

TRANSITION

Securing a sustainable future for your farm business

WATER WORKS

Why collaboration is key to
a fair supply for farmers



Making the most of a valuable resource



Welcome to the seventh edition of *Transition*, the *Farmers Weekly* quarterly supplement to help secure a more sustainable future for your farm business.

This issue of *Transition* looks at water management, including ways that growers and livestock producers can secure a fair supply of what is an increasingly valuable resource.

With competing demand for water from consumers and other businesses, we make sense of the legislation influencing how farmers are able to make the most of limited supplies in the face of complex rules and regulations.

The quest for cleaner water and the need to reduce pollution mean farming practices are under more scrutiny than ever before. But as our cover story (p45) shows, some farmers are at the forefront of groundbreaking clean-up efforts.

This is proving good for the farm businesses involved, as well as for the natural environment and wider society. So too are practices such as rainwater harvesting, which can help to reduce farm costs and waste.

As always, we are grateful to our *Transition* Farmers, who are sharing their stories as they adapt to this new world. We are equally grateful to our *Transition* Partners, for sharing their expertise and advice along the way.

For more about our *Transition* initiative, visit our knowledge hub at fwi.co.uk/transition

Johann Tasker, *Transition* editor

OUR PARTNERS

The *Farmers Weekly* *Transition* Partner Network is a UK-wide community of farmers, industry stakeholders and influencers working together to secure a sustainable future for UK agriculture. If you are interested in joining the network and would like to find out more, please contact Anna Eccleston at anna.eccleston@markallengroup.com



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Key water company incentives and initiatives

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How growers are de-risking maize production

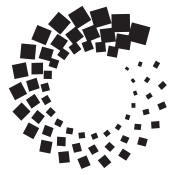
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Sandy, the Smart Natural Capital Navigator by Trinity Agtech, supports *Farmers Weekly's* Transition to measure environmental progress, evidence product provenance, and improve the resilience of farm businesses. For more information, please visit trinityagtech.com



PARTNER PERSPECTIVE



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Meet our Transition Farmers

These 16 farmers are sharing their journeys with us as they adapt their businesses

Karen Halton

Cheshire



Farm size 240ha

Enterprises

530-cow dairy herd

Transition goals

- Recruit/retain staff
- Maintain animal health and welfare
- Increase direct sales

James MacCartney

Rutland



Farm size 162ha

Enterprises

Beef and sheep

Transition goals

- Reduce disease in sheep
- Be better than net zero
- Establish herbal leys

Vaughan Hodgson

Cumbria



Farm size 244ha

Enterprises

Cereals, grassland, broilers

Transition goals

- Support the next generation
- Replace lost Basic Payment Scheme income
- Adapt to uncertain weather

Alan Steven

Fife



Farm size 138ha

Enterprises

Potatoes, brussels sprouts, parsnips, malting barley

Transition goals

- Reduce cultivations
- Improve soil health
- More resilient rotations

Andrew McFadzean

Ayrshire



Farm size 285ha

Enterprises

350 beef cattle, wheat, beans, barley, fodder beet

Transition goals

- Slash finishing time
- Reduce dependence on inputs using solar energy
- Improve grassland

Rachel & Richard Risdon

Devon



Farm size 151ha

Enterprises

300-cow dairy herd

Transition goals

- Secure adequate labour
- Better understanding of Environmental Land Management
- Reduce carbon footprint

Kit Speakman

Essex



Farm size 275ha

Enterprises

Mixed arable, beef and sheep

Transition goals

- Bridge income gap
- Fully diversified business
- Widen the rotation

Eddie Andrew

Sheffield



Farm size 73ha

Enterprises

Dairy, milk delivery service, ice cream parlour and farm shop

Transition goals

- Co-operating to reduce costs
- Establish a new dairy
- Reduce carbon footprint

Irwel Jones

Camarthenshire



Farm size 375ha

Enterprises

1,500 ewes on owned and rented land, suckler cows and followers, root crops

Transition goals

- Manage natural woodland
- Plant hedgerows
- Rely less on volatile inputs

Andy Bason

Hampshire



Farm size 800ha

Enterprises

Cereals, spring beans, oats, linseed and oilseed rape

Transition goals

- Cut carbon emissions by 30%
- Establish 10ha of agroforestry
- Establish 10ha of woodland

Alistair Hall-Jones

Lincolnshire



Farm size 680ha

Enterprises

Cereals, oilseed rape, spring beans, sugar beet, forage maize, anaerobic digestion, 900 sows

Transition goals

- Recruit/retain first-class staff
- Pursue technical efficiencies
- Pay back borrowing

Duncan Blyth

Norfolk



Farm size 2,650ha

Enterprises

Cereals, oilseed rape, sugar beet, pulses, grassland, woodland, wetlands

Transition goals

- Improve soil health
- Develop natural capital revenues
- Achieve net zero by 2030

Philip Vickers

County Durham



Farm size 1,250ha

Enterprises

Winter wheat, oilseed rape, spring barley, spring beans, lupins, rotational grass; share-farming agreement with tenant sheep farmer

Transition goals

- Maintain margins while changing approach
- Improve soil health and resilience
- Enhance natural environment

Kate and Vicky Morgan

East Yorkshire



Farm size 1,700 breeding sows

Enterprises

Weaning 1,000 pigs a week – finished on-site and through B&B arrangements with local farmers, 140ha rented out

Transition goals

- Facilitate structural change in supply chain
- Establish more influence over own destiny
- Diversify

Ed Shuldham

Wiltshire



Farm size 1,800ha

Enterprises

Cereals, oilseed rape, oats, forage and grain maize, peas, solar, biomass, anaerobic digestion, events and property diversifications

Transition goals

- Help shape Sustainable Farming Incentive through participation in pilot
- Make more use of data
- Take natural capital

Fergal Watson

County Down



Farm size 285ha across three units

Enterprises

170-cow suckler herd, beans, wheat, spring barley, oats

Transition goals

- Recruit/retain farm staff
- Restructure suckler herd
- Improve business resilience

Visit our Transition hub to find out more about our Transition Farmers fwi.co.uk/transition-farmers

Catchment Sensitive Farming now available across England

Free and confidential farm advice on slurry, soils, and rainwater harvesting - get in touch with your local adviser at [GOV.UK/CSF](https://gov.uk/csrf)

CSF Adviser Rob Iddeson discussing soil health with local farmer Tom



Tom Monk demonstrating Rookley Farm's new rainwater harvesting system



Farmer Richard Monk talks with local CSF Adviser Ellie Bowen



More farms are turning to rainwater harvesting to lower their costs and improve the health of crops. From simple downpipes and reused tanks, to advanced filtration and pumping systems, Catchment Sensitive Farming (CSF) is helping farmers understand what they need, how much they could save, and where to get started.

Rainwater harvesting is the process of catching rain from the roofs of buildings and storing it for later use. Often it's just a larger version of a garden shed and water butt, with extra features to ensure the health of crops and cattle.

A filtration system is important for removing debris and minimising the risk of disease. A mains water top-up system allows you to always draw from the centre of the tank to avoid toxins gathering at the top or bottom. A pump lets you move water to any part of the farm without relying on gravity, and an underground tank can reduce algae growth and protect against cold weather. All these systems come in various shapes and sizes and won't be necessary for every farm. That's why your local CSF adviser can talk you through each one, how much rainwater you're likely to collect, and if it makes financial and environmental sense for your business.

"Catchment Sensitive Farming are dead easy to contact - don't hesitate"

Father and son team, Richard and Tom Monk from Rookley Farm in Hampshire, installed a new rainwater harvesting system with the help of CSF, "It was Rob [local CSF adviser] that came to me first and introduced himself to the area. I showed him the rainwater harvesting we did the year before and the site of where I wanted to put this year's 120m³ [of storage]. There were great big documents to read through, but once we established I just needed a filter, some pipe work, and tanks, it was just working out the quantity of those. The rainwater harvesting is going to help save water, decrease our costs, and we hope it has a better biological effect on the growing of the crops.

Catchment Sensitive Farming is a confidential advice programme that's free to use for farmers in England. We can put you in touch with your local farm adviser who knows your area and the challenges farmers are facing. We offer advice not only on rainwater harvesting but guidance, training, and grant support in the following areas:

- Soil management

- Nutrient, slurry, and manure management
- Ammonia reduction
- Farm infrastructure and machinery set-up
- Pesticide handling
- Water resources and natural flood management
- Local environmental priorities
- Land management
- Agricultural transition

After working with his local adviser Tom recommends other farmers reach out to Catchment Sensitive Farming as well, "CSF is initially just another three-letter acronym but they're always keen to know who you are, where you're from, what they can do to help, and what ideas they can give; not only how to spend money but where you can find grants to help with that spending as well. Catchment Sensitive Farming are dead easy to contact - don't hesitate."

To get in touch with your local adviser visit [GOV.UK/CSF](https://gov.uk/csrf)



Why farmers must act now to secure adequate water

Pressure on water resources has huge implications. **Louise Impey** reports

Agriculture faces a raft of water-related challenges, and industry leaders are highlighting the need for a fully integrated management plan to ensure growers and livestock producers have access to adequate supplies.

The combined effects of climate change and an expanding population is putting pressure on UK water resources, and agriculture is expected to face increased competition for water resources in the coming decade and beyond. While the pattern of change is unlikely to be uniform, future water availability will vary across the UK and over time, making constraints inevitable in times of extreme heat and drought.

For this reason, making sure there is enough water allocated to farming is a priority, says NFU national water specialist Kelly Hewson-Fisher. Policymakers must devise a plan that recognises the critical role it plays in agricultural production and food security. “We need good planning and investment in infrastructure in order to be

confident of withstanding current and future pressures,” she says. “Building resilience into our water system makes sense – for all users, not just farmers.”

At the same time, the effect of farming practices on water quality and the environment is also being scrutinised, after land management was identified as a contributing factor in the declining quality of the UK’s surface and groundwater. As a result, farmers are expected to take action to prevent both point source and diffuse pollution and manage any impacts on water quality, while using water efficiently to maintain production.

Government action

Clean and plentiful water is one of the six public goods that the new Environmental Land Management (ELM) scheme will contribute to,



Kelly Hewson-Fisher

showing the government’s intent to address the nutrient and sediment pollution that comes from farming activities. Under the Environment Act, Defra has committed to a long-term target of at least a 40% reduction in nitrates, phosphates and sediment going into the water environment from farming by 2038 – a target that many green groups describe as weak and unambitious as

they ramp up the pressure on government to take tougher action.

Already, the Farming Rules for Water, which were introduced in 2018, are in place to minimise water pollution and retain nutrients on-farm through better practice, with all farms legally obliged to comply. Their interpretation required clarity after an inflexible approach to muck-spreading was taken in 2021, effectively preventing manure applications to most fields in the autumn.

After urgent consultation, updated guidance on how the Environment Agency should apply the Farming Rules for Water cleared the way for muckspreading and the application of other organic manures in autumn and winter, providing there was no water pollution risk from their use. Far from being a green light for all types of spreading, the pollution risks associated with different types of manures and the need to demonstrate that applications have been planned and accounted for are central to the new guidance.

Water security

All farm businesses can take action to safeguard water security now, believes Ms Hewson-Fisher, >

ADVICE AND GRANT SUPPORT

The Catchment Sensitive Farming programme – a partnership between Defra, Natural England and the Environment Agency – offers training, advice and grant support to farmers to help them improve water quality and reduce flood risk on their land.

Advisers cover the whole of England, and the advice comes on a one-to-one basis free of charge. Most of the water companies also offer grants and expert

advice on environmental solutions that protect river health and drinking water quality. In addition, Water Management Grants from the Farming Transformation Fund are for capital items that help increase productivity through the efficient use of water, such as new reservoirs and associated equipment.

● To find out more about funding available from water companies, see **p57**

CASE STUDY: GARTH WESTON, OXFORDSHIRE

Drought last spring and summer was far more impactful on Garth Weston's Oxfordshire farm than he was prepared for – and it hit him hard. Crop yields and lamb performance were affected by the lack of rainfall, he reports, while he was unable to return some of his temporary grass leys to arable production.

In addition, the AHDB Monitor Farm host suffered high losses on its cricket bat willow enterprise and some of the chosen Countryside Stewardship options failed to establish successfully after harvest, given the lack of moisture. "It was so dry we couldn't take the leys out or get the kill we needed from glyphosate applications," he recalls. "A grass ley must be actively growing for glyphosate destruction to work, so a key element of that approach was missing in 2022."

The hot, dry weather also meant that he was left with higher blackgrass numbers in cereal crops than he had aimed for. The prolonged drought conditions also affected glyphosate activity after harvest and reduced pre-emergence herbicide performance.

Reducing inputs

Farming just over 400ha at Sydenham Grange Farm, near Thame, Mr Weston is in the process of integrating livestock into the arable rotation and has introduced four-year grass leys to both fatten lambs and help with blackgrass control. He is also looking to reduce reliance on artificial inputs, use less fuel and produce higher

quality forage, while farming with his environmental responsibilities in mind.

The overall plan is that the sheep and arable enterprises will share the heavy, low-lying land. The 1,100 ewes will then be housed from Christmas onwards in readiness for lambing. Cover crops are being considered, both for their soil function benefits and to extend the grazing provision for the sheep.

Finishing the lambs last year proved difficult, as forage growth slowed and the ground needed to be rested.

A lack of available grass meant that the worm burden increased and parasite control was challenging. Crop yields were down, and spring beans were particularly disappointing at 2.81t/ha. His Group 1 winter wheat averaged 7.83t/ha but didn't make milling specification, most likely due to it being unable to take up the nitrogen required to meet grain protein levels

As a result, Mr Weston has now made the decision to install a borehole to supply the whole farm. Having done the research and initial surveys, he believes it will bring the resilience that the business requires for its future. "It is costly but we've calculated that it will have a two-year payback," he says. "We are not alone as farmers in having to manage either too much or not enough rainfall, but this step will mean we can access a secure water supply when we need it most."



More growers are looking at the economic viability of winter wheat irrigation

< who says that there are short-, medium- and long-term strategies that can be applied to ensure that agriculture gets its fair share of supplies. "Having had a summer in 2022 that featured prolonged dry conditions and high temperatures, water resources are front of mind," she says. "So it makes sense to think about what you can do to help manage water availability on your farm. Understanding the risks to your business of changing water availability is really important – this is an issue that isn't going to go away."

If you haven't already done so, improving soil health is a good place to start. Increasing soil organic matter content will bring corresponding improvements in both infiltration rates and water holding capacity, making soils more resilient and better able to cope with deluges and droughts. "Put simply, healthier soils absorb and retain more water for longer periods of time," she says. Other water management benefits can be gained, she adds – especially when combined with other practices, such as reduced or no tillage, the use of cover crops and strategic residue management.

Jackie Evans, managing director of agriculture



Where livestock manures pose a threat to watercourses, measures such as fencing or buffer margins can help



Potato irrigation costs now exceed £200/ha in some parts of the country

TIM SCRIVENER

FELIXSTOWE HYDROCYCLE – SECURING WATER BY REDUCING WASTE

A farmer-led project is saving and reusing drainage water that would have been lost to the North Sea, so that it can be used to irrigate crops on six farms and replenish existing reservoirs in Suffolk.

In 2018, five local farmers got together to form Felixstowe Hydrocycle, securing an EU grant of €969,000 (£857,585) to part-fund the construction of 11km pipeline and appropriate water management infrastructure to bring drainage water back inland.

Recognising that a shortage of fresh water supplies was a threat to the future of their businesses, the farmers worked with the Environment Agency and several other partners to develop a sustainable solution and make additional water available for their high-value crops.

Conservation

As well as refilling 14 farm reservoirs, the recovered water is helping to conserve the mudflats and saltmarsh found on the Felixstowe Peninsula. The water is sourced from the Kingsfleet, where the local drainage board was pumping more than 1m tonnes of water into the tidal River Deben each year, putting valuable habitats at risk from erosion.

A novel method of water storage – managed aquifer recharge – which uses the natural water holding-capacity of the underlying strata, is being trialled. In this system, surplus water is pumped into shallow lagoons or trenches, where it soaks into the ground and supplements normal winter rainfall.

This recharges groundwater stores and avoids the need to construct large reservoirs. Any water not reabstracted is left in the ground to maintain spring and river flows.

RESERVOIR PLAN FOR EASTERN ENGLAND

One of the UK’s driest regions, the east of England, is set to get two new reservoirs – helping to secure water supplies for decades to come and make the region more resilient to the risks of drought and flooding.

The proposed reservoirs would be located between Chatteris and March in Cambridgeshire, and between Grantham and Boston in Lincolnshire. Both new facilities expected to similar in size to Grafham Water.

Proposals are at an early stage. The first consultation has just completed, and work on constructing the reservoirs is not expected to start until 2029.

and land at farm consultancy Adas, says adapting existing farm buildings and infrastructure to capture and store rainwater can have a big impact, as this water can be used for washing down and cleaning, as well as spraying. “There will be arable farms where growing more autumn-sown crops makes sense from a water availability perspective, or where switching to crops such as rye and grain maize, which have a lesser water requirement, is the right course of action.” Boreholes and reservoirs may have a place in the long term, depending on individual farm circumstances and their water use, but they have greater cost implications, she notes.

Flood warning

Last year’s heatwave underlined the pressure on water supplies, and extreme weather is also triggering flooding events, says NFU flooding

and drainage adviser Zoe Moore. Farmers have a role to play in flood management and can help to alleviate flood risk, she says – especially where actions are a planned element of catchment management and participants get compensated for providing a service.

“We’re still waiting to see if ELM will provide for this, as there isn’t provision otherwise,” says Ms Moore. “Unless they’ve entered into a private agreement, farmers are currently doing this at a cost to themselves.”

Natural flood management techniques used as part of a package of measures may be supported, she acknowledges, as there are grants available for wetland development as well as tree and hedgerow planting. These techniques, which take their inspiration from nature, catch and detain water where it falls, helping to reduce and slow peaks of water after a rain event. ■

ABSTRACTION LICENCE CHANGES

For farmers who rely on abstraction for irrigation or filling reservoirs, there are changes coming to abstraction licences, which will see charges rise and a move to an Environmental Permitting Regulations system in 2024. “The change is all about sustainable abstraction to protect water bodies,” says the NFU’s Kelly Hewson-Fisher. “Farmers actually use less than 2% of the total water abstracted in the UK,

but there are hotspot areas.”

Be aware of expiry dates on licences and note that all licences will be referred to as converted permits once the new system is up and running. It is just part of a big shake-up of water resources that’s coming, she adds. “We are active at a regional and a national level and will keep issuing updates, but all farmers should aim to keep themselves abreast of developments.”

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Richard Cross - trialling a reduction in N

For Richard, harnessing the power of FieldView's accessible and useable data is fundamental to his goal to get every hectare of his winter wheat achieving a profitable 10t/ha while also delivering on environmental and community pledges as an estate. Richard remarks, "We all have data, it is making good use of it that is important".

Using FieldView, he tested the theory that a slight reduction in total N in wheat and

OSR is possible by varying rates to match crop biomass based on data captured using FieldView satellite imagery of Oxtan Estate, Southwell, Notts.

Feed wheats typically get 220 kg/N/ha and milling wheats a 20 kg/N/ha top up. Mr Cross' standard dose was reduced to 200 kg/N/ha for trial with a further variation of +/- 20 relative to low or high biomass. More data is needed before definitive conclusions can be drawn from the trials but to date the trial field has delivered a £105.86 improvement through a combination of improved yield and reduced inputs.

Extrapolated to his entire wheat area this could be an extra £35,887 for Mr Cross.

Richard has since readjusted his focus from cultivation practices to finely tuned agronomy. These findings have inspired him to continue to refine his agronomic practice for the future, adding variable seed rate to the 22/23 trials agenda, using three rate bands based on historic performance, alongside data already accumulated from OSR fungicides trials.

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CLIMATE
FIELDVIEW

Local farmers unite to clean up polluted river

Once blamed for contaminating the Wye, farmers are helping its recovery. By **Louise Impey**

Farmers are leading the way in a joint effort to clean up the River Wye in Herefordshire – reducing phosphate pollution by changing farming practices.

In just over a year, lasting solutions to the high phosphate levels in the river have been identified. A timescale for phosphate reduction has been agreed, thanks to the willingness of businesses, retailers and government agencies to work together. This collective approach has added to the momentum originally created by the local farming community, which is keen to reverse the deterioration of the River Wye and improve the ecology of the area.

As Fownhope-based arable farmer and instigator Martin Williams explains, recognising that there was an issue in the catchment and accepting there would have to be an element of compromise were two key steps in making progress.

A lack of data on the agricultural side and a prevalent blame culture meant a certain amount of “sword-fighting in the dark” to go the true picture, says Mr Williams. “Over the past 18 months, there have been many events organised to discuss the river and plenty of dialogue with relevant bodies,” he reveals. “As a result, we now have the awareness and co-operation that we need to change things for the better.”

There is also a route map for achieving results. Along with a new phosphate audit tool that’s being developed, it will support farmers and businesses in making better-informed decisions.

More than manure

While the widespread use of poultry manure as a fertiliser was originally blamed for the situation,

the issue is more complex than that, with numerous sources, including water treatment facilities and other farming activities, also contributing to the pollution. “Back in the summer of 2021, the national press was running articles vilifying the farming community, especially broiler production, for the state of the river,” says Mr Williams. “Something had to be done so farming had a voice and the situation was better understood. Only then could we move forward.”

The first exploratory meeting that he organised with the help of the Wye and Usk Foundation was well-attended and included representatives from farming, food processing, research institutions and environmental organisations.



Martin Williams

“Once all the facts and figures were presented, it was clear that livestock manures, biosolids and digestate were contributing as much as 75% of the excess phosphate in the River Wye, with the catchment running at a surplus of 2,000t of phosphate a year.

“From a farming point of view, having access to nutrient-rich manures had gone from being a blessing to being a curse,” says Mr Williams.

Importantly, the tone of that meeting meant that developing workable solutions became the focus, rather than each party apportioning blame for a long-term issue.

Research findings

During the initial meeting, Shane Rothwell from Lancaster University reported the findings of >

WHAT'S THE PROBLEM?

The River Wye rises in the Cambrian mountains and flows for 152 miles, making it the fifth longest river in the UK. It is one of the most protected rivers in the UK and is under site of special scientific interest and special areas of conservation status.

The water quality of the Wye has been a cause for concern for some time and its ecological status is described

as “unfavourable – recovering”. The current problems are centred on algal blooms, that grow quickly in hot weather. These are exacerbated by levels of phosphate pollution, which originate from numerous sources.

In addition, lower river levels reduce the oxygen content of the river, killing aquatic life and affecting water quality.

WHAT'S NEXT IN CLEAN-UP QUEST?

A farm audit tool for phosphate is being developed by a consortium of research and environmental organisations to help with measurement and reporting. Expected to be ready in the next two years, it will establish the phosphate baseline on individual farms and highlight actions that will mitigate the impact of farm activities on phosphate levels.

The tool will also be able to help with inspection implications and will eventually include a trading platform, in line with the

development of nutrient neutrality as a condition of planning.

A document titled *What Does Good Look Like?* is also being produced, so that the implications of development, abstraction, climate change and other environmental factors on the River Wye are clear. With the farm audit tool running behind it, site-specific actions can be carried out without putting the health of the river at risk or threatening nearby habitats.



PHOTOGRAPHY: RICHARD STANTON

The Wye's water quality is such that its ecological status is 'unfavourable – recovering'

< rephOKUS, a large research project on phosphate use in the food system. This confirmed that phosphate leakage from land to water was also occurring.

Not only did this blow the myth that soil phosphate is immobile, the work also showed that the phosphate loadings were too much for the sandy and loam soils to retain. “Livestock dominate the phosphate flows in the Wye catchment,” says Dr Rothwell. “The main movement of phosphate is in the manures, which is why changing how they are used can help, but there’s also a huge reserve of phosphate in Herefordshire soils.”

It was the catalyst that was needed for change, recalls Mr Williams, as it showed that soil input was exceeding phosphate demand by 30%, leading to its accumulation every year. “It got us all thinking about our soil indices and our land management practices,” he says. “If the soils



Kate Speke-Adams

can’t hold the phosphate that’s being applied, there’s an obvious need for a different approach. Ultimately, farmers are responsible for what they put on their land.”

Industry input

Getting the poultry industry to play its part in addressing the problem was essential, says Kate Speke-Adams, formerly of the Wye and Usk Foundation, as the use of poultry manures as fertiliser can be a risk.

“If it’s not applied in the right way and at the right time, some of the excess phosphate content in these manures can find its way into the water through soil diffusion.”

Avara Foods – one of the UK’s largest producers of poultry – was willingly involved in the discussions from the start, as almost half of the company’s production comes from its Hereford operation. It agreed to take full accountability for the phosphorous used in its processes, from changing the chickens’ diets to enhanced

manure management and new destinations for chicken litter (see “Avara’s ‘bold plan’ for reducing pollution” on p48).

Since then, it has been encouraging to see work done by egg packer Noble Foods, says Ms Speke-Adams. The company has been working with her colleagues to deliver one-to-one farm advice and develop solutions to pollution, such as building wetlands. “Free-range egg production units can be hotspots for phosphate,” she says. “Where they are well-established, soil indices of 5, 6 and 7 have been recorded.”

In the same way, Stonegate Eggs is engaging in the efforts being made to prevent nutrient and sediment pollution, reflecting that all parts of the supply chain are intent on making improvements.

Further up the chain are the retailers, who are also involved and putting pressure on others to step up. Tesco, which has signed up to the Courtauld Commitment, is now part of the collective action with regard to sustainable water use and water quality. “Tesco recognising that the catchment is saturated and that it can play its part in getting change to occur has really picked up the pace,” says Ms Speke-Adams. “If their suppliers are expected to be transparent about their practices and look for ways to improve, it helps to change old habits.” >

CASE STUDY: MARK WOOD, CLAY ESTATES, HEREFORDSHIRE

Mark Wood, farm manager at Clay Estates in south Herefordshire, was set a challenge by his new employer when he started his job 20 years ago. His most urgent task was to find ways of keeping soil in the fields, rather than seeing it running out of the gates and heading towards the river after heavy rainfall.

His starting point was to improve soil structure by increasing its organic matter content, as well as changing the rotation so that potatoes were grown less frequently and only on specific sites. “Building in some resilience and doing things differently has really helped,” says Mr Wood. “As well as improving the water-holding capacity of the soils, it expanded our working window and reduced soil damage.”

Fields tested

Recognising that there was variability in the estate soils, Mr Wood had all of the fields tested so that he would be able to variably apply fertiliser according to soil zones and crop requirements. Aware of the declining state of the River Wye, he also took a gamble and decided that the soil P index should be 2-, rather than 2+, so that any risk to water from excess phosphate was minimised. “We have managed fine at 2-; there hasn’t been any detriment to yield or quality.”

He now uses manures on a one-in-four basis, has reduced tillage, introduced cover crops and used stewardship to include buffer strips and margins – all of which are helping to keep soils healthy and water



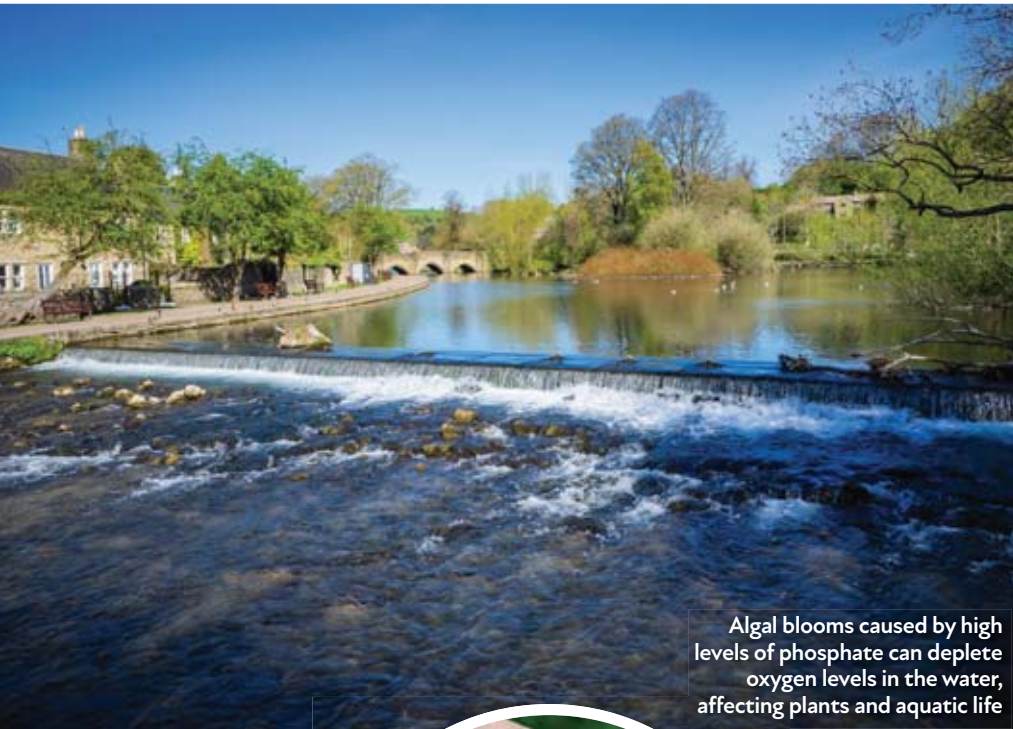
protected. “With water protection, it’s about doing more than one thing – we are always looking for improvements and learning about what works.”

Collaborative approach

Mr Wood also recognises the need for farmers in the area to work together. He now shares a drill with others and liaises closely with the estate’s contract potato grower, especially at harvest time. “We don’t allow de-stoning, only have potatoes on a one-in-10 basis in certain fields and are intent on preventing any run-off from potato fields,” he reveals. “Cover crops

are grown to prevent nutrient loss and cultivations are used strategically.”

Managing climate conditions is becoming more challenging, he adds, but the local farming community knows that looking after the river is an essential part of their role. “We are doing things in a smarter way,” he says. “Our primary role is to produce food and, to do that, we have to plough and use organic manures sometimes. But by having a plan in place and working with the partner organisations, we have reduced our impact on the soil and on water, and we will continue to look at ways to improve that.”



Algal blooms caused by high levels of phosphate can deplete oxygen levels in the water, affecting plants and aquatic life

AVARA'S 'BOLD PLAN' FOR REDUCING POLLUTION

The supply chain for Avara Foods covers 120 farms in the Wye catchment area. These farms jointly produce about 160,000t/year of poultry manure, or just over 3t/week. Each one is an independent business, supplying into the Avara operations in Hereford and nearby Newent on long-term contracts.

The water pollution risk arises when farmers decide to use the manure on their own land or sell it to third parties as fertiliser.

Taking full accountability for the phosphorous used in the company's processes is the right thing to do and part of its wider environmental responsibilities, says John Reed, Avara's director of agriculture, who has committed to other initiatives over the next two years.

"We have already identified four potential destinations for poultry litter," says Mr Reed (see "Where does all the poultry litter go?" below). "It makes sense to use existing infrastructure, where possible, while establishing best practice for manure management."

powers were used in 36 instances and 10 warning letters were issued.

There has also been a move to "export" litter out of the catchment, with main contractor Gamber Logistics now moving about 20,000t away from the source to counties in need of the nutrient, to alleviate the pressure.

"There is a plan that everyone has signed up to and we are seeing a sea change in behaviour," says Ms Speke-Adams, who is now with the Herefordshire Rural Hub. "But there are 2,000 farmers in Herefordshire, so we want to see more of them involved." ■

< Wider action

As word spread, other organisations have added their support and accepted the challenge, she notes. Welsh Water has invested in its sewage treatment infrastructure and given grants to farmers to support water quality, while Herefordshire Council – which has calculated that the economic impact of the planning moratorium in the catchment is £200m – has been instrumental in agreeing on progress.

A Landscape Recovery bid, put together

with the help of the Wye and Usk Foundation by 14 landowners and covering 1,100ha of farmland, was unsuccessful – but the group was not deterred and will continue to support changes to agricultural practices.

At the same time, the Environment Agency, which is working with a range of partners in the Wye catchment to improve water quality, carried out 136 farm inspections last year. Of these, 101 were to high-risk fields and sites, while the others were to anaerobic digestion plants and poultry units. Regulatory



Water pollution monitor

WHERE DOES ALL THE POULTRY LITTER GO?

Current model

- **Heat/power source** Used in on-farm litter burning technologies.
- **Digestate** Used in existing anaerobic digestion (AD) plants, with limits on digestate use.
- **Manure** Spread on farmland subject to enhanced manure management standards, with third-party approval and auditing.
- **AD solutions** Sold on to an enhanced AD plant, creating a circular economy for end products.

Future model

Over the next two years, Avara will be taking further action, says John Reed, the company's director of agriculture. Working with farmers, there will be a transition to a different model for poultry manure that is commercially viable and sustainable.

- **Data** Produce verified, accurate manure production and phosphate levels data for each farm in the catchment.
- **Feed development** Continued work on reducing phosphate in chicken diets. Levels have already come down by 27%, without compromising welfare or quality standards.
- **Further AD solutions** Support for the development of solutions that create a circular economy, by converting litter into renewable energy, carbon dioxide, biofuel and fertiliser. This will be done by supplying 100t/week to an existing AD plant outside of the Wye catchment and increasing that to 600t/week in 2023, until two new local plants are ready. These new plants will be in Herefordshire, and Avara will assist with the planning process as well as purchasing some of the resulting value stream.
- **Manure management** Robust practices

for manure use in the catchment will be developed. An independently assured and audited management framework based on agreed practice will have to be followed by any farm using poultry manure on their land. Also, farms burning litter on-site must demonstrate that the ash is exported out of the catchment area, while AD plants must show that digestate use is in line with approved processes. Farms selling chicken litter will need to show that it has gone to one of the three enhanced AD plants.

Avara is focusing on long-term actions that are sustainable and create value, says Mr Reed. "We've recognised that we can play a role in the condition of the Wye," he adds. "These are ambitious goals, but they will help to reduce the carbon footprint of the supply chain and improve the ecology of the area."

AGRIVOLTAICS: integrating food production into solar land-use

From water retention to carbon sequestration: how adding specialised solar panels to land can support sustainability objectives and increase long-term resilience.



Adobe Stock

Agrivoltaic Systems

The science of 'agrivoltaics' is based on the integration of high-value farming activities into the structures of solar photovoltaic (PV) systems. In accordance with specialised PV structures and their corresponding microclimatic conditions, solar assets can transform farming operations through on-site electrification and help to improve the long-term health of the land parcel by implementing regenerative agricultural practices. By improving ecosystem services and their subsequent production, the land can support high-quality and sustainable crop production for the long-term whilst restoring degraded soils, supporting carbon sequestration and improving ecological connectivity within the context of the wider landscape. Agrivoltaic systems optimise the overall land-use through a highly synergetic relationship between the solar architecture and agricultural activities, with research estimating an increased land-use efficiency of up to 150%.

In this way, Regener8 Power deploys solar technologies as a catalyst for innovations in land management and an opportunity to invest in the management of natural capital. Instead of focusing solely on the electrical output of the system, projects are responsibly developed as an element of the landscape in which they belong and managed to deliver additional ecological benefits alongside the provision of clean energy.

Building Resilient Farming Systems

In the face of climate change, resilience is key for farmers. Farming practices are adapting to increasingly inconsistent crop yields while extreme weather conditions are having impacts on food production. Additionally, the UK is

facing a cost-of-living crisis with prices for energy and food at an all-time high, meanwhile viable land to produce both resources is decreasing.

Agrivoltaic systems offer a solution to this uncertainty by increasing the resilience of the land to environmental pressures and improving the financial resilience of farming businesses through stable income support, all while simultaneously producing food and energy. Environmentally, the synergetic relationship between solar panels and agricultural production provides benefits to each process and their subsequent outputs. Efficiency is increased as solar panels:

1. Protect crops from extreme weather events;

- solar panels protect crops and animals against extreme weather events such as heavy rainfall, hail, and flooding, removing the need for crop covers.
- solar panels provide shade from the sun which prevents oversaturation in the face of droughts.

2. Increase water retention and soil quality;

- the shade provided by the solar panels increases the crops and soil's ability to retain moisture, actively increasing their biomes along with the soil's ability to sequester carbon.
- as water retention increases, crop transpiration also increases, which cools the microclimate in between crops and the bottoms of solar panels. When cool, the panels can absorb more light energy and generate more renewable electricity.
- solar panel systems can have rainwater collection mechanisms attached to them, decreasing irrigation needs and flood risk.

Supporting Farmers and Communities

Agrivoltaic systems support farmers by providing additional income support and revenue diversification in the context of a wider farming operation. Regener8 Power is looking to support farmers to realise the full potential of their land by co-locating the benefits of solar energy and regenerative land management without a significant land loss. By partnering with local communities in the operation and management of agrivoltaic sites, Regener8 Power is also focused on providing new job opportunities in the rural economy, localising supply chains and supporting ecological connectivity with the wider landscape.

About Regener8 Power

Regener8 Power is a UK-based solar power company that operates in the UK, Poland, and Italy, with continual expansion throughout Europe and Australia. Our responsible development approach uses a holistic view of renewable energy, accounting for the environmental, social, and economic impacts of our systems to generate clean energy while providing ecological benefits to the land.

To find out more

Email info@regener8power.com

Visit <https://regener8power.com/>



How to enhance your soil health



Rhug Estate, an organic enterprise in North Wales, has been trialling a soil conditioner which has helped boost crop yields and silage nutritional values, while reducing inputs.

Having been at Rhug Estate farm for almost 30 years and overseeing its transition to organic production, Gareth Jones – farm manager – is always on the lookout for ways to maintain a healthy soil and boost its biodiversity.

Mr Jones says soil is at the heart of all farming practices and is key to providing the correct crop nutrition.

“However, we can’t rely on artificial fertilisers to help boost plant growth and vigour, so we find other ways to ensure crops are getting the right nutrition at the right times,” he says.

“We rely heavily on maintaining a good level of organic matter through applying farmyard manure (FYM), poultry manure and growing cover crops, which provide many of the plant nutrients required, along with stabilising soil structure.”

“Whilst FYM is a great source of nitrogen (N), only about 50-60% of P found in manures is available to the growing crop,” adds Mr Jones.

Mr Jones jumped at the chance to trial an organic certified phosphate soil conditioner, Ferteos IV, when he was approached by Timac advisor, Samantha Alexander.

“We applied the soil conditioner to a crop of spring barley and an Italian ryegrass and red clover sward to analyse the effects on yield and plant quality,” says Mr Jones.

“We’ve welcomed trialling a new organic certified product, that allowed us to increase soil fertility and nutrition availability.”

Increased yields

“The trial results have been very promising, I was surprised to see that even after such a dry spring, we saw an 18% uplift in the yield of the spring

barley compared to the control, with a financial gain of nearly £200/ha,” adds Mr Jones.

Grain samples were taken to assess protein content, and plate meter readings were taken throughout the growing period for the Italian ryegrass and red clover ley.

“The silage analysis results showed that crude protein, metabolisable energy (ME) and digestibility value (D-value) were all greatly improved,” adds Mr Jones

“All our silage and cereals are used on farm for feed, so if we can enhance the forage, we can start improving finishing rates of our cattle and sheep.”

Intensify soil biology, rather than inputs

Timac’s technical manager, David Newton, says soil conditioners are designed to increase biological populations and activity to enhance mineralisation of organic nitrogen and phosphorus, making them more available for plant uptake.

“Our technology not only enables the mineralisation of N and P, but also controls the release of N within the soil. It slows down the conversion of

ammonium to nitrate in the soil so the plant can utilise nutrients over the growing season.”

Mr Newton says that it reduces leaching by slowing down nitrate production and there is a measurable reduction in nitrous oxide emissions due to reduced denitrification.

“Applying soil conditioners will bring year-on-year benefits to your soil health, boosting nutrient efficiency”.

“When margins are tight for farmers, efficient use of crop nutrients can keep costs of inputs low. Also, the need to minimise risk of environmental impacts means soil conditioners might be the answer to helping to reduce emissions,” he says.

To find out more

Call 01582 958 444

Email info@uk.timacagro.com

Visit <https://uk.timacagro.com/>



Spring Barley

	Area	Yield/ha	Yield Gain	Financial Gain/ha (based on £375/t feed Barley), minus Ferteos cost
Control	2.8ha	3.54t		
Ferteos	2.6ha	4.3t	+0.76t/ha (+18%)	+£190.50/ha

Silage analysis

August Silage	Control	Ferteos	Ferteos Gain
Crude Protein %	11.1	14.6	3.5
ME %	9.7	10.2	0.5
D value %	61.5	64.8	3.3

Why irrigation is key to the agricultural economy

Food production could be left short as demand for water rises, says **Melvyn Kay**

The practice of irrigation has soared in importance since the 1976 drought, when it was something few farmers did. In the coming years, it will become even more critical to farmers.

Today, irrigated agriculture and horticulture form an integral part of the farmed economy – particularly in the Midlands, East Anglia and south-east England – covering some 150,000ha and more than 1,000 agri-businesses. These are businesses large and small, employing many thousands of people whose jobs depend on irrigation that produces high-quality fruit and vegetables for the nation's wholesalers, supermarkets and food service sectors.

Outside agriculture, few people realise crops need lots of water to grow and produce marketable yields. A typical UK diet requires a staggering 2,400 litres a person a day – much more than the 140 litres a person a day needed for public water supply. Fortunately, most UK crops rely on natural rainfall in what is generally perceived to be a “wet” country. But our rainfall varies significantly geographically – both seasonally and annually.

Demand for water

Some regions are, of course, much drier than others. In parts of East Anglia, supplemental irrigation has become essential to increase crops yields and meet quality assurance standards for processors and retailers.

Crops grown under glass and in polytunnels have also fuelled demand for water. But concerns are growing over who should get what, with competition increasing among other water-dependent sectors, too. Hotter, drier summers – including the agricultural drought in summer 2022 – reduce water availability, and increasing water demand will only heighten concerns about the reliability of future supplies for irrigated agriculture.

During periods of water shortage, domestic use, industry and the environment always take precedence over agriculture. Coupled with climate uncertainties, therefore, are uncertainties about changes in the way water will be allocated in future.

Over-abstraction

This is driven by the Environment Act 2021, which rightly seeks to ensure catchments are sustainable, particularly those that are already seen



Abstraction is regulated to help avoid environmental damage to catchments



Melvyn Kay

as over-abstracted and may incur environmental damage in the future. Some farmers have already had their licences revoked or reduced. More of such limitations are expected to follow.

The key stumbling point appears to be defining environmental damage and, in the absence of a clear definition, assessments are based on the “precautionary principle”. In its simplest form, this means that if someone “thinks” abstraction for irrigation may cause damage then it should be curtailed or stopped. In the light of this, it is unsurprising that farmers are reluctant to invest in irrigation infrastructure for the long term.

Droughts, water scarcity, and administrative issues together threaten not just the sustainability of irrigated farming but also the livelihoods of many thousands of people in both rural and urban settings. The latter does not seem to be an issue where the environment is concerned, even when the mantra is water for people, industry and the environment. Where do people fit into this balance beyond public water supply?

Political decision

So should we continue to irrigate crops? It is a good question. Unlike in arid countries where

there is little or no rainfall, there is no God-given right to irrigate in any part of the UK. Government considers irrigation to be a commercial risk. Growers must therefore decide their course of action within the established regulations. But what if farmers decide not to irrigate crops because of a lack of water, high energy and fertiliser prices, and lack of seasonal labour?

Decisions like these take the debate into how much food we should grow domestically as a nation – and how much we should import, including from countries where water is even more scarce than it is in the UK. This is a political decision rather than a simple commercial choice – a decision beyond the scope of individual farmers, growers and food producers.

It also raises the issues of food security and self-sufficiency. No surprise, then, that there are strong arguments being made by various farming organisations to have water for food production added to the list of “essential water users” alongside the public water supply and the environment. ■

● Melvyn Kay is executive secretary of the UK Irrigation Association, whose annual conference, *Are you ready for the next drought?*, takes place on 1 March in Peterborough. For details, visit www.ukia.org

Water Resilience: From Risk to Opportunity

Water is the central chemical without which life, let alone agricultural production, cannot function. And it comes to us mostly for free. Yet, as more extreme weather, including drought and deluge, is forecast than at any time in human history, effective water management is essential for future farm resiliency.

Farming has always been concerned with the quantity of water, namely water in the right place at the right time. However, water quality is important as well, both as it comes to the farm (and with the rises in atmospheric microplastics and pathogens this is by no means certain) and as it leaves the farm to avoid either damage to the farm itself or the threat of environmental penalties. The risks from drought or flood to all types of agricultural production are well known, but the scale of the impact is rising. There is also increasing risk of new environmental regulations as well as the reputational risks of being seen as a polluter.

To a bank, a farm that is exposed to the risk of lower water quality and quantity, and therefore facing year-on-year falls in yield and crop quality, or even total production loss, is seen as a poor credit opportunity. Parts of the UK

are already under high water stress, indicating poorer resiliency and therefore higher risk for lending.

With too much water, there will be impacts on both the green and grey infrastructure of any farm – the risk of field or farmyard flooding, lodging, soil erosion, nutrient run-off and stress on both livestock and deadstock. Poorly managed soils cause a loss in the land asset value as topsoil will simply wash away. Water stress clearly then also leads to off-farm supply chain disruptions, which can cause both local and indeed global issues – food price volatility is frequently driven by water issues around the world.

All businesses should be assessing water data, water dependencies, water risks and impacts and opportunities to mitigate these risks in a location specific way. Oxbury is working with its customers to identify mitigation strategies and suitable investments in either grey or green infrastructure to ensure more resilient farm businesses.

Although grey infrastructure improvements in the farmyard will be required, such as adequate drainage to rainwater harvesting, the largest opportunity is using green infrastructure to capture and hold water. These include

land use choices (such as key-line agroforestry planting or wetland restoration) or simply increasing soil organic matter to ensure total water holding capacity per hectare improves: Every 1% increase in soil organic matter could store an additional 185,000 litres per hectare.

Using green infrastructure opens up numerous opportunities for farmers to capitalise on a role as water managers, both with respect to quality by entering nutrient neutrality markets and quantity by entering natural flood management markets. The same natural capital investments will also offer a range of other commercial opportunities around carbon and biodiversity net gain. Such opportunities are already being exploited at both the farm level, where Oxbury is lending as part of our DEFRA supported Natural Environment Investment Readiness Fund (NEIRF) and at the catchment level, for example by the North East Cotswold Farmer Cluster's project to restore the health of the Evenlode Upper Thames Catchment. Such collaboration may well be essential for all farmers to ensure they are managing the precious resource that is water well into the future.

Get in touch at: www.oxbury.com





Diverting and storing rain can help mitigate floods as well as ensure a water supply in times of drought

How harvesting rainwater can reduce farm costs

Water is a precious resource, so why aren't more farms collecting it? **Mike Abram** reports

On paper, collecting rainwater would seem to make sense – water is essential for farming, can be scarce as last summer highlighted, and there's a cost attached to taking it from mains supply, both financially and to the environment.

Dig a little deeper, though, and it becomes clear it's not a straightforward decision for every farm, especially dairy and livestock. Priority on the latter, currently, is more likely to be slurry storage, although rainwater harvesting might help reduce storage requirements. The main use on arable farms is for spraying, while on livestock farms its drinking water for animals, as well as washing down and cleaning yards and equipment.

First steps to deciding whether to invest in rainwater harvesting are working out how much water is used and what for. The Environment Agency's *Waterwise on the Farm* provides a useful, if perhaps slightly out of date, guide. Before embarking on a rainwater project, decide whether water use efficiency can be improved for no or low cost.

Next, calculate how much rain could be collected. This will depend on rainfall, roof area, the run-off coefficient and filter efficiency. The run-off coefficient determines how much water will flow from the roof surface, and how much is lost. A pitched roof typically has a coefficient of 0.85, meaning 85% of the water is collected, while a

flat roof with a smooth surface is nearer 0.55.

Filters often reject the first flush of water to prevent debris entering the tank – most suppliers will provide filter efficiency, but a factor of 0.8 (80%) can be used if not available, although it might be on the low side. This will help determine the size of system required.

Farm types

Much less water is likely to be needed for arable farms than for livestock holdings – and especially dairy units. In the calculated example (below right), the amount of water collected using average annual rainfall in Cambridge would cover four spray passes across 400ha at 100 litres/ha, but the average annual rainfall in Carlisle would only last 13 days for a 200-cow dairy farm using 100 litres/day.

With capital costs for rainwater harvesting increasing faster than the cost of water, the economics, particularly on livestock farms, need considering carefully, especially if the farm has already invested in a private source of water such as a borehole, says Neil Rowe, a livestock consultant with Rowe Associates.

Capital grants can help cover some costs but it's important to factor in electricity requirements too, he adds. "Don't underestimate the costs of pressurising and pumping water around the farm from a rainwater tank if you're buying electricity off the grid. It could easily make the project

cost negative. The economic case is definitely less than it was five years ago, while the moral imperative has increased."

While the economic case is more challenging on a livestock farm, agrees Paul Bartholomew from Bart Agri, which designs and supplies livestock buildings, farmers shouldn't overlook the economic impact of dirty rainwater run-off on slurry storage, and the potential positive public view of farmers using natural resources. "You might be surprised how many litres rainwater adds to your slurry. By reducing that you're increasing your storage capacity, which could have a big benefit," he explains. "With >

HOW TO CALCULATE POTENTIAL COLLECTABLE RAINFALL

Potential collectable rainfall (litres) = roof area (sq m) x run-off coefficient x filter efficiency x annual rainfall (mm)

- Roof area: 420 sq m
- Run-off co-efficient: 0.85
- Filter efficiency: 0.8
- Annual rainfall = 575 mm (Cambridge)
- Annual rainfall = 920 mm (Carlisle)
- Collectable rainfall (Cambridge) = 164,220 litres (164cu m)
- Collectable rainfall (Carlisle) = 262,752 litres (263cu m)



Dairy farmers can benefit from reduced slurry store requirements if rainwater is captured

◀ the changes requiring farmers to store slurry for longer, most are having to increase capacity on site, which is a massive investment.”

Roof grants

Using roof grants to cover yards and clamps and harvesting the rainwater from them will potentially reduce the investment required in slurry storage by diverting water away, he suggests, although there are also other ways to separate brown and fresh water.

On arable units, the payback is likely to be much quicker, says Dan Fentiman, from Norfolk-based supplier D&H Group, while siting systems is usually easier too. “A restriction on livestock farms is often the gutter height on buildings are quite low, which means you can’t get a very big tank close by, and, typically, a livestock shed needs all-round access. Whereas a spray store is often on the end of a grain shed, where you have a large roof and 4.5m height to the gutter, so it is very easy to set up a system that will work very efficiently.”

The D&H Group prefers to install gravity-fed systems, reducing the cost and pumping requirements. “It is always worth filtering before water enters the tank to remove debris – it’s easier to keep a clean tank of water clean,” Mr Fentiman says. “Our system has a three-stage filtration

RAINWATER HARVESTING BENEFITS

- Reduced reliance on mains water – infrastructure and cost
- Soft water better for some pesticide active efficacy – for example, glyphosate
- Reduction in need for water conditioners or other additives when spraying
- Anecdotal evidence of preferred

- drinking source for animals – might be more palatable than borehole water
- Potential reduction in water run-off costs from water supplier
- Potential reduction in flood-risk premiums
- Could help with new building planning permission as a flood control device

process, where you first remove the dirt and debris from the water. The water then flows into the bottom of the tank, which allows it to well up and reoxygenate the oldest water in the tank.

“We then have an overflow trap mechanism at the top of the tank which, rather than just overflowing, will suck and draw any dust and particles off the surface of the water. That leaves you with

a very clean source of water, good enough to go into sprayer and not block any ball valves in livestock troughs.”

Water filters

Once set up, rainwater harvesting systems will need looking after, says Mr Rowe. Bacterial contamination can develop in collection tanks, while

TRANSITION FARMER DUNCAN BLYTH

Albanwise Farming’s prospective rainwater harvesting system is being driven from a technical perspective by a desire to make better use of herbicides on the 2,650ha arable unit.

Norfolk’s hard water can cause alkaline hydrolysis of glyphosate and sulfonylurea, which dramatically reduces their efficacy, says farm manager and Transition Farmer Duncan Blyth. “The way to mitigate that is to buy wetters and water conditioners which, up until recently, were more expensive than glyphosate.” Rainwater, in contrast, is neutral or very slightly acidic, so those problems disappear, and reliance on mains water is also reduced.

A redevelopment to upgrade workshop facilities and build a new chemical store and sprayer filling area is giving the opportunity to include a rainwater harvesting system, as well as extend a roof-mounted solar



array. Discussions with the local Catchment Sensitive Farming adviser around a new Higher Tier Countryside Stewardship agreement highlighted the potential for capital items payments for rainwater harvesting that might cover most of the infrastructure costs.

Under the plans, which would cost about

£70,000 without grant help, water will be harvested from three buildings in the yard, put through a catchment tank and filtration system into a 500,000-litre storage tank, with the outlet routed into the new sprayer filling area. Together with an additional 250,000-litre tank fed by rain collected from a grain store roof on a satellite unit there will be enough total storage for half of the farm’s annual water requirements. “With a bit of in-season rainfall, hopefully we will get to 70-80% of our spray water requirements.” It will also offset most of the mains water costs of about £2/cu m, totalling £3,000-£4,000/year, he says.

● Follow Duncan Blyth and our other Transition Farmers as they adapt their business for the new environmental schemes and phase-out of the Basic Payment Scheme. Find out more on **p39**



bird droppings washing in from roofs can also create issues. While filtering water from the roof should help minimise issues, he says many with systems don't do enough quality control, such as testing the tank and troughs fed with rainwater for disease-causing pathogens about three times a year. He also suggests water should be extracted from the middle of a tank, as most pathogenic bacteria are likely to be either in the top 30cm or bottom 60cm of the tank. "The perfect solution is a floating outlet pipe, so you are always drawing

water from around a metre below the surface." Most systems have extraction points at the bottom, he says. That's fine for spraying but increases risk when the water is being used for drinking. "The ultimate safety feature is an ultraviolet light filter, but they are expensive to buy, run and maintain." Typically, UV filters are only used where the water is being used for more sensitive livestock, such as pigs and poultry, or sometimes on calving units with their more immature immune systems.

In low-rainfall areas, Mr Rowe says you will likely need an automated backup mains water supply.

"I'd recommend you always keep the tank at least one-third full using a floating ball-valve to automatically top up with mains water, when necessary, from an inlet above the highest water level."

That will mean there is an air-break between mains and harvested water, and avoid any risk of contaminating mains water supplies, as well as always using harvested water first when available. Switching between sources manually is also possible, but risks leaving animals without water for a period of time or forgetting to switch back.

Another useful system addition is a water fuse, says Mr Rowe. This can be set to alert you by phone to potential leaks or blockages when the flow rates are higher or lower than expected. ■

TRANSITION FARMER EDDIE ANDREW



Replacing older buildings with one large multipurpose shed is giving Sheffield Transition Farmer Eddie Andrew the opportunity to increase water resilience on his dairy farm by installing underground rainwater collection tanks.

Following on from building a new dairy processing plant six years ago, a 50x50m, relatively low-roofed building is being erected. It will house the milking parlour, equipped with three Lely robots, plus all the cow feeding troughs, newborn calves and cows that are going to calve, Mr Andrew explains. "It's going to replace all the existing asbestos-containing old buildings."

A burst water main following Storm Arwen in November 2021 highlighted the potential threat to the farm when water supplies were cut off for two days, necessitating the fire service to bring water for the 90-head herd to drink after a 5,000-litre backup tank had been drunk dry. That has led to plans to install an underground rainwater collection tank as part of the new development. Harvesting rainwater will help reduce the amount of water going into an open slurry tank, leading to better quality slurry, as well as reducing volumes stored.

A good relationship with experts at the University of Sheffield, where he supplies milk, has enabled him to get advice about how to treat and store collected rainwater for drinking. "We're currently working out how much water we want to store, and the design of the system," he says. Usage will include washing out, as well as drinking, and even potentially irrigating nearby pasture fields after the drought last summer left them parched.

● Follow Eddie Andrew and our other Transition Farmers as they adapt their business for the new environmental schemes and phase-out of the Basic Payment Scheme. Find out more on [p39](#)

WHAT GRANTS ARE AVAILABLE?

Farming Equipment and Technology Fund (FETF)

This fund is designed to support businesses to invest in equipment and technology to improve sustainable agriculture reducing impact on the environment. In the last FETF – which replaced the Countryside Productivity Small Grant Scheme – various rainwater harvesting equipment was available, including £939 towards 5,000-litre-plus tanks and £3,678 for 50,000-litre and bigger tanks, and £229 was available towards UV water treatment systems. Defra says it intends to retain equipment for rainwater harvesting on FETF round two in 2023, in the Productivity and Slurry grant. Applicants will need to be registered on the Rural Payments service.

Countryside Stewardship (CS)

Support for various capital items for rainwater harvesting systems, including above- and below-ground tanks, diverters and downpipe filters are available in CS schemes. To receive funding, applicants must obtain prior approval from Catchment Sensitive Farming. Applications must seek

to achieve one or more of the following outcomes:

- Improve water quality by reducing diffuse water pollution from agriculture
- Reduce flood risk by using flood management measures
- Improve air quality by reducing ammonia emissions
- Address a priority pollutant in the catchment or area.

Water companies

Some water companies may also offer funding for rainwater harvesting equipment. For example, Severn Trent has match-funding available through its Severn Trent Environmental Protection Scheme until 31 January 2023.

Tax relief through Enhance Capital Allowance

Rainwater harvesting equipment could be eligible for tax relief under this scheme. It allows businesses to write off 130% of the cost of qualifying plant and machinery against taxable profits for purchases made in the 2022-23 tax year. From 1 April 2023, the rules will revert to 100% tax relief.

Grass and forage: a strategic, sustainable choice for farmers

Farmers who take a more holistic approach to pasture management can find it will pay dividends for flock health, grazing utilisation and overall enterprise economics. Versatile and valuable, grass plays an important role on any farm.



To find out more visit www.barenbrug.co.uk/farming

UK farmers have a successful track record for grass, thanks in part to a climate that's so grass friendly. Our ambition is to improve that track record further - to make that return on investment, we look at what is beyond the 'standard' metrics such as productivity and dry matter content. Our primary focus is grass genetics improvements – the varieties we're breeding and trialling now will provide the leys and silage cuts of the mid-2030s. Pastures that feature not just a mixture of grass varieties, but also herbage and other broad-leaved species can convey considerable benefits.

Multi-species benefits

Many farmers are already aware of the importance of multi-species. It's widely accepted that these mixed swards can deliver a higher liveweight gain when compared to PRG and PRG/WC swards. Greater emphasis on legumes in the sward can also achieve the same dry matter yield, without the same reliance on big-bag nitrogen. A mixed sward makes for healthier stock, improving the quality of replacements for the flock or herd. Studies show a mixed sward's ability to boost the animal's immune system, resulting in fewer sub-clinical losses and reduced vet and medical bills. This is largely attributed to a mixed sward's ability to access more of the soil's nutrients. Deep-rooting species – herbs such as plantain and chicory, and legumes like red clover – draw up valuable trace elements from lower soil profiles. Otherwise inaccessible to the 'usual' PRG ley, the presence of these micronutrients creates a healthier,

more nutritious ley. Those same deep roots also instil *drought tolerance* to a pasture – something certainly noticed during the summer of 2022. These dense, complex root systems, produce root exudates that feed and build the soil microbiome, boosting soil organic carbon and improving soil fertility and structure.

But these root-microbe interactions can be curtailed by over-reliance on synthetic nitrogen fertilisers. It seems paradoxical but, by cutting back on nitrogen application, you can help your pastures make more efficient use of existing soil nutrients. Beef and sheep farmers will be more attuned to these trace element deficiencies. Typically, subclinical losses include decreased daily liveweight gain or milk yield, increased parasitic burdens and lower immunity to other diseases, or reproductive issues such as lower conception rates and poor colostrum quality and yield.

More specific deficiencies are identified with copper, cobalt, selenium and zinc. But it's worth pointing out that in general, grass species tend to be commonly deficient in phosphorus, magnesium, copper and cobalt, while clovers tend to contain higher levels of these trace elements, and herbs higher still.

Anthelmintic characteristics

It is the anthelmintic characteristics of certain herbs that are of most interest. Nearly 40 years since identifying the first case, benzimidazole resistance is thought to affect 90 per cent of British sheep farms.

Given growing evidence showing the damaging effect of chemical anthelmintics on invertebrate biodiversity, plus the practical difficulties and effects, natural control looks particularly attractive. *Chicory* is one of the leading herbal contenders. It's been shown to result in reduced egg count and adult abomasal worm numbers in lambs, although the results are less evident in adult sheep and there appears to be no effect in cattle. It is also possible that substances within chicory act directly on the parasites, or reduce their activity.

Other plants, including *sainfoin* and *birds-foot trefoil*, contain compounds – condensed tannins (CTs) – known to be anti-parasitic. CTs decrease egg numbers, reduce hatching, impede larval development and inhibit larval mobility. Another benefit is improved feed protein utilisation, not only improving meat and milk yield but reducing the amount of nitrogen excreted in urine. CTs also impede methane-producing gut microbes, which can reduce methane production – another environmental benefit.

At Barenbrug, we're committed to this concept of wholesome pasture – robust, high-performing grass genetics complemented by valuable diversity in companion species, and a holistically focused management approach. Developing and supporting this concept is a leading element of our total commitment to helping all UK farmers. [#growyourfuturewithgrass](https://twitter.com/growyourfuturewithgrass)

Key water company incentives and initiatives

Support packages can tackle on-farm issues while improving water quality at source. **Charlotte Cunningham** looks at what's available

Catchment areas in the UK are largely dominated by land put to agricultural use, which makes collaboration between water companies and farmers essential for preserving raw water quality.

Water companies across the country operate various schemes that work closely with farmers to not only help meet water quality goals but also improve the farm's bottom line. We take a look at the advice and support available.

Affinity Water

Areas covered: Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire and Surrey. The London Boroughs of Harrow and Hillingdon and parts of Barnet, Brent, Ealing and Enfield. Also supplying to the Tendring peninsula in Essex, as well as Folkestone and Dover in Kent

Key concerns include nitrates, pesticides and other biologicals entering watercourses. Affinity Water offers a number of incentives to work alongside farmers to address these issues at source. Among these is Affinity's own Soil Innovation Fund, which is designed to improve soils to the advantage of both farm productivity and preventing run-off and other water-related issues associated with poor soils.

Danny Coffey is an agricultural adviser at

Affinity. "The scheme allows farmers access to anything that they see will improve their soils – it's a very flexible scheme," he says. The ideas pitched are then put to a panel – which includes soil scientists, regenerative agriculture specialists and representatives from the water industry – and are assessed based on the merits and awarded grant funding accordingly. Funding can cover up to 75% of project costs, to a maximum value of £15,000. Previous projects have included machinery modifications, precision injection of fertiliser and support for undersowing maize.

This funding is supplementary to other schemes run by Affinity, which include grants for cover cropping, oilseed rape companion cropping and alternative cropping to oilseed rape, with the overall aim of targeting pesticide and nitrate issues.

affinitywater.co.uk

Anglian Water

Areas covered: East of England and Hartlepool
Protecting resources in one of the driest regions of the UK is a priority for Anglian Water. The firm has a dedicated team of agri-



Danny Coffey

cultural and catchment advisers who work with and alongside farmers, landowners and agronomists to ensure pollution does not enter watercourses.

Leaching nitrate and phosphorus fertilisers causes some of the biggest issues in the area. The company has run a number of projects with local farmers, providing advice and support on everything from slug control to using drip trays with pesticides – and even a pesticide amnesty.

Senior agronomy adviser Richard Reynolds says: "Ultimately, we believe local farmers are best placed to understand their local needs and challenges so try avoiding generic funding programmes that pay a fixed rate for a specified item. We want to put farmers as part of the solution, not the problem."



Richard Reynolds

In terms of grant support, Anglian Water's Farming Innovation Grant has now provided two rounds of funding to develop innovation solutions that tackle local water quality challenges in priority areas across the catchment. >



The Bough Beech reservoir, Kent, is supplied by the River Eden and stores 15% of SES Water's raw water supply



Some schemes include funding for machinery efficiencies such as optimising sprayer calibration

< In its first year, the grant programme gave farms in the area access to more than £250,000 worth of funding, which was split across 19 projects. The application window for this year's funding is now closed, but Anglian Water is keen to continue hearing ideas from farmers. Last year, the company also offered a training grant and cover crops grant, which provided funding for more than 120 farmers in the region. anglianwater.co.uk

Bristol Water

Areas covered: Bristol city and north Somerset, as well as parts of Bath, north-east Somerset and South Gloucestershire

A large proportion of dairy farms in the area mean Bristol Water's work with farmers centres on controlling nutrient concentration levels. Matthew Pitts is the firm's catchment strategy manager. "My main focus is on the Mendips. We have three big reservoirs there – Chew Valley, Blagdon and Cheddar," he says. "In these areas we're trying to maintain nutrient concentration at a lower level so that we don't get algal blooms. The algal blooms are what makes the water difficult for us to treat."

Farmers can get a free specialist consultation on how they can protect local resources through the long-standing Mendip Lakes Partnership – a collaboration between Bristol Water, Catchment Sensitive Farming, Avon Wildlife Trust, Natural England and the Environment Agency. This partnership gives farmers access to a number of other free tools including:

- Soil analysis and management advice, as well as manure and slurry nutrient value analysis
- Nitrate vulnerable zone compliance checks
- Nutrient management planning from a Fertiliser Advisers Certification and Training Scheme (Facts) qualified adviser
- Grant application support advice.

Bristol Water also offers a grant scheme. "We have a pot of money set aside for farmers to

apply for to make improvements to their farm that will reduce the risk of pollution or enable them to manage their nutrients better, for example," explains Mr Pitts. This funding in general covers up to 50% of an investment up to a maximum value of £10,000.

bristolwater.co.uk

Cambridge Water

Areas covered: Cambridge, extending as far north as Ramsey, west to Gamlingay, down to Melbourn in the south and over to Balsham in the east

Last year saw the extension of the Slug Pesticide Rethink – Ideas for Nurturing Growth (Spring) grant to farmers in Cambridge Water catchment areas, after continued success since its launch in 2016 by South Staffs Water. Both companies are part of South Staffordshire Plc.

The grant is designed to help farmers improve practices to prevent pesticides and fertilisers entering watercourses. It offers up to £10,000/year a farm, with the funding going towards voluntary on-farm infrastructural improvements and land management options, or a mixture of both. Applications can include cover crops, buffer strips, nectar pollen and wild bird mixes, as well as concrete yard renewal and funding for chemical handling and/or storage areas. Most recently, a range of options to improve biodiversity have been added. These include funding towards soil testing, spreader and sprayer calibration and rainwater harvesting.

Senior catchment adviser Nina Yiannoukos-Benton says she is particularly keen to speak to farmers in priority catchment areas, which

includes Babraham, Fleam Dyke, Fulbourn, Linton and Sawston, Euston and Brettenham, and Fowlmere.

In addition to the Spring scheme, Cambridge Water also runs a number of collaborative initiatives that farmers can get involved with. One of these is the Granta project, which revolves around the River Granta in south Cambridgeshire. It aims to identify and implement nature-based solutions to minimise flood risk while maximising both the water quantity and quality in this chalk stream.

cambridge-water.co.uk

Dwr Cymru (Welsh Water)

Areas covered: Most of Wales and Herefordshire, as well as parts of Deeside

Dwr Cymru's package for collaboration with farmers and landowners is known as Water-Source and comprises a number of measures to protect raw water sources. "These programmes are specific to each catchment, and feature farmer-led discussion groups supporting innovations and novel approaches to land management, developing decision support tools – such as weather stations – and peatland restoration," explains project manager Nigel Elgar.

The Pendine Catchment Project



Nina Yiannoukos-Benton

Richard Roderick, John Owen, Iwan Jones and Nigel Elgar





Some management measures, such as planting cover crops, can be eligible for grants

is one such programme. Working with farm consultants at Adas, it enables farmers to claim a farm health check, which can provide free advice such as identifying risk areas in fields, or options for slurry and silage storage, and clean and dirty water separation systems.

Last year, the water company also partnered with the Wales Federation of Young Farmers' Clubs to facilitate knowledge exchange on protecting raw water with the next generation. dwrcymru.com

Northern Ireland Water

Areas covered: Sole provider of water services in Northern Ireland

A new farm chemical disposal scheme was launched by Northern Ireland Water last year for farmers in the River Derg catchment area of County Tyrone. This scheme gave farmers free access to farm-to-farm collection of any unwanted chemicals and pesticides such as fungicides, sheep dip and veterinary medicines. The scheme was relaunched again in December in the same area with plans to roll it out across the country in the future.

Also in the Derg catchment area, the recently concluded five-year Source To Tap project involved a pilot scheme to provide 100% grants to farmers looking to reduce pesticide and sediment loss through changes to management practices. Alongside other water companies last year, Northern Ireland Water helped develop an online water quality training module for the national Basis classroom – a web-based resource for farmers across the UK – to advise on sustainable land management. niwater.com

Northumbria Water/Essex and Suffolk Water

Areas covered: Northumbria Water – Tyneside, Wearside, Teesside, Northumberland and

County Durham; Essex and Suffolk Water – Chelmsford, Brentwood, Romford, Tilbury, Basildon, Southend, Havering, Redbridge, Hanningfield, Langford and the London Boroughs of Barking and Dagenham; in Suffolk, supply is available to Barsham, Walpole, Southwold, Lowestoft and Great Yarmouth Catchment advisers in the Northumbria Water/Essex and Suffolk Water areas work with farmers on a one-to-one basis. Through farm audits they can help identify measures in the farmyard or the field that could improve raw water quality. “Catchment management is really important if we’re to try to at least maintain raw water quality, but ultimately improve it,” explains company spokesperson William Robinson.

The implementation of eligible improvements can be funded with capital grants from the company as part of its Field to Tap scheme, which is focused on minimising risk of key pollutants such as nitrates, pesticides and cryptosporidium. Money available for up to 50% of investment and grants to date have funded measures such as concrete hardstanding in yards, biobeds and precision fertiliser application equipment. Where and how this funding is spent can be flexible, adds Mr Robinson, who says farmers with ideas that could have a benefit to water quality are encouraged to get in touch.

The company also carries out trial work on areas such as reducing nitrogen losses from soil to groundwater and are keen to work alongside farmers to test technology such as nitrogen inhibitors and cover crops. nwg.co.uk

Scottish Water

Areas covered: All of Scotland

Scottish Water works with land managers through its sustainable land management team to assess and make recommendations about land activities that take place near drinking water sources. To safeguard these areas further, the

organisation also has a Drinking Water Protection scheme, which covers specific areas within drinking water catchments. Farmers can ask for an on-site visit from advisers to identify potential improvements that could enhance water quality.

Where applicable, the scheme will finance the investment at up to 100% of the cost. Measures available cover a range of capital and management options including biobeds, stock fencing and the resurfacing of gateways. scottishwater.co.uk

SES Water

Areas covered: Surrey, Kent and south London, from Morden and south Croydon to Gatwick airport and spanning from Dorking to Edenbridge

Though it does not have a formal grant scheme, SES is keen to hear from farmers who are interested in investing in mutually beneficial, sustainable, catchment-based solutions to prevent pollution entering watercourses.

The company has a dedicated catchment team, which includes a scientist and a consultant, who work closely with farmers in the area and host on-farm walks and visits. Catchment manager Ria Woodfield says: “Our key concerns in the catchment are primarily around autumn-applied herbicides – things like propyzamide and flufenacet. “The other area we have a lot of issues with is nitrates in the water. These are our two key water qualities that we want to address [through funding].”

Past solutions have included funding the installation of biobeds on farm. seswater.co.uk



Ria Woodfield



WATER COMPANY SCHEMES AND SUPPORT FOR FARMERS AND LANDOWNERS IN THE UK

- Scottish Water**
 - Access to support through the sustainable land management team
 - Grants through the Drinking Water Protection scheme
- Northern Ireland Water**
 - Free chemical disposal scheme
 - Grant funding for changes to management practices
- Severn Trent**
 - Severn Trent Environmental grant scheme
 - Swap your Nozzles free training sessions
- Dwr Cymru/Welsh Water**
 - WaterSource support package including funding of decision support tools and free farm health checks
 - Knowledge exchange partnership with Wales YFC
- Bristol Water**
 - Mendips Lake Partnership programme
 - Grant scheme valued up to £10,000 (50% investment)
- Northumbria/Essex and Suffolk Water**
 - Support from catchment advisers
 - Field to Tap scheme
 - Trial work on farms around key areas such as nitrate losses
- Cambridge Water**
 - Spring grant scheme
 - The Granta project scheme
- Anglian Water**
 - Support from catchment advisers
 - Farming Innovation Grant
- SES Water**
 - Flexible grant scheme awarded based on farmer ideas aligning with catchment priorities
- Affinity Water**
 - Soil Innovation Fund, plus training and cover crop grant schemes

Severn Trent Water

Areas covered: Bristol Channel to the Humber and from mid-Wales to the East Midlands
 Over recent years, Severn Trent has launched a plethora of schemes, workshops and grant funding in a bid to work more closely with farmers in its catchment areas. All of these come under the firm's Regenerative Pathway Package, which is designed to help farmers protect and improve rivers.

Set to close on 31 January, the Severn Trent Environmental Scheme is offering farmers and landowners grants of up to £30,000 to put towards farm improvements that will help reduce water quality issues. Priority funding is reserved for farms in catchment areas where pesticide reduction is paramount and is designed to go towards washdown and disposal areas. For farmers outside catchments where pesticide reduction is a priority, maximum funding of £10,000 is up for grabs.

Over December and January, Severn Trent also held free virtual training workshops on improving spray efficiencies – with participating farmers able to claim a set of low-drift spray nozzles upon completion of the course. One final Swap Your Nozzles session will be held on 24 February and is open to all farmers in Severn Trent pesticide priority catchment areas.

Training covers a variety of topics from legislation, buffer zones and local environment risk assessments for pesticides, to nozzle selection and application decision-making.
stwater.co.uk

PARTNERSHIP BOLSTERS FARM BUSINESS RESILIENCE

Farmers working with Anglian Water are being encouraged to build their business resilience by managing and monetising their natural capital.

The water company has joined forces with Trinity AgTech to offer farmers a trusted and scientific solution to optimising soil health.

"Farmers can monitor and, where necessary, make informed decisions to improve their soil health and keep inputs on the field. That inevitably improves drinking water quality and farmers gain from a business productivity perspective," says Anglian Water catchment adviser Chris Hewis.

Trinity AgTech's natural capital navigator Sandy is a software package that shows how changing farm management practices affects on-farm carbon sequestration, biodiversity and water quality so farmers



Chris Hewis

can profit from their decisions.

This can benefit farm businesses as well as the environment, says Anglian Water senior agronomy adviser Richard Reynolds.

"The more productive and more economically sustainable farmers are, the better end result for water quality.

"Farmers are coming up against challenging times financially, so supporting them in making the most of their inputs is crucial to making sure their businesses stand the test of time," adds Mr Reynolds.

Using Sandy to optimise soil health can increase both farm productivity and the soil's water holding capacity, allowing better nutrient retention and reducing the risk of run-off. "As a result, business resilience for both parties will be bolstered and everyone gains from a water quality and environmental perspective," he says.

Southern Water

Areas covered: Kent, Sussex, Hampshire and the Isle of Wight

Southern Water offers a number of support options for farmers as part of its Catchment First commitment to improve and protect water and the surrounding environment.

For eligible catchments, Southern Water runs a farm capital grant scheme as part of its Water for Life programme. Funding can cover up to 50% of the purchase cost, up to a maximum value of £10,000, and is targeted at reducing nitrate and pesticide risks to water quality by investment in more sustainable land management practices.

Southern Water also funded the soil health monitoring of eight farms over five years in one of its catchment areas – an initiative that ended in 2021. Findings were used to better understand the impact of different cropping and management strategies on both soil health and nutrient availability and the influence this may or may not have on water quality.
southernwater.co.uk

Habitat Banks creating a net gain for English farmers.

We recently talked to landowner, Joseph Soul about his involvement in the privately funded Environment Bank scheme, which is already providing an alternative income stream for him and many others.



Hand planting of native scrub on the 38 hectare site



Landowner Joseph Soul, Milton Keynes

Environment Bank is the UK's market leader in Biodiversity Net Gain (BNG). Environment Bank is currently working with a range of farmers and landowners across England to create a significant uplift in biodiversity on their land and create a welcome additional income stream. Habitat creation is happening at quite a pace; there are 20 sites underway, with an additional 60 scheduled to commence over the year ahead.

Planting the seed

One such site is in Milton Keynes where planting has begun on a 38-hectare site.

Wood Farm in Emberton is owned by Joseph Soul who was looking to diversify the income of his farm by creating high-quality, landscape-scale habitats including neutral grassland and lowland meadow. Joseph already has a campsite on his land, so he was eager to diversify in a way that would complement this business enterprise and work alongside crop cultivation and grazing.

Environment Bank works with landowners and farmers to ensure that their land is converted in a way that will benefit their needs as much as the needs of nature, and planting is fully funded and managed by Environment Bank.

Mr Soul said: "I have worked throughout the process with a team of expert ecologists who

seem to have no end to their knowledge. As much as I know my land, they know exactly which species and habitats will benefit its unique needs and increase its quality for years to come."

This restoration project will be fully established over the next ten years, and it will be subject to continuous monitoring and support from Environment Bank's team of ecologists throughout. It will then be maintained and managed for a minimum of 30 years by Joseph to generate income for a fixed term and potentially beyond.

About Habitat Banking

The concept of Habitat Banks was pioneered by ecologist Professor David Hill, CBE. His team is now working with farmers and landowners across England to restore natural habitats which are pivotal to nature recovery and achieving net zero. Since launching its multi-award-winning Habitat Bank scheme last year, Environment Bank has seen enquiries soar, and it is looking to establish over 2,000 hectares of Habitat Banks over the next few years.

Financial benefits

Farmers that partner with Environment Bank retain ownership of their land, with Environment Bank taking a lease interest. The man-

agement plan is tailored to suit the landowner's existing land management strategy and ensures the most tax-efficient solution.

Environment Bank pays up to £27,000 per hectare over a 30-year period with fixed annual uplifts to counter inflation for the management and lease of the land, as well as a generous welcome bonus.

Being fully funded, Environment Bank typically arranges lease and management payments within 20 weeks of registration and covers all costs for establishing and managing the Habitat Banks, extending to legal and tax advice where appropriate. Unlike other BNG models, farmers do not have to manage the complex implementation process or take the risk of the scheme failing - all of that sits with them.

Environment Bank are looking for parcels of land over 20 hectares, typically low-yielding with low levels of biodiversity. Registering your land on their website is the best way to get started - there is absolutely no obligation, it just allows their team to do a review of the suitability and potential income

To find out more
Call 01904 202 990
Visit environmentbank.com





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How growers are de-risking maize production

A special charter is helping growers reduce erosion associated with growing maize. **Charlotte Cunningham** reports

Maize is a crop often perceived to be damaging to the environment, causing issues such as soil compaction, erosion and nutrient losses, which can lead to run-off, affecting nearby watercourses. A “maize charter”, pioneered by the Maize Growers Association, is aiming to tackle concerns, by providing field evaluations to encourage best practice when it comes to growing the crop.

The Maize Growers Association (MGA) Maize Charter project was launched in 2017, designed to help farmers carry out field-by-field assessments to determine maize production suitability, based on a score that incorporates risk factors such as soil type, likely drilling and harvest date, as well as altitude and aspect of the field.

Based on that score, the charter then provides advice on the most suitable varieties, with the overall aim of de-risking growing the crop, explains John Morgan, consultant at Devon-based Creedy Associates, which provides technical support to the MGA. “If we know it’s a high-risk field for soil erosion, for example, the charter will direct growers towards very early maturing varieties that should be ready for harvest in September, rather than October or November.

“Maize grown in the right field has very strong environmental credentials – it has low nutrient and agri-chemical use. It’s part of the solution as

I often say. But maize grown in the wrong fields poses all sorts of risks, including soil compaction at harvest and then subsequent soil erosion and run-off linked to rainfall over the winter.” This is on top of the management-type problems such as heavy tractors driving on weak, wet soils late in the autumn – normally around harvest time – as well as the overapplication of nutrients, he adds. “My take is that we can tackle all of the issues by responsible maize growing – and the Maize Charter is one of the tools that can help growers do that.”

Since the launch of the MGA Maize Charter in 2017, projects have been completed across Wiltshire, Dorset and Cornwall, and over this time has grown to incorporate nutrient management planning in a bid to reduce issues with phosphorus in watercourses too, explains Mr Morgan. “In the right place, [phosphorus] is great, but in the wrong place it’s bad news in that it encourages algal blooms and eutrophication in watercourses. So we started adding a section on nutrient management to the charter, looking at soil indexes and phosphorus supply, via manures and fertilisers, to try and balance the two.”

Sussex partnership

Most recently, a partnership between the MGA and South East Water enabled a charter to be rolled out in the East Sussex region. The East



The charter looks at measures that can improve water quality, such as undersowing

Sussex Maize Charter involved six farms, with a full maize charter completed for five of them – equivalent to a total maize area of 190ha. Dairy farmer Chris Appleton is among those involved. He also has a long-standing relationship with South East Water, working closely over recent years to improve maize production and minimise soil losses at Primrose Farm, near Arlington, while also protecting local watercourses. The farm is home to a 450-head herd of autumn block-calving Holstein-Friesian cows. They are grazed through the summer and housed over winter, fed on a diet of predominantly grass and maize forage. Most of the maize, 73ha, is grown on-farm with the rest grown on contract locally.

The relationship with South East Water began about five years ago, explains Mr Appleton. “We started off experimenting with different cover crops, trying to establish what worked and what



PHOTOGRAPHY: BIB-BILDER/ADOBE STOCK, MGA

< didn't. The express aim at the beginning for us was just trying to establish green cover and to work out what the best way of doing that was." Funding for this was provided by South East Water, he adds. About three years ago, Mr Appleton then moved on to experiment with undersowing maize crops with Italian ryegrass, again supported by South East Water. "This was also to try to get a more certain green cover across the fields over winter." With the combined support from the water company and the MGA, Mr Appleton says they have been able to take that one step further and now either undersow or oversow – or a combination of both – all of their maize ground.

Last year, the farm also invested in a strip-till cultivator. "We've got the aim of establishing green cover figured out, so now we're trying to look at how we can minimise the work that goes into establishing our maize crops in the spring," says Mr Appleton.

Nutrient gains

The primary aim of all of these measures is to hold onto soil and nutrients better, to the benefit of both the farm and the River Cuckmere, which runs through the middle of the land, he adds. "We're also about half a mile upstream from Arlington reservoir. So there's a benefit for South East Water because if [soil and nutrients] stay in our fields, then they don't have to clean it up."

Though he has arguably been taking steps to protect soils and the watercourses for some time, Mr Appleton believes the biggest advantage of being part of the charter is the advice and guidance provided by the MGA. "None of what we're doing is particularly new or groundbreaking, but it has been really helpful having John Morgan, in particular, on the other end of an email to pick his brain about what we're doing. The combination of the MGA and South East Water has been really beneficial."

And further changes to the farm have been made as a result of the charter. "A successful maize season for us starts off before we've even put anything in the ground," explains Mr Appleton. "It begins the previous autumn, making sure we've got good green cover, but the next step is selecting earlier maturing varieties." Over the past four years, the farm has moved to growing predominately Group 9 varieties, and now with advice from the MGA, Mr Appleton is going to have a go with some Group 11 types too this year.

The driver behind this ensures crops are drilled by the end of April and harvested in September to avoid travelling at the wetter times of the year. This minimises the risk of soil issues, as well as allowing ample time to establish green cover while conditions are still favourable. "The earlier we can get it drilled, provided conditions are right, sets us up to harvest as early as we



Drilling by the end of April can allow for harvesting in September before fields get too wet

this year. "Most of the muck on the farm was already applied through a dribble bar or a trailing shoe – some sort of low-emission applicator. But this year, we're looking at whether or not we can inject the slurry into the row as we drill it." Mr Appleton adds that he will also be continuing to "fiddle" with nutrient applications, seed rates and row spacing as he believes there is still more he can do to improve the efficiency of his maize growing.

In terms of working with organisations such as South East Water and the MGA, Mr Appleton says it is really important and beneficial to continue to get different viewpoints to understand what is sustainable for different parties and perhaps prompt a mindset change, where needed. "There's no doubt we started off with practices – such as winter ploughing – that are very different to what we do now.

"I think the UK dairy industry would fall apart without maize as an energy feed – we can't afford not to find a way of growing it sustainably and responsibly," he says. "If we don't, then ultimately the way it will go is that [farmers] will be banned from growing it. So that is the key driver behind everything we're trying to do here. As a business, I'm not sure what we'd replace it with."

Mr Morgan says he hopes to extend the charter further, too. "I'm currently in conversations with Welsh Water about doing more this spring. [The charter] is there and is a tool that's ready to go and ready to be used." ■

reasonably can at the other end of the season."

This has proven to be a particularly beneficial strategy in some of the higher risk fields, which were identified as part of the charter. Mr Appleton adds that conditions dictate drilling and harvesting over date, and the MGA stresses that earlier is not always better. "We have found that with our strip-tilling, the fields stand up a lot better now to heavy machinery, so that helps too [with drilling and harvesting earlier]. We're seeing a lot less soil compaction and damage now."

In terms of how all of this has affected watercourses, anecdotally Mr Appleton says he now notices water running off fields is near enough clear, highlighting the reduction in soil erosion that these measures have made. "This is particularly noticeable in fields where we would have traditionally seen soil wash. Now we don't."

Future plans

Over the past few years, the farm has been carrying out fairly comprehensive soil analysis work and Mr Appleton says this is something he wants to continue. This will help yield some concrete data on if and what benefits the changes to his farm are having on soil. Building on the success of his strip-tilling, he is also looking to experiment with precision slurry application

● The latest maize trials and research work will be discussed at the Maize Growers Association annual conference at Reading University on Wednesday 8 February.

How varieties can maximise min till transition success

Minimum tillage techniques can help preserve soil moisture and reduce the carbon footprint of crop production but how do producers go about choosing the best varieties for this?



Min-till is growing in popularity across the UK with many producers believing it is a cornerstone of more sustainable crop production with particular benefits to long-term soil structure and productivity, says KWS technical specialist Olivia Potter.

“Disturbing the soil as little as possible makes perfect sense in the context of modern production with major benefits to soil health, general resilience of the farming system, increased farmland biodiversity and reduced carbon emissions.

“It also has a vital role to play in locking in moisture, nutrients and organic matter into soils but potential yield losses, particularly in the transition stage from more traditional cultivation methods, can still put people off.”

The current line of thought is varieties that perform best in a min-till situation are those that thrive in adverse environments, she says.

“Common sense suggests vigour is important but we’ve actually seen low vigour varieties coming out top in some situations, so it’s not so simple.

“There are numerous other traits such as overall tillering performance, grains per ear, ability to finish, ability to tolerate trash better and drought resistance, that are important.

“KWS’ work on the subject has focused on

the second wheat situation as this is the most valuable to farmers and breeders alike.”

The results suggest the best varieties for no-till tend to be those that perform well in the late drilling slot, she explains.

“Group 2 KWS Extase and Group 4 KWS Cranium have been the stand-out varieties with yield losses as low as of 0.2t/ha between deep ploughing and min-till approaches.

“Both varieties have high levels of vigour with strong disease resistance which is obviously going to go a long way in protecting the plants as they grow.

“Indications are the new Group 4 variety KWS Dawsum will also be a strong min-till performer based on its overall agronomic package and high untreated yield.

“It’s got a high outright yield at 104% of control indicating it uses available N very efficiently, but it also has a high untreated yield at 95% - just 2% behind the highest performer in this respect KWS Extase at 97%.

“This is underpinned by a strong agronomic package with robust genetics ensuring it delivers its full potential regardless of soil type, drilling slot and whether it’s a first or second wheat plus short stiff straw further adds to its overall resilience.”

Varieties that are able to use N efficiently will generally be well-suited to min-till sys-

tems, she says.

“Plants that have the most appropriately adapted root systems are usually the ones with the highest Nitrogen Use Efficiency (NUE).

“Such varieties are also likely to be the ones with the highest yields, or more specifically the highest untreated yields.

“High untreated yield is usually an indication of plant resilience and resistance to abiotic stresses so it’s no surprise that varieties like KWS Extase, Palladium and Dawsum with 90% plus untreated yields on the latest RL also have strong agronomic traits.

“These can be in the shape of disease resistance but other factors such as standing power, stem stiffness and early harvest potential can also be important in the min-till scenario.”

To find out more

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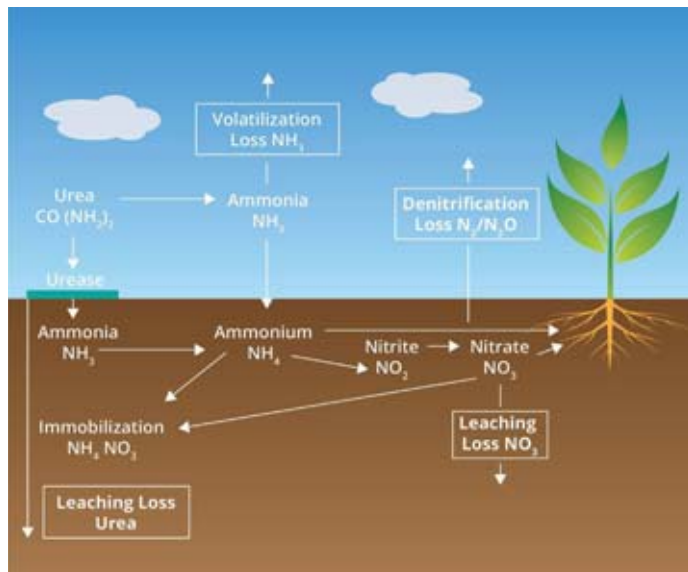
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Controlled Release Fertilisers (CRFs) is the latest precision nutrition with the highest efficiency, which is key to optimising crop yield.



Matching supply to crop need is not always easy. Some nutrients, such as nitrogen, can be easily lost through leaching, especially in light soils, or volatilisation in high pH soils.

One option for solving this apparent conundrum is to look at Controlled Release Fertilisers (CRF).

WHY ARE NUTRIENTS LOST?

Standard farm practice is to apply nutrients on a few occasions throughout the growing season; but in reality, crops take up nutrients a little at a time, hour by hour and day by day.

Applying crop nutrients on such a little and often basis would neither be practical or economical, given the costs of machinery and labour involved with every application. Nor would it be sensible to cause excessive soil compaction across fields.

HOW CRFs CAN HELP

Controlled Release Fertilisers (CRFs) can be applied early in the season and nutrients become available only when they are needed. CRF will more closely match the growth needs of the plant, so less is wasted and nutrient uptake is fully optimised by the crop.

Recent studies by ICL have shown that Con-

trolled Release Fertilisers are up to 80% more efficient than conventional applications.

HOW CRF TECHNOLOGY WORKS

E-Max Release Technology developed by ICL is described as an 'innovation' in controlled release nutrients. In essence, the fertiliser coating - once in contact with the soil and associated moisture - begins to take up water. As the moisture content builds up in each granule of fertiliser, so the osmotic pressure increases, and nutrients start to 'escape' into the soil via micropores in the coating.

The technology enables predictable release over periods ranging from 1-2 months right up to 5-6 months.

The slow release can be tailored to closely match the crop needs to ensure the yield potential is optimised as growth and development occurs.

CRF TRIAL RESULTS SUMMARY

- 8% marketable yield increase - ICL broccoli trials (UK)
- 18% marketable yield increase - ICL potato trials (IE)
- 82% increase in NUE and 10% increase in yield - ICL seed potato trial (UK)
- 3 MT/ha yield increase with 50% fewer

CRF products by ICL:

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- Agrocote - 100% individually coated N, P or K
- Agromaster - combination of coated and uncoated nutrients

applications - ICL onion trial (NL)

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Much of the area receives less than 700mm of rainfall annually

What UK's driest region is doing to meet water challenge

Parts of eastern England receive less rainfall than Greece – posing a growing challenge for food production. **Johann Tasker** reports

A groundbreaking plan for the UK's most drought stressed region aims to help secure a fair share of water for farmers, businesses and the general public.

Not-for-profit organisation Water Resources East (WRE) has been tasked by the government to produce a long-term water resources plan for eastern England. It will include water for irrigation, energy production, transport and the general public. WRE managing director Daniel Johns says: "It's the first time anyone has set out for the east of England exactly how much water the region uses at the moment, how much water will be needed in the future – and where that water might come from."

Action is needed by all sectors, not just agriculture, to manage water in a region classed as seriously water stressed by the Environment Agency, says Mr Johns. Parts of East Anglia, for example, receive less rainfall than Greece. "We can see from recent events – drought as well as flooding – that climate change is taking hold. It is now starting to grip the east of England and

making the situation worse, so the water that we have today, we won't have in future.

Draft plan

Published in November 2022, the draft regional water resources plan is open for consultation until February. A final plan will be set out in autumn 2023. Separate plans are being devised for other English regions facing their own challenges.

In eastern England, water abstraction for agriculture will, in some cases, need to be replaced with water from more sustainable sources. This will hopefully ensure farming needs continue to be met alongside those of an expanding regional population. "The growing need for water for irrigation will outstrip the extra water needed for housing growth," says Mr Johns. This could be good for the regional economy – but only if the challenge of water availability is resolved.

As climate change results in longer, hotter and



Daniel Johns

drier growing seasons, it might be good for food production, he adds. "It could increase yields – but only if there's sufficient water to not constrain that growth." This means access to water will have to increase. What water there is will have to be used more efficiently – including rainwater

harvesting, trickle irrigation, water storage and growers working together to share water, with changes in farm management. Depending on their rotation and the season, some growers might need lots of water in one year but not in another – making sharing abstraction rights and irrigation resources within the same catchment increasingly common.

Shared abstraction

"There might be a series of storage reservoirs linked together so farmers can move water to that local area," says Mr Johns. Growers might submit bids depending on their water require- ➤

KEY REGION FOR IRRIGATION

More than 60% of the country's irrigation abstraction licences are in eastern England, where farmers manage 75% of the region's land. Currently, 85% of the water abstracted from the environment is used to produce water for public supply. The predominant users of the remaining 15% are the agri-food and energy sectors, both of which are of national and regional significance.

Even though the volumes may seem small compared with water abstracted for the public supply, Water Resources East

says they have particular relevance because food and power are needed to sustain local communities and the economy. "There are also important time- and location-related issues that need to be taken into account, which can be masked by regional and annual averages," it says.

"Water for irrigation will have an impact on a particular catchment and is needed at specific times of the year. Moreover, there is increasing need to supply agriculture with water to provide environmental benefits and support national policies."



ments and have a shared abstraction licence within a local area, he adds.

Other solutions are likely to involve so-called grey infrastructure, including nature-based approaches to increased water retention, capturing rainwater, storing it within the landscape and then using it to recharge aquifers. "Rather than allowing water to run off land, straight into local rivers and then into the North Sea, we need to capture more rainfall, store it and then use it for farming as well as for the public water supply."

Nature-based approaches are already being considered for Wensum and Yare catchments, both of which face particular water resource challenges, including nutrient neutrality and water quality issues. These could include woody dams, infiltration systems and reconnected floodplains to slow the flow of water out to sea and retain it within the landscape in a way that is good for wildlife, biodiversity and the environment, as well as for agriculture.

Doing so will make agricultural businesses more resilient to drought, says Mr Johns. This will also improve their bottom line and land values, which are in part related to abstraction licences and yield potential. "The earlier farmers start looking to the future, the more chance they have of sustaining their business, making it more resilient and being able to secure the water they need for their crops." This could prove invaluable for growers in counties such as Norfolk and Suffolk, which have the same annual rainfall as Greece, explains NFU national water resources specialist Kelly Hewson-Fisher.

Rain ratio

"Not many people realise the sort of challenges growers face," she says. "We saw exactly that during the 2022 drought. In this country, we have too much rain in some places and not enough in others. Rain seldom falls where we need it, and this is about planning and looking to the future – taking everything into account to ensure that we build that water resources resilience into our businesses."

When it comes to access to water, the NFU wants government and policymakers to put agriculture and food production on the same playing field as the environment, adds Mrs Hewson-Fisher. "We're looking to protect and enhance the environment, but we're also looking to protect food production and ensure that it

meets the needs of a growing population. That is going to be even more of a challenge with climate change." It is about working together within the agricultural sector, and with other organisations too, including via Water For Food Group, an independent forum that aims to raise the profile of water for food production and ensure it is seen as an essential need.

Steve Moncaster, technical adviser for the Broadland Agricultural Water Abstractors Group (BAWAG), is also working to get a fair deal for farmers. Climate change means abstraction is under increasing pressure in north-east Norfolk, he says. "Environmental needs become more of

a driver of regulation around water abstraction, and farmers are increasingly finding they have to respond to that. But it is not a core business for growers, so there is quite a bit of learning involved – there's lots to do."

Legislation aimed at switching from abstraction licences to permits will be a game-changer for growers, says Mr Moncaster. "It really gives the Environment Agency teeth to move towards sustainable abstraction." Farmers will have to up-skill, says Mr Moncaster, becoming water resource management planners and drought planners so they understand how to get the best out of the limited water resources they have.

CASE STUDY: TIM PAPWORTH, NORFOLK



Contract farmer Tim Papworth grows a range of crops for 20 landlords across north-east Norfolk. These include cereals, oilseeds, sugar beet, potatoes and vegetables; he has some grazed livestock, too.

Water scarcity poses a huge challenge, says Mr Papworth. "Last year, when we had a significant drought, we irrigated everything we could reach with water – mainly cereals, sugar beet and potatoes.

"Without that water supply, our crops would have yielded much less and the quality wouldn't have been as good. And even with the water, our yields were down on what they would normally be. Unfortunately, we need water desperately."

PHOTOGRAPHY: CLYNT GARNHAM/AGRICULTURE/ALAMY STOCK PHOTO; GEOFF ROBINSON/SHUTTERSTOCK; CHRIS CULLEN/ALAMY STOCK PHOTO; RICHARD STANTON



Crops in the region withered in 2022's extreme summer heat, denting yields

EASTERN ENGLAND – THE NUMBERS

- Covers 27,000sq km*
- Two-thirds of average national rainfall
- Population of 10.5 million and rising
- Grows 40% of England's vegetables
- Has three of the UK's five fastest growing cities
- 125 miles of waterways
- 30% of land mass below sea level

Source: Water Resources East
 *From the Humber in the north to Basildon in the south, and from the east coast to Northampton

“There is a big technical agenda that farmers must embrace. Growers also need to work together to find solutions. The more they are able to collaborate, the more options they will have and the cheaper it will be.

“Behavioural culture is a big part of what we need to change. People are already working together in clusters, but ultimately this will involve shared infrastructure. It will feel different and the scale will be different, too. There is a lot of work to do. It is about being prepared for what's coming. We've all got to be like Scouts – be prepared because we know it's coming. We have got to get our act together,” he says. ■

Mr Papworth says his biggest challenge is uncertainty over access to water. “I reapplied for my irrigation licences back in 2017 and I am still waiting for the Environment Agency to confirm that I am going to have them or whether they are going to be reduced.”

For the time being, Mr Papworth has been irrigating under a limited extension of licence validity, which means he can continue irrigating, but doesn't know whether he will have a licence in the future.

“It's very frustrating to be in a situation where we can't plan our business going forward. It's been like this for six years. They need to get their act together and let us know whether we have a licence or not.”



FLOOD MANAGEMENT PROVIDES OPPORTUNITIES FOR FARMERS

With large parts of the region below sea level, eastern England faces a significant threat from both flooding and drought. Widespread floods in December 2020 affected 120 settlements, with more than 350 properties flooded, prompting the establishment of the Norfolk Strategic Flooding Alliance two months later.

Chaired by farmer and former head of the British Army Lord Dannatt, the alliance brings together 36 risk-management authorities, companies, organisations and other bodies with responsibility for water management in the county. Some £80m is needed to tackle flooding in Norfolk alone, says Lord Dannatt. Farmers are among those who have a key role to play when it comes to watercourse management, including keeping rivers and culverts clear, he adds.

“Once you start unlocking local knowledge, you can unbundle a lot of the problems at the heart of flooding issues,” he says. Local councils have a part to play, but so do landowners and homeowners. “We must recognise that water, which can be regarded as a problem because it constitutes a flood, is something we need. We have to adopt measures that can dilute the problem of flooding, but also retain water so it is available when we need it.”

Farmers in flood-risk areas should reflect on their own circumstances, says Lord Dannatt, such as the potential to capture water and use it for agricultural purposes. “On our farm, we have quite a number of flood meadows designed to take excess water,” he says. “Parts of our farm are flooded routinely in conjunction with the local authority, which has now put in a flood lagoon. “I'm thinking of growing vines for grapes on the adjacent field. The water from that lagoon could be used to irrigate the vines. Once you start to think innovatively and differently, there are often ways you can improve your circumstances.”



Do you want to confidently take control of your natural capital?

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What is Sandy?

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The inherent value of natural capital

Maintaining and enhancing your natural capital is pivotal to success and is something all farms can manage and profit from, without having to wait for ever-changing policy directives.

Building insights and refining a number of on-farm practices can not only reduce costs and have a direct impact on profitability, but also on a farm's sustainability credentials.

Fundamentally, improving your farm's natural capital metrics has an all-round positive impact. The challenge to date has

been credibly and rigorously understanding the full breadth of this value and the options for all farm types and systems.

It's not just about carbon

Not only can Sandy support farmers to navigate their natural capital, it also uniquely forecasts the impact of management changes on carbon and biodiversity metrics through scenario planning.

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- Enabling a precision approach to nitrogen applications through an advanced real-time alert system, reducing nitrate leaching and improving uptake efficiencies
- Integrating with existing farm management software to reduce data input

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We may not be able to predict what the future looks like, but success doesn't require this.

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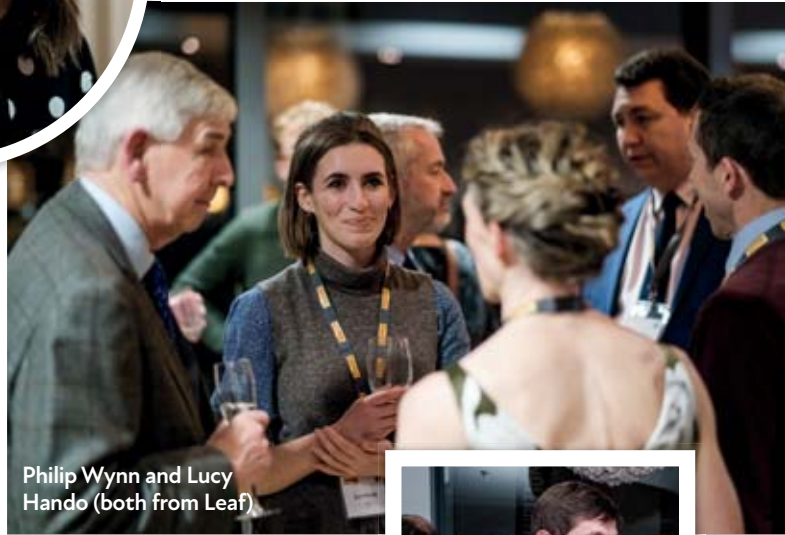




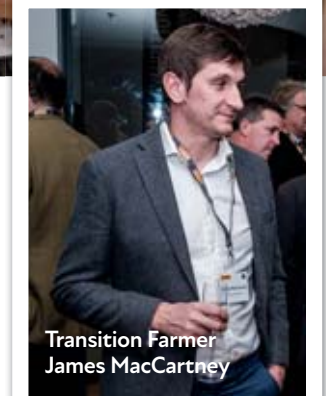
Above: *Farmers Weekly* editor Andrew Meredith (left) and farm conservationist Jake Fiennes. Above left: Alice Liddle (Morrisons) and Paul Savage (Arla). Inset left: Lisa Bray (AHDB)



Transition Farmer
Rachel Risdon



Philip Wynn and Lucy
Hando (both from Leaf)



Transition Farmer
James MacCartney

Why farming must unite to secure more sustainable future

Joining forces for the good of the industry was the theme of a recent Transition event, which brought farmers and the supply chain together. **Johann Tasker** reports

Farmers and the supply chain must pull together to secure a more sustainable future – and help combat climate change, says a leading conservationist.

Jake Fiennes is conservation director at the Holkham Estate, which encompasses some 10,000ha on the north Norfolk coast. He is also author of the book *Land Healer: How farming can save Britain's countryside*. "Partnerships are really important," said Mr Fiennes. "Working with a range of organisations towards a single, agreed goal is vital for the future – not just for British

agriculture, but for global agriculture as a whole."

Mr Fiennes was speaking at the annual *Farmers Weekly* Transition dinner, which brought together 53 farmers, industry leaders and agricultural suppliers at the Ashmolean Museum in Oxford last month.

Huge role

Agriculture had a huge role to play in helping to combat climate change, said Mr Fiennes. Some 40% of the world's habitable land was farmed, with 70% of UK land used to grow crops or pro-

duce livestock. "My firm belief is that agriculture is the solution," he said. "It is about understanding soil – and biodiversity below ground as well as above ground – and about educating consumers as well as policymakers."

The Holkham Estate includes potatoes, sugar beet and cereal crops, and a nature reserve visited by a million people annually. Mr Fiennes' revolutionary approach to land management has seen him nurture wildlife while helping to increase crop yields. "We cannot combat climate change on our own," he said. "Agriculture should



Clockwise from top left: Rob Thurkettle (Agrifac); Sam Gilbert (Regener8 Power); former NFU president Meurig Raymond; Transition Farmers Kate and Vicky Morgan with NFU deputy president Tom Bradshaw; Rory Geldard of NRM; and (inset) Rachael Madeley Davies (Hybu Cig Cymru)



< put its front foot forward and demonstrate that the supply chain is working together with end users, consumers and the government to be the solution.”

Temperature records were broken in numerous parts of the world last year – including in the UK, which recorded above 40C. January this year is already unseasonably warm, and the Met Office has forecast that 2023 is likely to be hotter than 2022.

Serious challenge

“That’s the reality of climate change,” said Mr Fiennes. “The four seasons are becoming a thing of the past. Any farmer knows you can get four seasons in a week, let alone in a month. We are seeing that more than ever. We face a serious challenge – and we need to be the generation that starts to fix it.”

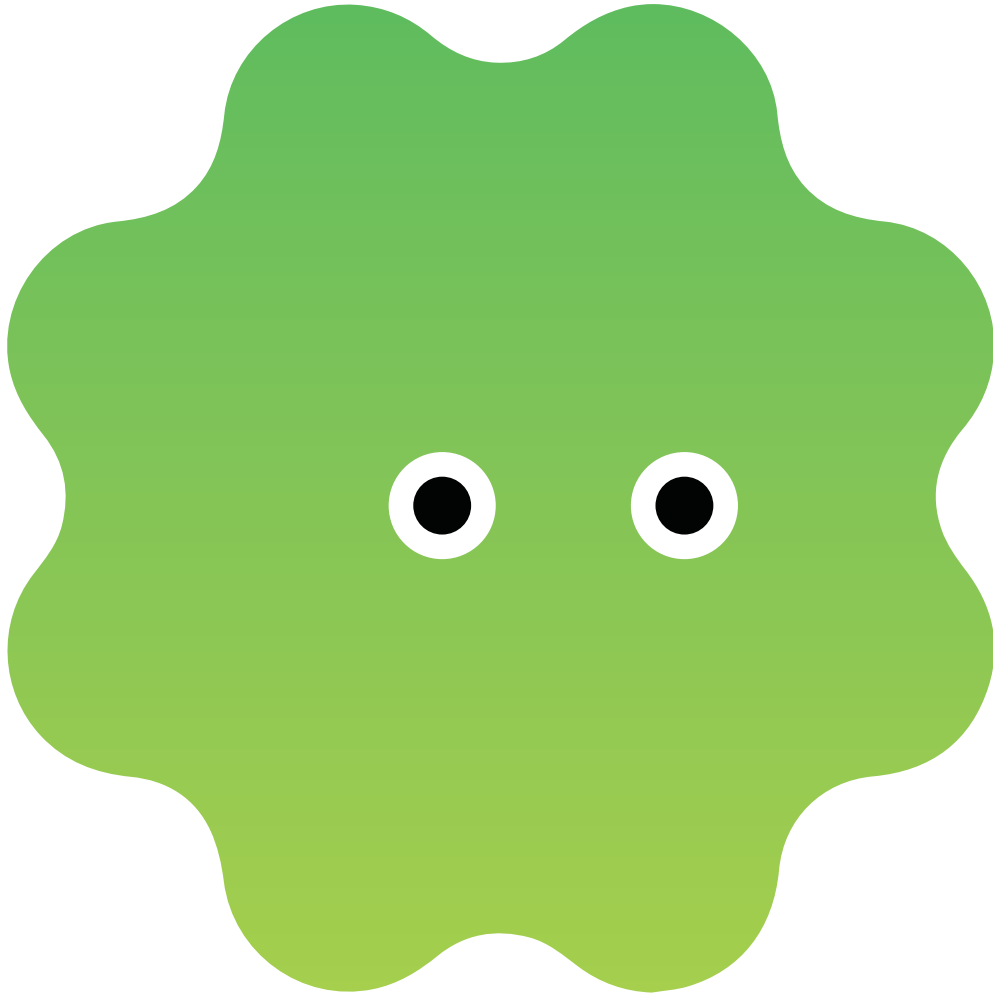
It would not be fixed overnight, said Mr Fiennes. But farmers and the supply chain needed

to come together as a union of voices with a shared joint ambition to influence politicians and ensure the right policies were put in place. This included a standard method of measuring the environmental benefits provided by farmers, said Mr Fiennes. A universally accepted metric was vital for farmers to demonstrate success, he added.

“It is about healthy soils, clean water and a rich and vibrant countryside. It is about access to land, high-quality, high-yielding food and biodiversity – and showing that we are making a difference and that farming is able to deliver.”

“If we come together with a consensus of how we move forward, I think we have the real ability to demonstrate – to the government and the private sector and globally – that British agriculture has the potential to do this,” he added. ■

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Four ways to stress-test your farm business

How can farm businesses ensure they are resilient and sustainable enough to meet the challenges ahead? Industry experts and farmers discuss some key starting points



A changing policy and payment landscape means growers and producers naturally have questions about how they can adapt to ensure their farming enterprises remain productive and profitable.

Stress testing is a valuable tool for identifying vulnerabilities and opportunities. Here are four focus areas discussed by the panel in the latest *Farmers Weekly Transition* series webinar.

1 Borrowing and business

When it comes to borrowing, Tim Coates, Cotswold farmer and co-founder at Oxbury Bank, advised growers and producers to look at their working capital needs instead of focusing on overdraft size.

“To calculate your business ratio, divide your forecast income for the next 12 months by your costs over the same period. If the ratio is below one, you’re probably holding too much cost. If it’s as high as two, you’re likely not pushing the business forward enough.”

Touching on a business’s gearing ratio, Mr Coates warned that it isn’t a true indicator of profitability.

2 Cost of production and benchmarking

Cost of production (COP) and benchmarking are fundamental tools businesses should be using, said Will Foyle, farm business consultant at agronomy group Hutchinsons.

“We did an analysis at the end of November

and found COP for winter wheat ranged from £150-£200/t, pre rent and finance. You need to understand your COP and business performance before making other crop management decisions. Measure, manage from that, and look to improve or remove.”

For Jeff Claydon, Suffolk farmer and chief executive at farm equipment supplier Claydon Drills, benchmarking forms part of his monitor and measure approach. “[It] helps businesses understand their performance and costs more comprehensively, and make better-informed decisions,” he said.

Mr Coates pointed to his own farming experience with Defra’s Future Farming Resilience Fund. “It’s been valuable and useful; I’d recommend it if you haven’t taken it up already.”

3 Environmental land use

One of the biggest concerns for farmers is market volatility and the lack of certainty in future government funding, said Tom Mason, senior land manager at Environment Bank, a business that supports the delivery of biodiversity net gain solutions for farmers.

“There’s growing interest in environmental land use. Having pockets of unproductive land is ideal for creating habitat banks because we don’t have to take productive land out of food production. It should bring a good injection of cash over a 30-year period.”

While some farmers believe environmental land

use prohibits agricultural use, that is not the case, he said. “Low-intensity grazing is a key action in habitat bank management.”

And while long-term environmental agreements can be challenging for tenanted farm businesses, this is being addressed. “Having frank and open discussions with landlords now is best for moving forward.”

4 Soil, soil, soil

Whatever the farm business, soil health is crucial, said Mr Claydon, who prioritises retaining moisture and adding organic matter through his cultivation methods. “We’ve found tremendous success in leaving straw down in the autumn to add organic matter and promote the worms, which in turn improves aeration and moisture.”

“Combined with using a simple straw rake to create a 2-3cm tilth – seed sown underneath – and inter-row hoeing, we have good soil profile that prevents moisture loss.”

Mr Foyle advised growers and producers to invest in at least a day with a soil expert. “A day is invaluable and will help farmers unlock and learn so much about their number-one asset.” ■

WATCH THE WEBINAR

The full webinar is available to watch at fwi.co.uk/transition-webinars, where you will also find others from the series