

# THE ORGANIC RESEARCH CENTRE



## ELM FARM

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### Cover photo

*Martin Wolfe (centre) with loaves being baked using flour from the ORC Wakelyn's Population at the Small Food Bakery. (See p 14)*

*Photo: David Severn*



### Subscribe to the Bulletin

We have returned to a slimmer but more frequent Bulletin.

We aim to publish 3-4 issues per year for £25 in the UK (£30 overseas) from [organicresearchcentre.com](http://organicresearchcentre.com)

## Organic Research Centre

# Bulletin

## No. 125 – Summer 2018

## News in brief

### New technical guide on dock control

The booklet *Dock Control: Combining the best methods for successful control* was produced by FiBL and the English version was adapted by ORC. The guide lists the causes for the spread of the dock, suggests solutions for the restoration of infested farmland and presents the latest innovations in dock control. To date, there is no 'magic bullet' for the solution of the dock problem on organic farms. The most promising approach, therefore, is a combination of several measures. Depending on the level of infestation, different techniques are recommended for removing and suppressing established docks. Only by dealing with the causes of proliferation can the reproductive cycle be broken and long-term control be achieved. This booklet results from the Organic Knowledge Network Arable project funded by the Horizon 2020 programme of the European Union. The guide is available as free download or hard copies can be ordered at a cost of £6.00 including postage, from the ORC website.



### Countryside Stewardship and organic farming

Defra and Natural England (NE) are working with the organic sector to improve uptake of Countryside Stewardship (CS) funding, as currently around a third of organic farmland in England is not under agri-environment schemes. Organic farmers can access funding by applying for the Mid Tier or Higher Tier of CS, accessing conversion and maintenance payments, bespoke organic options and any other CS options compatible with organic farming.

Applicants to CS can combine the organic options with other environmental land management options to access additional funding and do more for wildlife on their farms. Defra/NE say that "The application process has been improved for 2018 and we are looking at how we can simplify the evidence requirements of the scheme so farmers can more easily access the funding available."

### Defra organic farming stats for 2017

Defra and the Office for National Statistics have released their organic farming statistics for 2017. The release presents estimates of the land area farmed organically, crop areas, livestock numbers, and numbers of organic producers and processors in the United Kingdom. The results are produced from data compiled by approved organic certification bodies. Although land area farmed organically has increased again, growth is still slow compared to our European neighbours.

- 517,000 hectares is farmed organically in the UK (2.9% of total farmed area).
- 64% of UK organic land is permanent grassland.
- 7% of the total UK organic area is used to grow cereals.
- 58% of the total UK organic area is in England.
- 2.7% of the total UK cattle population is reared organically.
- 6600 organic operators in the UK. Up 3.5% since 2016.
- The area of land farmed organically increased by 1.9%

compared to 2016.

- The area of in-conversion land as a percentage of the total organic land area showed a small increase in 2017, the third consecutive increase since 2014.
- The area of organic cereals and vegetables (including potatoes) declined slightly in 2017, continuing the downward trend since 2008. However, the area of 'other arable crops' saw a small increase in 2017.

### Organic farming: new EU rules adopted

On 22 May 2018 the Council of the EU adopted new EU rules on organic production and the labelling of organic products. The new Regulation (EU) 2018/848 was posted on the Official Journal of the EU on 14 June 2018 repealing Council Regulation (EC) No 834/2007. As from 1 January 2021:

- Production rules will be simplified and further harmonised through the phasing out of a number of exceptions and derogations.
- The control system will be strengthened thanks to tighter precautionary measures and robust risk-based checks along the entire supply chain.
- Producers in third countries will have to comply with the same set of rules as those producing in the EU.
- The scope of organic rules will be enlarged to cover a wider list of products (e.g. salt, cork, beeswax, maté, vine leaves, palm hearts) and additional production rules (e.g. deer, rabbits and poultry).
- Certification will be easier for small farmers thanks to a new system of group certification.
- There will be a more uniform approach to reduce the risk of accidental contamination from pesticides.
- Derogations for production in demarcated beds in greenhouses will be phased out.

### New IFOAM EU President

IFOAM EU's members have elected Jan Plagge as their new President. He is the President of Bioland e.V. and has many years of experience developing the organic sector. He has a background as an organic farmer and an organic farm adviser. He replaces Christopher Stopes, who served as IFOAM EU President from 2009.

### Martin Wolfe lifetime achievement award



Prof Martin Wolfe, ORC's Principal Scientific Adviser, was presented with a lifetime achievement award at the 1st International Conference of Wheat Landraces for Healthy Food Systems, held at the University of Bologna in Italy, in June. The award was presented 'For services to plant breeding, diversity, the environment and sustainable food production'.

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## About us

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**Bulletin editor**

Phil Sumption

**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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## Editorial: Putting the 'O' (word) into Health and Harmony

Defra's Health and Harmony consultation on 'the future for food, farming and the environment in a green Brexit' hit the streets in the spring with a huge fanfare. Stakeholder meetings of all colours were held around England with Defra staff teaming up with agricultural, environmental and consumer NGOs to hear what we all had to say. Perhaps surprisingly given the lack of mention of organic in the consultation document, there were even organic-focused events held with the Soil Association at Sheepdrove and with the English Organic Forum, as part of Defra's Organic Roundtable in London. By May 8th, more than 44,000 consultation responses had been delivered to Defra, from organisations and individuals representing all shades of opinion. The task facing civil servants to digest all these views and produce something meaningful is not to be envied.

Amid the cacophony of responses, it was challenging to get the voice of the organic movement heard. ORC led the efforts of the English Organic Forum to produce a combined response representing almost all the organic organisations, many of whom also prepared their own responses and encouraged their individual members to submit responses in large numbers. The 'O' word should be appearing more than occasionally in the responses being analysed.

A key focus of the English Organic Forum response was on the idea of organic farming as a system-based approach, generating multiple public benefits and being productive in economic terms, because of strong market demand at home and particularly abroad. An aspiration for England or even the UK to achieve at least 10% of land managed and food sold as organic is not unrealistic, given what is being achieved in countries like Austria (now 24% of land), Denmark (now 13.5 % of the food market) and Germany (targeting 20% of land by 2030).

To achieve this, there needs to be a specific recognition of organic land management delivering public benefits in the new environmental land management scheme (NELMS), with both conversion and maintenance supported in recognition of this. It is not for a minority of consumers to be responsible through the marketplace for compensating organic farmers for the benefits that they are delivering to society has a whole. Sadly, the NFU decided to take a different view on this, ignoring their own organic forum, their organic members and those members who in future might choose to convert.

There also needs to be a radical shift in the funding of research, innovation and knowledge exchange activities. The strong recent focus of the Agri Tech Strategy and Innovate UK on technological innovation is understandable, given the Government's growth agenda and new Industrial Strategy. But there is also a strong case for an 'ecological innovation' approach, which helps improve understanding of how farming systems (or agroecosystems) can be redesigned to perform better, based on ecological (organic) principles. This requires a much greater focus on knowledge exchange, and participatory research, than has been the case to date. Our recent conversations with senior Defra officials indicate that they may be listening.

The consultation deadline is not the end of the road for this debate. We are continuing to work on the industry-led English Organic Action Plan and hope to consult on this more widely in the near future. Gove's Agriculture Bill is also expected to be published in July. We are also now engaging in the consultation committees that have been established to develop NELMS so there will be a long hot summer ahead, not just in terms of the weather.

**Nic Lampkin**

## Trees for shade, shelter, survival and body maintenance

In the first of a short series of articles, written as factsheets for the Agroforestry Innovation Networks (AFINET) project, ORC Livestock Researcher **Lindsay Whistance** looks at how offering access to trees can improve the welfare of domestic animals.

### Why offer animals access to trees?

The benefits of silvopasture to domestic animals include access to shelter in the winter and shade in the summer, as well as providing scratching posts to maintain coat condition. The behaviour of domestic animals can be grouped into the categories of locomotion, maternal, nutritional, reproductive, social and resting behaviours and access to trees can be of some benefit to them all. Much of an animal's daily behaviour is involved in maintaining balance, or homeostatic equilibrium, for example, when an animal is hungry it will seek and eat food. Similarly, when hot or cold, it seeks shade or shelter and trees, shrubs and shelterbelts can offer effective protection. The newborn offspring of farm animals are either hidiers (e.g. cattle) or followers (e.g. sheep) but mothers of all species seek out available shelter when giving birth.

### Key advantages

- Shade and shelter are important for good animal welfare.
- In hot weather, normal animal behaviour patterns are less disrupted than on open pasture.
- Good shelter promotes the bonding of mother and offspring and increases the survival rate of newborn animals.
- Coat condition is improved and risk of disease from external parasites is reduced with access to trees as rubbing posts.



*Evergreen plantation: a living barn providing shade and shelter for dairy cattle, Over Viskum, Denmark*

### Animal behaviour and tree management

Grooming helps to maintain coat condition and trees make good scratching posts. Although hens use their beaks for preening, they spend more time preening under trees than on open pasture. Moulting hair and fleece can be removed by rubbing against trees, along with seeds that can penetrate the skin and external parasites (e.g. ticks) can be dislodged, reducing risks of associated diseases. Additionally, excessive rubbing can alert carers to flystrike or mite infestations. Good access to different heights and angles including low-hanging branches allows animals to access most body parts; however, appropriate positioning of such trees is important since they can make pasture more difficult to manage.

In summer shade from a well-designed silvopasture can reduce solar radiation by 58% compared to open pasture and skin temperature of cattle is 4°C lower. Along with higher welfare, animal productivity is better maintained when they have access to shade in hot weather and the landscape is utilised more evenly than open pasture. With too little shade, overcrowding increases the risk of disease, parasite contamination, death of vegetation and soil compaction.

Cold winds negatively affect air temperature. For example, with a windspeed of 24 kph, and an air temperature of 2°C,



*Sheep using low hanging branches as a scratching post*

### Placing and managing trees for the benefit of animals

Trees can be included in an animal's grazing environment in many ways. Trees offer a canopy that provides shade in the summer and, globally, this is their most important role. A canopy also provides shelter from rain and cold, acting as a buffer for temperature fluctuations. In winter, minimum grass temperatures can be raised by 6°C. Trees with an alternative primary function can offer good shade and shelter, including biofuel plantations for e.g. pigs and commercial pine for living barns. The latter also offers protection against insects, since pine species have insect repellent properties. The positioning of trees is important in their effectiveness as protection against the weather.



*Ewes and their lambs sheltered by trees, Hald Ege, Denmark*



the effective temperature becomes  $-7^{\circ}\text{C}$ . Trees act as a buffer against temperature fluctuations, reducing the need to feed extra energy for heat production. Shelterbelts, perpendicular to the prevailing wind, offer good shelter if well designed. Planted too densely, they can increase wind turbulence and if they are open at ground level, they can cause driving cold winds at animal resting level.

Cattle and deer are 'hider' species and mothers utilise trees and shrubs to hide their offspring for several days after birth. Even 'follower' species, like sheep, benefit from access to shelter at lambing time. Exposure and starvation together cause 30% of lamb deaths and lambs can lose as much as  $10^{\circ}\text{C}$  body heat in the first 30 minutes of life so they are highly reliant upon shelter from the environment. Offering ewes shelter close to feed and water encourages them to stay longer at a sheltered birth site, promoting a strong ewe-lamb bond and increasing lamb survival. Since energy intake is directed towards growth rather than keeping warm, lambs with shelter have a higher growth rate than lambs with no shelter. Offering adequate shelter is important since overcrowding of ewes at lambing time reduces lamb survival from mis-mothering, starvation and exposure.

#### Further information

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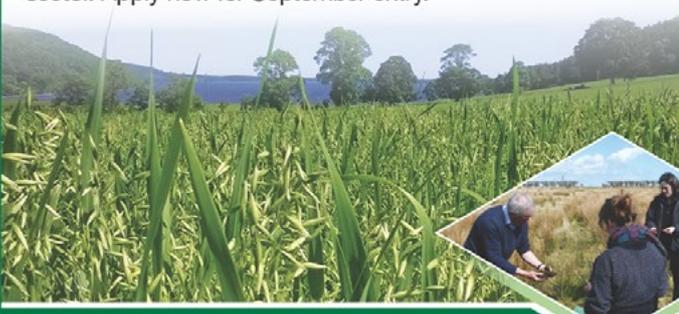
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## Join ORC's Farmer and Business Supporters' Group

ORC is at the forefront of UK research on organic and other agroecological approaches to sustainable and healthy food production, including knowledge exchange and policy advocacy on behalf of organic farmers and businesses.

While much of this work is supported through project funds from the EU, governments and foundations, we rely heavily on donations from individual supporters to provide vital underpinning for our activities.

**Regular monthly or annual donations** help us to plan ahead with greater confidence about our ability to undertake new initiatives on behalf of organic farmers and food businesses.

#### Will you join the growing band of farmers and businesses willing to support us like this?

We're not just asking for your support – we're offering something in return to say thank you!

FAB supporters have:

- The opportunity to attend FABS annual events to hear about our current activities, with space to discuss your priorities for research, information and policy initiatives
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- Access to the research team and a quarterly update on progress and staff news, with links to on-line resources, for each of the main areas of ORC activity
- Links to and (optional) membership of relevant on-line discussion forums
- Discounted access to ORC conferences and events, including our annual conference
- Free subscriptions to ORC's printed bulletin, monthly e-bulletins and the Organic Farm Management Handbook every two years or so.

#### Please give us your support and sign up today!

To join the ORC FABS group, please pledge a regular annual donation (or monthly equivalent) of at least:

**£100 (Supporter)**

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We are keen to recognise the different levels of support, but all supporters will receive the same benefits.

To register, please contact Gillian Woodward at ORC: 01488 658298 ext. 554  
[gillian.w@organicresearchcentre.com](mailto:gillian.w@organicresearchcentre.com)

## Participatory research: whatever you think, think again

*Participatory research is a key element of our approach to research and a buzz-phrase in research policy and funding streams. Since the concept emerged in the context of agricultural development in the global south in the 1970s it has challenged the rigid 'top-down' model of innovation that has shaped modern agriculture. It has enabled (some) farmers to reclaim a protagonist role in innovation and has challenged (some) agricultural scientists to systematically talk, and listen, to the beneficiaries of their research. ORC Principal Crops Researcher **Ambrogio Costanzo** guides us through the maze of challenges and constraints of the approach. So, whether you mistrust the approach or consider it the holy grail, read this.*

I first came across participatory research eleven years ago, during a life-changing internship funded by the IFAD and the World Agroforestry Centre in West Africa. However, it is in the last 30 months since I joined ORC that I have had the opportunity to work closely and consistently with many farmers and fellow researchers engaged in this type of activity. I learnt much more than I could give and advise on the reality of farming and of participatory research itself. This article is an attempt to synthesise what I've learnt so far, discussing a collection of five 'statements' that are commonly heard when talking about participatory research, hoping to give some inspiration to those involved, or wanting to be involved.

### 1. "It is not true science"

This is often espoused when farmer participation is downplayed compared to 'more scientific' activities, such as trials at research stations, or laboratory experiments. But what is 'science', then? From Newton and Galileo's times, the philosophical debate is still open after four centuries, and it would be inadvisable to contribute. Nevertheless, I am inspired by the concept of 'falsifiability' introduced by the Austrian-British philosopher Karl Popper (1902-1994), according to which only a 'falsifiable' theory, or result, can be called scientific. Please note, this is quite different from what one might think at first glance, i.e. that scientific results must be 'verifiable'.

How to make a result 'falsifiable'? By enabling others to control the result, the steps by which it was produced, and potentially end up with different conclusions. Is involving 'non-researchers' an *a priori* constraint to building a repeatable methodology and, ultimately, a falsifiable result? I would rather say that, at least in theory, involving 'non-researchers' enables and empowers more people to control the results, making them more, not less, exposed to cycles of falsification and improvement, i.e. scientific.

It may well happen that a conventionally managed variety trial has variety A as the top performing; a similar, but organically managed, trial shows B to be the best; and farm data results in C being the best (Murphy et al. 2007<sup>1</sup> showed to what extent varietal ranking can change depending on whether the same trial is managed conventionally or organically). We are not triggering a 'war' between different trials: we are rather getting closer to what makes a variety perform well. Indeed, the more closely the experimental conditions match those in which the results are supposed to be applied, the more likely it is that they will be useful 'in reality'. Participatory research and on-farm experiments can enhance the relevance of results but, as we will see below, the planning phase requires extra attention.



*Participatory farmers (part of 'the Magnificent Seven') in the Liveseed trials - See p9. Ambro is second from the left.*

### 2. "Different actors don't have the same skills"

Hopefully they don't! However, this does not mean that a scientist has better skills than someone else, e.g. a farmer. On the contrary, everyone has a different set of skills relating to different needs and contexts. Probst and Haggmann (2003)<sup>2</sup> explained that, alongside a 'positivist' perspective, which assumes that there is an objective 'truth' that we must get as close to as we can through scientific activity, there is a 'constructivist' perspective, according to which, instead, the 'truth' is constructed by combining the skills, needs and values of as many involved different players as possible. Gianpietro<sup>3</sup> explained in a mind-blowing way how 'positivist' mindsets clash when addressing complex realities such as agroecosystems.

Getting back to our example of the wheat varieties the picture may become clearer (and more down to earth). After the Green Revolution, growers have been sold a technological package made up of a 'high yielding variety' and all the inputs and management tools needed to ensure its high yield<sup>4</sup>. In organic farming, to a certain extent, we are all called on to turn this model upside down, as the management must be as adapted as possible to the local environment. Consequently, one grower will drill wheat as early as possible, another one as late as possible, a third one in widely spaced rows to enable mechanical hoeing, a fourth one in very narrow rows to make it more competitive, and so on. How can we test varieties for such a diversity of situations? Since these four are supposed to ultimately use our results, wouldn't it be better to get them on board in the trial from the beginning?



### 3. “The only research worth doing is participatory and on-farm”

After hearing from the sceptics, now it is the turn of the enthusiasts. Participatory on-farm research is not the only research worth doing, in so far as there is no ‘one size fits all’ solution. Furthermore, there isn’t one participatory research model either: there are a myriad of approaches and methods to involve ‘non-researchers’. The classification proposed by Probst and Hagmann<sup>2</sup> is just one of many. (At times, it seems that the only common point between all these approaches is that everyone claims theirs to be the ‘true’ one.)

Testing varieties in farmers’ field is not the only solution, as standard plot trials are not the only solution either. Rather, every solution contributes to answering a bigger question. The basic principle of participatory research is that different players look together to solve a common problem. Farmers bring to the table their skills, knowledge and specific experiences. Researchers bring their methods and skills that often require a dedicated trial site or laboratory to be consolidated and developed. Farmers can appreciate that variety A shows less yellow rust damage than variety B in their fields. However, if they want to make sure A is really resistant to a certain strain of yellow rust, someone must test it in controlled conditions, artificially inoculate the plants with the strain and measure the reaction.

### 4. “It must be useful (only) in the context where it has been carried out”

This statement calls for a boundary to be drawn between advice and research, to make sure both fulfil their goals. In simple terms, an adviser is called to solve a farmer’s problem, whereas a researcher is called to produce general, scientific, knowledge. In very practical terms, an adviser is paid by a farmer, whereas a researcher is generally paid by public money. What happens then when a ‘participatory researcher’ is working with a farmer? For an adviser, the farmer is a client, whereas in participatory research, the farmer and the researcher are colleagues. The boundary may be considered useful, as it allows distinction of perspectives, yet exchange of these perspectives is crucial for the participatory research process to work effectively. For example, it is often claimed that participatory research should exclusively be initiated by farmers (as if they were asking for advice). On the contrary, both parties can take the initiative. This can enable farmers that have never been involved to be engaged for the first time.

The very essence of good participatory research is addressing a tangible problem in a context whilst creating new knowledge generalisable (falsifiable?) to other contexts. How do we make it work? It helps to be open to the fact that it is a very dynamic process; the following points are key:

- i. Discuss and clarify all the details of the assumptions made while formulating the research question;
- ii. Keep track of the methodological steps, who is responsible for them and the changes that inevitably occur;
- iii. Communicate the results and the process outside of the context where they were produced;
- iv. Hopefully, repeat the research in other contexts.

### 5. “Statistics and replicates are not that important”

A scientific result must not only be ‘falsifiable’, but hopefully also ‘hard to falsify’, i.e. having a low probability of being an ‘artefact’ of the experiment. This low probability is represented, including in this bulletin, by the stars that generally follow a ‘p’, which in turn follows a numeric result showing that, for instance, wheat variety A is significantly better than B. This significance (p) value is an outcome of statistical analysis to test the likelihood that the trend in the experimental data is false is very low. In agricultural research, replicates are often the most essential tool to make sure results are reliable and robust. It is by replicating varieties A, B and C spatially that we can end up saying that one variety is performing ‘significantly’ better. The basic principle is that, having three plots, rather than just one, of each variety, allows us to discriminate between differences which are due to the variety and those that are due to any other external factors, such as variation in soil, which are known as ‘the error’ when not measured as part of the experiment.

It is true that fully replicated experiments designed ‘by the book’, can be impractical and even too expensive to make them feasible or worthwhile. At times, with an awkward attempt to ‘be simple’, it is claimed that statistics are only relevant to scientific papers, not to the farmer.

Avoiding the problem is not a solution. It is a matter of planning, where the researcher and the farmer are called to bring to the table all their skills and knowledge. Researchers involved in on-farm trials will ideally master basic statistical design skills much better than if they were in a standard research station setting with a ‘balanced design’, for example, and become more aware that they need to be able to ‘think out of the box’ and can’t always find ‘the best’ design for all possible situations. Farmers, on their side, will find that the researchers’ requirements are not obscure or meaningless exercises, but often are no more than good common sense which they will be happy, and perfectly capable, to contribute to.

### An evolving farming and research partnership

Whoever has been involved in participatory research will appreciate that it is not a linear process with a start and an end. It often takes unexpected directions and leaves more open questions than there were at the beginning. However, this is the essence of participatory research and, perhaps, the whole of science. Whenever a research cycle ends, some questions are answered, and others are open. This opens a new cycle that will, in turn, yield other answers and other questions. Every cycle can enhance how much we know of nature, can involve more participants, and ultimately create a strong and evolving partnership between farming and research.

*With special thanks to Charlotte Bickler for her help in putting these thoughts together.*

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## The Dean Organic Fund

### First loans approved!

Launched at the Oxford Real Farming Conference this year, the new Dean Organic Fund providing interest free loans to small-scale organic/agroecological producers and food businesses, attracted a lot of interest.

The Dean Organic Fund was established following a major bequest from the late Jennie Bone to ORC, along with the transfer of funds from the former Dean Organic Trust which she established in 1993. Her idea was to support the conservation of wildlife in the farmed environment by providing interest free loans to organic producers. ORC is committed to continuing this process with the new Fund.

After the first round of applications closed in March, 13 were approved and loans totalling £260,000, and ranging from £6,000 to £25,000, have been paid out.

A wide range of businesses have been supported, from crofts planning meat processing operations in Scotland to growers expanding their vegetable production and protected cropping facilities in eastern and southwest England. Other farms and food businesses are using the funds to develop farm shops, nano-dairy production, vineyard management equipment, expansion of organic granola production, and organic chicken production systems.

We have been very encouraged by the wide range of applicants and the quality of the applications, and we hope this standard will be continued. Many applicants benefited from taking advice on their business plans, and we are working with a number of like-minded organisations to try to secure funding to provide further assistance for business advice and mentoring.

The next round of applications is opening in July, with a September application deadline and decisions planned by November. Given the limits on the total size of the fund, the number of applications likely to be approved will be smaller than in the first round.

If you are interested in applying, and would like further information, please email:  
gillian.w@organicresearchcentre.com



## ORC Summer Appeal 2018

### How your support will make a difference in 2018 and 2019

If you'd like to sponsor a specific project, make a general donation, give once or make regular contributions, donate a few pounds or a few thousand pounds, your help will make a real difference. If you'd like to talk to us about how your money will be used and the kind of change that you can bring about through us, we'd love to talk to you. Here though are just a few of the things we'd like your help with in 2018 and 2019.

**Handbooks and guides:** The more that we can get our know-how into the hands of the people who can put it to use, the more impact we can make in the world.

**Policy advocacy:** ORC will speak up for the things that you believe in and make real change in the right places. (See editorial)

**Farmhouse refurbishment planning :** We need around £10,000 for architectural and planning work and to prepare a prospectus for the refurbishment project ahead, which will turn Elm Farm House in to a state of the art training centre.

**Building on existing research:** We have research and development projects planned and need your help to be able to take them forward. Every penny you give can help us to do just that.

**Training and bursaries:** Students and farmers from all over Europe and the UK come to Elm Farm. What they learn here inspires others and builds the organic communities knowledge, across the world.

**Conservation work at Elm Farm:** We'd need to use local volunteers and increase staff resource to make the most of the many mixed-use areas on the farm including the walking trails and growing agroforestry systems here at Elm Farm.

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## An ideotype for organic wheat – is it possible?

Breeding programmes generally identify an ideal plant with given characteristics as a goal for selection: an ideotype. With the Whealbi EU project we had the opportunity to investigate what an ideotype for organic wheat would look like. **Ambrogio Costanzo** summarises preliminary results of two years of trials, suggesting that the response could be more complex than it seems.

The Green Revolution in the 1950-60s was a turning point in wheat breeding, with the formalisation of an ideal plant, with short straw and a single, big ear, as a univocal 'ideotype', as formalised by CM Donald in 1968<sup>1</sup>. There is currently a lot of discussion about what an ideal wheat for organic farming would look like. Many people claim that Donald's ideotype still leads the way with the magnificent and progressive fate of technology, whilst others urge the importance of getting back to older varieties. No clear solution is in sight.

As part of the EU-funded Whealbi (Wheat and barley Legacy for Breeding Improvement) project, ORC carried out a field experiment during the 2015/16 and 2016/17 seasons, at Sonning farm – University of Reading's Crops Research Unit – to compare several wheat and barley accessions in a ploughed and a shallow non-inversion organic system. With 20 different accessions, the wheat trial provided a unique opportunity to compare landraces dating back to the 17th century with heritage cultivars (pre-Green revolution), modern cultivars and elite breeding lines, to identify optimal trait architectures, i.e. an 'organic ideotype'.

Yield was found to be significantly lower in shallow non-inversion tillage plots ( $1.78 \pm 0.08$  t/ha) compared to ploughed plots ( $2.32 \pm 0.10$  t/ha) in the first year only ( $p = 0.000^{***}$ ) when continuous rainfall prevented any mechanical weed control. Across the two years, no 'best cultivar' could be identified. There was a yield advantage of modern cultivars and elite breeding lines over heritage cultivars across both years, but this was only significant in the ploughed, and not in the shallow non-inversion system (fig. 1). Moreover, when looking in detail at relationships among different morphological traits, yield did not appear to be linked to some of the key features of the 'Donald's ideotype', particularly short straw and high harvest index (grain/total biomass). The most consistent yield driver seemed to be ground canopy cover at the onset of stem extension, probably because of its relationship with resource capture and timely competition against weeds. Analyses on processing and nutritional grain quality will follow and provide a more comprehensive view on performance.

The conclusion cannot be a simple statement. Yield advantage can be expected from 'modern breeding' cultivars if they are locally adapted and match their growing environment well. When deviations from this occur, for example when the environment becomes limiting – as can happen e.g. when not ploughing (Fig. 1) – their advantage may be lost. Getting back to heritage varieties is not a univocal solution either, at least as far as yield is concerned. We can confirm that crops with good early ground cover are better suited to organic conditions, but we cannot neglect that the challenge is far more complex: fitting varieties into a range of growing environments whose variability cannot be artificially buffered. This requires new knowledge and new organisational, technical and possibly business models for cereal breeding.

### Reference

1. CM Donald (1968) The breeding of crop ideotypes. *Euphytica* 17:385-403

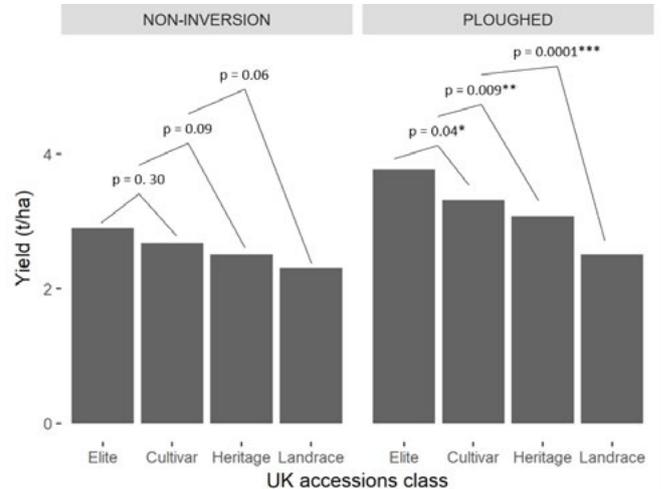


Figure 1: Average 2015/16 and 2016/17 grain yield (t/ha at 15% moisture content) of UK accessions, grouped according to different genetic classes, in the non-inversion and ploughed system. P-values of orthogonal linear contrasts are indicated.



This work has received funding from the European Union's Framework Programme 7 under Grant agreement No. 613556. Visit <https://www.whealbi.eu/> for more details.

### Organic Winter Wheat Variety Trials Network

Our experimental work testing the performance of different varieties in organic agriculture has continued as part of the LIVESEED EU project. In collaboration with Organic Arable a network of seven farmers has been established across the country from Dorset to Lincolnshire. These farmers, including Mark Lea, who is hosting NOCC this year, are growing at least three varieties on their farm at a commercial scale, managing them with their own farm equipment and taking note of key performance indicators throughout the season. We will also be assessing yield, gross margins and different quality measures as part of the UK Grain Lab. The varieties being tested this year were selected based on farmer preference and performance in breeder trials. They are Basset, Crispin, Evolution, Montana, ORC Wakelyns Population, Siskin and Spyder. All seven of these varieties are being assessed in a fully replicated plot design in our organic field trials at Sonning. In combination, this 'mother trial' and the on-farm 'baby trials', all connected to one another through a specific experimental design, will help us to understand how genes, environment and management interact to determine variety performance in conditions that more closely reflect organic and low-input farms compared to current testing protocols for the recommended list. We hope that this is just the beginning of a collaborative organic variety trial network that can provide growers with the information that they need to enable variety choice. **Charlotte Bickler**



This work has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 727230. Visit <https://www.liveseed.eu/> for more details.

## OK-NET Arable: Exchanging knowledge, enhancing organic farming

After three years the OK-NET Arable project, funded by the European Union's Horizon 2020 research and innovation programme, has finished. We are proud of the project, which aimed to 'Improve the exchange of knowledge among farmers, farm advisers and scientists to increase the productivity and quality of organic arable farming in Europe.' **Katie Bliss,**

**Susanne Padel and Phil Sumption** look back at the project's achievements compared to the aims.



The complexity of organic farming requires farmers to have a very high level of knowledge and skills. But exchange on organic farming techniques remains limited. The OK-Net Arable project aimed to facilitate co-creation of knowledge by farmers, farm advisers and scientists to increase productivity and quality in organic arable cropping all over Europe.

OK-Net Arable was coordinated by IFOAM EU and involved 17 partners from 12 countries. ORC was the UK research partner. OK-Net Arable is one of the first four so-called thematic networks funded under the umbrella of the European Innovation Partnership for Agricultural Productivity and Sustainability (EIP-AGRI). This EU policy instrument aims to foster innovation by connecting farmers and researchers.

### Project aim: Synthesise existing knowledge

The project aimed to identify the best ways of exchanging knowledge on organic arable cropping. Based on this, farmer facing advisory material was collected and developed.

Tools collected	94
Videos made	8
Tools translated	28
Practice abstracts	43

The selection of knowledge exchange tools (i.e. material suitable for the end-user) was informed by feedback from the farmer innovation groups. In addition, new tools were made, including practice abstracts (2-page summaries of key practices) and videos, and others were translated, including 4 technical guides from FiBL. As a result knowledge from previous projects is more widely available. The tools are all available on our online knowledge platform [farmknowledge.org](http://farmknowledge.org) (see box) and have been submitted to EIP-AGRI. They have also fed into online courses (also on [farmknowledge.org](http://farmknowledge.org)) which link the theory of organic production with the practical solutions in the tools.



### Project aim: Create European network of farmers

The project worked with 14 farmer innovation groups in 10 countries representing a range of farm types. Exchange between the groups and between the farmers taking part in the groups was intensified through two European farmer workshops and seven exchange visits.

There was positive feedback from farmers on the exchange visits and the opportunity to meet with peers from across Europe. There was interest in more exchanges in future and many felt willing to contribute to costs. Farmers valued the opportunity for direct visual observation, understanding of the context in which the practice was being tried and

discussing with others what worked and what didn't work.

John and Alice Pawsey hosted an exchange visit between the UK group and French (ITAB) farmers and researchers at Shimpling Park Farm in June 2017. The focus was on intercropping, including relay cropping (buckwheat and oats/peas), undersowing and companion cropping (camelina and oats) and the use of the Cameleon combi-drill system. The group visited Wakelyns Agroforestry and the NIAB Innovation Farm.

Based on input from farmers and academic partners, recommendations on topics and methodologies for a common research agenda for organic arable farming were made.

### Project aim: Create online knowledge platform

This is perhaps the most important legacy of the project. The platform offers evidence-based advisory material as well as facilitating farmer-to-farmer learning. This platform is a virtual meeting place for farmers, advisers and researchers that would otherwise not be able to meet. The farmknowledge platform, with toolbox and discussion forum, was launched in October 2016. It is available in 10 languages (using auto-translations and some materials published in several languages). The platform will act as the European knowledge hub for organic farming for farmers and advisers with other projects such as OK-NET Ecofeed (See Bulletin 123) and LIVESEED (Bulletin 122) contributing to it.

[www.farmknowledge.org](http://www.farmknowledge.org)

### UK Farmer Innovation Group

Farmers in the UK Farmer Innovation Group hosted a series of meetings across the country. At the first meeting hosted by Richard Gantlett at Yatesbury House Farm in June 2015 the group discussed challenges facing organic arable cropping in the UK and potential solutions, including effective techniques for knowledge exchange. Weed control and soil health were identified as priorities. The second meeting was held at Abbey Home Farm, near Cirencester, in 2016. Knowledge exchange tools — such as videos and decision support tools and apps on organic farming — were assessed by farmers to provide feedback on how knowledge and information could be better shared.

The third meeting was hosted by Charles Hunter Smart at Bradwell Grove in Oxfordshire, where the group chose to test the nitrogen dynamics model NDICEA in the field. Eight farmers worked with researchers from ORC to input data from their farms over the 2017 growing season. The final meeting was hosted by Tom Liddell at Fullerton Farms, Hampshire, in July 2017. This was an opportunity to share experiences of the NDICEA testing and discuss ideas for how to better manage nutrients in organic rotations. Beyond the project group members have the opportunity to stay engaged through FABS and in the Anaerobic Digestate field lab.



## Field testing

The Farmer Innovation Groups were also invited to carry out some practical testing of knowledge presented or specific practices that addressed the issues identified by them. The groups submitted proposals that were reviewed by the project steering group and feedback was provided before the actual testing started. In total, 11 practical trials were carried out. The results of this practical testing summarised here have been reported by the Farmer Innovation Groups in the form of practice abstracts and/or videos that are shared on the knowledge platform.

### 1. Mechanical weed control; Bioforum/INAGRO, Belgium

A classic tine harrow (Carré), a precision tine harrow (Treffler), a rotary hoe (Carré) and a rotary harrow (Einböck) were demonstrated to a group of 20 organic farmers. They discussed the machines and their effectiveness in the field, which was followed by weed counts. Each machine had advantages under different conditions. The rotary hoe breaks up the crust, while the harrow works more delicately. For all machines, multiple or crossed passes increased effectiveness. Most effective in the trial conditions (hard crust, sandy loam) were two passes of the harrow, or a combination of two passes of the rotary hoe followed by the harrow. At the final farmer exchange workshop inter-row hoeing of winter cereals was discussed but considered not suitable under many conditions and some more experienced organic farmers advocated a 'do nothing' approach to weeds in winter cereals, which works if the rotations are well-balanced and the soil is in good condition.

### 2. Comb harrow; Bioselena, Bulgaria

Many farmers in Bulgaria unfamiliar with using the comb harrow for weed control had doubts about its efficacy, so a trial was organised to test the effect of harrowing on wheat, spelt and einkorn. In the early stages, weeds with shallow roots were successfully eradicated and the presence of others (burdock, stork's bill) were reduced. Yields increased by 13% for wheat, 17% for spelt and 23% for einkorn.

### 3. WUZI dock-cutter in pasture; SEGES, Denmark

Docks are often present in the grass ley phase of the arable rotation and can only be controlled with additional tillage. The group tested a dock-cutter that terminates docks and prevents re-growth through re-seeding in the area the dock was cut out. The group found it more convenient than digging-out docks, but time consuming for larger fields or fields with high infestations as it still needs 20-30 seconds per dock for one person and the machine. The group saw the potential of further innovation in self-driving robots drilling out the docks.

### 4. SEMINBIO® prototype seeder; Con Marche Bio, Italy

This new machine optimises seed distribution in the three axes of space. It was tested in durum wheat and found to ensure a fast soil cover by the crop, a rapid and improved uptake of nutrients, and enhanced competitive ability against weeds. It can be combined with other weed control measures, such as a comb harrow.

### 5. Roller crimper; AIAB, Italy

Soya bean is a challenging crop in organic systems due to its low ability to compete with weeds during growth. The trial in Central Italy tested several methods of sowing soya bean into a mulch and found some of them to have good results in terms of weed control, and preservation of soil water

even during the dry summer in 2016 and yields comparable to traditional establishment. The effectiveness of a mulch depends on the amount of mulch biomass, but this can cause some difficulty for the planter.

### 6. Roller crimper; Bioselena, Bulgaria

No-till is considered suitable for Bulgarian conditions, but so far is only used on one non-organic farm and cover crops are not widely used. The group decided to try the roller crimper on two organic farms in different parts of Bulgaria. The results showed that no-till can work in organic farming in Bulgaria but several years of trials would be necessary. Also, the size of the machines and weight of the tractors needed might limit its use on small-scale organic farms.

### 7. Testing cover crop varieties; ITAB, France

Trials of different white clover varieties and mixes undersown in winter wheat in central France (Yonne) showed some interesting differences. Comparing dwarf (Huia and Rivendel) with intermediate 'Hollandicum' (Merwi and Jura) cultivars one intermediate cultivar produced the highest biomass. The highlights the importance of variety testing for fertility-building crops.

### 8. Multi-spectral cameras for field trials; OMKI, Hungary

During the testing a drone was used for imaging field trials. The analysis of the remote sensing images allowed determination of weed infestation, field heterogeneity and SPAD (Soil Plant Analysis Development) and NDVI (Normalized Difference Vegetation Index) were calculated. The NDVI data did not correlate well with traditional sampling results.

### 9. NDICEA model; ORC Arable group, UK

Together with two researchers from ORC the UK group used a computer-based nutrient budgeting model (NDICEA) to assess individual field rotations on seven farms, using farm specific data, to identify where nutrient surpluses and deficiencies occur over the seasons and rotation cycle. In many cases, the model predicted potential loss of organic matter and encouraged the farmers to reflect on their planned rotations and soil cultivation practices. (See article in Bulletin No.123.)

### 10. Soil assessment methods; Bioland, Germany

The group explored several tools for soil assessment in their workshops and then opted for demonstrating a quick method of assessing soil compaction in the field. A simple and quick test of water infiltration in the soil can be used. It promotes an understanding of the effects of soil compaction and the importance of soil-conserving cultivation. It is easy to understand and impressive for non-scientists and can be used in training events, for example for farm staff.

### 11. Using spade test with farmers; ITAB, France

The French group carried out a demonstration of the spade test using a French description of the approach.

[www.farmknowledge.org](http://www.farmknowledge.org)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No. 652654. This communication only reflects the authors' view. The Research Executive Agency is not responsible for any use that may be made of the information provided.

## Diversity from field to fork

*Increasing the range of crops and combining them in mixtures can build resilience and create new opportunities in farming systems. Yet there are barriers to crop diversification at both the production and market end. The DIVERSify and DiverIMPACTS EU projects focus on diversity in the field and across the value chain. **Charlotte Bickler** and **Katie Bliss** outline a case study from Green Acres Farm that will be demonstrated at NOCC, which can help us to understand the challenges and identify ways to overcome them.*

### Carlin peas and spring triticale

This year on Green Acres Farm, Mark Lea has brought together an interesting 'plant team': Carlin peas and spring triticale. Carlin peas are a nutty pulse similar to a chickpea, traditionally eaten around Bonfire night in the North of England. The triticale provides 'scaffolding' for the peas to grow as it is tall and strong-stemmed.



*Carlin pea and spring triticale plant team: will triticale provide support without competing too much?*

**“ Peas are an important crop here. We grow three types, all for human consumption for a specific customer. ”**

*Mark Lea*

### Harvest and crop management complexity

Peas can be a difficult crop to produce, they are prone to weeds and have a poor standing strength which in combination can make for a challenging harvest. Carlin peas are tall and weak strawed on top. Mark told us: “They are nearly always flat at harvest and losses when combining can be very high indeed. Quality also suffers with the peas close to the ground where they struggle to dry out.” In an on-farm trial in collaboration with DIVERSify, and as part of the Innovative Farmers (IF) Intercropping in Arable Systems Group, Mark has set up an experiment to help to establish an effective seed rate of triticale to successfully support the carlin peas. The production of a better yield of high quality peas is the focus of the trial.

“I intend to sow the peas at the full seed rate of 250kg/ha. The triticale will be added at 10%, 20% and 30% of its normal seed rate (25kg/ha, 50kg/ha and 75kg/ha) each on a 1ha block. I hope to establish what seed rate of triticale is the most effective at improving standing strength of the peas whilst not competing too much with them. We will be measuring plant densities, physical effects and all harvest results.”

The IF group is bringing together farmers experimenting with plant teams across the UK to share ideas and experiences. Some members of the group are collecting and sharing data on yield, gross margin and weed cover among other indicators to start to measure the benefit of plant teams over a monoculture crop.



DIVERSify and DiverIMPACTS have received funding from the European Union's Horizon 2020 research and innovation programme under agreement No. 727284 & 727482

### Intercropping around the world

At the end of last year 567 individuals attended 15 DIVERSify workshops and events in Europe, Kenya and Palestine. The aim was to bring farmers, advisors, processors, researchers and more together to discuss how they are already working with diverse 'plant teams', e.g. intercropping, and to determine key barriers to their wider adoption. Alongside identifying a wide range of crop combinations that participants have already worked with to varying extent (130 options with two or more plant species) key barriers were identified. Harvest complexity was identified as the top barrier whilst lack of advice, drilling, processing and crop management complexity followed close behind. As would be expected with the range of stakeholders, regions, countries and likely farm and business types covered by the workshops, this is not the whole picture and the full report from these workshops can be found online at:

<https://www.plant-teams.eu/publications>

### Post-harvest challenges

Despite the benefits of increasing diversity in farming systems, challenges can also arise post-harvest. For example, separation, storage for small volumes and access to markets for novel and mixed crops. Mark and other innovative farmers are finding ways to overcome these barriers. In our last Field Lab meeting, Andy Howard demonstrated the grain separator that he has built to process his mixed crops. Mark is not so worried about separation: “I believe we will be able to clean the triticale out after harvest through our own cleaner as we remove the split peas and weed seeds before bagging. The cleaned-out triticale and split peas will be milled on farm for feed for our livestock.” Feeding the triticale and split peas to his livestock would not be possible on stockless farms however, demonstrating another benefit of the mixed farm model.

Diversification may also require looking for alternative markets. Through Hodmedod's ([www.hodmedods.co.uk](http://www.hodmedods.co.uk)), Mark has found a market for smaller quantities of higher value specialist crops such as carlin peas, yellow split peas and naked barley. Hodmedod's works with over 25 farmers to produce more than 60 different products which are sold in an online shop and through a network of wholesalers. The business emerged from the 'Norwich Resilient Food Project' and has revitalised local markets for UK grown seeds, grains and pulses, including carlin peas, by creating a short value chain between grower and consumer. As part of a 5 year case study in the DIVERimpacts project, ORC will be working with Hodmedod's to deepen understanding of the role of such pulses and novel crops in farming systems and working with consumers to enhance how this story is told.



## Staff news at ORC

### Sarah Barrett

Sarah joins us as Senior Fundraising and Events Administrator. She previously worked for a professional fundraising agency growing and developing small teams to support their fundraising efforts in her role as Logistics Manager and then more recently Equipment and Merchandising Manager. Prior to this Sarah worked as a Projects Manager for a government funded initiative, working in partnership with schools, colleges, universities, local authorities, training providers and community organisations to raise educational aspirations amongst disadvantaged groups. When not at work Sarah enjoys spending time with her family, fossil hunting with her little boy, being outdoors, walking and learning how to tame her recently acquired mature garden.



### Penny Dixon

Penny joined us in May as Business Development Officer. She will lead on products and consultancy services which fall outside of the 'restricted' income category which is associated with most ORC research bids, from initial contact to delivery. She is working with specialist colleagues from ORC's eight programme teams both to refine existing and develop new propositions in this area. Qualified in Clinical Biochemistry, she has worked in NHS, Healthcare, IT and Food Manufacturing. Penny has over 20 years' experience in Marketing, Sales, Business Development and Management Consultancy in UK and EMEA in these sectors. A keen organic gardener for 30 years, Penny is delighted to have this opportunity to use her commercial experience to help grow ORC's portfolio in support of the charity's objectives.



### Olivia Nelson

Olivia joined us on 13th April to help with the response to the Defra Health and Harmony consultation and pulling together the English Organic Forum's English Organic Action Plan which will be launched later this year. She will be here on a part time basis until July as a Policy Researcher. She has come to us after 15 years of working for the National Trust. Her background is in policy and advocacy on issues including heritage, tourism, energy, transport and planning, with a side shift into project management at the National Trust site Runnymede. Initially this was on the 800th Anniversary celebration of the Magna Carta which took place at Runnymede in 2015, and after maternity leave, she was responsible for the development and submission of a £1.6 million Heritage Lottery Fund Bid for the site, as well as the installation of a new major contemporary work of art on the meadows. She is now submerging herself into agricultural policy and enjoying growing her understanding of the organic sector as this has always been a personal interest of hers.



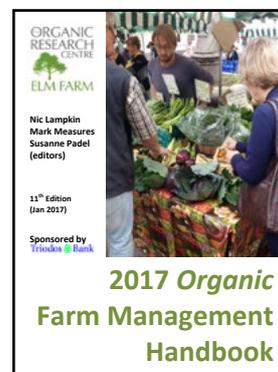
### Pastures new?

In June we say farewell to **Dr. Konstantinos Zaralis** – Kostas to us – our Livestock Systems Team leader since January 2014. Kostas joined ORC to work on organic milk production. In the SOLID (Sustainable Organic and Low-Input Dairy) project he was responsible for the participatory trials that were carried out on organic farms, such as the use of udder mint, a case study of diverse pastures and mob grazing and the importance of trace elements for dairy cows. During his time at ORC he stayed involved with the Norwegian OptGraze project comparing different ways of pasture allocation in grazing trials. Early results indicate that pasture allocation techniques cannot optimise nutrient intake from low quality pastures and that pasture quality is a key factor influencing animal performance, product quality and GHG emissions irrespective of the allocation approach. He secured the current iSAGE Grant from the EU on sustainable sheep farming, where we work closely with the National Sheep Association on sustainability assessment of sheep and goat farms using a modified version of the ORC PG-tool and on several case studies. He leaves the team with lots of work to complete in iSAGE, the new OK-Net Eco-Feed and SEEGSLIP project. Kostas will be joining the School of Agricultural Technology at the University of Applied Sciences of Western Macedonia in Florina, Greece, as an Assistant Professor. We want to thank Kostas for all his work while with us. He will be missed by the ORC team and we wish him and his family well on their return to Greece. We are busy finalising his replacement and will let you now more about that in due course.



**Phil Sumption**, as you may have heard, is leaving to move to Germany, but will be carrying on working for ORC on a part-time basis from there.

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## YQ and the rise of an alternative grain network

*Using indicators such as protein content to assess quality in grain has become embedded in wheat production, and yet these indices are limited in what they can tell us about a wide variety of baking or organoleptic qualities. The baking process common to large scale facilities relies on consistency and speed and that is being questioned as part of the rise in artisanal baking and the real food movement. We have gained first-hand experience of the current issues and opportunities surrounding how quality is determined in UK grain markets as sales of ORC Wakelyns Population (OWP) seed have increased and producers have questioned “what can I do with it?”*

*The diversity within OWP challenges us to explore alternative approaches to marketing of both the seed and grain (see Box 1). When it comes to the grain, Kimberley Bell of the Small Food Bakery has been pioneering the use of OWP, which has been nicknamed ‘YQ’ (Yield/Quality), in wholegrain bread and other baked goods and showing what is possible with wheats that may not comply with standard ‘quality’ measures. Alliances are now developing across the country to bring together bakers, millers, farmers and more who are looking for alternatives across the grain economy. This was explored at the UK Grain Lab conference held at the Small Food Bakery in November 2017. In this article, **Kimberley Bell** discusses working with OWP, the current state of play and approaches to alternative systems with **Charlotte Bickler**.*

**CB: It is clear that the appeal of OWP goes beyond certain traits and characteristics that it may possess. What drew you to OWP ‘YQ’?**

KB: At first it was the flavour, delicate and nutty/malty... and it might sound silly, but the silky texture of the dough we made with this flour was so enjoyable. Upon further investigation it was my interest in the story of Martin’s work and ideas that compelled me to want to make a bread with it. I think to some extent many of us (bakers) are trying to find a way to work and exist in the world that contributes in a positive way to our community and environment. It just made total sense to me that we should be trying to bake with grain from Wakelyns and to play a part in getting this new grain into the food chain somehow, and the ideas behind it into the wider discussion on the future of food.

Part of my interest in the YQ Wakelyns population was that (although a modern crop), Martin’s intentions in developing the crop seemed to be aligned with a (pre-chemical agriculture) set of values more reminiscent of the past. Looking to bring back biodiversity and farm in a low input system are certainly value sets that I believe those working with heritage varieties have in common with Martin’s work and the story of the population wheat.

**CB: We hope to test the baking quality of grain produced in our Organic Winter Wheat variety trial network (see p9 – and look out for tasters at NOCC!), what would you be looking for when working with flour samples from these grains?**

KB: Flavour. As a baker working with naturally fermented dough, I’m interested in how that flavour manifests itself after fermentation. After that, it’s the baker’s responsibility to find an appropriate product to utilise good flour. Some benchmark measures would be helpful though for bakers, as not having them can be a barrier to investing in new flours.

I have worked with two harvests of OWP YQ, milled by different millers and there have been big differences in the character (flavour and behaviour) of the resulting flour. This has as much to do with infrastructure as farming (storage and milling) but has been an interesting journey for me, learning how to cope with it, and testing my sense of responsibility as a baker to continue being an ambassador for this crop.



*Kimberley Bell demonstrates baking with the YQ - ORC Wakelyns Population at the UK Grain Lab conference.*

### BOX 1: ORC Wakelyns Population seed and grain

After extensive study of its potential to show resilience and yield stability in organic systems, and lobbying for changes to seed regulations which currently do not allow for genetically diverse ‘heterogenous material’, the EU granted a temporary experiment on the marketing of heterogenous material. OWP was launched for sale at National Organic Combinable Crops (NOCC) in 2015. The vision for OWP was for farmers to develop their own local populations from the ‘pool’ of genes provided within OWP via farm-saving seed, but the regulatory framework, and the benefits of economies of scale when it comes to haulage and processing, has led to some centralisation in seed marketing in these early stages. We are now working with Walnes Seed to market the OWP seed. As for the grain, Kimberley began baking with OWP in 2016. She has now recruited a local farmer and windmill to grow and mill the grain for the Small Food Bakery and other bakeries in Nottingham. Whilst we have followed a more traditional approach to certifying the seed, for example working with seed companies to process and market it, it has been interesting to see how the grain has been taken up by end-users interested in more alternative local economies and shortening the food supply chain.



### CB: What does local mean to you?

KB: Local means human scale and direct. It's not about a prescribed geographic area, more about a web of strong human relationships that can deliver a sense of community and sovereignty over our food systems. For our bakery, in terms of geographical proximity, it's about deciding what's appropriate on a crop by crop basis. It makes sense for me that eggs should come from a few miles down the road, but, provided a relationship can be built and maintained with a farmer, I'd be happy to consider grain to be local from anywhere in the UK.



### CB: What do you think the key elements of a successful local network are? What tips would you give growers and producers hoping to engage in something like this?

KB: Fundamentally, people need to make the time and space to come together and form relationships that will provide the network. It's critical that we work together, so, for cereal farmers wanting to trade more directly and build a community around their product, they need to get out there and meet bakers and millers. It won't take long before they find people they can work with and this will give momentum to new ideas. Making time to step outside of your work and see what others in the network are doing is essential to building these relationships. At Small Food Bakery the whole team spend up to two weeks a year travelling to visit farmers and suppliers and to attend lectures and conferences. Our network wouldn't exist without this. But it works both ways, and it's also important that our farmers and millers come to visit us too. It might sound like a luxury, but it's during these visits that new ideas present themselves, problems get ironed out and business is done. They also build trust, loyalty and friendship... These are the most important elements of a successful 'local' network.

### CB: What led you to organise the Grain Lab conference at Small Food last year? Will this continue?

KB: I think we urgently need to build localised grain economies across the UK and I thought an event of this nature might help. I have had the privilege to meet some brilliant people working with grain at all stages of the network and it seems that there are many of us that share a common aim to build strong local networks, but we are disconnected and therefore don't move forward. After hearing discussions amongst colleagues from the scientific and agricultural side talk about the obstacles they perceived to achieving this, and on the flip side, bakers speaking about the challenges they face... It just seems to me that the first step is to get everyone in the same room learning about each other's work, sharing a meal together, cross-pollinating our ideas, building empathy and knowledge in a convivial atmosphere.

I was inspired by the US Grain Gathering hosted annually by Steve Jones and the team at WSU Bread Lab. Each year they bring together a gathering of farmers, millers, bakers and scientists who spend 4 days eating, learning, teaching and spending time together. I guess I wanted to re-create this kind of learning and development opportunity here in the UK.

As a baker, to have the opportunity to come together and exchange skills and ideas is progressive in itself, but if you add the full network into the mix I think the learning and exchange can be much more powerful...

### CB: Where do you hope that the movement will go next? What role will the UK Grain Lab (see Box 2) play in facilitating your vision?

KB: I hope that we will see more farmers, millers and bakers working together in much more long term forward looking collaborations. Ideally with academics and scientists in the mix to support with their knowledge and resources. I feel that the UK is really lagging behind other countries in this and we should run to catch up.

The UK Grain Lab (bolstered by our Grain Lab conference, which will be held again at the Small Food Bakery in November this year) will hopefully become a facilitated network that can help kickstart some of these relationships, foster a culture of transparency/sharing of knowledge and help to address some of the infrastructure problems we have to overcome. It would be great to connect seed breeders and those reviving old seed with bakers to ensure meaningful and real feedback loops – rather than relying on basic lab results and supposition to determine how to take things forward.

#### BOX 2: Introducing the UK Grain Lab

The Grain Lab is a collaborative initiative between farmers, millers, bakers, brewers, chefs and researchers. The vision is to work along the supply chain, and across food and farming networks, to make innovative, diverse, nutritious and flavoursome grains available to all. The Grain Lab is inspired by the pioneering work of the Bread Lab in the US, which started within Washington State University and now conducts research on thousands of lines of cereals. Working with farmers they are identifying those that work well for growers and food processors from millers to bakers and maltsters to brewers. We will be organising gatherings across the country encouraging collaboration and creating opportunities - pick up an information leaflet or talk to the team at NOCC on 3 July, follow @UKGrainLab on Twitter, or email Steven Jacobs (steven@ofgorganic.org) or Edward Dickin (edickin@harper-adams.ac.uk) to find out more and get involved.

Check online for up-to-date details on the next Grain Lab conference and go to: [ORC website](http://ORC website) for more photos from the event in 2017 and to read Kim's interview in full.

This interview will feature as a factsheet for the CERERE project and there will be a case study of the ORC Wakelyns Population.



LIVESEED and CERERE have received funding from the European Union's Horizon 2020 research and innovation programme under agreement No. 727230 & 727848



John Turner (Grange Farm, right) is growing YQ for 2018 harvest; it will be milled by Paul Wyman (Tuxford Windmill, left). They discussed their approach to shortening the supply chain at the UK Grain Lab conference.



# Events and announcements - details at [www.organicresearchcentre.com](http://www.organicresearchcentre.com)

## Events

- 28 June 2018: Regenerative Agriculture and Chromatography.** Six-day course at Ragmans Farm
- 3 July 2018: National Organic Combinable Crops 2018.** OF&G event hosted by Mark and Liz Lea, Green Acres Farm, Shifnal, Shropshire.
- 10-11 July 2018: Trees and livestock.** Farm Woodland Forum Annual Meeting at GWCT Allerton Project, Leics.
- 18 July 2018: Agrigology Field Day.** Join Agrigology and the Royal Agricultural University in the field at Harnhill Innovation Farm, Cirencester.
- 18 July 2018: Potato event - West Wales.** Controlling potato blight field lab & opportunities for commercial seed potato growers.
- 9 August 2018: Tree and vegetables AFINET group meeting** at Wakelyns Agroforestry
- 25-26 September 2018: 12th European Organic Congress** Vienna, Austria. Organic on every table: Added value for farmers, consumers and society.

## Project Manager Agrigology

(Grade 7) Salary range £29200 - £32000 Full Time  
 ORC is looking to appoint a Project Manager, based at Daylesford, Gloucs, to oversee management of Agrigology, a web-based platform supporting farmers and growers in learning about practical sustainable farming regardless of labels. The Position is limited to 2 years with a possibility of extension. Applications must be on the ORC application form. <http://tinyurl.com/ORC-jobs>  
 The closing date for applications is : 9:00am on 16th July 2018. Interviews will be held at the Daylesford Foundation, Kingham on 1st August 2018

## Organic Congress 2018 15-16 November 2018

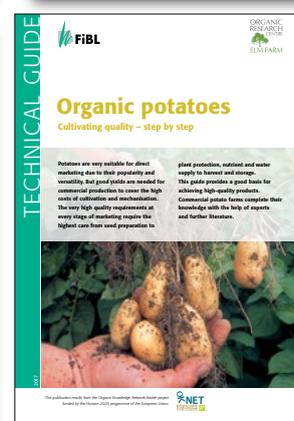
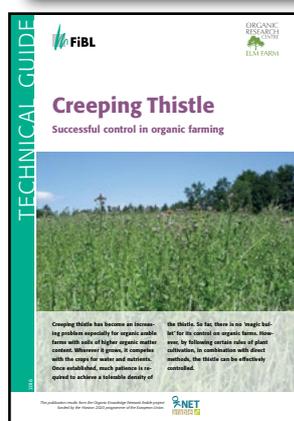
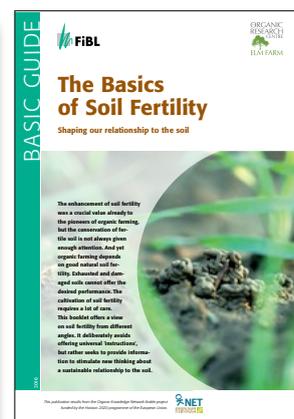
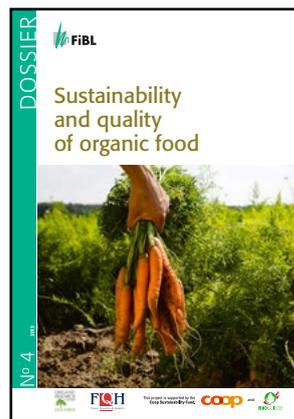
**Dunchurch Park Hotel, Rugby**  
**Going for growth – transforming organic food and farming in the UK**



**A joint event for the whole organic sector.**  
**Bookings will open in July. See ORC website for more details**



## ORC/FiBL technical guides



Download or order hard copies: <https://tinyurl.com/ORC-pubs>



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