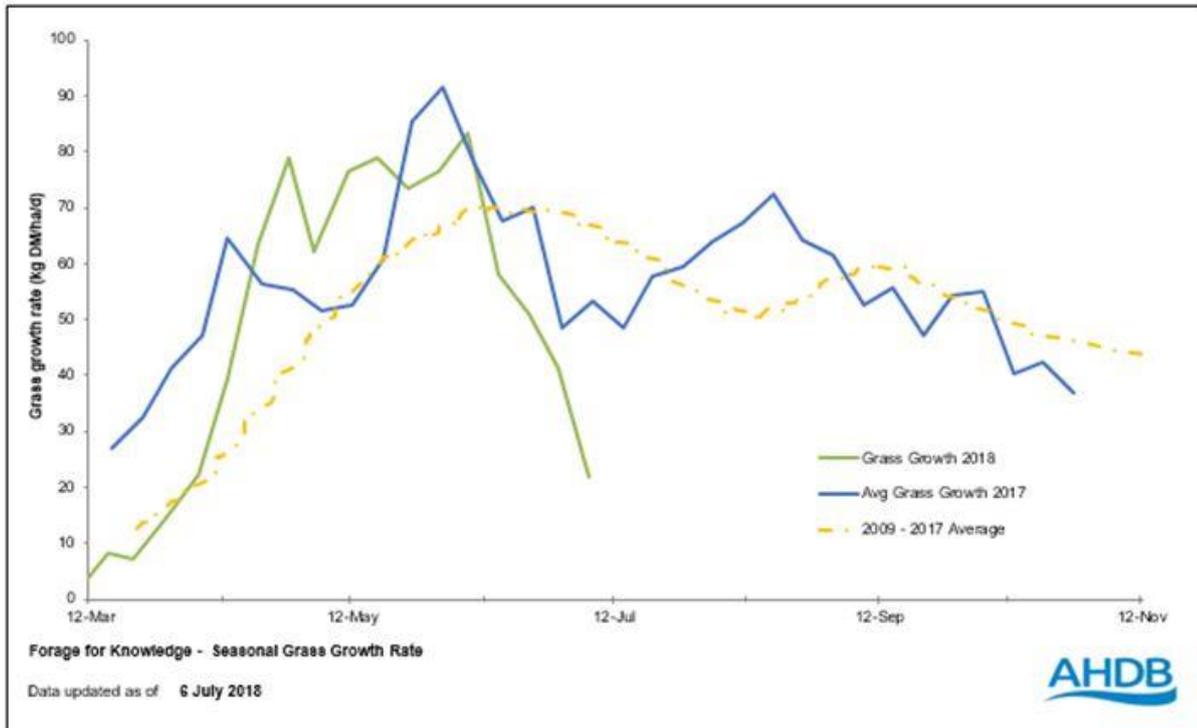
Whether we are in an official drought, or not, is largely irrelevant. The key challenge this year has been a long winter, when forage supplies had already been depleted, followed by a period of poor forage growth. It is the lack of rainfall and high temperatures at a time of year where water in the ground will evaporate quickly, that is causing the current concerns. Similar periods were seen in July 2013 and, before then, in August 1995.

The dry, hot spell in July 2013 had followed a particularly cold, and relatively dry, spring. However, the drier spring meant forage quantities had not been depleted, and the hot, dry period in July was relatively short-lived.

In 1995, conditions had been dry from April through to July, but became exceptionally so in August, with temperatures hitting a record high in that month. The extended dry period stressed ground conditions, causing widespread issues.

Forage

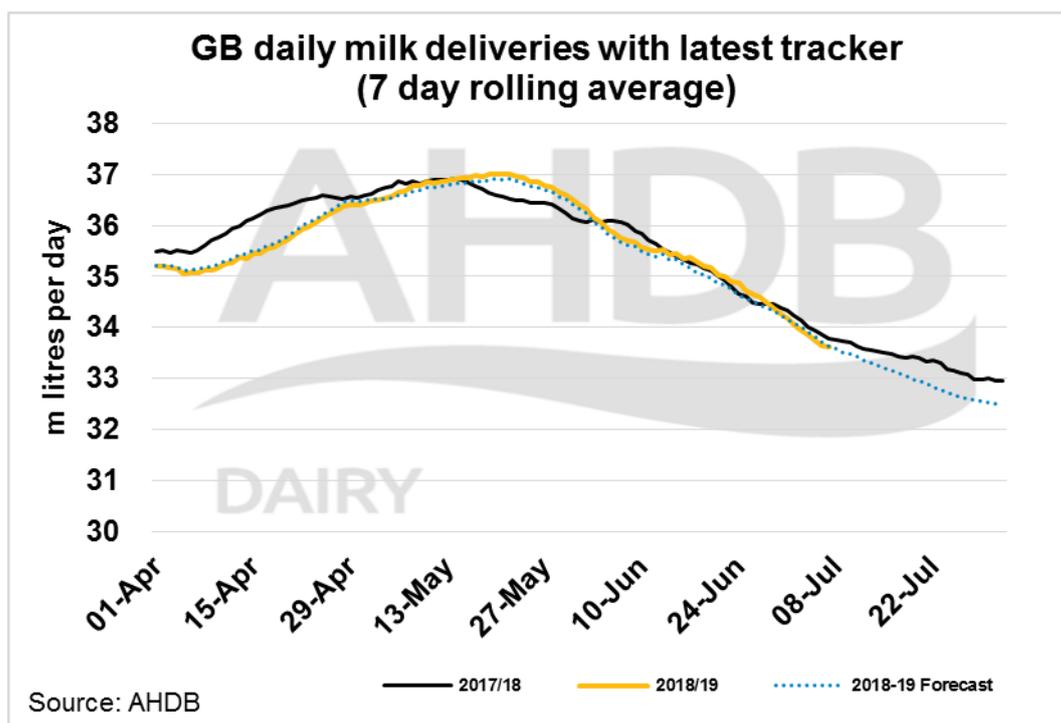
After a slow start, grass supplies picked up well in late spring, but are now running short again. Growth indicators are showing a significant drop-off in grass growth throughout the country since the middle of June.



It is difficult to get national silage quantity and quality results, and we have to rely on reports from those out in the field. Accordingly, first cut silage was reported as good quality but quantity was potentially on the low side. The weather conditions since the middle of June have impacted second cut. Most farmers are hoping for a change in the weather conditions to allow them the opportunity for a decent third cut.

Dairy impact

Milk production data is available up to 7 July, with volumes continuing to fall, in line with the AHDB milk forecast.



We are not seeing any significant impact on milk volumes at present as a result of the drought conditions, but we have picked up reports of farmers drying off cows early to reduce the feed burden. Farmers are also reportedly destocking as much as possible, by sending barren cows, spare youngstock and poorer milkers to market. The aim being to take the pressure off, wherever possible. In many cases, this will not have an immediate impact on milk production, but is likely to have a longer-term financial implication for the individual farmers.

The main immediate impact for most farmers will be lack of forage. Farmers really have three options – they either start grazing paddocks they would have kept aside for silage-making, or they start feeding silage that’s already in the clamp or they buy in feed. The first would be the preferred option because it is lower cost, but this and the second option will both mean less silage in the clamp ready for the winter period. In addition, some farmers were forced to use silage through March because of the wet ground conditions. This means silage stocks are likely to be already low, and continuing to come under pressure.

Maize crops are looking decent, but will need rain before harvesting to allow them to bulk out.

What can we learn from history?

We have recently published an article looking at the last severe drought to hit the UK, in 1995.

<https://dairy.ahdb.org.uk/news/news-articles/july-2018/the-potential-cost-of-a-drought/#.W09dTU32b4g>

This suggested that milk from forage fell away during the drought period, and yields suffered. Yields did recover once the drought had passed, but only by farmers increasing bought-in feed. The loss of milk yield during the drought month of August 1995 took an estimated 15m litres from GB milk volumes.

The additional concentrate used through August (15%) and September (12%) at today's feed prices (£225/tonne) would equate to an additional £265k per day, or around 0.8ppl.

Milk production was severely impacted by the drought of August 1995. Milk Marque declared Force Majeure, effectively telling its customers it could not satisfy all contracts because of a force outside its control. What this allowed them to do, was direct milk to liquid processors and away from cheese and manufacturers, ensuring immediate consumer demand was not affected.

Longer-term impact

While milk production is likely to come under some pressure over the coming weeks, the bigger impact is expected later in the year. Feed costs will likely rise because of the conditions and the increased demand from the livestock area.

There is a risk that some grazing areas will need to be reseeded, depending on how ground conditions recover once the rain does come.

Heat stress could potentially impact on fertility levels, causing delays to calving patterns and animals getting back into milk.

Dairy products

If volumes start to drop off, we would expect to see spot milk prices rise. Liquid processors will need to satisfy their demand, and will look to the spot market to ensure they get the milk they require. Cheese makers and butter/powder manufacturers, in particular, will then look to see if the spot prices are high enough to make it worth them selling milk on the open market, instead of putting it through their own factory. At current cheese, whey and cream prices, spot prices would need to get to 33–35ppl in order for cheese makers to consider it worth selling milk. The price is even higher to encourage milk away from butter/powder manufacturers, at around 35-37ppl¹.

Assuming prices get to that level, liquid milk should be ok (albeit probably paying more to secure supply) but we will then see a lagged impact in the cheese market and in butter/powder availability. With the EU still having large SMP stocks, the impact on milk powder availability should be manageable. The impact on cheese could be more significant. Stocks will fall, and cheese makers will need to decide if they can catch up or need to buy in cheese.

Outside the UK

We shouldn't forget that it's not just the UK that is suffering with challenging weather conditions in 2018. Ireland, in particular, struggled with feed in the spring due to the wet and cold weather, and are having similar challenges

¹ Based on estimated marginal cost of processing milk into cheese or butter/powder, using June 2018 wholesale prices.

to the UK now. France and Germany are also reporting high temperatures, and lack of rain impacting grass availability and, ultimately, milk volumes.

Summary

Unless significant rainfall is seen over the coming weeks, the following impact would be expected on the dairy industry.

Short-term impacts:

- A more rapid drop in milk volumes, off the back of poor grazing conditions and farmers looking to dry-off cows early or remove excess stock to reduce the pressure on their forage stocks
- Reduction in silage stocks, either because of farmers using silage already in clamps, or using fields that would have been used for future silage cuts
- Increase in spot milk prices and milk being diverted away from cheese and butter/powder to protect volumes into the liquid market

Longer-term impacts:

- Financial strain on farmers due to the additional feed costs
- Lack of silage for the winter period, forcing farmers either to reduce stockholding or buy in feed, which leads to a further increase in feed costs
- Reduced stocks of cheese and butter, and subsequent upward pressure on prices in these markets
- Impact on fertility of dairy herd, and slippage in calving patterns for future years

Red meat impact

While the drought is unlikely to affect overall numbers of livestock for slaughter, if it is prolonged, it may affect the timing of those supplies.

Farmers who sell store animals and are short of forage, may be forced to destock sooner than planned, selling cattle to those who have feed and straw available. Finishers with feed but little straw may attempt to finish animals more quickly. Finishers with a feed shortage may have to send livestock forward sooner than planned. The schedule to which they are sent forward, the degree of finish achievable, and carcass weights may all be negatively impacted.

Industry reports suggest farmers are already:

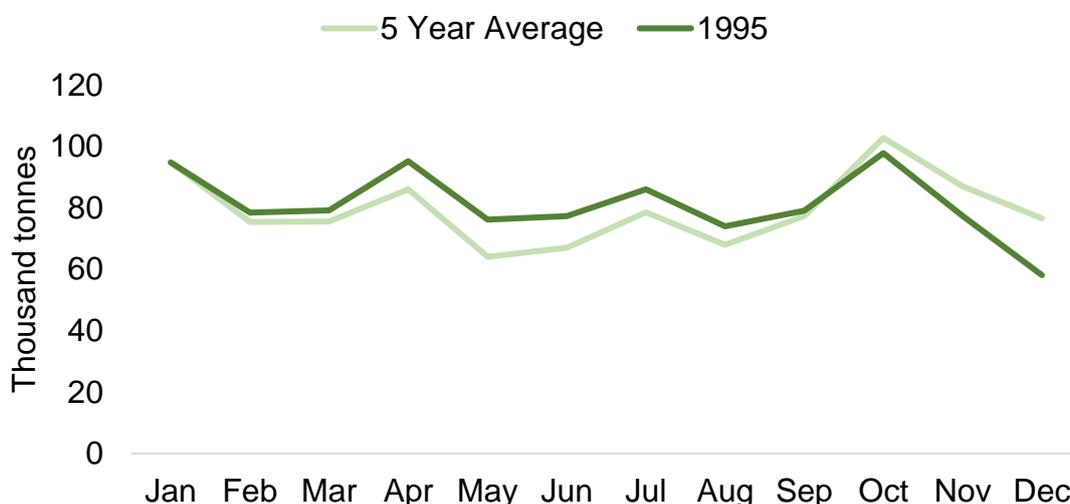
- Putting cattle onto ground which is/was destined for silage-making
- Using winter stocks left over from last year (although unlikely to be much left following the long winter) or using stocks made earlier in the year
- Thinking about putting more cattle into the marketplace as they try to conserve winter stocks, control input costs or just run out of grazing altogether

What can we learn from history?

Beef

Looking back at the years with similar weather patterns, 2013 and 1995, there is no notable change to production or slaughter levels. In fact, in 1995, production was actually higher than the 5-year average for much of the year. However, with the BSE crisis that hit UK agriculture during the 1990s, the culling of infected animals would have been on the increase throughout that period as BSE became more prevalent, potentially skewing the production data. Price data around that time will also be skewed by BSE, due to declining demand for beef amid consumer concerns.

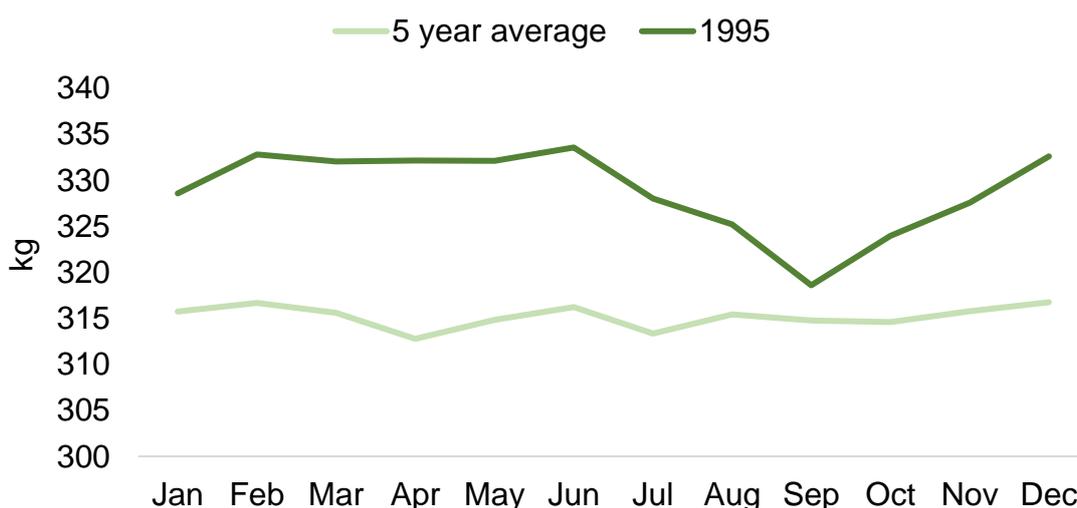
UK beef and veal production



Source: Defra

One factor that is shown to be affected by the weather is carcass weights. For 1995, the carcass weight 5-year average was relatively stable throughout the year. Average carcass weights in 1995 were higher than the 5-year average, due to a trend of increasing carcass weights overall but were also relatively stable for the first half of the year. However as the dry weather started to put the strain on forage requirements, the steer average carcass weights fell sharply, by almost 15kg, as producers looked to destock farms.

UK steers average carcass weight

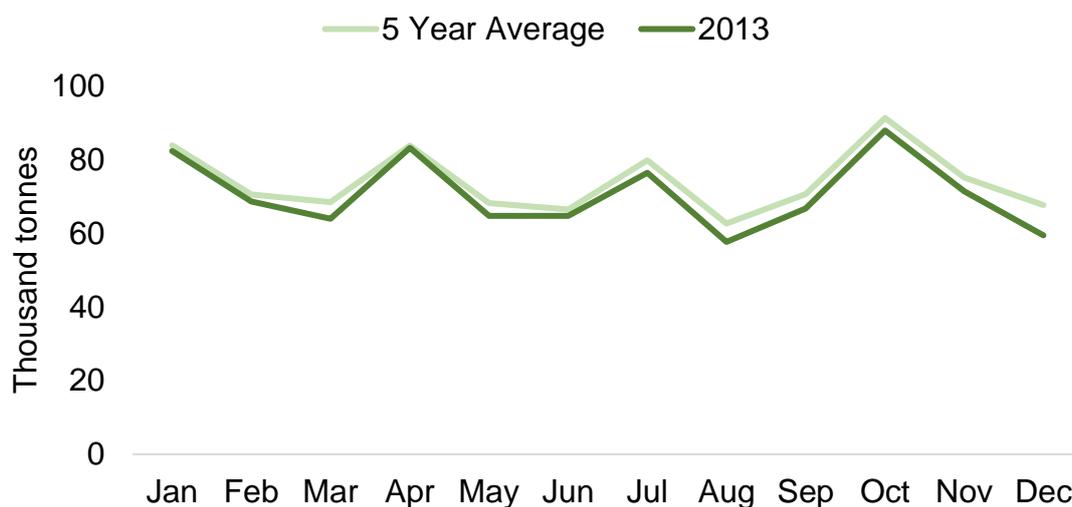


Source: Defra

Focusing on more recent times, 2013 resulted in weather similar to 2018 and 1995, albeit less severe, as the winter of 2012/13 was shorter and the dry spring in 2013 meant cattle were turned out earlier than in 2018. Further

to this, the hot, dry spell was relatively short-lived compared with what is being experienced this year. Notwithstanding that, in contrast to 1995, production for 2013 was marginally lower than the 5-year average, but still largely followed seasonal trends.

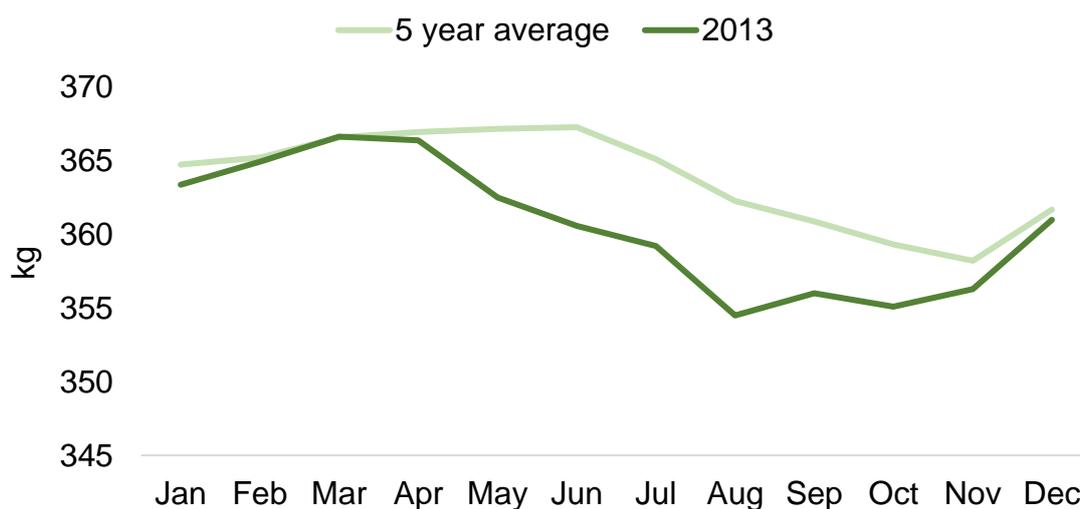
UK beef and veal production



Source: Defra

Carcase weights in 2013 were also below the 5-year average, declining steadily from the beginning of April, and then more sharply between July and August as forage stocks again became short.

UK steer average carcase weights

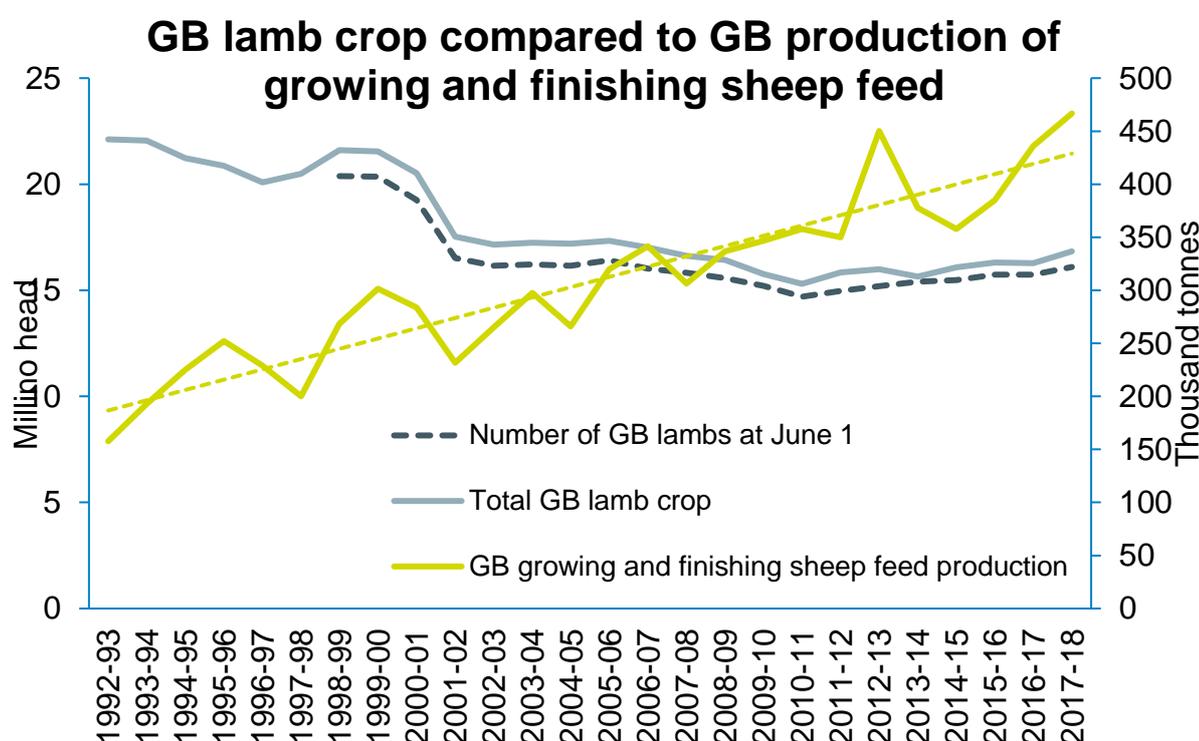


Source: Defra

Lamb

There is little to suggest a shift in seasonality of slaughtering sheep, based on the weather. There has been a shift in seasonality in recent years but this appears to be largely unrelated to weather.

In 1995 and 2013, there is a clear pick up in feed for growing and finishing sheep. The 1995 GB lamb crop decrease by 2 per cent year-on-year, but feed production for growing and finishing sheep increased by 14 per cent during the first six months of 1995, compared with the same period of 1994, according to AHDB and Defra data. Similarly, the GB lamb crop declined by 2 per cent in 2013 compared with 2012, but feed production during the first six months increased by 31 per cent. Due to the foot and mouth outbreak in 2001, GB production of growing and finishing sheep feed also increased outside of the historic trend.



Source: Defra, Scottish Government, Welsh Assembly, AHDB

Latest information

Beef

Looking at the current year, data from Defra estimates production to be up on the year to June, as demand for beef is, somewhat ironically, being bolstered by the hot weather. It will remain to be seen if production levels are affected by the weather, going forward. Historic data suggests not, but the weather we are currently experiencing is arguably more severe than the years we have been comparing with and some weather experts have suggested that 2018 is more akin to the heatwave experienced in 1976, but there isn't sufficient production or carcass weight data going back that far to carry out robust analysis. Carcass weights in the current year are already below the 5-year average, in part due to a hard spring experienced by many producers but could also be indicative of processor requirements, but rose slightly in June and are now very close to the 5-year average. Going forward, unless

significant rain is experienced soon, it can be expected that carcass weights will continue to decline slightly as producers try to reduce burdens on feed stocks and sell cattle earlier than usual.

Lamb

Looking at 2018, AHDB is currently forecasting the UK lamb crop to have declined 6 per cent on-the-year, which is entirely driven by the lambing conditions earlier in the year. Feed production during the first five months was up by 14 per cent year on year because of the poor weather in the early spring. Looking at the effect of the warm, dry weather this year, reports have suggested that, while seasonality does not appear to have changed, those that are coming forward are under-finished, which in turn is affecting overall production and the SQQ price measure.

Pigs

Most of the impact on pig farmers will be a secondary impact from higher feed/straw prices in the coming months.

Excessive heat does tend to reduce pig growth rates and affect fertility, which could potentially lead to lower production around Jan/Feb than would have otherwise been expected. This, coupled with the CO₂ shortage, and overhanging effects from the difficult winter, mean pig production has had a difficult year.

Summary

As producers aim to reduce the burden on grazing land, they may look to sell/slaughter cattle. As a result, we may see some cattle coming forward out of specification, both weight and fat class, which you would expect to naturally reduce average prices. More efficient beef farms that employ rotational grazing techniques to improve grass utilisation and, therefore, have a higher stocking density, may begin to struggle sooner than those farms that are on a set stocked approach. The latter, by default, will be required to use grass better, or destock.

Feed availability is likely to be affected later in the year (see below). In preparation for this eventuality, there are several mitigation strategies that businesses can put in place, but each will have a cost, made worse if many others are acting simultaneously.

- Keep an eye on silage stocks and think about calculating your winter feeding budget now. This may involve additional top-up purchases, and perhaps more additional supplements than usual. This could be done in conjunction with planning options around retention of breeding animals at housing time
- Consider fixing at least some prices with your feed merchant in order to mitigate some risk. Unfortunately, feed prices will already be prohibitively high for some, worsened by a weaker sterling and, in any case, others may be doing the same
- If the weather permits, where possible, consider planting additional catch crops (kale, brassicas)
- It may be possible to change the components of your silage or feed mix, for example, in the event of a potentially successful potato crop
- Straw is also likely to be in short supply so it may not be possible to bulk out a Total Mixed Ration.

Cereals and Oilseeds impact

There has been much consternation surrounding the effect the drought conditions may have had on harvest 2018. Concerns have been exacerbated following the difficult spring planting conditions, brought about by the extremely wet winter.

That said, up until mid-June, the industry was reasonably optimistic about yields. The warm weather during May and June sped up emergence, and late-planted spring crops largely caught up. Winter crops survived the wet weather mainly unscathed, and were well established moving into their winter dormancy period.

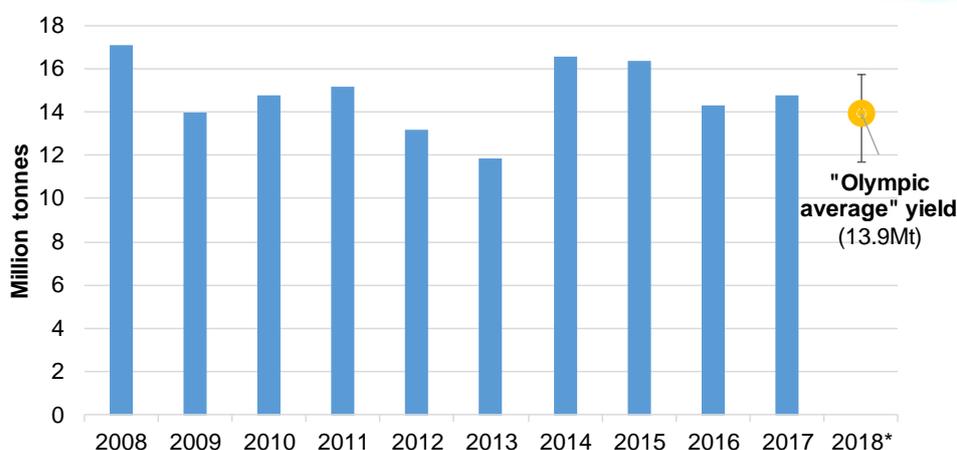
However, when growers needed the rain in late June, it failed to materialise. Moving towards harvest, there has been little precipitation of note – especially in the main crop-growing regions of East and South East England. These areas are more at risk due to their lighter, well-draining soils. Those regions on heavier soils are reportedly faring slightly better due to lower soil moisture deficits. Early harvest reports, predominantly of barley, reflect this variability. Yields and quality are, so far, wide ranging. However, this is only a small part of early harvest and, as the season plays out, a clearer idea will be gleaned on the true impact of the weather on production levels.

Given that we know the planted area of wheat is back 2 per cent on last year², a range of yields can be plotted against this to give an estimated production range. Using these theoretical extremes would give a production range of 11.7–15.7Mt. By applying a 10-year 'Olympic average'³, production of 13.9Mt would be recorded for UK wheat. This volume would be 0.9Mt less than 2017. In addition, it should be noted that the 2017/18 ending stocks are forecast to be the lowest since 2013/14. This could put further pressure on supplies if domestic demand remains at similar levels. However, the increasing use of feed wheat in the bioethanol and poultry sector could further put pressure on a decreasing resource.

² Source: AHDB Planting and Variety Survey 2018

³ Olympic average takes the average of a selected period removing the extreme outliers

Figure 1 2018 UK wheat production scenarios

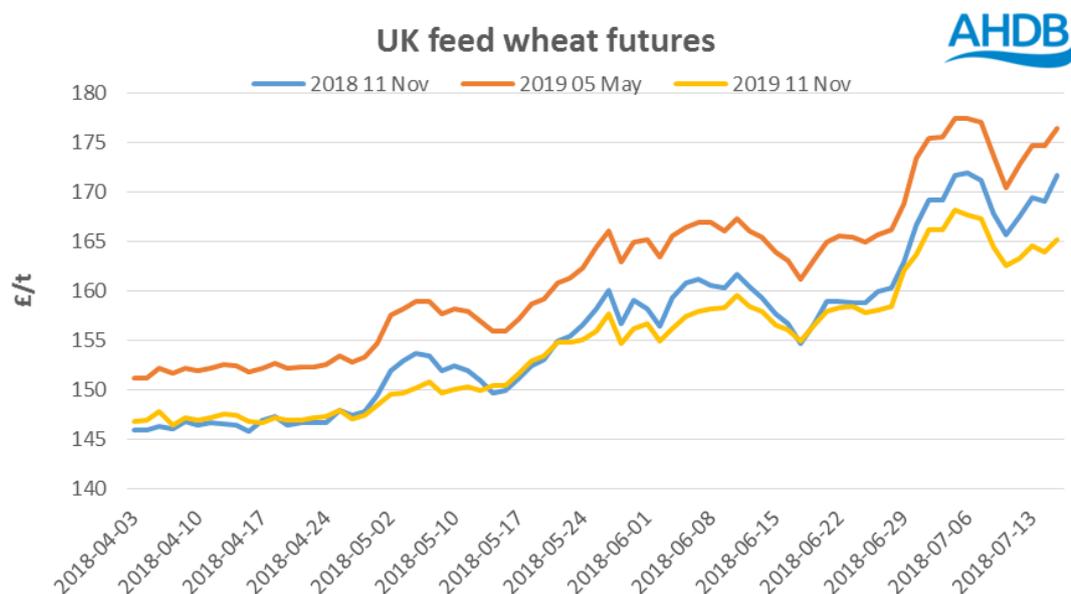


*2018 production scenarios are based on the 2018 AHDB Planting & Variety Survey area estimate 1751Kha¹ and the 10 year minimum, maximum & 'olympic' average Defra yields.

Source: Defra, AHDB

Which leaves the option to import. The UK was a net importer of wheat in 2016/17, and 2017/18 looks set to continue that trend. There is the possibility that 2018/19 could be the same. As a result, domestic prices could reach import parity more quickly in 2018/19 than 2017/18. But, where would imports come from? Germany and France are the UK's biggest EU trading partners and, combined, accounted for a quarter of all UK wheat imports in 2016/17. Outside of the EU, Canada and the US supplied 28 per cent of UK imports over the same period. Therefore, the production, and availability of supply, in these nations needs to be tracked to infer potential supply impact to the UK. Following the dry conditions on the continent, the Association and German Farm Co-operatives and the French government have revised down their production forecasts from earlier in the year, and to below year-earlier levels. On a worldwide scale, the USDA has slashed its estimates of world wheat supplies and stocks, driven by the weather challenges seen globally.

So, what effect might this have on price? Grain markets often react to weather news in spring. The challenging domestic conditions and global forecasts being pegged back have seen futures markets rise over recent months. However, more optimistic crop condition reports recently from the US have helped to temper these increases.



Source: ICE

So what could this all mean?

For livestock producers, there may be extra pressure on feed wheat availability this coming season. Potentially lower production levels, variability in quality and potential continuing increasing demand from the poultry and bioethanol sectors could continue to support prices. Gaps in supply could be mitigated by importing, but many of the major grain exporters have pegged back production levels. With a reduction in the area of Group 1 and 2 wheats, and potential quality concerns, there could be decreased availability, once again supporting the price. So, it will be necessary to think about options to mitigate this risk. Is there merit in securing the price and buying forward? This would mitigate price fluctuation risks, but be of no benefit if the price should fall.

For feed manufacturers and livestock producers, explore the options in altering your ration mixes. What could be included, and what would the cost/availability options be for alternatives? Should quality be adversely impacted this year for Group 1 and 2 varieties, is there more opportunity to use these stocks for feed on farm?

Also important to consider are livestock bedding options for the winter. Reduced crop quality and a shorter growing season may affect stalk length, resulting in reduced availability of straw. The winter of 2017/18 already demanded heavily on straw stocks, reducing any potential carry into the coming winter. Another year of short supply would compound this tightness. Therefore, alternative bedding material should be considered, where appropriate.

From an arable perspective, it may be necessary to reassess any commitments in forward contracts. Should these be comfortably fulfilled, or is there a degree of exposure? How could this be mitigated? With increasing concerns over the variability in quality, is there merit in increasingly checking quality on farm to reduce the risk of rejection at the mill? What are the cost implications of this?

Should the dry weather continue, it might be necessary to consider the viability of your next rotation. Early drilling for OSR may prove tricky on hard, dry ground, so are there any other options, should it be necessary to plant later?

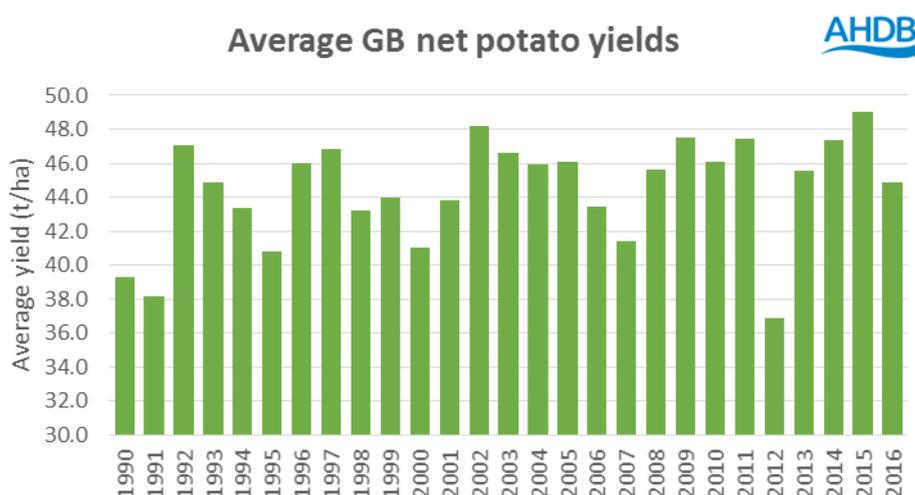
The weather continues to play a significant role this season and, as harvest progresses, we can say with more certainty what the potential short-term impacts may be. AHDB harvest reports and the Cereal Quality Survey will continue to provide a firming picture during the course of the season.

Potatoes impact

This growing season has provided a number of weather challenges for potato growers. The wet spring caused significant planting delays in some areas, with reports that growers were 2–4 weeks behind schedule. This had a knock-on effect to the earlies harvest. However, supply has not been generally disrupted, due to the uplift in production volumes in 2017, and a large amount of old crop still in stores at the end of March; 1.3Mt – 300kt more than a year earlier. This has largely dampened any sizeable fluctuations in price.

Favourable conditions in May caused crop emergence to accelerate and, in some areas, almost negated the impact of late planting. However, the lack of significant rainfall since June means that crops are now looking thirsty. The hot, dry weather is causing concerns about the state of crops in the field, and there are widespread reports of small sample tuber sizes.

Looking historically, since improvements in agronomy and irrigation have embedded over the last 40 years, drought conditions have had less of an impact on yield than excessive rainfall. 2003 and 2006 recorded dry summers, and the chart below shows minimal yield reduction. When we look at the wet summer of 2012 (and to a lesser degree, 2007), we can see a more detrimental effect on yields.



Source: AHDB

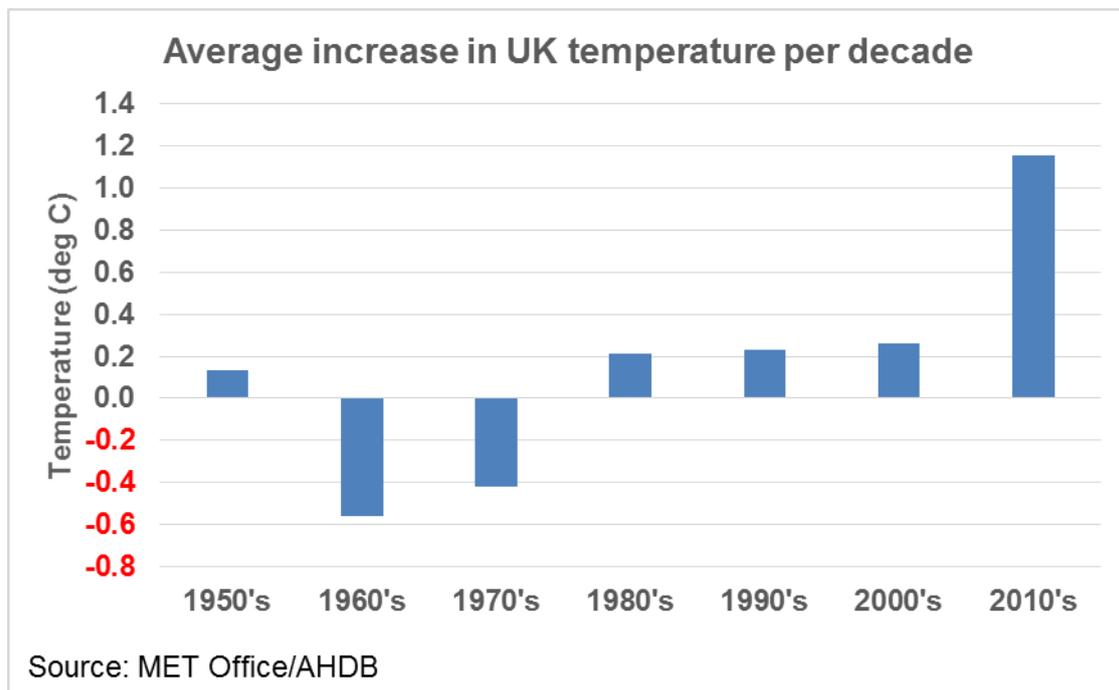
That said, irrigation systems are now reported to be under pressure. More frequent irrigation has been necessary - with its associated time and cost impact, the rate at which water is transferred from the land to the atmosphere by evaporation from the soil and by transpiration from plants has also outstripped the ability to irrigate. Where crops have not been irrigated, reports of under-developed canopies, potential reduced yields and increasing dry matter content have been received.

Excessive heat has led to some reports of early sprouting, which will compromise storage later on. Heavy downpours, while welcome, have led to cracking and secondary growth in crops that have essentially ‘shut down’ under stress. The total impact on the quality and volume of crop available is still being assessed. Irrigation

and nitrogen application strategies are now at a critical stage to affect crop development, and disease concerns should also be of focus. The cost of additional irrigation also needs to be factored into marketing strategies, in addition to the balance between selling off the field and storage. This has been explored in more detail in a recent article: [Knowing your costs and market direction to extract a margin | AHDB Potatoes](#)

Longer-term weather changes

Although the current situation calls for careful management, we should be mindful that the long-term trend in the UK is for warmer conditions and more extreme weather events. Annual average temperatures in the UK have been rising since the 1980s, although the rate of increase has accelerated lately. From 1980 to 2009, the average rate of increase was 0.2°C per decade. Since the start of 2010, the rate has increased to the equivalent of 1.2°C per decade.



Over the last 20 years, UK temperatures were only below average in one year (2010). Of the top 10 warmest years in the UK, eight have been recorded since the turn of the century, but we have also seen six of the wettest years and two of the driest.

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