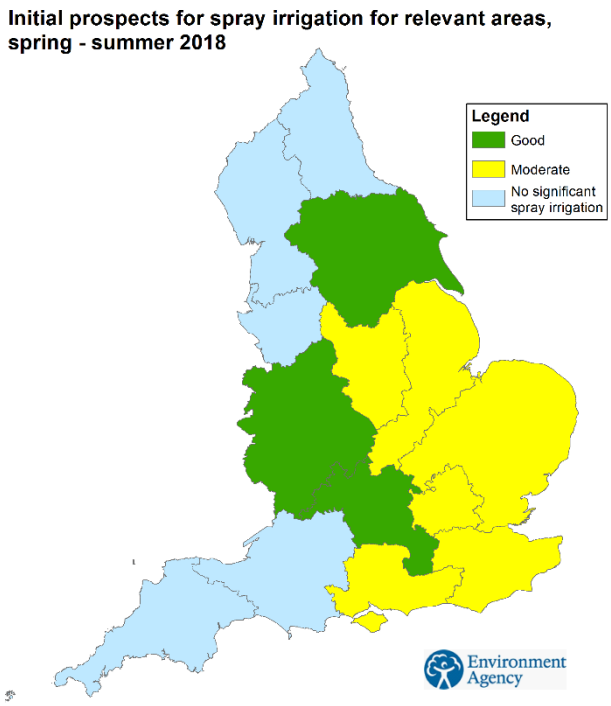
Initial prospects for spray* irrigation - forecast for 2018

Summary

Overview

This document provides the initial prospects for spray irrigation (SI) across England (for those Areas where irrigation is most significant). We will be updating these prospects into the spring. Figure 1 shows a map of SI prospects. There has generally been an improving hydrological position since December 2017 across the country generated from two months of above average rainfall resulting in river flows and groundwater levels rising. The mapped SI prospects (figure 1) reflect the improving conditions and the most likely rainfall scenarios for the remaining part of the winter. Despite this improving hydrological situation, many areas are classed as moderate, with groundwater levels in some Areas still below normal for the time of the year. Some Areas have provided detailed prospects which are contained further into this document. These also contain the prospects should the remaining winter rainfall scenarios turn out to be more pessimistic (i.e. drier) than expected continuing into the summer. Therefore a range of prospect forecasts are presented for some Areas.

Figure 1: February 2018



Definitions

Prospects for spray irrigation are defined as ‘Good’, ‘Moderate’ or ‘Poor’.

Good	Water levels are average or above average and supplies are expected to be safe. There is a possibility of minor local controls on abstraction from surface water in late summer if the weather is exceptionally hot and dry.
Moderate	Water levels are low. Some controls on surface water abstraction are possible by mid-summer if the weather is hot and dry. Controls on abstraction from groundwater are possible in small, sensitive groundwater areas.
Poor	Water levels are well below average. Soil moisture deficit is developing early and significant restrictions on abstraction from surface and groundwater are probable.

Paul Hammett, NFU's water specialist has urged growers to monitor irrigation prospect announcements from the Environment Agency as they are updated in the months ahead. He said “Recent rainfall has allayed many concerns but dry conditions in the second half of 2017 again reminded growers in the south and east about the importance of building resilience to face future droughts." The NFU recommends that farmers and growers review their abstraction licences before the next irrigation season starts to ensure that they meet current business needs.

(* The Environment Agency has historically provided Spray Irrigation Prospects. Trickle Irrigation has only recently been brought into regulation from the 1st January 2018. To date there are no trickle irrigation abstraction licences in the system).

Prospects for individual areas

Yorkshire

The prospects for water resources availability for spray irrigation in Yorkshire for spring - summer 2018 are GOOD.

Kent, South London and East Sussex

Kent, South London and East Sussex Area is in a period of prolonged dry weather. We have less water available than normal for the start of the irrigation season. The water resource availability for the 2018 irrigation season is:

- MODERATE in the 'Most likely' scenario (most likely being 100% of long term average (LTA) rainfall)
- POOR in the 'Reasonable worst case' scenario (reasonable worst case being 80% of LTA rainfall)

So far this winter Kent, south London and East Sussex have received 83% of LTA rainfall.

East Anglia

The overall summer prospects for water resources availability for spray irrigation in East Anglia are MODERATE.

After a dry autumn a wet winter has seen conditions return to normal in most of the area, although some parts of the south of East Anglia still have below average river flows and groundwater levels.

Hertfordshire and North London

The prospects for water resources availability for spray irrigation in Hertfordshire and North London are currently MODERATE, but have the potential to go to POOR.

Lincolnshire and Northamptonshire

Lincolnshire and Northamptonshire will not be producing a spray irrigation prospects yet, but their initial spray irrigation outlook for spring - summer 2018 is MODERATE. They are waiting to see how much rainfall is received over February before deciding whether to do a spray irrigation prospects report.

East Midlands

East Midlands will not be producing a spray irrigation prospects but their initial spray irrigation outlook for spring - summer 2018 is MODERATE.

West Midlands

West Midlands will not be producing a spray irrigation prospects but their initial spray irrigation outlook for spring - summer 2018 is GOOD.

Solent and South Downs

Solent and South Downs are going to wait until the end of March or beginning of April to before considering producing a spray irrigation prospects. The situation has been improving but as a period of drier weather is forecast they would currently consider their spray irrigation outlook for spring - summer 2018 to be MODERATE.

Thames

Thames will not be producing a spray irrigation prospects as there is not a demand for it in their area and the situation is improving, their initial spray irrigation prospects for spring - summary 2018 is GOOD.

Area detail

Yorkshire

Background

After a relatively dry period at the end of 2017, water levels have returned to normal or above normal levels in all the rivers across Yorkshire as a result of January's rainfall. The soils are also fully saturated.

As of February 2018, groundwater levels in both the Chalk and Corallian Limestone aquifers are at average or just above average for the time of year. The Magnesian Limestone aquifer within Yorkshire is just below average for the time of year.

The Met Office is currently forecasting a period of continuing cold weather. This is due to a greater chance of easterly winds prevailing with some potential snowfall in Eastern England and drier conditions to the West. Later in March this is likely to change into mild and changeable conditions.

Forward look

Spray irrigation prospects for the Yorkshire Area for spring - summer 2018 are currently favourable. This does not rule out a return to lower river and groundwater levels should we have a hot, dry summer, but we currently expect that there will be good supplies of water to meet irrigation demands.

Kent south London and East Sussex

Background

After an exceptionally dry winter and spring in 2016/17, all of Kent and Southern London river flows and groundwater levels were well below average. Intermittent periods of rainfall over the 2017 summer period temporarily eased pressure on the environment and agriculture irrigation needs, but it did not improve the overall water resources situation. The exceptionally dry conditions returned in the autumn and first half of this winter, influencing a second groundwater recharge season.

Rainfall since the middle of December has significantly improved the water resources situation, with some recovery in river, groundwater and reservoir levels. However, groundwater levels in some aquifers remain below normal levels and we need above average rainfall for the remainder of the winter to support further recovery. Many Kent and South London river flows are supported by groundwater, this is particularly important throughout the summer months and therefore further recovery over the rest of the winter will improve irrigation prospects for summer 2018.

The current impacts have been reflected through both lower than average flow and regimes that are uncharacteristically flashy in nature reducing the opportunity of water available for abstraction.

Forward look

Indicative spray irrigation prospects for the summer are 'poor to moderate' across the Area.

Under the reasonable worst case scenario flow/level constraints for abstraction licences would be likely to come into force for:

- rainfall dependent catchments from early spring and remain throughout the summer
- groundwater fed catchments from mid-summer onwards.

However, under the most likely scenario if there is sustained, above average rainfall until the close of the recharge season, irrigation prospects will improve. In this scenario, flow/level constraints for abstraction licences would likely come into force for:

- rainfall dependent catchments from early to mid-summer

We encourage abstractors with Hands off Flow conditions (HoFs) to keep track of daily river levels on our website so they can take advantage of the brief increases of flows, further advice and details will have

been sent to affected abstractors. In addition we encourage abstractors to provide us with email contact details to improve our river flow messaging services to abstractors. If dry weather conditions persist we will be working with spray irrigators to achieve voluntary savings where possible.

Should groundwater catchments receive insufficient recharge, Environment Agency river augmentation schemes supporting water level dependent environments such as the Stour Marshes in East Kent may be vulnerable to further formal restrictions. Further updates on this situation will be provided as the situation develops. This is an interim forecast and a further update will be provided towards the end of March/April.

For further updates or advice please contact your local environment officer or the Groundwater Hydrology team on: ksl.gwh@environment-agency.gov.uk

Forecast

The latest weather forecast suggests colder, drier conditions are more likely for the end of February and first half of March, followed by more unsettled conditions. There is greater uncertainty in the three month weather outlook, with no clear signal either way.

Although we have recently seen an improving water resources situation, we still need above average rainfall for the remainder of the winter to support further recovery and improve irrigation prospects.

East Anglia

Background

A dry end to 2016 and start to 2017 resulted in limited recharge of groundwater across East Anglia. There followed a wet summer in which much of the area received summer recharge that meant most rivers and aquifers were back within the normal range for the time of year. However, there were still parts of East Anglia with lower than normal groundwater and river flows. The autumn of 2017 saw a return to much drier conditions with some catchments in Suffolk experiencing their lowest recorded monthly flows for November. Starting at the end of November a more unsettled weather pattern established across the UK. There then followed a wet December with 160% of long term average rainfall with half of the rain falling during the last 6 days. This rainfall dramatically reduced the soil moisture deficit and with a slightly wetter than average January groundwater levels have been rising throughout East Anglia. River flows have also recovered enabling irrigation and water supply reservoirs to fill at a steady rate.

So far February has been wetter than average particularly towards the east helping to maintain river flows and recharge of the groundwater.

In response to broadly average rainfall during February most river flows are classified as normal or above although some groundwater dominated sections in the south of the area are still below normal.

Groundwater levels give a clearer indication of the overall state of water resources as they largely determine the level of base flows in rivers during the summer months. Groundwater levels are currently classified as normal or below normal with the below normal sites tending to be towards the south. The exception is Fringford in the limestone in the Upper Bedford Ouse which is classified as above normal.

Forward look

East Anglia area (west)

Prospects across East Anglia area (west) are good to moderate for 2018. Groundwater levels are average and the soil moisture deficits are also within normal bands. Rivers are likely to be flowing at normal levels in groundwater fed catchments throughout the irrigation season. Groundwater levels are likely to remain normal through the summer unless we experience very dry weather conditions.

It is possible that local water management actions may be required in Fenland catchments during the irrigation season. Even in average conditions any dry periods during the summer can result in some form of local water management actions.

East Anglia area (east)

In Suffolk and Essex sustained aquifer recharge has been gradual with levels remaining below normal for the time of year. Further north an area from mid to north Norfolk has responded well to very wet conditions in December with groundwater levels now close to their normal seasonal level.

Soil moisture deficits have fallen sufficiently that further rainfall should now result in effective and steady recovery of all major aquifers. This is 6-8 weeks later than usual, therefore prospects for next year continue to be dependent on the rainfall accumulations over the next 8 weeks.

The current expectation therefore is that recharge of aquifers that are currently below their normal levels will again be limited this winter. Average rainfall between February and April 2018 will not be sufficient to fully recover the major aquifers to their normal summer levels. In particular the confined chalk of Essex and Suffolk may remain below normal as we head into the summer. Average rainfall during the winter and early spring should however be sufficient to prevent the widespread development of environmental issues next summer. There remains a small possibility that informal limited demand reduction measures may be required should summer 2018 be hot and particularly dry. The general synopsis following average winter rainfall is therefore considered to be generally moderate throughout the area.

Prospects following February to April rainfall totals much below 75% of the long term are less favourable. There is around a 20 % probability of rainfall below this level and if associated with continuing prolonged dry conditions may result in the need for more active demand reduction measures during the mid to late summer period of peak environmental stress. A continuation of very dry conditions into the summer could result in flows falling below our exceptionally low indicator for drought in some catchments predominantly south of the river Yare. In addition to the impact of natural low flows, the level of peak demand for resources direct from the river is likely to determine the need for demand reduction measures in individual catchments. This elevated risk remains low but sufficient for us to issue advice that we cannot exclude the need for formal restrictions. The prospects for the dry scenario are therefore moderate to poor.

Hertfordshire and North London

Background

The winter 2016/17 was particularly dry with only 70% of the average winter rainfall. These dry conditions continued through 2017 with a slight improvement but rainfall totals were still below average. This resulted in declining groundwater levels and receding river flows being recorded. The rainfall from December 2017 onwards has prevented further decline and contributed towards some improvement.

Hertfordshire and North London Area (HNL) has seen fairly wet conditions during December and January on the back of relatively dry 12 months. Winter rainfall is critical to enable our water resources to recover to support the higher demands placed on them in the summer. Rainfall has been above the long term average (LTA) for the last 2 months. This has improved the current situation but not taken away that some rivers are still below expected levels for this time of year.

Forward look

Our winter abstractors do rely on high river flows to allow then to fill winter storage reservoirs. The December 2017 rainfall did result in river flow restrictions being lifted. Many of these abstractors are situated in clay catchments and have until the end of March to fill their reservoirs for subsequent summer irrigation.

Our summer abstractors primarily rely on groundwater resources to meet their irrigation needs. Groundwater levels in the Chalk have seen some recovery but are still notably low in the Colne catchment and below normal in the Upper Lee catchment.

River flows in our Chalk streams are also reliant on groundwater levels to maintain their flow regime. There has been an improvement but the majority of our rivers are still below normal where they rely on the Chalk groundwater to support them.

Flow constraints could be activated early for summer abstractors in our Chalk stream areas. This will all be determined by the amount of additional rain we receive during the remaining recharge period.

Abstractors with winter fill licences will continue to receive Environment Agency (EA) flow constraint data. This will inform them whether further abstraction is permitted.

Further hydrological information

More detailed information for all the areas can be found in the Environment Agency Monthly Water Situation Report at:

http://www.environment-agency.gov.uk/research/library/publications/104036.aspx

These are updated shortly after the 10th of each month.

Ensuring your business is resilient to drought

Climate change predictions suggest the extremes of weather we have seen in the last few years are likely to become more frequent in the future. It will become increasingly important to ensure we are as resilient as possible to periods of reduced water resource and drought. The section below gives you some ideas on what you could consider before and during a drought to help make your business more resilient.

We will work with abstractors to minimise the impact of drought and related restrictions on businesses in the future. If you have ideas on things such as voluntary initiatives to conserve water whilst reducing the impacts of imposed restrictions in your area, or would like to set up an abstractor group in your area to work together to improve resilience, please get in contact, our details are at the end of this document.

We continue to recognise the importance of irrigation to the agricultural industry in the region and will aim to work with farmers and others to try to minimise, where possible, the impact of any dry weather on their businesses.

Abstraction is primarily controlled by conditions on licences and licence holders must ensure that they adhere to these at all times. We would encourage all abstractors to review their licences to ensure that they continue to meet their needs. In areas across England in 2009 and 2010, some farmers experienced difficulties lifting crops from dry ground and found that their abstraction licences didn't cover abstraction beyond the end of September. You may also need to extend the winter season on your licence from February to March.

For those farmers who wish to extend their licensed abstraction period, we strongly recommend that you apply now to formally vary your licence. In most cases these variations will be relatively straight forward and will provide you with long term drought resilience without the need to talk to us in the future for a temporary dispensation. This is particularly important as the allowances in the last few years are unlikely to be made in the future as more farmers formally vary their abstraction periods.

We do have powers to further restrict the abstraction of water for irrigation from rivers, streams and underground sources, and will use those powers should the situation become critical. If such a situation arises, however, we will always seek to achieve as much as possible through voluntary savings before imposing formal restrictions. Total bans will only be used as a last resort.

What can irrigators do?

For their part, irrigators are encouraged to take such actions as they can to minimise the impacts on the environment and their businesses: Please talk to us now about actions you can take. If you don't know your local EA contact, please call our customer service line on 03708506506 and ask to speak to your local water resources member of staff dealing with spray irrigation prospects.

Abstraction Licences

- Check your licence details and, at all times, adhere to licence conditions.

Voluntary Restrictions

- Comply with voluntary restrictions where they are requested. This will delay, and may avoid the need for more formal restrictions.

Storage Reservoirs

- Take every possible opportunity to ensure that high flow storage reservoirs are as full as possible by the start of the irrigation season;
- Continue to plan for the future. Is there an opportunity to convert from direct summer abstraction to high flow storage? The Rural Development Programme for England (RDPE) may be able to help with funding.
- Ensure your reservoir is regularly maintained, checking for cracks and leaks.
- The Environment Agency has a range of literature available to help support your business including Rain Water Harvesting; Think about installing an irrigation Reservoir and adopting Best Metering Practice. Guidance on the planning and design of irrigation reservoirs in Kent, jointly produced by Environment Agency, Kent County Council and EMR.
- If you are currently having trouble filling your irrigation reservoirs, please contact us as early as possible to enable maximising any potential that may exist to fill your reservoir.

Irrigation Management

- Make sure that meters are in good working order and properly fitted;
- Check irrigation systems and replace worn or broken items before the start of the season;
- Make sure that irrigation systems are properly set up and operated in accordance with an accurate and reliable irrigation scheduling system;
- Ensure you are prepared to change your irrigation plans if necessary;
- Prioritise crops and fields in terms of water need;
- Choose irrigation times carefully, e.g. avoid the heat of the day; irrigate at night, if possible;
- Undertake a water audit. Know the cost of your water, calculate crop per drop.

Abstractor Groups and Guidance

- Where appropriate, discuss issues, share ideas etc. with neighbouring farmers. A number of local liaison groups already exist for this purpose. Consider setting up a group?
- Maintain an awareness of developing guidance from academic institutions and farming organisations (e.g. NFU, UKIA, Cranfield University etc.);
- The Environment Agency has a range of literature available to help support your business including Rain Water Harvesting; Think about Installing an Irrigation Reservoir and adopting Best Metering Practice.