ORGANIC RESEARCH CENTRE

Bulletin

No. 135 – Spring 2022

News in brief

Dean Organic Fund open for 2022

We are very pleased to announce that the third round of Dean Organic Fund (DOF) funding is now open, with up to £200,000 of interest-free loans available for small businesses.

The Organic Research Centre (ORC) is originating and managing a programme of small loans, all made out of the Dean Organic Fund. Our loans support small scale organic/agroecological farmers, producers and food businesses and these loans are unsecured, without any interest cost to finance investments in equipment or stock or other forms of working capital (not land). To date, previous loan sizes have been between £5,000 and £25,000, and all repayable in instalments over up to 5 years. We are able to lend to companies, sole traders, community/social enterprises or charity owned businesses, including ones that are not certified organic but operate on principles closely aligned with organic principles.

www.organicresearchcentre.com/farming-organically/the-dean-organic-fund/

40th anniversary ebook published

To round off our 40th anniversary year we have published an ebook celebrating our pioneering research in organic farming. This brings together all the Factsheets and Research Digests that we have put together over the last year into one publication.

https://tinyurl.com/ORc-40-ebook

Assessing the multidimensional elements of sustainability in European agroforestry systems

A new paper has been published from the SustainFARM project team. A real team effort with Laurence Smith, Samantha Mullender, Sally Westaway and Jo Smith contributing authors from ORC. Highlights:

- Agroforestry leads to efficient land-use through higher Land Equivalent Ratios
- Agroforestry systems may have negative financial margins when labour costs are included
- Positive social and environmental impacts in agroforestry
- Increased local sales, on-farm employment, and lower fossil-fuel use benefits within agroforestry
- Innovative agroforestry may have improved financial performance, compared with traditional.

https://doi.org/10.1016/j.agsy.2021.103357

Lucy MacLennan at COP26

In November our Chief Executive Lucy MacLennan spoke at the Agri-Food Transition Summit at COP26, in the Climate Action Innovation Zone. The session was titled 'Transformational Agri Food systems: Reforming our systems to deliver on SDG2' and Lucy was part of a panel which included three other industry representatives: Dr Gunhild Strodalen from EAT Forum, Lee Howell from World Economic Forum and Rob Cameron from Nestlé. The panel discussion focused on Sustainable Development Goal 2 – ending hunger, achieving food security and improving nutrition and promoting sustainable agriculture.

Multi-agency response to GM wheat trial 21/R52/01

GM Freeze, ORC and twenty five other organisations have asked Defra not to allow the John Innes Centre to plant another open field trial of genetically modified wheat. We do not believe that this trial should go ahead. The applicant has failed to provide key information; the GM plants contain antibiotic resistance genes; there is a risk of escape; and there are significant questions about the value of the project to which the proposed trial contributes.

Herbicides: A threat to bee and pollinator survival

This PAN UK policy briefing explores the various types of herbicides used in both agricultural and urban landscapes, the increase in their use, and the direct and indirect impacts of these pesticides on our bees and pollinators. It also presents PAN UK's recommendations to a range of stakeholders including the UK Government and supermarkets on how to better protect our pollinators from further pesticide-related harms. It's vital that decision-makers broaden their current narrow focus on a small group of insecticides and take action to protect pollinators from the harmful effects of all pesticides and, in particular, pay more attention to the impact of herbicides.

https://tinyurl.com/PAN-cocktail

Use of Complementary and Alternative Methods is significantly reducing antibiotic use

A survey, by Whole Health Agriculture, of over 220 livestock farms (80% commercial) in the UK and Ireland has reported up to 69% reduction in antibiotic use, up to 70% reduction in vet costs, significant reduction in disease frequency and severity, and 84% overall improvement in livestock health through the use of Complementary and Alternative Methods (CAMs). 24% of farmers report they have achieved and are maintaining ZERO antibiotic usage.

https://wholehealthag.org/survey/

Increased payment rates for organic farming brings opportunities as market grows

Payments for organic farming in England are rising by between 46% and 500% for those entering a new scheme with Countryside Stewardship, which provides financial incentives for farmers and landowners to care for nature.

The window for Countryside Stewardship applications opened on 8 February, and some organic farmers will now be able to earn triple or even six times as much as before from government cash incentives. These payments will be available until at least 2024 when an organic standard is promised as part of the new Sustainable Farming Incentives (SFI).

The rate hike comes alongside a surge in the organic market, with a 23% increase since 2019 revealed in Soil Association Certification's annual Organic Market Report.

For more details on items on this page, including links to the publications, visit the News link at www.organicresearchcentre.com or, to receive more frequent updates, register for our E-bulletin service and follow us on Facebook, Twitter and Flickr.

Editorial: Out and about again

Welcome to the Spring 2022 Bulletin

Welcome to the Spring edition of the 2022 bulletin and a very happy new year to all our bulletin readers and ORC supporters! The new year is not only a good opportunity to look back on our achievements over the last 12 months, but also focus on our plans and aims for the year ahead – with lockdowns and COVID restrictions easing, as a team we are looking forward to getting back out and about, having face to face meetings as well as continuing to meet remotely.

Thanks to easing COVID restrictions, I very recently visited Devon, Dorset, Hampshire and Somerset, meeting inspirational organic farmers and other like-minded organisations, discussing potential future research areas and how we could work together to help support the future of organic farming. During the visit I was lucky enough to meet with three organic farmers, Peter Cheek from Godminster Cheese, Sophie Alexander from Hemsworth Farm and Tim May from the Kingsclere Estate, and was struck not only by their passion for organic farming but also their interest in agri-tech and using cutting edge research to help continuously and sustainably improve their businesses. You can learn more about Tim May in this edition of the bulletin as he features in one of the converting to organic profiles written by Marianne Landzettel on page 10.

During my trip I also visited Alice Astor, who alongside Adrian Blackwell, has stepped down as an ORC trustee after 12 years. We are hugely appreciative of both their contributions and support over the years. In the Summer 2021 edition of the bulletin we welcomed Janet Dwyer, Jake Pickering and Honor May Eldridge to our Council of Management and in this edition I am delighted to introduce Seeta Rajani as another new Organic Research Centre Trustee – you can find out more about her on page 19 – welcome to the team Seeta!

In this edition of the bulletin we are also taking the opportunity to reflect on our 2021 40th anniversary celebrations, including our 40th anniversary event which took place on 30th September at FarmEd in the Cotswolds. The event was a great opportunity to discuss the future of organic farming and priorities for research, as well as awarding our inaugural Young Organic Farmer/Grower of the Year Award, which was presented to Ashley Wheeler and Kate Norman of Trill Farm Garden, Musbury, whose business showcased fantastic commitment to organic principles – huge congratulations again.

Finally, I am excited to announce the news that the latest funding round of the Dean Organic Fund is now open to small businesses. The Dean Organic Fund (DOF) provides interest-free loans to small scale organic/agroecological famers, producers and food businesses and has up to £200,000 available. Previous businesses to have secured loans from DOF include Lynbreck Croft and Grazing Matters. Funding is awarded on a first come, first served basis so don't delay and find out more about the fund on page 2 of this bulletin (opposite).

Lucy MacLennan
ORC Chief Executive Officer

About us

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The Organic Research Centre
is a leading, independent, research charity working for better farming, food and health, promoting environmental sustainability, quality food and health and wellbeing for all. We work in the UK and internationally to: research and develop practical, sustainable land management and food production systems based on organic and agro-ecological principles; foster knowledge exchange with and between current and future producers, food businesses and related professionals; and influence policy and public debates on the future of food and farming based on sound evidence.

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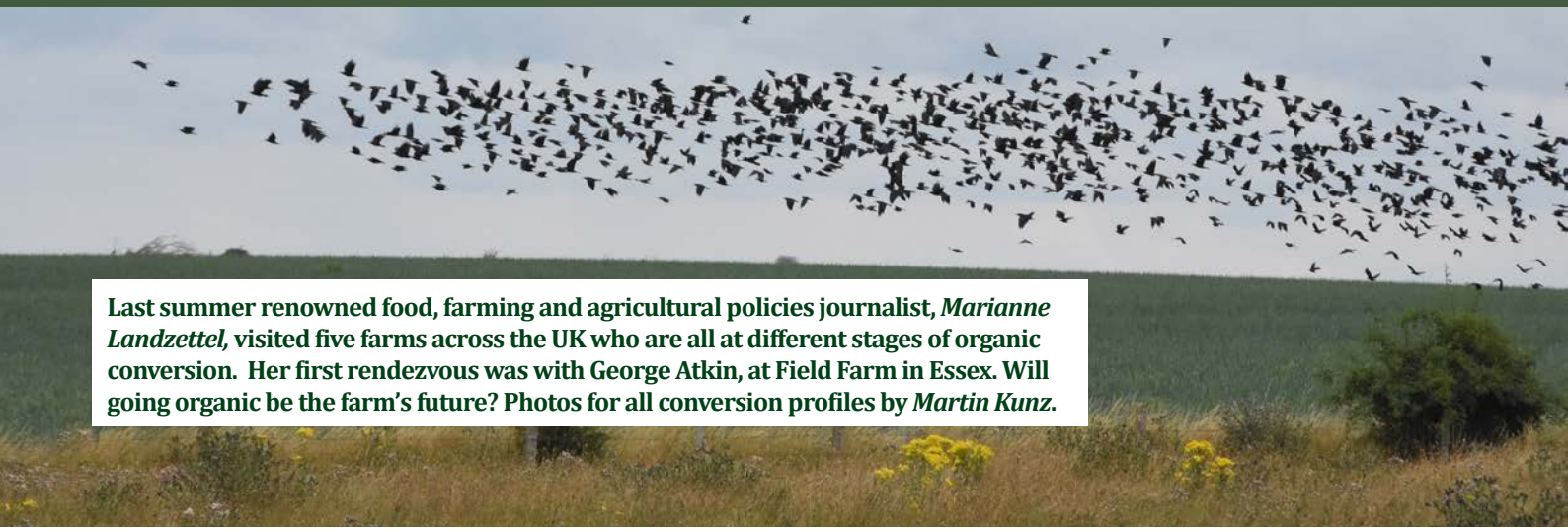
Cover photo: George Young of Curtis Farm, Essex. One of our conversion farmer profiles (p8).

Photo: Martin Kunz

Conversion profile: George Atkin of Field Farm



Last summer renowned food, farming and agricultural policies journalist, *Marianne Landzettel,* visited five farms across the UK who are all at different stages of organic conversion. Her first rendezvous was with George Atkin, at Field Farm in Essex. Will going organic be the farm's future? Photos for all conversion profiles by *Martin Kunz*.

George Atkin is short of time, a deadline is due. At present, he works full time for Natural England, but his future will be on the 700 acre family farm which is currently run by his mother and the farm manger. Atkin is acutely aware of the challenges farmers in the UK – and in England in particular – are facing: whatever ELMS, the government's Environmental Land Management Scheme will eventually look like, it will not make up for the shortfall from the Basic Payment Scheme (BPS) that farmers could rely on before Brexit. Combined with the vagaries of the climate crisis which farmers are exposed to in a more immediate and direct way than most, one thing is clear: farming practices will have to change. The question is how.

Farm history mirrors the challenges of its time

Atkin's mother and her father before her had to come to grips with challenges and hard choices, too. The family has been farming the land northwest of Thetford for six generations. Because the land is relatively flat and level, some hedges had been taken out during the war to turn the fields into a landing strip for fighter planes. At the time Atkin's grandfather took on the farm, chemical fertilisers were just becoming widely available and food production was of paramount importance. It made sense for his grandfather "to focus on a single goal: the highest yield possible." It was a highly productive system, but it took its toll: when George's mother, Pat Atkin, took on the farm almost half a century later, she introduced more diversity and had some of the larger fields broken up into 30 acre units. Today, winter and spring barley (mainly grown for seed) as well as some of the winter wheat are the most important crops. Then there are lucerne, sugar and fodder beets. Some land is rented out for onion production, but the contract with a potato grower has ended and will not be renewed. The 200 acres of permanent pasture are grazed by a herd of 100 Aberdeen Angus. As we make our way to see the cattle, George Atkin points out the cultivated field margin paid for via the Higher Level Stewardship Scheme: by taking out the nutrients, the wild flowers typical for the Brecks were able to re-established themselves.

Thinking differently

George Atkin was born in 1990. He had little interest in farming until he left school and studied agriculture in Cirencester. "I wanted to learn how to grow crops," he says. After his exams he worked for three years as an agronomist for a large company. "Quite a lot of what you do is going around farms selling chemicals," he says. He did not enjoy this aspect of the job, and he also began to have serious doubts about the use of agrichemicals. There was no single event that changed his perspective, he says, rather it was the look back at history: how his grandfather came to rely on chemical fertiliser and the consequences that has for us today. "We have a biodiversity crisis, and a climate crisis," Atkin says, "Now is our time and we understand things differently."

George Atkin is still working full time for Natural England, but since he and his wife live in one of the cottages on the farm, he is getting more involved – not with the day to day running of the operation but with long term planning. A strip of land next to the drive leading up to the farm has become his 'sand box' – in the literal sense, too: it is grade 2 agricultural land with sandy soils over chalk.

Five years ago, he planted a small woodland area with ten different species and the help of the Woodland Trust. The hedge bordering to the south was planted four years ago and having previously worked as an orchard manager, he planted fruit trees in the adjacent area: choosing local heritage apple varieties, Norfolk Royal, Norfolk Dumpling and Norfolk Beefing among them. It's a thought through agroforestry project: all varieties were planted on M25 strong rootstock, the trees will grow tall and develop large crowns, providing cider, cooking and eating apples for home consumption as well as shaded grassland for grazing animals which, in turn, will help to improve soil quality, even though at present, the 20 rare breed Norfolk Horns grazing on the other side of the drive are still more of a hobby. Eventually they may become more integral to the farm, managing cover crops on the arable land.

Planning ahead

Within the next five years, Atkin will return to the farm as a farmworker, possibly part-time to begin with. Though his mother will continue to run the farm for the foreseeable future, he will have more of a say. Eventually, he will take over, but no date has been set. Still, his goals for the farm are very clear: he wants to produce good, nutritious food while increasing biodiversity and achieving measurable benefits for the environment. He would like to switch to direct drilling.

Where the hedges once used to be, he'd plant rows of trees serving as windbreakers for the alleys with crops in between. He'd like to introduce new crops, possibly grow beans for human consumption for Hodmedod, the Norfolk pulse and grain company, that is helping farmers to reintroducing heritage varieties into their rotations.

Atkin sees reducing the cattle numbers further as key, eliminating the need for supplementary feed. Changing their role to 'landscape managers' with a side product of beef. His short to medium term goal for the grassland is to farm without the use of fertilisers and supplementary feeding; instead the animals should graze a diverse mix of grasses, forbs and herbs. And he is looking at mob-grazing.

Organic as an option

His mother has already agreed to his plan for converting a small area of grassland to organic once he returns to the farm. But while he studied agriculture in Cirencester, there was little talk about organic farming practices. Atkin joined the ORC to learn more about organic farming, but converting to organic of course would have to make financial sense, too. In an ideal world he'd want an ORC agronomist to come to the farm to do an assessment. "It would be great to have someone to bounce ideas off," says Atkin.

With the loss of the BPS he'd also be looking at putting more unproductive land such as hard to cultivate corners and field margins into higher stewardship schemes and if there was an option to get paid for sequestering carbon that would of course be an added bonus.

For George Atkin, his farming goals are clear: food, climate and biodiversity on an equal footing, calorific output of the farm must be maintained or increased whilst making space for nature and being a carbon positive business. So much is made of not reducing food production, it's often given as the reason space can't be made for nature. But more focus needs to be placed on what we are growing. There are efficiencies to be made if farmers, suppliers and consumers can change together. Organic certification is not the main driver for what he wants do. For 'millennial farmers' like Atkin, mitigating the climate crisis is the challenge of his generation, and without the knowledge and research as to what practices from the 'farming toolbox' work best on their farms, there will be no future for food.

Your Farming Future

Are you in receipt of Direct Payments? Would you like some help and support with the agricultural transition?

The Your Farming Future programme is helping farmers and land managers prepare for the agricultural transition and build farm businesses that will work for you and future generations. The programme supports the integration of resilience into all aspects of farming systems, looking at agroecological land-management, shortening supply chains, and resilient financial practices.

This programme is being run by the Landworkers' Alliance in collaboration with the Pasture Fed Livestock Association and Organic Research Centre. The following support is available for FREE to farmers:

Farmer To Farmer Webinars

Weekly webinars to help you learn more about how you transition your farm to a more sustainable future. From building fertility to pest management, soil health to direct sales, these 20 webinars will enable farmers to identify what changes and adaptations they can make to build resilience into their farm businesses. The webinars also provide a crucial space for farmers to meet, and be supported in building peer-to-peer networks.

1 On 1 Advice & Peer Support

Advisors will help farmers look at their whole farming systems to evaluate their business and farming model from inputs to the end supply chain, identifying ways to help the farm business become more environmentally sustainable in preparation for ELMS and more economically sustainable as BPS income ends. Tailored support will be aimed at exploring key management changes associated with conversion to agroecological farming systems, focusing on soil health, recycling nutrients, the dynamic management of biodiversity and energy conservation at all scales, and reducing external inputs. Production systems can include:

- Organic Farming (certified)
- Regenerative/low-input systems
- Pasture fed livestock systems
- Agroforestry/Silvopasture
- Biodynamic Farming

Transition Tool Kit

Information, resources and sector specific films sharing case studies of different environmental land management practices and farming models.

To be eligible you must have an SBI number and be in ENGLAND in the following sectors:

- *Medium to large scale horticulture (above 5 hectares)*
- *SME dairy production*
- *SME red meat production*
- *Mixed farming systems*

For more information and to sign up, go to: https://landworkersalliance.org.uk/your-farming-future/

Conversion profile: Nathan Nelson, Deepdale Farm

Going cold turkey during a perfect storm. *Marianne Landzettel* talked to Nathan Nelson, at Deepdale Farm in Norfolk, which has been under conversion since January 2021

Nathan Nelson had been farm manager at Deepdale Farm for less than a month when storm Ciara hit the UK on February 10th 2020. Storm Ciara, followed by storm Dennis, dumped inches of rain on the farm, making it their wettest February on record. "I was in chest waders in a blocked drainage pipe by one of our fields, but there was nothing we could do," says Nathan, who still gets emotional talking about what happened next. At the bottom of one of the sloping fields sits the house of a lady in her nineties; before the torrent of soil and water running off the field reached the road and flooded the basement of the church, it deposited six inches of slush and mud in the lady's house.

Nathan and Managing Partner Jason Borthwick did their best to provide immediate help and set things right. But the consequences of these two storm events triggered a much more general rethink: in future, the farm would be managed very differently – to prevent anything like this happening again.

Stepping up in a crisis

Neither Jason Borthwick nor Nathan Nelson had ever planned to become farmers. Jason grew up at Deepdale and his father had expected him to take on the farm, but he had other plans and spent years working abroad. Deepdale is situated in one of the most stunningly beautiful parts of the Norfolk coastline; on his return to the UK Jason developed the tourism business, including an eco-friendly campsite and hostel, looking to recreate some of the best features of the backpacker experience from work in tourism in South Africa. He had no plans to work on the farm.

When Nathan gave up his desk job in London for training in countryside management, he started spending more time at Deepdale, running conservation volunteering weekends and surveying the long-unmanaged woodland on the farm. When Jason's father, Alister, announced he would be retiring, Nathan was offered the job of farm manager. He would be working alongside Alister and take over once both felt he was ready to run the farm by himself. But things turned out very differently: Alister passed away suddenly in September 2019, four months before Nathan was due to start work. In the meantime, Deepdale's farming team had to manage more or less on their own. Alister had documented much of his work including a cropping plan for the following year and the team knew their jobs.

A perfect storm

Jason's father had farmed 1,000 acres – some of it rented – with the goal to make the business financially viable. The rotation was based around winter wheat grown in-hand with maize, carrots and potatoes grown by contractors leasing land. Growing carrots, potatoes and maize was all detrimental to soil health, with regular tillage, spraying and irrigation followed by winter harvests that left soil exposed and vulnerable to erosion. The whole farm was heavily dependent on chemicals, with little in the way of organic matter being added back in; even their agronomist, essentially a salesman for a chemical company, was telling them that their soil needed more organic matter – the SOM of the sandy loam soil was down to about 2 percent.

Before storms Ciara and Dennis even arrived, there was a mix of conditions that left the soil extremely vulnerable to erosion: a tight rotation of high-risk crops grown on sloping fields, frequent tillage used for weed suppression (what Gabe Brown described in his book Dirt to Soil as 'recreational tillage'), soils left bare over increasingly wet winters, irrigation washing out soil aggregates, chemicals suppressing biological activity and soil starved of organic matter. In the run-up to those winter storms, a contractor had also drilled one of the worst-affected fields up and down the slope to minimise turning, creating drainage channels in wheelings that served to accelerate the flow of runoff down the hill. The rainfall that came with storms Ciara and Dennis ran downhill unimpeded, carving out two-feet-deep channels in wheelings and headlands and carrying tonnes of topsoil away with it, into a home, and into the village church.

While Nathan and Jason were still dealing with the aftermath of the flooding, the Covid-19 pandemic then struck and Britain went into lockdown.

First goal: fixing the soil

"Covid acted as a catalyst," says Nathan. Jason had been forced to furlough tourism employees due to lockdowns and other restrictions and the campsite stood empty; he and Nathan now had time to focus on the future of the farm and address a range of questions raised not just by poor soil health but the coming changes in UK agricultural policy, and deciding on a new direction for the farm following the loss of Jason's father. In the next few months they made a series of decisions that might otherwise have taken a few years.

Their first point of call was Norfolk Rivers Trust, whose Water Sensitive Farming team advised them on measures to minimise flooding and erosion. They sowed a multi-species cover crop mix into the fields most depleted by carrot growing: the mix included plant varieties such as crimson and Persian clover, mustard, vetch, forage peas, rye, radishes and phacelia. Each plant has a specific function – from providing canopy cover which breaks the power of falling rain and protects against soil erosion to fine root networks which hold the soil, and from fixing nitrogen to storing it and preventing it from leaching away. With living roots in the soil and a diverse community of soil organisms, the water infiltration rate and the water holding capacity would hopefully increase.

Nathan and Jason learnt more about the principles of regenerative agriculture, following progressive farmers on social media who were sharing what they knew, and attending as many webinars as they could where more farmers were providing virtual farm walks, when in-person events were affected by Covid. Further research introduced them to agroforestry, organic farming and eventually to Stephen Briggs, an organic farmer, agroforestry pioneer and consultant.

Jason and Nathan approached Stephen Briggs with the goal to restore soil health across the farm. After an initial assessment, Briggs suggested conversion to organic, and followed up with a feasibility study that looked at farm finances, implements, and a range of other considerations that took organic conversion from being an abstract concept to an achievable goal that supported their aims.

Jason and Nathan had already started an extensive redesign of the farm, placing it into a comprehensive mid-tier Countryside Stewardship scheme that took sixty percent of the farm out of production and into features for wildlife. This served a few different functions. Jason and Nathan wanted to do a great deal more to support biodiversity on the farm, being in a beautiful place on the North Norfolk coast, with a thriving tourism business on site. Features such as beetle banks could support crop pest management, lessening the need for artificial controls. Finally, fields with large buffers of permanent green cover such as wild bird seed mix and flower-rich margins would better cope with heavy rainfall events by holding and slowing water.

Going organic would make it a near certainty that the goals of the stewardship scheme would be met. The combined payments for Countryside Stewardship and organic conversion over the next five years would at least "keep the lights on and pay the staff," as BPS payments dropped by over 60% in the same period and the farm lost out on income from volume crop sales and land rental for root crops.

Going cold turkey

"It felt good to convert our chemical store into a seed store," says Nathan. But going organic was also "another thing I would have to learn." While there are 265 ha of agricultural land, only 100 ha are planted with cash crops, in 20 five-hectare plots surrounded by Countryside Stewardship options. The five-year rotation developed with Stephen Briggs starts with two years of clover leys, followed by cereals, a legume break crop, and in year five, cereals again, undersown with a clover ley to restart the rotation. Winter cover crops are used throughout the rotation to shield the soil. In any one year there will be 40 ha of herbal leys, 40 ha of cereals and 20 ha of legumes. The remaining 165 ha will not be cropped and will remain as wide margins planted with flower and bird seed mixes and cultivated margins to support arable plants.

We walk out to the fields because Nathan wants me to see the wheat. Stephen Briggs recommended YQ (ORC Wakelyns Population) wheat developed by Martin Wolfe at ORC, and Siskin wheat, which they have grown side-by-side in the same plot. The YQ outgrew cover crop volunteers and other weeds, producing a clean-looking crop. Nathan hopes that he will be able to harvest enough to plant 5 ha with it next year. The Siskin appeared to perform less well than the YQ with more weed competition in the crop, but yielded better. "We grow what we can through the conversion and we'll be glad if we generate any income from it" says Nathan. Beginning the conversion this year was like "… opening Pandora's box, all the marestail and ragwort has come out. Under organic you have nowhere to hide. All the underlying issues come up in conversion. It is like the drug addict who gets the shivers and comes out in a rash."

Big dreams for the future

"We have a rule that we don't throw out a mad idea until we have batted it around for a while, and we still may implement it anyway," says Nathan. He hopes to bring animals back to the farm, and has been discussing options with a nearby farmer he met through livestock consultant Liz Genever's Carbon Dating service, aimed at matching arable farmers with livestock owners. The clover leys are grazable and winter cover crops have been planted with grazable options omitting red clover, which is alleged to present a risk of abortion in ewes.

Nathan would like to introduce different grains such as spelt, milling wheat and malting barley. Next to the campsite and also on Deepdale land are a cafe and several shops that not only cater for the campers, but also serve local people and tourists passing by on the main road. It's a great opportunity to sell local produce. "We want to show the connection between what we do on the farm and the food that comes from it," says Nathan, who is also thinking about conservation volunteering and engagement, school visits and care farming. Oh, and Jason wants Deepdale to be carbon negative by 2025. How is that all going to work? Who knows, it's all work in progress. In 2020 they started "learning to live with having no control." In 2021 they are becoming accustomed to riding the storm.

Conversion profile: George Young, Curtis Farm

Radical farm makeover. *Marianne Landzettel* meets George Young at his Essex farm which has been under conversion since autumn 2020

Getting to Curtis Farm isn't easy, at least not when you take the wrong exit in the maze of motorway intersections and end up navigating the interlinked roundabouts in Basildon that seem to literally take you round in circles. Standing at the farm gate you can make out the industrial units and the cranes of the London Gateway Port on the horizon, which makes the farm even more of a green and beautiful oasis.

Oil futures and playing the saxophone

Buying cattle is one of many things George Young, now 35, has done since he returned to the farm in 2013.

Music, playing saxophone and clarinet, had been his passion growing up. But as becoming a professional musician isn't exactly a safe career choice, Young moved to London having studied maths at university in Edinburgh. When he joined a bank as oil commodity trader he often needed to work late and there was little time to play saxophone in his band. When, in the aftermath of the financial crisis, the bank reneged on a promised raise and didn't pay a bonus either, Andrew Young told his rather frustrated son: "You don't really like it. Why don't you come back to the farm?" Which he did.

Thinking about soil

At the time, Andrew Young managed the roughly 1,200 acre farm conventionally. The main crops were wheat, rape seed and peas. Like many farmers, Andrew Young had moved to shallow tillage (min-till), but used all the agrochemicals that his agronomist recommended.

When George Young moved home, he started to look for alternatives. He visited another Essex farmer, Simon Cowell, who farms no-till, and Young loved the spongy quality of the soil. It made him think differently about cause and effect in farming and convinced him to also go no-till.

After a few years of being no-till, including planting cover crops over winter which would be terminated with glyphosate in spring, it was clear that there were still issues with the system. "We were told that if we did this, the water in the drainage ditches would run clear," remembers Andrew Young. When the water run-off from the fields continued to be muddy "we started to realise there was a problem with the soil."

Over these years, George had begun to think seriously about the agrichemicals that he was using. He always disliked insecticides because he cares about insects, all insects, not just pollinators. He had similar issues with fungicides, which negatively impact soil mycorrhiza, and finally he understood that chemical fertiliser promotes plant growth, but simultaneously creates a pest problem: because of the plentiful nitrogen the plants have more sugar in the leaves, and that attracts pests and leads farmers to apply pesticides. And below ground, because the plants are 'spoon-fed' nitrogen but little else, the root systems don't develop well and the plants are weaker, which attracts disease and provides an opportunity for weeds. A vicious circle has been set in motion.

In spring of 2021, George direct seeded wheat in cover crops which he terminated two weeks after the wheat was sown (using glyphosate) just before the wheat emerged. A couple of weeks later he walked the field and saw the brown, wilted remains of what had been healthy cover crop plants and thought: "How can you have a farming system that is based on chemically killing things, with all the ecological destruction that follows?" A few weeks later a farm worker overfilled a sprayer tank and some of the bright yellow herbicide spilled into the yard. The next few weeks were dry and the yellow stain was a constant reminder of what had happened; then came the rain and for days there was a strong chemical smell until the last of the pesticide had washed off. The spill was minor, but for George Young it was the incident that ended a long process of thinking, information gathering and discussions – the decision was clear: the whole farm would get a radical makeover. Starting now.

Going organic

A few months earlier, in September 2020, Young had already started organic conversion on the main part of the farm, which means he will be able to establish his first organic crop on October 1st, 2022.

Eventually, he plans to work with a seven year rotation: four years of herbal leys which will be grazed, followed by three years of arable crops. The first year will be ideal for high protein wheat for bread, followed by pulses and soft wheat for cakes, buckwheat or hemp in the final year.

The cows need moving once a day and the time is now! As we walk across the farm they make themselves heard, loudly. The herbal leys consists of a 28 species mix including sweet, white and red clover, tall and wonderfully fragrant Persian clover, birdsfoot trefoil, grasses, lucerne, sainfoin, yarrow, sheep's parsley, burnet and chicory. Some of the plants are high in tannins and the cows use them to 'self-medicate'. Young has used a simple electric fence to divide the pasture into small plots. The cows have grazed their plot clean and it will now rest for at least 40 days until the plants have regrown. As soon as George Young moves the fence the cows head into the neighbouring paddock where grasses and clovers reach up to their bellies. As we talk, bull Kestrel comes to the fence, head down. "No need to worry," says Young, "he just wants me to brush the flies off his neck."

As he pats Kestrel's neck, he explains why he chose Red Polls: they are a native breed and local to this area. The cows calve easily and they will be able to stay on pasture year round. They are good natured and naturally have no horns which makes them easier and safer to handle.

And Red Polls are a dual purpose breed: they can be raised for milk or meat.

There is a system to being radical

From where we are standing we can see some of the 7,000 trees Young began planting last year. He chose a wide variety of species including 'exotic' trees such as persimmon and olives, but mostly woodland trees, willow for mulching, nut and fruit trees. "We have a very special microclimate in this part of Essex, it's similar to that in Brittany and ideal for growing apples and pears," says Young. The space between the rows measures 36 metres. That gives him a wide enough alley to plant crops and enough room to extend the space along the trees. Eventually he would love to have a market gardener grow vegetables on the farm and possibly a future agroforestry project would have tree belts set out like forest gardens..

Young wants the tree belts to be connected to field margins to create a continuous habitat belt for wildlife and beneficial insects throughout the farm. At present he still grows a winter bird mix under a paid stewardship scheme, but "what's the point," says Young, "birds need food in summer too." He wants to rewild the margins to create year-round habitats for as many species as possible.

Organic makes economic sense

The decision to go organic and farm the way he does are based on economic considerations. "If I want to get a good price I need certification, it is not enough to just farm organically. But since I started conversion, I've become convinced that I need to create a farm system that is in balance. If it is not in balance, we are not doing it right."

"My observational skills and my senses are most important to what I do in farming," says Young, who regularly walks the farm, not to do a particular job but to observe and think. "When you grow conventionally, your cash flow depends solely on the harvest: four weeks in the year. The rest of the time you have to invest. And even the harvest can't be sold immediately, first you have to reinvest by planting the next crop. That is ludicrous!" On one of his farm walks he realised that the grains weren't looking good, but the hedgerows had loads of fruit. "That's resilience: if one crop is really poor, another one will be good." The aim of his radical farm makeover is to diversify as much as possible and to spread the risk.

Adding value on farm

George Young tries to balance things on a multitude of levels: he wants to build up the cow herd to around 150 animals, a number that might justify employing a stockman. He also wants to keep sheep – their grazing behaviour is different from that of cows, which is beneficial for the growth of pastures and herbal leys and it breaks the pest cycle: worms that plague sheep don't bother cows and vice versa. Poultry could follow cows and sheep and the wild area could sustain six pigs, Young is thinking about Tamworth, which could also be "employed" to terminate some cover crops and do some light ploughing. In two years time he hopes there will be enough livestock to merit on-farm slaughter and the employment of a butcher. This would not only add value to the meat, he would be able to keep blood and bone meal on the farm and compost it with cuttings from willow and hazel to use as mulch around the trees.

Everything on the farm is thought through, costed and carefully planned. Young intends to produce mostly heritage wheat which he will mill on farm – he has just invested in a stone mill from Vermont, and the milling room with a cleaning and packing unit is nearly ready. He will save seed for planting to locally adapt it and with the wheat being a niche product, processed on farm, he hopes to get a very good price selling to artisan bakeries – of which there are many in and around London.

Real food

"Farmers are wholesalers, not retailers," says Young. He wants to produce the most nutritious produce and he wants his wheat to go into carefully made bread that truly nourishes those who eat it, but making the bread will be the job of a good baker. The same goes for meat butchered on farm: he plans to sell whole carcasses or halves to butchers and restaurants, and it will be their job to produce different cuts, sausages or complete meals.

"I want to keep control over what happens on the farm until I am sure we are getting it about 80 percent right," he says. The last 20 percent comes with special knowledge and expertise and that's when he will hire staff – for example someone to set up and run a market garden – with the perspective that one day they might buy into the business. But that's way down the road.

The ORC – farm family and help when you need it

For now there are a whole lot of other issues to deal with and problems to solve. For Young, Brexit is what it is. He expects a lot of cheap food imports to come into the UK as a result of the trade deals. "Some of that food is not produced under conditions consumers want to see. Up to now, maybe 5 percent of consumers cared about where and how their food was grown and produced. Now the trade deals, together with COVID and the export problems we are facing, have raised awareness. Maybe we'll get to 20 percent of people caring about the nutritional value of their food. I am taking myself out of the commodities market and will no longer be a price taker."

This is the clear sighted view of a former commodity trader, but making it work on the farm, on the ground and all at once is hard. George Young is at home on social media; often there is immediate help and advice available via Twitter. Still, during COVID he realised how cut off from everyone he was, how he missed the exchange with other, like minded farmers. For him it was particularly noticeable because he was about to introduce so many radical changes on the farm just when COVID struck and he was most in need of help and advice. Young joined the ORC some four years ago. Having access to the research was hugely valuable and just how important ORC farm events are became clear to him when they couldn't happen anymore, due to the pandemic. "You network, you meet other farmers who think like you, you can discuss problems, ask them what they have done. These farmers are my kin, they are my tribe." Exchanging information, communicating what he does, helping others to change their farm systems and go down the organic and sustainable route are hugely important to him. And when that's all done he sometimes still can find a little time for music and for playing the saxophone.

Conversion profile: Tim May, Kingsclere Estate

Find partners, minimise risk, increase profit. *Marianne Landzettel* meets Tim May on the Kingsclere Estate in Hampshire which has been under phased conversion since January 2017

The laminated, multicoloured farm management, cropping and grazing plan in the estate office is impressive. Folded out it runs from one end of the conference table to the other and gives Tim May an overview of what's happening (or should be happening) on the 2,500 acre farm on any given day. Like the estate map on the wall it is a handy tool, because a lot changed when May took over the management of the farm in 2004: maximising profits through minimising risks and sharing resources became something of a mantra. It was the lesson he and his father learnt after the farm nearly went bankrupt in 1997.

When a mixed farm can't succeed

The Kingsclere Estate just outside Basingstoke is beautifully situated. But growing a crop on the chalky loam of the rolling hills with many fields almost covered with flint is a challenge. "The plough wore out in four hours where it would take days on any other farm," says May, "the same was true for the tyres; the flint in the soil is really aggressive." Back in the 1990s, the farm also ran a dairy and a pig operation. The animals were housed, and while the straw from the arable land was used for bedding, the manure could only be spread on a few fields near the barns; on the rest of the land the soil fertility continued to be depleted. In 1997 the milk price was low and with new animal welfare regulations on the cards, the pigs alone lost the farm £200,000 that year. It was clear to everyone that a dramatically different approach was needed, or the farm would go bankrupt. Reducing financial risks became the main goal: no more big capital investments such as new machinery, and fewer staff. "We needed to be flexible and nimble in everything we did," says May.

Lessons from a Nuffield scholarship

Tim May is a fourth generation farmer and farming was what he always wanted to do. He got a GCSE in agriculture from Brymore secondary school, one of the few schools that offer this choice. He went on to study agriculture at Harper Adams, but it was winning a Nuffield scholarship that really changed his perspective. He travelled to Brazil, Tanzania, Kenya and the US to learn about sustainability and find out whether lessons could be drawn for Kingsclere. "We have a yardstick for good soil, we also need one for economics," was one of his conclusions.

He grabs his notebook and draws a curve that rises steeply at first, then more gently until it levels off. "The steep rise is the start-up phase where you have a high risk but also huge opportunities. In the next phase you've established your business and work on growing and expanding it, very rapidly at first and at a slower pace later," says May. The farm provides the ideal environment for testing ideas and May is happy to give young farm entrepreneurs with a business proposal the chance to try things out on a small scale. If it works, he may consider a farm-share partnership.

"I am driving a business, not just a tractor"

One such young entrepreneur is Ben Reynaldo, a carpenter who wanted to get into farming. When I first visited Kingsclere in 2016, Reynaldo had just built a mobile hen house and kept 50 laying hens on a pasture that had been grazed by cattle. Five years on, the young farmer has become one of May's business partners. The chicken flock has grown to 1,200 hens which are housed in four mobile units. Half of the eggs are sold through a vending machine on the estate (next to the road), the rest goes to organic wholesalers. The profit is shared in accordance with the share-farm agreement. And with the units being mobile,

Reynaldo can grow his business beyond Kingsclere by co-operating with other farmers in the area who may also want to 'host' a flock of hens.

From the start May wanted to reintroduce cattle to Kingsclere because "the powerhouse of the farm is grass and dairy." To get more experience with keeping livestock and holistic managed grazing he first introduced sheep to the farm, and he also set up what he calls "a beef cattle B&B": the cattle were owned by another farmer, but they grazed Kingsclere pastures and May managed them. Low risk at low cost. After learning how to handle cattle, May in 2017 entered into a new share-farm agreement which saw dairy cattle return to the farm: farm partner Oliver Chedgey runs the 480 New Zealand Frisian Jersey crossbreed dairy cows and the 20 a side mobile milking parlour with the running costs split between Tim and Oliver. Oliver owns the machinery and puts in labour, while Tim provides the food and the land. The income from milk and surplus cow sales is split accordingly.

Going organic

The decision to convert Kingsclere to organic was driven by the consistently higher price for organic milk and dairy products. In 2017, May decided on a phased conversion, one eighth of the land at a time – which means the whole farm will be organic by 2023. May says he had to learn a lot and by not taking the farm organic all at once he knew that if something went wrong he would still make a profit from conventional crops. He works with an eight year rotation, four years of herbal leys which are grazed, followed by four years of crops. Initially, he wasn't sure whether the herbal leys would sustain four years of cropping, "in organic you really need to look after soil fertility. If you deplete it, it takes 10 years to build it again. You cannot buy stuff in a bag to replenish it," he says, but so far everything is working out well. May is only interested in growing high value crops; growing feed does not make sense to him. Going organic has provided him with new opportunities: he is growing speciality crops such as quinoa, linseed and heritage grain varieties and he might even grow a whole field of borage for borage oil. He considers the companies and processors he sells to as partners; he aims to grow exactly what they need and that can mean introducing a crop such as linseed or quinoa, which he wouldn't have considered on his own, had it not been for the demand by a buyer.

Farm hub future

In cities, food hubs connect growers, small processors, incubator businesses producing food, commercial buyers

and customers. It's a type of infrastructure that facilitates delivery, avoids food waste, reduces the carbon footprint and helps growers to achieve better prices. What if something similar could happen on farms? At Kingsclere, old farm buildings have been converted into a 100,000sqft commercial space which houses 50 different businesses; the waiting list of companies wanting to rent is growing. The 35 existing farm cottages have been refurbished for residential accommodation. And Tim May hopes to significantly increase the number of partners he farm-shares with. "There is little I can't imagine happening on the farm," he says, from someone keeping pigs, to cheese making, glamping, a farm shop, a micro brewery…. Kingsclere could become a farm hub where some or all of the ingredients needed by the businesses in the commercial space would be produced on the farm – milk for a cheese maker, malting barley for a micro brewery, heritage wheat for an artisan bakery. And with Basingstoke just five miles away, a customer base is pretty much guaranteed. He wants to retire from running the farm before the next generation are 30, says May, which means in 2041. "By then I can imagine we have 20 farm-share partners on Kingsclere."

Conversion profile: John Pawsey, Shimpling Park Farm

Marianne Landzettel **visits John Pawsey at Shimpling Park Farm, in Suffolk, fully certified organic since 2007**

When we meet in the farm office, John Pawsey seems at ease with himself and the world. It's hard to imagine he ever wanted to be anything but a farmer. The opposite is true he says. He comes from a farming family, but grew up with his mum, away from the farm, and as a teenager music was the only thing he really loved. He played double bass and bass, had a small band and wanted to be a talent scout for new and emerging bands. Then he was expelled from school and with few other options he started working as a farmhand on his maternal grandfather's farm. Pawsey was 22 when his grandfather died unexpectedly. From one day to the next he was supposed to step up and run the farm. An expectation he rebelled against for six or seven years, he says, and to this day he is grateful to the team of eight farm employees: "They trained me and helped me through it."

What Pawsey found so hard to deal with was the feeling of having missed out on travel and seeing the world. When he met Alice, who is now his wife, the farm team made it possible for the young couple to take time off the farm and go places: they visited numerous countries in Africa, South and East Asia. "I mostly wanted to spend time in cities, watching people, experiencing city life because for the rest of the year I would be farming and living in the countryside," he says.

The sprayer and the hare

In the mid 1990s, Pawsey was done with travelling and worked on the farm fulltime. Like his grandfather, he farmed conventionally, but he started to notice that yields were going down. And there were just so many pests to deal with. While he was mixing and spraying all sorts of chemicals his concerns grew: what impact was it all having on wildlife, on soils and on the food he produced? A neighbour of his was working organically; Pawsey started to think about conversion and tried to figure out how an organic rotation might work on his farm. He still remembers the day he put on his protective suit, sat in the hermetically sealed tractor cab and began spraying a field. "I thought: I am the only one safe here." Suddenly a hare ran across the field and under the sprayer. By the time it reached the field margin it had been doused in chemicals. Pawsey saw it sit down to lick its fur. "I don't know what happened to it," he says, "but I knew that I would go organic."

Going organic

In 1999 he converted the first 120 hectares to organic; by 2007 the whole 649 ha farm was certified. Pawsey now works with a tried and tested six year rotation. It starts with two years of fertility building with herbal leys including red, crimson, and Persian clover, bird's-foot trefoil, sainfoin, grasses and chicory. It's followed by winter wheat. Short varieties proved to be no match for the weeds, but heritage wheat varieties, spelt and oats are: they are taller and able to outgrow the weeds. After two years of sowing crops in autumn he switches to spring oats (which are very good at suppressing weeds), barley or triticale.

Then come winter beans. There often is a weed problem with beans, but they are needed for nitrogen fixing – and honey from bean flowers is delicious, says Pawsey. Last in the rotation is spring barley, undersown with cover crops that will grow into leys after harvest. He'd prefer to grow spring wheat once more because the leys underneath receive more light to grow and because of the organic milling premium, but there is a problem with gout fly and so far he hasn't found a means to combat them.

For a long time, organic farmers ploughed to get rid of weeds. Now there are mechanical weeders such as the tine harrow which takes out broad leaf weeds, "though you need to get at them young," says Pawsey. Then there is the inter-row hoe which can be combined with a seeder and a venerable and rare 'weed surfer' which cuts the weeds that have grown taller than the crop and prevents them from seeding. But Pawsey sees mechanical weeders only as a backstop: "If you get things right and the system is in balance there should be no need for mechanical weeding."

Sheep and resilience

Despite of all the careful planning there were setbacks. "In 2012 the harvest was awful," says Pawsey; there were lots of problems with crop diseases such as rust and he realised he needed more diversity on the farm to build up resilience. One way to do that was to bring back livestock: if the crop harvest was bad he would have meat to sell and the fertility building herbal leys could be grazed – essentially free feed. Initially he thought about cattle, but the costs for sheds and permanent fencing seemed high and he decided to go for sheep. He looked at different breeds and finally chose New Zealand Romneys, which have good feet and good worm resistance; the ewes are good mothers and they can stay outside year-round. The herd has now grown to 1,000 ewes, and having grazing animals on the farm will have contributed to the

increase in soil organic matter (SOM), which increased from 2.9 percent to over 6 percent. But Pawsey is still thinking about getting cattle… dairy cows would be nice to have on the farm, or maybe a dual-purpose breed…

Don't grow what you can't sell

"We never put a crop in the ground without securing a market for it," says Pawsey, who plans even small changes very carefully. "Other organic farmers have told me that I overthink stuff," he says. He's certainly never regretted going organic. The farm is financially profitable and he finds farming organically far more creative. "If you want to be told by an agronomist what to do, organic farming is not for you." But true pioneers, who, like Pawsey, have to forge their own path into unchartered territory, may have to be extra cautious: "As a conventional farmer I did what the neighbours did. I went to all the conferences and had a good time with other farmers, the chemical companies sent representatives. But with the conversion all that camaraderie disappeared. The conferences were irrelevant. There was no point in consulting the neighbours, quite often they didn't like what I did on the farm and thought I was nuts. It got quite lonely." To him, the ORC and in particular the field days "were a complete lifeline." And he continues to treasure the ORC bulletins, the new as well as the old ones. "They are a great resource and often the only source of information on a specific problem," he says.

If in doubt, Pawsey takes the scientific approach and conducts a field trial. At present he is testing how good different crop varieties are at suppressing weeds – is it necessary to hoe or are the weeds shaded out? If they remain small they don't really compete for resources and there is no need to remove them. How well are heritage varieties performing – so far, the two old barley varieties, Devon's Archer and Golden Pheasant, are looking good. And what happens when you grow Red Fife wheat together with beans? The yield may be less but you've got two crops. In a six-year trial, Pawsey is trying to work out whether lucerne or sainfoin are performing better. What do the sheep prefer? Which grows back faster? And can buckwheat help to release phosphate into the soil, making it available for next year's crop? Depending on the germination rate next spring it might be worth including it in the rotation.

The organic commodity trap

Until not too long ago, at harvest time, John Pawsey would talk to different companies about his cropping plans and what their needs might be. But now everyone just tries to buy as cheaply as possible. The same goes for the local feedmill. He now sells mostly through Organic Arable, focussing on heritage varieties. And he will probably start milling grain on farm again and sell it through local shops.

The lambs go to an abattoir in Essex or Norfolk, are butchered and then sold under the Shimpling Farm name to individual customers and restaurants in Suffolk, Norfolk and Essex. The success is down to Pawsey's wife Alice, who is "terrific at marketing and communication" and to the Shimpling Farm brand: the lambs have of course been raised organically, but they can't be sold as organic because the local abattoir

was closed down and now the closest abattoir with organic certification is in Wales. Pawsey doesn't want to send his animals halfway across the country; even the 90-minute drive they have to endure now is too much in his opinion. It would be "a dream" to be able to slaughter on farm, he says, but given the regulatory framework which is geared towards large abattoirs, he currently can't see how this could be made to work.

Time in the woods

An 11 ha ancient woodland area is part of the farm. In June, Pawsey and his wife spent a fortnight there, camping. It was a time and space that allowed him to have his mind settle, to sit, be quiet and just observe. He realised that these woodlands are a beautiful and fully functioning ecosystem and that's exactly what they should strive for on the farm. "Our fields are still over-managed," he says.

He has started an agroforestry project, planting trees such as oak, holly and walnut, species that grow in the ancient woods.

He is thinking about giving up contract farming. At present he and his employees take care of 980 ha of land on other farms. "It's a lot of administrative work," says Pawsey; maybe he should spend that time to introduce more changes on Shimpling Farm. He will continue to grow seed mixes for pollinators and wild birds under the Countryside Stewardship Scheme that will run until 2023. After that he will see what stewardship schemes might be available under ELMS.

And he wants to start some rewilding projects – there is a small stream his grandfather had straightened – why not let it meander again? And he is re-establishing the 'ghost ponds' he found on old estate maps: they were established some 150 years ago for fish and as watering places for livestock and wildlife until they were filled in and the land farmed. The first pond has been carefully dug out, following the sediment lines and contours of the old pond. "They will be fabulous for all sorts of birds," says Pawsey. Of course it would be great to get paid for things like that, but he will do them anyway, he says. And he wants to communicate what he is doing through farm walks, school visits – before the pandemic they did 25 per year – as well as through field days.

Yes, it takes him a long time to take decisions and introduce changes. "There is only a certain amount I can take on at any given time," he says. But in the end it is down to his gut feelings, his intuition allows him to act. It's a certainty that he has always experienced through music and being part of a band. "I need more headspace to know what is right for us;" Pawsey says, "maybe I need to spend more time in the woods to give myself time to observe, to think and to just be."

How can agroforestry contribute towards biodiversity conservation?

Senior Agroforestry Researcher *Colin Tosh* and Knowledge Exchange and Policy Coordinator *Charlotte Bickler* summarise an ORC Agroforestry Policy Brief resulting from a recent online workshop

Photo: Kay Ransom

Introduction

It is widely acknowledged that none of the Aichi Biodiversity Targets have been met. In the UK, the RSPB State of Nature Report 2019 concluded "There has been no let-up in the net loss of nature in the UK." Agriculture is a major driver of biodiversity loss and so a major focus for remediation, and the 2030 Target 10 of the UN draft Post 2020 Global Biodiversity Framework requires that global agriculture be both biodiverse and resilient.

Trees are inherently biodiverse, hosting insects, birds, and many other species, and deliberate incorporation of trees in agroecosystems (agroforestry) has been shown to dampen environmental extremes. Agroforestry within and around fields can also improve connectivity between high quality habitat patches such as woodlands.

Background

We held an online workshop in October 2021, funded by the A Team - Farming the Future initiative, to explore the role of agroforestry in biodiversity conservation with a range of stakeholders. The focus of the workshop was to discuss what role agroforestry can play in UK biodiversity conservation and restoration, and what a supportive policy environment would look like. This was examined through a series of presentations by invited speakers and audience interaction.

Key findings of the workshop

1. Agroforestry increases farmland biodiversity. In UK arable agroforestry, ensuring a flowering tree understorey improves pollination and pest management services.
2. Agroforestry on already biodiverse farmland should be done with care. A species inventory should be taken and interventions should specify targets for enhancement.
3. Advice and guidance, including support from professional ecologists, should be taken throughout agroforestry projects. This is especially important in high diversity farmland.
4. Agroforestry can contribute to various policy targets and areas including, for example, the UK Agriculture Act 2020, UK Environment Bill and England Tree Strategy.
5. Policy support for agroforestry can include intiatives beyond Countryside Stewardship / Environmental Land Management, for example current or future funding schemes within: Local Nature Recovery strategies, national/ local climate change targets, and the Clean Air Strategy.

Policy recommendations

1. Support agroforestry to work towards the delivery of 2030 Action Target 10 of the UN Post-2020 Global Biodiversity Framework in the UK: for agroecosystems that are both resilient and productive.
2. In England, the expansion and management of diverse agroforestry systems should be incentivised via the new Environmental Land Management scheme (ELM). Agroforestry can simultaneously deliver a wide range of public goods including biodiversity conservation and restoration.
3. Agroforestry can and should be an important delivery tool for a range of policy areas within England, including the path to Net Zero and the National Food Strategy, as well as delivering for nature. These wide-ranging policy areas must be integrated to avoid unintended consequences and structured in such a way that public and private finance can be blended.
4. Agroforestry is a complex system, and the many benefits are because of ecological and economic interactions. It can be challenging to provide policy support, regulations and monitoring frameworks that encompass complexity. Supporting access to research, training, practical guidance, and peer to peer mentoring will be important to realise the biodiversity and other benefits of agroforestry in practice.

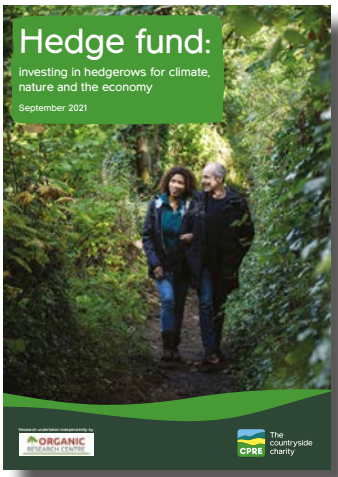
Conclusions

Introducing agroforestry will increase biodiversity on much farmland but it is not a silver bullet. Getting the right type of biodiversity in UK arable systems (i.e. pollinator and predator rich) requires special management such as the introduction of a flowering tree understorey. Agroforestry in already biodiverse farmland needs to be approached carefully. Poorly planned planting of trees on such land could conceivably decrease biodiversity. While the post-Brexit ELM system dominates discussions around agroforestry in England, it is by no means the only policy driver or route to funding agroforestry.

This article is adapted from a fully-referenced ORC Policy Brief available at: https://tinyurl.com/ORC-PB-Agrof

Boosting hedgerows by 40% would create 25,000 jobs

In this research, commissioned by CPRE, the countryside charity, and undertaken independently by the Organic Research Centre, we provide an evidence-based analysis of the environmental and economic benefits of hedgerows. The research investigates what 40% more hedgerows could mean for nature, climate and the economy – and CPRE makes recommendations for how the government, local authorities, farmers and land managers can maximise the astounding potential of hedgerows.



- For every £1 invested in hedgerows, as much as £3.92 is generated for the wider economy.
- CPRE is calling on the government to stop dragging its feet and set a target to increase the hedgerow network by 40% by 2050, which would be a win-win-win for climate, nature and the economy.

ORC's analysis shows how hedgerows could become champions of climate action and nature recovery, while contributing tens of thousands of jobs to hard hit local communities. While the government has set clear targets to increase tree planting, it is yet to set a target for hedgerows, which are absolutely crucial in soaking up carbon, protecting against flooding and aiding nature's recovery. Ahead of the international climate summit taking place in Glasgow in less than two months, CPRE is calling on government for a firm commitment: set a target to increase the hedgerow network by 40% by 2050.

The Climate Change Committee (CCC) recommends that the extent of our hedgerow network should be increased by 40% to support the UK government's goal to reach net-zero carbon emissions by 2050. Now, new research conducted by the Organic Research Centre, on behalf of CPRE, has found that the benefits of setting and achieving this target would not only be for the climate and nature, as 40% more hedgerows would result in over 25,000 more jobs in hedgerow planting and maintenance in both rural and urban areas. If the right hedgerows are planted in the right place, for every £1 invested in hedgerow planting, as much as £3.92 is generated in the wider economy.

The research was launched in September 2021 at the first in-person environmental parliamentary reception since lockdown in March 2020, attended by the Environment Secretary, George Eustice MP; Selaine Saxby, Conservative MP for North Devon; members of the environment sector and CPRE's network of local groups.

ORC's Head of Research Will Simonson said:

"The report describes how hedgerows extend into the landscape and, like capillaries branching and penetrating to supply all cells of the body with food and oxygen, give rise to healthy and functioning ecosystems. Expanding the hedgerow network would benefit biodiversity, some of which is important for agriculture through their pollination services and natural pest control."

Commenting on the research, Crispin Truman, chief executive of CPRE, said:

"It is almost impossible to define the enormous value of our hedgerow network – just as our arteries and veins supply our bodies with nutrients and oxygen, the UK's hedgerow network defines many of our rural landscapes and must remain healthy to benefit villages, towns and cities. Our research shows that investing in our hedgerows is a win-win for climate and people in both the countryside and urban areas.

"Sadly, half of our precious hedgerows have been ripped from the landscape since the Second World War and we've seen a huge decline in nature and soaring carbon emissions. There is a lot of work to do. Local authorities can support community groups to plant more hedgerows while farmers can help by letting hedgerows grow taller, and bushier.

"But we know the government has the biggest part to play in unleashing the full potential of hedgerows. That's why we're calling on Ministers to set a target to increase the hedgerow network by 40% by 2050 with improved protection for existing hedgerows. This would be seen as a bold step by the UK government to support nature's recovery, help grow us out of the economic downturn and tackle the climate emergency head on."

In its expanse, the hedgerow network is our largest, most connected 'nature reserve'. Healthy hedgerows are teeming with life and vital for nature. One in nine of all vulnerable species in the UK are associated with hedgerows. These include the hazel dormouse, the much-loved hedgehog, whose decline has been closely associated with hedgerow loss, and the brown hairstreak butterfly, which lays its eggs on blackthorn, and is particularly common in hedgerows.

But shockingly, we have lost around half of our hedgerows since the Second World War and they are still in decline. It is clear that continued hedgerow loss will hasten the decline of these species but increasing the hedgerow network will aid nature's recovery.

Lord Deben, Chair of the Climate Change Committee, said:

"What was a determination to make land more productive in order to feed our people during and after the war has led to indiscriminate destruction of our hedgerows. Spurred on by Deficiency Payments and the Common Agricultural Policy, our yields rose and our wildlife diminished.

"Since then, there has been a growing shift in thinking as farmers and landowners, environmentalists and rural communities recognise the role and value of hedgerows. Reintroduction and proper maintenance of hedgerows transforms the all too sterile prairie land into the countryside, which for long we have loved. But, as this report shows, this is not about romance – the hard facts are that hedges contribute to profit as well as to wellbeing."

https://tinyurl.com/ORC-Hedgefund

A decade of field labs with DOFF/Innovative Farmers

Now in its 10th year, the Innovative Farmers network, which began as the Duchy Originals Future Farming (DOFF) programme, is celebrating the success of more than 120 field labs that have placed farmers in the driving seat of agricultural research, with the network connected with around 12,000 UK farmers.

The Organic Research Centre has long been a pioneer of participatory research and is proud to have been a partner from the start. From the outset, the network has enabled farmers to investigate solutions to their own challenges, on their own farms. It also provides open access to trial designs and findings through its website, newsletters, and social media channels, so that other farmers benefit from the research in the UK and further afield. Run by the Soil Association in conjunction with LEAF (Linking Environment and Farming), Innovation for Agriculture and the Organic Research Centre, Innovative Farmers is part of the Duchy Future Farming Programme, funded by the Prince of Wales's Charitable Fund through the sales of Waitrose Duchy Organic products.

Results from the last 10 years have shown that putting farmers at the centre of scientific trials like this bolsters research into sustainability and sparks positive change on farms, with the model garnering interest globally.

Mark Lea, Green Acres Farm, took part in the intercropping field lab, and is now working with Innovative Farmers to trial growing a permanent living mulch as an understorey for his crops. He said: "Having researchers to come and measure has been a game changer. Before being involved in field labs I wouldn't have really measured anything. I would have just looked at the crop and I'd be going on gut feeling. Now we're working with a lot more precision, and this helps us develop our understanding and also allows us to share that understanding with other farmers."

To mark the 10th anniversary, the Soil Association has calculated the benefits that could be delivered if some key field labs were scaled up to more farms across the country:

A trial that launched last year is testing the benefits of silvopasture - a practice of combining trees with livestock. While this trial is still in its early stages, data collected in the Soil Association's Agroforestry Handbook suggests that trees can help to reduce disease in sheep and cattle, as well as reducing lamb mortality and boosting availability of grass forage. If more farmers trialled this practice and it was then rolled out across just 10% of British sheep and cattle farms, the lives of up to 46,000 lambs could be saved per year and feed cost savings of £8million could be made across the UK.

The farmers investigating intercropping, the practice of growing two crops alongside each other, found the method was able to reduce weeds by 74%, while increasing yields by up to 30%. This suggests that if conventional farmers grew beans alongside cereals, the need for weedkillers and artificial fertilisers could be significantly reduced. If just 10% of the cropped areas across the UK adopted this method, it could eliminate the need for up to nearly a quarter of a million kilos of herbicide. It could also deliver UK-wide savings of up to £30million in artificial fertiliser each year, which in turn could result in a reduction of 300,000 tonnes carbon dioxide emissions associated with fertiliser use.

Any farmer interested in improving the sustainability of their farm can get involved with Innovative Farmers field labs and ideas for field labs are welcome from farmers, researchers or organisations working with and supporting farmers.

www.innovativefarmers.org/

ORC field labs:

Current field labs

No-till with living mulches

Organic hop varieties

Silvopasture for livestock, biodiversity and soil health

Paused field labs

Leguminous leys for organic dairy

Zone tillage for lower inputs and healthy soil

Past field labs

Compost teas in arable cropping

Land Gardeners Controlled-Aerobic-Compost group

Buckwheat for couch control

Anaerobic digestate in organic arable systems

Green manures to increase N availability

Improving soil health across a shared rotation

Amendments for soil health in top fruit

Intercropping in arable systems

Legumes for building fertility

Reducing potato blight with mesh covers

Growing quinoa organically in the UK

Growing heritage wheat varieties for thatching

Reducing antibiotic use in dairy farming

Comfrey teas for improved crop yields

Hot water seed treatment to reduce leaf spot

Feeding sprouted cereals and pulses to livestock

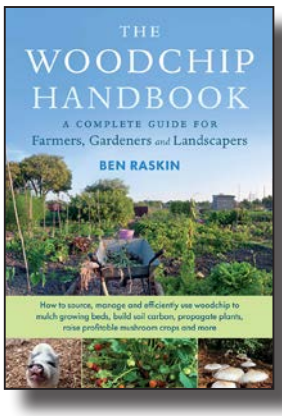
Cultural methods to control blackgrass

Organic wheat varieties

Weed control in cereal crops

Book reviews

The Woodchip Handbook: A Complete Guide for Farmers, Gardeners and Landscapers
Ben Raskin, Chelsea Green



In his new book *The Woodchip Handbook* Ben Raskin explores the surprisingly broad array of uses for woodchip in a farm or garden. The book is a really comprehensive summary bringing together key nuggets of information from research, practical experience and anecdotal evidence on one of my favourite subjects, woodchip.

Using practical examples and case studies showcasing a wide variety of uses and scales, the book repeatedly highlights the role that woodchip can play in creating more resilient food and farming systems, from healthier, happier fruit trees to the remediation of damaged soils: closing the loop in moving to more sustainable farming systems. Ben tackles the practicalities of sourcing, producing and using woodchip at different scales and gives some really useful figures on production, as well as some unusual applications such as trials investigating the use of salicylic acid present in willow woodchip as a weapon against apple scab.

I am especially keen on the slightly less common uses such as the Jean Pain method of using the heat given off in the decomposition of woodchip to heat water – and getting a useful compost at the end of the process. I would love to try this out one day. Ben also describes how growers have used this process to provide heat in spring for the propagation of young plants and how, via composting, the woodchip itself can produce a peat free growing medium. I have also been itching to try using woodchip for mushroom cultivation and there is a whole chapter celebrating fungi and woodchip and giving useful practical advice on mushroom cultivation.

My only concern is that by highlighting the many and varied uses of wonderful woodchip its popularity may increase too much and it will become tricky to source – but then that's a very good reason to plant some trees and grow your own woodchip. A great way of using trees to tap into nutrients that are deeper in the soil and make them more accessible to shallow rooted fruit and veg plants – whist also realising the benefits of the trees. Start now as it will take a few years!

This is a really excellent resource on all the various wonders of woodchip, inspiring, practical and useful all at the same time.

Sally Westaway

https://chelseagreen.co.uk/book/the-woodchip-handbook/

Manual: Welfare and environmental impact of organic pig production

This recently published manual contains 29 factsheets created within the POWER project (part of Horizon 2020, CORE Organic Co-fund project). The manual is split into chapters, with the factsheets presented under four major themes. The first theme focuses on the management of outdoor areas and the second theme covers piglet welfare. Each 3-4 page factsheet offers a background explanation and lists relevant legislation and the topic's relevance for animal welfare, environmental impact as well as cost and labour. Addressing welfare, environment and cost issues together is welcome since it acknowledges the importance of the three main 'partners' in any animal farming system and may support more holistic on-farm decision making.

Although pasture-based systems are covered, the farms represented in the manual are based in countries where it is common practice to manage organic pigs indoors with outdoor yards and so the first two themes address some focus areas of less relevance to UK pig farmers. That said, the factsheets are still worth a read for the extra information they contain, including how to manage heat stress (1.4) or how heat influences ammonia emissions (1.5). Factsheet 2.5 (p.53) covers the importance of good gut health and the value of pre- and probiotic supplementation for feed digestibility, efficiency and immune status, and includes a useful recipe on fermenting woodland litter for adding to drinking water.

The third theme covers 'best practice', illustrating how access to pasture, forage use and vegetative cover can be optimised in different systems. The farms in this section have undertaken a life cycle analysis, again assessing animal welfare, environmental impact and productivity. The findings here include a large range of carbon emissions at 3.5 – 10 kg CO_2 equivalent per kilo of weaned piglet, reflecting differences in litter size, land availability, ground cover, manure management and imported feed.

The fourth theme covers innovative practices including mobile pig housing for both small and large groups, on-field farrowing units, and a woodland-based system for breeding and rearing pigs in Italy. The latter system illustrates how woodlands can be managed with ecological sensitivity and be productive whilst offering high animal welfare.

The manual is informative, well presented and attractive, though weakened by the debatable value of its further reading recommendations for the target audience of farmers and advisors, since these are heavily biased towards journal articles which predominantly sit behind a paywall.

Lindsay Whistance

https://www.fibl.org/de/shop/1300-hb-power-en

40 years of industry-leading organic research celebrated

Organic farmers, staff (past and present), friends and supporters gathered for a special 40th anniversary event at FarmEd in the Cotswolds on 30th September 2021 to celebrate ORC's achievements and to look to the future

Photos: Kay Ransom

Lucy MacLennan, ORC Chief Executive, commenting on the milestone said: "This year is a pivotal one for British agriculture, as we adapt to life post-Brexit and an agricultural policy framework focused on delivering environmental benefits. Low input and regenerative agriculture have become buzzwords in recent times, but our work doesn't just seek solutions for low input agriculture, we wish to push the boundaries by exploring no input agricultural practices to deliver truly sustainable food production for the whole agricultural community.

"We'll do this by leading change in nature-positive farming, bringing new thinking to the mainstream, empowering people to embrace different agricultural approaches and by demonstrating the economic as well as environmental benefits available. By working together with our partners, industry stakeholders and the farming community, we'll deliver the transition to naturally healthy and resilient farming systems that is needed for British agriculture to flourish in the coming years."

The future of organic farming & priorities for research

Andrew Burgess (Chair of the NFU Organic Forum), Christine Watson (Professor at SRUC/ORC Trustee), Ian Wilkinson (Co-founder of FarmED) and Ashley Wheeler (YOFY 2021 award winner and grower) joined a panel discussion chaired by Janet Dwyer (ORC Trustee).

The panel discussed two main questions around the rising interest in regenerative agriculture, the 'public money for public goods' agenda of ELM, and legislative changes:

1. what future do you see for organic farming (threats and opportunities)? and
2. what are the priorities for ORC and its partners in supporting organic and agroecological approaches through its research and knowledge exchange?

Janet Dwyer, who chaired the panel, said: "The discussion raised interesting and valued points, rounding off a brilliant day, which not only allowed us to appreciate and celebrate the last 40 years of pioneering organic research led by the ORC, but showcased how it will continue to drive future change based on the organic principles of health, ecology, fairness and care."

Mark Measures contribution to organic farming

Mark Measures retired from ORC work last year and during the event was awarded a celebratory retirement gift produced by a local artist, Christopher Townsend. Mark, who had been at the ORC since joining Elm Farm Research Centre as the Farm Manager in 1983, was commended on his dedication and support for organic farming, advice and research. Lawrence Woodward, Elm Farm Research Centre's first Director, presented the award and commented on the impact Mark had at the Elm Farm Research Centre from the start; from helping to set organic standards, the development of MAFF/Defra organic support schemes and marketing initiatives such as OMSCo to providing advice to farmers and growers through setting up and heading the ORC Organic Advisory Service (OAS) and more recently the Institute of Organic Training and Advice (IOTA).

ORC's Young Organic Farmer/Grower of the Year

Ashley Wheeler and Kate Norman of Trill Farm Garden, Musbury, Devon, were announced as winners of ORC's first YOFY award at at the event. The judges recognised Ashley and Kate's commitment to organic principles and how their attention to good soil management and biodiversity has helped them deliver quality vegetable production despite a farm with a high water table and poor drainage. They were also commended for their commitment to ongoing training, including their support for the Landworkers' Alliance. Ashley and Kate win a donated prize of £1,500 and a trophy.

Highly commended nominees included Juno Norman, The Wicton Farm Team and Rosa Holt.

Commenting on their success, Ashley Wheeler, said:

"It is fantastic to get this recognition, which reinforces the value of our focus on soil management, seed sovereignty and organic production methods in our business.

"Now, more than ever before, organic farming principles offer an opportunity for mainstream agriculture and horticulture to embrace nature-friendly farming and deliver sustainable and resilient food production across the UK. That's why we've been focused on supporting training schemes and mentoring young people as they embark on their careers in the industry."

Council of Management: Goodbyes and a welcome

Alice Astor

We say goodbye and a big thankyou to Alice Astor, who has been an ORC trustee for the last 12 years. Her connection however goes right back to the start. As the daughter of David Astor, Alice was originally involved in farming on his organic farm in Dorset. The farm was sold in 1981 and the farming enterprise moved to Elm Farm, Newbury, starting what became The Organic Research Centre, Elm Farm.

Alice Astor with an engraved wooden bowl presented to her by Lucy MacLennan (as well as the tree of her choice) as a thankyou from ORC for her 12 years as a Trustee.

Alice said that she "has had huge enjoyment from being part of the organisation" and "it has been fun and invigorating to be part of a community doing something really important." She is proud in what has been achieved, particularly the communication to farmers through the Organic Advisory Service and the quality and integrity of research. She said: "ORC's connection with Europe, especially at the start, set us apart." ORC brought research together, that had previously been quite isolated and drew inspiration from like-minded people like EF Schumacher. "ORC produces research that is valued due to the way it is conducted – something that wasn't really available before it started."

Alice has seen lots of progress over the period of being a trustee and reflected: "I loved working with my fellow trustees and also love that new trustees bring new ideas and that people are still interested in being involved and give up their time for the future of the ORC."

Adrian Blackshaw

We also say goodbye and thankyou to Adrian Blackshaw, who stepped down as a trustee for the Organic Research Centre in December after four years in the role and as a Trustee of the Dean Organic Fund. Reflecting on his time Adrian said: "As a former Chairman of the Organic Trade Board and organic farmer, I was aware of ORC over the years. However, it is only as a consequence of working closely with fellow Trustees and the excellent ORC executive team, that I began to realise the extensive breadth and quality of work as the UK's leading independent organic research organisation, with a growing international reputation.

As the UK organic market has now broken through £3bn in value, with an increase of 23% since 2019, organic food production and consumption in the UK will play an important role in our farming industry and the health of the nation. With the reform of the Common Agricultural Policy, organic research will make a vital contribution as UK farming adapts to new challenges. I am aware of the talented ORC executive team and broad skills of ORC's Trustees. I wish ORC all success for the future and may it continue to build on its impressive portfolio of historical work, covering crop diversity, animal husbandry, food systems, business and markets and agroforestry.

Seeta Rajani

ORC welcomes Seeta Rajani, who joined our Council of Management in September 2021. Seeta is a market gardener, natural beekeeper and has worked in the food and farming sector since 2005. For many years she has worked in the box scheme operations side of horticulture businesses and has managed the finances for these businesses.

She has a varied background, with a degree in engineering, a stint at the EU and two years of running a community café on a city farm. She then worked in fundraising, after which she co-founded Sutton Community Farm. She then successfully managed and grew two London-based box scheme businesses. Seeta now works for the Landworkers' Alliance as Finance and Operations Manager.

In her spare time, she enjoys cycling, cooking and yoga.

Appeal to launch the new Organic Farm Management Handbook

The organic market appears to be booming. It is now worth £3.05 billion, after a 23% growth in sales since 2019 with shoppers now spending almost £60m on organic products every week. But despite this growth, the land area used has remained largely static over the last few years in England. So, what is preventing more farmers moving into organic?

Undoubtedly a key factor is lack of confidence that such a move is viable. Brexit and Covid have changed things for everybody. Things that were a given a few years ago, may no longer apply. That's why up to date information is vital to anyone considering a transition to organic. We are committed to providing such information with the publication of an updated edition of our Organic Farm Management Handbook (OFMH). We hope that it will give many farmers the confidence that now really is the time to change.

To find out more about our ***Organic Farm Management Handbook Appeal*** and how you can support our work please visit:

www.organicresearchcentre.com/support-us/ofmh-appeal

Events and announcements - details at www.organicresearchcentre.com

Events

29 March 2022: DiverIMPACTS final conference. Systems approaches to support agroecological transitions in the agri-food system. Brussels. https://conference.diverimpacts.net/index.html

16-20 May 2022: 6th European Agroforestry Conference, EURAF2022, Nuoro, Italy. https://uninuoro.it/euraf2022/

21-22 May 2022: Agroforestry Open Weekend 2022. Various locations. https://agroforestryopenweekend.org/

16-17 June 2022: European Organic Congress 2022. Future is Organic: On the road to achieving EU Green Deal. Bordeaux, France. https://europeanorganiccongress.bio/

22-23 June 2022: Groundswell. The Regenerative Agriculture Show and Conference. Hertfordshire. https://groundswellag.com/

5 July 2022: National Organic Combinable Crops. OF&G event hosted by the Cholderton Estate in Wiltshire https://ofgorganic.org/

26-29 July 2022: BIOFACH - World´s Leading Trade Fair for Organic Food. Nuremburg, Germany. Real and virtual. https://www.biofach.de/en

Technical guides/publications

Download only at present! https://tinyurl.com/ORC-pubs