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Hedge fund

Planting up a new hedge at Elm Farm this Spring, with Woodland Trust support and trying out the award-winning Ezee tree guards



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Organic Research Centre Bulletin

No. 115 – Spring 2014



News in brief

Agroforestry letter to Defra

In a letter to Owen Paterson MP, the Secretary of State for Environment, Food and Rural Affairs, ORC and 22 other organisations and individuals have urged Defra to reverse its decision not to adopt support measures for agroforestry under the next English Rural Development Programme. More organisations have since added their support. Defra's Lord de Mauley announced in January that, despite its potential benefits, Defra would not support agroforestry within Pillar 2 of the reformed CAP nor include it as an option in the New Environmental Land Management Scheme. The letter to Paterson says Defra has under-estimated the likely uptake by farmers and growers and sets out the potential of agroforestry in the UK, in particular its substantial environmental benefits, including biodiversity, soil, water and flood protection, combined with improvements in agricultural productivity.

UK organic market returns to growth

After the encouraging news from earlier in the year, the Soil Association Organic Market Report confirms that in 2013 the organic market returned to growth for the first time since 2008. The total organic market grew by 2.8% in 2013 compared to 2012 and was valued at £1.79billion. Organic sales are growing slightly ahead of the overall grocery sales at around +2.1%. Market confidence is returning and the increase in sales of organic food looks set to continue during 2014, but the same cannot be said for UK organic production. Defra figures for the end of 2012 show organic land falling compared with 2011 in all parts of the UK. Defra figures for 2013 are not yet available but ORC data from a small producer survey in England show whilst about 3% of respondents intend to leave the sector in the coming year, there are signs that producer confidence is slowly returning. However, the Welsh producer survey found that about 20% of producers had withdrawn in 2013. Hopefully UK policy makers will see the return to growth of the UK organic market as an opportunity to boost domestic production instead of imports and make positive moves when planning the new organic support schemes as part of CAP reform. Certainly the EU and other member states will be.

Sustainable biogas production

Sustainable biogas production - A handbook for organic farmers has been written and published by SUSTAIN GAS, a project in the Intelligent Energy Europe Programme of the European Union focused on enhancing sustainable biogas production in organic agriculture. www.sustainingas.eu

Consultation on the National Pollinator Strategy

Defra is seeking views on a proposed national pollinator strategy for bees and other pollinators in England. The strategy sets out proposals to safeguard pollinators and their contribution to our food production and the diversity of our environment. The consultation is open to 2 May 2014.

<https://consult.defra.gov.uk/plant-and-bee-health-policy/a-consultation-on-the-national-pollinator-strategy>

Research and innovation for smallholders

ORC led a workshop at the January 2014 Oxford Real Farming Conference on research and innovation for commercial smallholders. The interactive session came up with a number of topics and some potential research questions, and identified other areas where training or knowledge dissemination is needed. It was notable how much knowledge and experience was in the room and the session highlighted the value of networking and peer to peer learning. We will be exploring ways of taking this forward through our Participatory Research Network, Field Labs, training programme and organic farming information hub.

MEPs reject draft seed regulation

The European Commission's (EC) controversial and much criticised proposal for a new plant reproductive material and seed regulation has been voted down by the European Parliament. Although its draft text was rejected by 650 votes to 15 the EC has refused to withdraw its proposal and it now goes to the Council of Ministers for a final decision. If the Council supports Parliament's rejection, then the legislation process will end. Alternatively, the Council could amend the EC's text and return it to the Parliament for further consideration.

ORC Bulletin 113 The EU Seed Regulation proposals - a chainsaw to crack a nut

New UK GM trial plan

GM Freeze is leading a coalition of organisations, including ORC, in outlining the scientific and other reasons why the UK Government should say 'No' to trials of GM Camelina. Rothamsted Research has applied for permission to plant an open-air trial of GM *Camelina sativa*, a relative of oilseed rape, at its farm in Harpenden, Hertfordshire from April 2014. Raising objections via a Defra consultation, the coalition cited a number of concerns, including the possibility of GM seeds and pollen being spread beyond the test site, unintended effects of the GM process itself and the presence of a gene resistant to an important antibiotic.

Biodiversity benefits of organic farming

A newly published paper provides more evidence for the biodiversity benefits of organic farming using a meta-analysis of 94 studies. The paper *Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis*, published in the *Journal of Applied Ecology*, showed that on average, organic farming increased species richness by about 30%. This effect was greater in more intensively farmed regions.

Tuck SL, Winqvist C, Mota F, Ahnström J, Turnbull LA, Bengtsson J. (2014) Land-use intensity and the effects of organic farming on biodiversity: a hierarchical meta-analysis. *Journal of Applied Ecology*. doi: 10.1111/1365-2664.12219

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About us

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The Organic Research Centre

is the UK's leading, independent research organisation committed to developing sustainable land management and food production systems based on IFOAM organic/agro-ecological principles; disseminating knowledge to current and future farmers/land managers and other related businesses; compiling evidence on systems performance and informing public debate through communication with policy makers and opinion leaders, and through them the wider public, in order to ensure the health and well-being of soil, plant, animal, people and the environment.

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Editorial: Defra says NO (maybe)

As the process of preparing the next English Rural Development Plan draws to a close, decisions have been or are being taken which have the potential to damage the organic sector, inhibit the development of agroforestry and small-scale production, and prevent them all from delivering their full potential to generate social and environmental benefits. In a series of disappointing decisions, Defra has said:

- NO to fully costing organic maintenance payments in advance of submitting the RDP to Brussels for approval, although Defra has signalled they will review this decision later. In the meantime it is likely that maintenance payments will be announced shortly that continue the historic low level of support compared with almost all other EU countries.
- NO, it seems likely, to combining organic options with other low-input environmental options even though maintenance payments are not currently calculated to compensate for this. Apparently organic producers are compensated for restrictions on input use by premium prices and therefore do not need public support, unlike conventional producers (including LEAF and Conservation Grade producers who can also access premium prices).
- NO to ensuring that synergies between organic support and other RDP measures can be exploited by including organic status as a relevant selection criterion for those measures, or by adopting an action plan approach as recommended by the Commission.
- NO to supporting small-scale, commercial growers and other producers by excluding farms of less than 5ha from support and not establishing a small-farm scheme as is possible under EU regulations.
- NO to supporting the establishment of agroforestry systems, despite the proven environmental and productivity benefits, the EU RDP regulation providing a 75%-funded mechanism for this, and a letter signed by 23 leading organisations and individuals asking Defra to reconsider.

On the positive side, Defra has said YES to a number of organic options designed to add environmental value to organic standards, and to conversion support – but in the absence of an announcement of payment rates, concerns remain about the imbalance between conversion and maintenance payments and the potential for market distortions.

While the UK government likes to portray the EU as imposing too many rules on us, in this case it is Defra's unwillingness to respond to the opportunities provided by the EU that is the problem. According to the Commission's draft organic regulation:

'Organic production is a system that contributes to the integration of environmental protection requirements into the CAP, and promotes sustainable agricultural production. That is why measures financially supporting organic production have been introduced ... and strengthened in the recent reform of the legal framework for rural development policy'. ... 'Organic production also contributes to the achievements of the Union environmental policy objectives, in particular those of the 2020 Biodiversity Strategy, the Green Infrastructure Communication, the Soil Thematic Strategy and environmental legislation such as the Birds and Habits Directives, the Nitrates Directive, the Water Framework Directive, the National Emissions Ceiling Directive and the Directive on the sustainable use of pesticides.'

At the European level, the new CAP and RDP regulations provide ample opportunities to realise the environmental and rural development potential of organic farming, agroforestry and small-scale production, which Defra is failing to grasp, seeing them purely as market opportunities, not public goods. At least in Wales and Scotland there are signs of a more positive approach.

Organic organisations have requested an urgent meeting with George Eustice MP to review some of the most critical issues, but as yet there has been no response.

Nic Lampkin and Lawrence Woodward



Farmers reduce flood risk using agroforestry

A group of Welsh farmers have worked together to bring trees into their farming, 'water proof' their upland landscape and reduce downstream flood risk. Mike Townsend, Principal Adviser of the Woodland Trust, explains how they did it.

Recent weather highlighted one of the possible significant benefits of agroforestry – flood mitigation. Cooperative action for integration of trees across landownerships at Pontbren in mid-Wales provides an example of both farm-level and landscape-scale benefits of agroforestry systems.

Pontbren is in the rolling upland landscape of a headwater catchment of the River Severn in one of the wettest areas of the UK. Like most of upland Wales the structure of farming changed during the 19th and 20th centuries, with a shift from small-scale mixed farming to predominantly sheep farming, and with fewer and larger farms. The landscape had become simplified, field structures rationalised, and hedges removed and replaced by fences.

The Pontbren project – what can be achieved by farmers working together

Unlike alley cropping or other forms of more intimate combinations of trees and crops associated with agroforestry systems, Pontbren is a silvo-pastoral system where tree cover has been introduced to provide shelter and aid the management of sheep in ways which are perhaps, more familiar.



Infiltration rates inside the woodland were 60 times those on the pasture ten metres away. Photo: Coed Cymru.

At the end of the 1990s three Pontbren farmers, dissatisfied with the way they were farming, decided to change the way they managed the land. Although they were getting more for their stock as a result of agricultural improvements, fertiliser and feed bills were growing too.

They set out to lower their costs and to make their farms more economically and environmentally sustainable. They reduced inputs, and moved from cross-bred sheep to hardier local sheep breeds able to lamb outside and needing less housing during the winter. Given the altitude and exposure of the farms, they realised there was a need to increase shelter through restoring neglected hedges, replacing those that had been removed, restoring woodland belts and planting new shelter.

They were soon joined by neighbouring farmers, and by 2001 the group consisted of 10 farmers managing 1000 ha across the catchment. The farmers knew where the shelter was needed, which land was wet and where foot rot and liver fluke were prevalent. They were able to design hedges and woodland belts where they could help with collecting in sheep, and fence out steep slopes and wet areas.



The old hedges were coppiced, gapped up and restored as stockproof boundaries and effective shelter. Photo: Coed Cymru.



Pontbren landscape. Photo: Rory Francis



Reducing water runoff

Overland water flow in grassland grazed by sheep was a significant runoff path – in many cases more important than field drains. It soon became clear that in addition to providing shelter, the tree planting was reducing this water run-off. Initial investigations showed that water infiltration in recently planted shelter belts was 60 times that of the neighbouring grassland. As a result more extensive soil and water monitoring was put in place between 2004 and 2011, which allowed a more detailed picture of the impact of tree planting on the hydrology.

Within woodland the overland flows were greatly reduced. The improved soil structure and larger network of large pores in the woodland soil was evident within two years of planting. The results clearly showed that shelterbelts across slopes captured surface run-off and allowed it to percolate into the soil.

Through reducing overland flows and increasing infiltration, peak stream flows were also reduced. This lowered the sediment load entering streams both from drainage water, and from bank erosion.

Soil erosion is a loss to the farm of nutrient-rich soil and organic matter, but it also has a damaging effect on biological processes in the stream. As fencing of riparian planting began to largely exclude livestock from stream banks the direct impact of trampling on bankside vegetation was removed. Consequently, vegetation has recovered and stream morphology has returned to a more natural profile with riffles and pools which are used by trout and support other wildlife.

Future-proofing farms – economically and ecologically

At the start of the project only 1.5% of Pontbren was woodland. Ten years on 120,000 new trees and shrubs had been planted, 16.5 km of hedges created or restored and nearly 5% of the Pontbren land is now ‘woodland’ – or perhaps more exactly, canopy cover. This has been achieved with no loss of agricultural productivity.

There have been clear benefits to net farm income, but the business benefits are not confined to the improved efficiency of the livestock enterprises. The farmers feel that successful integration of woodland into upland livestock farming has also ‘future-proofed’ their farms, improving the capital value of the land, making it more resilient to the effects of severe weather as the climate changes, and reducing the risk of accidental breaches of biosecurity and water pollution standards.

Reducing flooding

There are also wider economic benefits of reduced flood risk and improved water quality.

Because researchers were able to study the hydrology at a number of scales it has allowed for improved modelling of the impacts of land use change.

This suggests that well-sited tree shelter belts and hedgerows in this improved upland landscape might result

in reduction in peak stream flow of around 40%. This is significant. Pontbren is one of the small catchments which feed into the Severn, notorious for flooding.

The research at Pontbren suggests that integrated tree planting and agricultural management could have an important role in creating more sustainable land drainage systems in upland catchments.

Whilst flood defences will continue to be needed, tree planting represents a cost-effective way to reduce risk. This has real economic value to society – this value is not captured through current support mechanisms.

Cost-effective measures which society can't ignore

There is an urgent need to find cost-effective ways of reducing future flood risk. In Wales alone the government spends around £44 million each year to improve and expand flood defences. The cost is expected to triple by 2035 to cope with the risks of unsustainable land use and the changing climate. This seems a high price to pay for what is essentially an ‘end of pipe’ solution.

The insurance cost of the 2007 floods in England and Wales was thought to have been around £3 billion, and could rise to £4 billion by 2035. The full costs of this year's flooding have yet to be assessed.

The undoubted success of Pontbren in agricultural, environmental, scientific and social terms has provided a model for farmers and policy makers seeking a better way of delivering essential environmental services as part of upland livestock farming.

But the approach has implications for land management elsewhere. Collaborative efforts across lowland landscapes could also contribute to mitigating flood risk through strategically located trees and woodland to increase ‘hydraulic roughness’ – in effect slowing the progress of flood waters and reducing peak river flows.

Benefits for farms and wider society

In addition to supporting production and reducing flood risk, trees and tree belts could also help improve water quality; support pollination services and biodiversity through habitat networks to provide habitat and pollen sources throughout the year; help capture of ammonia emissions from manures and point source from livestock housing; and contribute to general ecosystem resilience upon which ultimately farming itself depends.

Land use decisions have to make sense at a farm scale, but collaborative effort can produce results which have much wider implications for both farming and society.

Integrating trees into farming systems can make sense both for the farm and for society. These wider societal benefits should be recognised and supported.

Further reading

A copy of the full report authored by Clunie Keenleyside summarising the research and experiences of the farmers at Pontbren can be downloaded at: <http://www.coedcymru.org.uk/images/user/5472%20Pontbren%20CS%20v12.pdf>

Antimicrobial resistance and livestock production

In the decades following the discovery of penicillin in the 1940s antibiotics revolutionised human medicine and agricultural production. Such was their impact legend has it the US Surgeon General declared in the 1960s that the era of human infectious disease was over. In fact he didn't say that and the reality is different. It was estimated in 2007 that antimicrobial resistance (AMR) contributed to up to 25,000 annual deaths in the EU alone. Following his presentation to the 2013 Prince of Wales' Food and Farming Summer School organised by ORC, **Dr Dai Grove-White FRCVS**, School of Veterinary Science, University of Liverpool discusses how livestock production might be implicated.

Many factors have driven the re-emergence of infectious diseases; in particular the emergence of HIV, increasing urbanisation, global travel and the widespread emergence of AMR such that previously treatable diseases are becoming harder to treat. It is increasingly realised that disease threats whether infectious agents or AMR are global issues and as such must be dealt with at a global level e.g. HIV, SARS in 2003, and the rapid global spread of NDM-1 carbapenemase resistance from New Delhi since 2008.

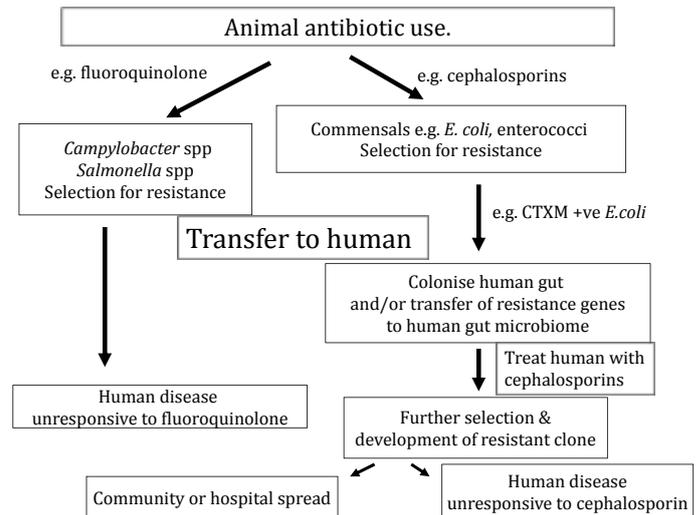
The threats to human health are real and the scale of the problem is chilling with physicians having to resort to potentially toxic antimicrobials such as colistin if the organism is resistant to all other antibiotics including the carbapenems, as is the case with NDM-1.

Antibiotic use and resistance are natural partners

Whilst it is universally accepted that AMR is an increasing problem, there remains controversy regarding the exact drivers and how best to reduce selection. It is agreed that the main driver is usage of antimicrobials in the human population both at hospital and community level. However the importance of animal usage in driving AMR is less clear. Antibiotics occur naturally and have existed as long as bacteria – in fact recent evidence suggests they play a key role in signalling in certain bacterial species. Resistance to antibiotics is a natural phenomenon and has always been present. The key point is that use of antibiotics in medicine or food production will select for resistance: thus it is a misconception to state that antimicrobial usage 'causes' AMR. The genes for AMR are found both on the bacterial chromosome and in small extra-chromosomal pieces of DNA known as plasmids: Hence the potential for transfer of AMR genes between different bacterial species. The genes are often found close to each other ('linked') on the chromosome and in plasmids – this linkage allows transfer of multiple genes – so called transferable Multiple Drug Resistance (MDR) where resistance to multiple antimicrobials can be selected for by use of a particular antimicrobial and potentially transmitted to other species.

AMR from animals to man

It is helpful to consider the issue of AMR spread from food animals under two broad headings: firstly the transfer to man of antimicrobial resistant zoonotic bacteria such as *Campylobacter* and *Salmonella* spp. In such cases it is likely that if the organism isolated from a sick individual has AMR genes, then they will have been acquired or selected for in the animal host i.e. there is a clear link between animal usage and AMR in the human pathogen.



Potential routes for transfer of antimicrobial resistance to Man

However there has been recent molecular research work with *Salmonella* in Scotland showing that the AMR profiles differ between *Salmonella* from animal hosts such as cattle and clinical patients suggesting the links may not be quite as clear cut in the case of *Salmonella* as with e.g. fluoroquinolone resistance in *Campylobacter* where the chief infection route is ingestion of contaminated poultry.

The second route for transfer of AMR from animals to man is through the food chain or environment via antimicrobial resistant commensal bacteria. These are harmless non-disease causing bacteria living in the animal's intestines e.g. many strains of *E. coli*. As such these bugs will do no harm to the individual but will introduce resistant bacteria or resistance genes, such as those for extended spectrum beta lactamase resistance (ESBL) e.g. CXTM-14 into the individual's own gut flora. If the person receives an antibiotic then selection for these resistant bacteria could occur, leading to the establishment of resistant clones in that individual. These resistant clones of bacteria could then act as a source of resistance genes for other bacteria species including those capable of causing disease such as pathogenic strains of *E. coli* associated with urinary tract infections and septicaemia. The importance of this pathway is almost impossible to quantify due to its nature.

The true costs of livestock intensification

Disease in livestock is primarily a consequence of domestication and intensification. This has allowed production of animal food products at reduced prices for the consumer but, it may be argued, those prices do not truly reflect the externalities of intensive livestock production e.g. welfare costs, environmental costs etc.



The risk of AMR to the human population may also be considered as an externality in this respect; although since the actual impact of animal derived AMR in the human population is unknown, an actual cost cannot be calculated with any degree of confidence. Nonetheless it is generally agreed that control of AMR in the human population must encompass antimicrobial usage in agriculture and efforts are being made in this respect – for example the recognition by WHO/OIE of certain groups of antimicrobials as being of critical importance to human medicine and thus worthy of restricted usage in agriculture, namely the fluoroquinolones, and 3rd and 4th generation cephalosporins.

Antibiotic resistance and intensive livestock production

Agricultural antimicrobial usage can be broadly classified as being for ‘treatment’ of sick individuals, prevention of disease in a group (prophylaxis), and treatment and prevention in a group (metaphylaxis). Whilst there is little controversy about the desirability of treating an animal suffering from a bacterial infection, there is considerable debate about the desirability of mass medication i.e. prophylaxis and metaphylaxis. The use of in-feed antimicrobials as growth promoters is associated with the development of AMR e.g. the feeding of avoparcin to pigs was associated with an increase in vancomycin resistance in their bacterial flora until the practice was banned in the EU. However prophylactic and metaphylactic medication is still carried out and is seen by many as essential for animal health welfare under certain – usually intensive – production systems. Examples might include medication of pigs at known periods of high risk and dry cow antibiotic therapy in dairy cattle for mastitis control.

There is considerable interest within the agricultural and veterinary communities in alternative strategies and these are paying dividends in terms of reducing antimicrobial use without endangering animal health e.g. the feeding of probiotics or other non-antibiotic compounds in feed, and the use of routine monitoring of individual cow milk somatic cell counts to establish udder infection status prior to treatment. Effective vaccine development and use is another key tool for reducing antimicrobial usage.

Husbandry and environment are key drivers of welfare and by extension health: massive improvements in health and welfare can be achieved by optimising environment and management practices. This is particularly the case with modern high yielding animals e.g. dairy cows. All of these approaches will minimise the use of antimicrobials. However such approaches are often costly and antimicrobials may in many circumstances offer a cheaper, albeit less effective route to disease control.

Unwise and irrational use

As well as the amount of antimicrobials used in agriculture there is the issue of ‘which antimicrobial’? All regulatory authorities agree that fluoroquinolones and 3rd and 4th generation cephalosporin usage should be minimised. But examination of antibiotic resistance profiles of most pathogens in animals reveals that, unlike in human medicine, the large majority are sensitive to most common

antibiotics. AMR is not yet a big issue with animal pathogens so rationally there should be little agricultural demand for these antimicrobials. However policy does not always reflect reality. For example, ceftiofur (a 3rd generation cephalosporin) was widely advertised a few years ago as ‘the world’s best-selling dairy antibiotic.’ Its popularity lay not in its curative abilities but in the fact that milk from treated animals may be sold, since it has no measurable antibiotic residues prohibiting its sale, thus providing a powerful economic driver for its use.

Fluoroquinolones are another case in point. These are widely used for the treatment of per-acute mastitis associated with *E. coli* infection in dairy cattle. Studies of *E. coli* from mastitic cows demonstrate widespread sensitivity to other antibiotics e.g. trimethoprim sulphamethoxazole which are not of concern to human medicine unlike fluoroquinolones. So why do farmers and vets use fluoroquinolones? This may largely be attributed to lack of good data regarding treatment regimes for animals and successful advertising campaigns aimed at both veterinarians and farmers, although advertising of antimicrobials to farmers is now banned in the EU.

Getting off the treadmill

Large scale robust clinical trials as performed in medicine are costly and hard to perform: thus many of our veterinary treatment decisions are made in the absence of robust data. Correction of this state of affairs will require considerable investment in clinical research which may have no commercial value to a pharmaceutical company – who then pays? Options for control of antimicrobial usage include legislation aimed at restricting prescribing of certain classes of antimicrobials. There is also a suggestion that supplying rights should be removed from prescribing rights on the assumption that vets prescribe certain drugs to make more money.

In the current era where the large retailers are dominant, there is the opportunity for control of prescribing at this level and in fact some retailers, notably Tesco, now require all milk suppliers to record drug usage by class with fluoroquinolones and 3rd and 4th generation cephalosporin being classified as ‘third line’ and only to be used under very specific circumstances. Initial results suggest this approach is associated with a reduction in usage of these drugs so it may offer a potentially useful control method.

Finally, it must be realised that farmers make market based economic decisions and antimicrobial usage is one such decision. The decision to use a specific intervention should be based on a cost benefit decision making process. Put simply, if antimicrobials cost more, then usage would almost certainly fall. So should antimicrobials for animals be taxed with the proceeds used specifically to mitigate the consequences i.e. to pay for the externalities?

Further reading

A useful reference for the interested reader on the state of play today is the recent report from European Food Standards Agency on AMR in livestock in the EU is www.efsa.europa.eu/en/efsajournal/pub/3590.htm



New projects starting at ORC

Agroforestry for Europe (AGFORWARD)

An EU funded project to promote agroforestry across Europe.

ORC is participating with 24 partners from across 23 European countries led by Cranfield University.

Called AGroFORestry that Will Advance Rural Development (AGFORWARD), the project has four main aims:

1. Improve understanding of the technical, environmental and socio-economic functioning of existing and new agroforestry systems,
2. Identify, develop and field-test innovations related to provisioning and other ecosystem services (biodiversity, carbon storage, nutrient cycling, resilience, stress toleration) to improve the benefits and viability of agroforestry systems in Europe,
3. Develop and update designs and practices adapted for areas where agroforestry is currently not practised or is declining.
4. Promote the wider adoption of appropriate agroforestry systems in Europe.

A central part of the project is the development of participatory research and development networks where project participants will work with land managers and other stakeholders. The networks will use existing knowledge and experience of multifunctional systems, to identify key challenges and potential innovations and improve participants existing systems. These innovations will be evaluated experimentally and on-farm.

ORC will develop participatory R&D networks centred on silvopoultry systems (such as Woodland Egg producers) and silvoarable systems within the UK. We will be collecting data from our own agroforestry research sites to model impacts on yields and ecosystem services at a field, farm and landscape scale. Additionally we will develop policy recommendations and tools for farmers and advisors.

The project runs from January 2014 to December 2017.

Wheat and Barley Breeding Improvement (WHEALBI)

Using genomic, genetic and agronomic approaches to improve European wheat and barley production in competitive and sustainable cropping systems.



The Wheat and Barley Legacy for Breeding Improvement (WHEALBI) project is an EU FP7 project with 17 partners led by the French Institut National De La Recherche Agronomique (INRA).

ORC will lead in identifying wheat and barley ideotypes with enhanced performance under organic husbandry. We will work closely with NIAB, who will be conducting similar work under different tillage regimes.

The project runs from January 2014 to December 2019.

Winter grazing cereals: DOFF research fund

An innovative, participatory project using a traditional approach to a modern problem.

ORC has received a grant from the Duchy Originals Future Farming Programme to look at the effects of grazing cereals in winter on crop-weed competition and grain yield.

Black-grass is a particularly pernicious and difficult to control annual weed on both organic and conventional farms across Britain. This project assesses the question 'How can the traditional method of grazing winter wheat with sheep be optimised to control black-grass populations?'

Delayed drilling employing a stale seed bed and pre-emergence spraying is proving less and less effective against high levels of black-grass which has evolved both later germination and herbicide resistance.

An early and densely sown crop could have a competitive advantage over germinating black-grass in the autumn by:

1. making use of nutrients in the soil before weeds as well as reducing nutrient loss from leaching;
2. earlier and more reliable establishment and development of canopy cover; and
3. allelopathy.

The potential downside is that too 'forward' or 'winter-proud' crops can be more susceptible to pests and disease. Grazing a crop prior to and/or after the winter months can mitigate this. Potentially it can also encourage crop tillering and increased grain numbers per ear, reduce lodging risk and aid the establishment of spring under-sown leys. However, grazing the crop may also cause grain yield losses if grazed at too late a stage. The reduced canopy cover in the spring could then mean reduced crop competition for light later in the season - although there is evidence that weed growth is checked as a result of grazing by trampling and selective grazing removing the apical growing point.

This project seeks to optimise these methods. It developed out of a weed control field lab on John Pawsey's Shimpling Park Farm, in Suffolk. Trials will be set up on John's farm in a first winter wheat field with significant black grass populations. John Pawsey said: "Black-grass is increasingly a problem for organic and non-organic farmers alike and with this trial we hope to see how a traditional practice might help us deal with a weed problem in an organic rotation which is pushed to deliver more autumn cropping. While we have experimented with grazing winter crops in the past, this trial will hopefully put in some rigorous replications to help us discover the benefits, be it from weed suppression, disease control or increased yield. Hopefully it will be all three!"

Farm walks and field labs will be held during the two seasons of the trials, so that the results can be discussed and experiences shared. The first trial will start in autumn 2014.



Photo: Garden Organic



Intensive Sustainability or Sustainable Intensification – which way forward for organic farming?

The 8th ORC Organic Producers' Conference, at Aston Business School 22-23 January, set out to establish whether organic farming fits with the Government's Sustainable Intensification strategy, or if we can find better ecological and knowledge-based solutions to meeting sustainability challenges. Is producing ever more food really the priority, or are the climate change, environmental pollution, soil and water degradation and biodiversity loss problems now too great? Should agriculture focus on intensifying the sustainability of food systems rather than intensifying production and hoping that some sustainability benefit follows?

Opening plenary

Sustainable food systems – the challenges we face

Charles Godfrey (University of Oxford), Sue Lockhart (Sainsbury's), Gunnar Rundgren (GroLink) and Iain Tolhurst (Tolhurst Organic Produce).

Four speakers presented their views on the current situation and the challenges for a sustainable food system. Professor Charles Godfrey outlined how a number of global challenges are coming together and how the concept of sustainable intensification could address this. Sue Lockhart presented Sainsbury's '20x20 Sustainability Plan' for tackling sustainability issues within their supply chain. Gunnar Rundgren gave a radical view of the problems of industrialised food systems and the need for a whole system approach to create a regenerative food system. Iain Tolhurst provided a grower's perspective of the problems suggesting Sustainable Optimisation might be a better way forward than Sustainable Intensification



Charles Godfrey

- Soil quality and management;
- Manure and nutrient management;
- Water quality and management;
- Food security and productivity;
- Food quality, safety and public health
- Energy and carbon;
- Agricultural systems diversity;
- Biodiversity;
- Landscape and heritage;
- Animal health and welfare;
- Farm resilience and profitability;
- Social capital and rural communities

Answers varied according to topic, but some clear and common threads came through:

The need for better **education**; helping the public understand the role that sustainable and organic farming plays; and more training and knowledge exchange activities for producers.

Creating and maintaining **diversity** at all levels: Genetic diversity in our animals, crops, seeds and breeds; more species in our habitats; and more habitats in our landscape.

Efficiency improvements such as better nutrient cycling and manure/slurry spreading systems on farms; better communication and more cooperation throughout the supply chain; waste reduction and more recycling by society at large.

Ensuring **better recognition** for the benefits that organic and sustainable systems deliver is a fundamental requirement. This will ensure better prices through the market; place more value on ecosystems services through 'true cost accounting' and highlight genuinely sustainable alternatives.

Arable workshops

Growing Oats – fulfilling the potential

Nick Fradgley (ORC) and Simon Penson (Camden BRI).

Oats are an important part of many organic rotations and are one of the most stable yielding of arable crops. Nick Fradgley presented the outcomes of ORC's QUOATS project, looking at the best yielding oat varieties for organic production; Simon Penson talked about the uses and health benefits of oats in the food industry and Henry Creissen delivered Ross Dawson's presentation on the market for naked oats. Discussions followed on the problems that organic producers face as a result of not having organic focused recommended lists and the quick turnover of varieties from breeders making it hard for producers to select the most appropriate varieties.

Sustainability round table session

Achieving sustainability in practice – how can we address the challenges?

This session was about making use of the collective experience of delegates. Small groups discussed the practices that contribute to sustainability, the barriers to sustainability and the steps to overcome the barriers in the following areas:



**Reducing the productivity gap – nutrients**

Julia Cooper (Nafferton Ecological Farming Group), Jochen Mayer (Agroscope) & Daniel Seaborne (Herefordshire & Ludlow College)

This session pointed out that nitrogen is often the limiting factor for crop yields in organic systems, although in many cases the challenge is not the amount of N but the distribution throughout the rotation (i.e. there is a flush of N following incorporation of leys followed by a deficit toward the end). The presentations also highlighted the situation of phosphorus (P) and potassium (K) in organic systems with results from the DOK trial in Switzerland showing a strong relationship between available P and K with yields of clover and grass. It was pointed out that P balances are often negative in organic systems, and these rotations could therefore be said to be mining reserves. Despite this, organic farmer Daniel Seaborne presented results from his nutrient balance, showing a small surplus for P and K, with measured P and K levels having stayed relatively stable over ten years of cropping.

Reducing the productivity gap – weeds

Bo Melander (Aarhus University, Denmark), Ken Tuffin (farmer) & William Hudson

The workshop included presentations outlining various management strategies to control weeds in organic arable farms. Bo Melander presented results from the Danish HighCrop project comparing the effectiveness of different strategies on two important perennial weeds; common couch and sow thistle. Adding slurry, intensive midsummer cultivations, catch crops or ploughing were all identified as important. Competitive crops such as winter rye are also important to include in organic rotations. Ken Tuffin from Pearce Seeds provided his experiences of using a propane burner to control broad leaved weeds in a false seedbed. This technique could also potentially be used in cereal crops post emergence as grasses are able to withstand burning better at early growth stages. William Hudson described the potential of the CombCut machine that uses rows of adjustable cutting blades to remove stiff stemmed weeds from cereal crops.



Bo Melander

Participatory plant breeding with wheat populations

Nick Fradgley (ORC)

Participatory plant breeding (PPB) is a farmer-driven approach to plant breeding. Selections are made on-farm by the grower with researchers and plant breeding professionals acting solely as advisors. PPB techniques can potentially be highly valuable to arable organic farmers in the UK, a sector largely overlooked by commercial breeding companies. Wheat populations offer a great source of diverse genetic material from which selections can be made by growers. This allows the farmer to adapt the crop to their own specific requirements depending on agronomic and quality requirements. The session highlighted the need for farmer-friendly techniques to select for grain quality parameters including protein, vitamin and mineral content and composition.

Future arable research priorities for organic farmers

Vicky Foster (HGCA)

This was an interactive session to identify current and future challenges for arable growers, discuss how new research activities might address the challenges, in order to feed into the HGCA's next research strategy. The main challenges facing the industry were identified as; adapting to climate change; weed control; markets and varieties for edible oil crops; soil fertility - mobilising P & K, cover crops, mycorrhizae; min-till; yield & harvest stability of wheat; pests of red clover; lack of organic specific R&D and cost-benefit analysis needed for short and long-term studies. Variety trials were identified as the **number one priority** for organic research. There is a big disconnect between the HGCA Recommended Lists and organic growers. Wheat should be the main focus as there is currently more support for oats. Some issues were raised relating to knowledge transfer and the lack of an organic information hub.

Horticulture workshops**Building local/regionally adapted seed systems**

Ben Raskin (Soil Association) & Peter Brown (Tablehurst Farm)

The central focus of this session was the need to maintain seed diversity and encourage local seed production. Both of these factors are of vital importance in providing plants with the capacity to adapt to increasingly unstable environmental conditions. The session included discussion of the implications of proposed new EU seed legislation on biodiversity (Ben Raskin), early results from open pollinated seed trials carried out under the Duchy Originals Future Farming Programme (Ben Raskin on behalf of John English) and a new initiative by the Biodynamic Association to breed and produce organic, open pollinated seed in the UK (Peter Brown). There was a lively discussion and general support for developing new seed systems to produce resilient seed varieties fit for purpose.

Making our growing systems truly local

Wendy Seel (OGA)

This session examined how local our growing systems really are, looking in detail at growing system value chains and inputs into these systems. Wendy Seel, leading the session, proposed that as growers we look at the whole chain to work out where we can regain control and make our systems more sustainable. She suggested we rank inputs in terms of sustainability and economic impact and asked for volunteers to take each input and work it back through the value chain. We discussed starting by identifying those inputs individual growers can tackle and those that would be best examined collectively (e.g. by SA/OGA). The idea that knowledge connects everything was discussed; that knowledge like seeds and growing media can be outputs as well as inputs and should not just be considered costs to the business. Wendy will circulate a template to collect information on each input via the OGA forum.



Wendy Seel leads the session



Innovative local marketing – beyond posh nosh

Rob Alderson (Manchester Veg People), Pete Ritchie and Heather Anderson (Whitmuir Organics) and Ulrich Schmutz (Garden Organic/CAFS)

The focus of this session was the discussion of practical examples of innovative and successful marketing strategies for growers and farmers. It looked at ways of promoting sales and connecting farms with restaurants, shops and consumers without compromising the organic message and through shortening food chains in urban areas (on a national and international level).

Grassland workshops

Home grown feed and forage – closing the system

Tom Tolputt (Farm Consultancy Group) & Simon Cutter (Model Farm Society)

Farms focusing on grazing livestock in the UK rely on few grassland species and therefore there is a need to develop mixed swards for highly nutritive and medicinal value to maintain animal productivity and health. The session, organised by the Pasture-Fed Livestock Association, addressed the importance of home grown feed and forage as potential alternatives for pasture fed livestock. Simon Cutter and Tom Tolputt provided valuable information on the use of functionally diverse plant species mixtures for grazing livestock. Discussions were on managing diverse swards and forage feeds. The session highlighted that home-grown forages can be cost-effective feeds for organic and non-organic pasture-fed livestock, making a major contribution to flock and herd profitability by minimising overall feeding costs.

Maintaining productivity from grassland long-term

Tim Downes (JR & MC Downes & Son), Edward Goff (Hindford Grange) and Tom Willoughby.

The central focus of this session was grassland management and farm practices to enhance forage productivity from organic pastures in the long term. Declining forage production on organic farms can affect the economic sustainability of organic produces and eventually lead them to de-convert. The session speakers, all experienced dairy farmers, put great emphasis on reseeded and ensuring high clover swards but identified declining pasture yields in the last few years. The session did not come up with definitive solutions but it did highlight that soil compaction and fertility as well as manure management are key factors that have to be addressed in the future.

Soft rush control in grassland

Ian Cairns (SAC Consulting and Dianne Horn (Slack House Farm))

Soft (common) rush can be a significant problem in grassland, particularly in permanent pasture and rough grazing on areas with poorly drained soils. Reasons for this include its strong competitive ability against more desirable species, a very high rate of seed production and long dormancy. The session started with an open discussion

to identify participants' experience of soft rush control. Ian Cairns then presented the benefits of a staged farm-specific approach to control focusing on strategies shown to be effective for organic systems. This was followed by a practical example from Dianne Horn of her experiences at Slack House Farm in Northumberland and included feedback from a workshop session held there earlier in the year.

Organic beef and lamb markets: opportunities and bottlenecks

Tim Leigh (OLMC), Stuart Vile (Graig Producers/Meadow Quality) and Philip Jones (Lan Farm)

In the last year the organic red meat market showed slow growth after some increases in demand for beef in the spring. High feed costs, reduced shelf space in most supermarkets and some international competition all contributed to this. Producing good quality carcass specifications remains important. Opportunities with mail order and direct sales, and how to improve the link from the supply of organic beef stores were discussed. Philip Jones' presentation focused on work undertaken to improve grassland management and herd health to ensure store animals would be profitable for finishing units.

Reducing antibiotic use for sustainable agriculture

Christine Gosling (Berkeley Farm) and Richard Young (Sustainable Food Trust)

Christine Gosling (Berkeley Farm) talked about the lessons learnt from a field lab to reduce antibiotics on dairy farms. Nine farmers are developing their own strategies to manage mastitis while reducing antibiotic use. Richard Young focused on the contribution of farming, especially dairy, to antimicrobial resistance. We do not have any treatments against certain bacteria since they have become resistant to all known antibiotics. Urgent action needs to be taken unless we want to face a post-antibiotics era, suffering from diseases which have been under control for the last 50 years. Complementary and alternative medicine (CAM), holistic approaches and further research monopolised the discussions which should encourage the ongoing field labs.

Other topic workshops

CAP Reform: What's in Store?

Emma Hockridge (SA), Mark Measures (IOTA), Gillian Westbrook (IOFGA), Debs Roberts (SOPA) and Keri Davies (Wales)

This provided a timely reminder of where things have got to with the planned reforms. Speakers from England, Scotland, Wales and Ireland pointed out some of the likely impacts for organic farmers. The discussion highlighted the planned exemption of organic farming from greening measures under Pillar 1 of the CAP. Speakers highlighted the range of measures to be implemented to support organic farming within agri-environment schemes and the other possible measures (e.g. support for mentoring in Scotland and farm planning support in Wales). However, there was a sense of disappointment with the so-called reforms, which in practice seem to be encouraging business as usual with some tinkering at the edges.

**Addressing the skills gap: Information and innovation**

Kate Collyns (Grown Green), Steve Roderick (Duchy College) and John Pawsey (Shimpling Park Farms).

The three speakers addressed different ways that the skills gap has been and could be addressed. Kate Collyns talked about the Soil Association Apprentice scheme and her own experiences as an apprentice. Steve Roderick explained and demonstrated an IT solution; the SWARM hub is a website that supplements more traditional training. The aim is to turn science into practice. John Pawsey talked about his experiences of the on-going Duchy Originals Future Farming Programme's Field Lab on black grass control. He sees the Field Labs as pooling knowledge from the coalface: farmers coming up with and testing ideas. The reassuring conclusion from the session was 'The answer is in the room.'

Agroforestry: A question of scale – from forest gardens to landscapes

Bethan Stagg (Schumacher College), Martyn Bragg (Shillingford Organics) and Mike Townsend (Woodland Trust)



Martyn Bragg

Agroforestry systems are increasing in popularity and on a range of scales, from small forest gardens to farm-scale systems and all the way through to landscape level management. This session explored some of the benefits and challenges of these diverse systems. Bethan Stagg described the productivity and diversity of the small-scale forest garden at Schumacher College in Devon. Martyn Bragg presented the apple-based silvo-horticultural farm-scale system at Shillingford Organics. Mike Townsend introduced the Pontbren Project, a landscape-scale agroforestry system, using trees to help improve the efficiency of upland farming management. Discussions centred on the practicalities of establishing agroforestry systems, choice of systems and sources of advice.

The organic principle of health, in practice

Anja Vieweger (ORC) and Lawrence Woodward (ORC and Whole Organic Plus)

Lady Eve Balfour's concept that 'the health of soils, plants, animals and man is one and indivisible' led to the IFOAM Principle of Health. The wording has changed with time but this principle still embodies the concept that the quality of the products of an organic system will relate to the farm environment in which the plants or animals are produced. Thus the impact of variability in management on product quality may be the key to explaining why scientific studies have failed to find consistent differences between organic and conventional. Several scientific reviews have also come to different conclusions because they have used different statistical approaches. Scientific effort currently focuses on

quantifying differences between products rather than on health itself. This reflects the difficulty of whole-systems studies. A re-focus on the health principle in organic farming is needed.

UK organic markets – trends and opportunities

Susanne Padel (ORC) and Finn Cottle (Soil Association)

The organic market is pulling out of the recession with January 2014 figures showing an increase of 1.2% and the market as a whole growing at approx. £1.2m a month. The dairy sector is leading the recovery and accounts for approx. 30% of the organic market. It is an important entry point for organic consumers. Profiling organic shoppers shows the young are willing to pay more, which is positive news.

Community woodfuel : Integrating energy production into farming systems and communities

Andrew Shadrake (Dartmoor Circle) and John Halle (Sharenergy/Woolhope Woodheat Co-op)

The speakers shared their very different experiences and approaches to community woodfuel. Andrew talked about how his work in Devon has brought together communities and local farms and farmers to manage neglected hedges as a biodiversity and woodfuel source. John talked about his experiences of setting up the UK's first heat co-op and how to finance, set up and implement the plans.

Closing Plenary**Making sustainability happen!**

Nic Lampkin (ORC), Rob Alderson (Manchester Veg People), Peter Brown (Tablehurst Farm), Simon Crichton (Triodos Bank) and Heather Anderson (Whitmuir Organics).



Simon Crichton, Rob Alderson, Peter Brown & Heather Anderson

Nic Lampkin's presentation challenged the common assumption that organic farming does not contribute to food security. N fertilisation levels appear the most important factors explaining the yield gap between organic and conventional, making it questionable whether systems productivity can be increased with simple solutions without compromising genuine sustainability. The following discussion started with four short presentations illustrating how organic businesses make sustainability happen. It was concluded that the organic sector should 'enable global citizens' and will be stronger if it works together.

For full conference proceedings and photos go to:
<http://www.organicresearchcentre.com/?go=Information%20and%20publications&page=2014Conference%20overview>



So what has the current EU Organic Regulation ever done for us?

The European Commission (EC) has just announced its proposals for a new organic regulation and a new EU wide Organic Action Plan (see page 15). Before finalising these, in 2012 it commissioned an external ex-post evaluation of the existing regulation to run alongside an internal ex-ante impact assessment of the new one. ORC was part of the evaluation team and here **Susanne Padel** and **Jörn Sanders**, who led the study, summarise some of the key conclusions.

Why evaluate the EU organic food regulation?

The organic sector in Europe has grown substantially in the last 20 years, both in land area and retail sales. During this period the EC introduced two consecutive regulations governing the production, labelling and inspection of organic food and farming. In 1992, an EU-wide definition of organic farming was introduced with the Council Regulation (EEC) 2092/91. This provided the basis for consumer trust and for policy support, and has helped protect organic farmers against false and misleading organic claims. After many amendments this first regulation was replaced in 2009 by the current Council Regulation (EC) 834/2007 and implementing rules.

Scope of the evaluation

The focus of our evaluation was to explore the adequacy of the current rules for organic production, controls, labelling and trade with third countries, with respect to achieving the objectives as they are stated in the in Articles 1 and 3 of the Regulation. These are to 'provide a basis for sustainable

development of organic production, while ensuring the effective functioning of the internal market, guaranteeing fair competition, and ensuring consumer confidence and protecting consumer interests.' Furthermore, organic production shall 'establish a sustainable management system for agriculture, aimed at respecting nature's systems and cycles, contributing to high levels of biodiversity, protecting natural resources, producing products of high quality and a wide variety of foods and other agricultural products that respond to consumers' demand.'

The EC specified eight evaluation questions (EQs) that the team had to address. Key conclusions summarised in this article relate to production and processing rules including objectives, principles and some exceptional rules (EQ2); control systems (EQ3); import regime (EQ4) and labeling/consumer perception of organic farming (EQ5). The report also addresses further questions relating to the scope (EQ1), degree of simplification of the current legislation compared to before 2009 (EQ6), creation of EU added value (EQ7) and sustainable development of the organic farming sector (EQ8).

Table 1: Contribution of production rules to objectives and principles

Production rules	Respect nature systems/cycles	Contribute to bio-diversity	Make responsible use of natural resources			
			Energy	Water	Soil	Air & climate
Prohibitions [A: 4 (a) iii and (c)]						
No mineral nitrogen fertilisers [A: 12.1 (e)]	✓	✓	✓	✓	✓	✓
No herbicides, only authorised products [A: 12 (h), B: Annex II]	✓	✓	✓	✓	✓	✓
No landless livestock production [B: 16]	✓		✓			✓
No hydroponic production [B: 4]	✓			✓	✓	
No use of GMOs [A: 9]	✓					
Strict control of external inputs [A: 4 (b)], minimisation of the use of non-renewable resources [A: 5 (b)] and recycling of wastes and by-products [A: 5 (c)]						
Only permitted fertilisers: low-soluble mineral fertiliser [A: 4 (b) iii] and soil conditioners when need proven [B: 3, Annex I]	✓	✓			✓	
Only authorised plant protection products when established threat [A: 12.1 (h), B: Annex II]	✓	✓			✓	✓
Feed primarily from holding or same region (with exceptions) [A: 14.1 (d)]	✓		✓			
Stocking density and use of livestock manure restricted to maximum of 170 kg N/ha and year [B: 3 & 15.1]	✓	✓	✓	✓	✓	✓
Obligations to use good husbandry practices and prevention [A: 4 (a) iv and 5]						
Maintain crop health through prevention (natural enemies, the choice of species and varieties, crop rotation) cultivation techniques and thermal processes [A: 12.1 (g)]	✓	✓	✓		✓	
Number of livestock limited to minimise overgrazing, poaching, soil erosion or pollution [A: 14.1 (b) iv]	✓	✓		✓	✓	✓
Preference for inputs from organic origin (Art 4b with exceptions (Art 4d))						
Manage entire holding organically (with exceptions) [A: 11]	✓	✓	✓	✓	✓	✓
Only organic seed (with exceptions) [A: 12.1]	✓					
Only organic feed (with 5 % exceptional rule for monogastrics) [A: 14 (d) ii]	✓					



This article focuses on results relating to production rules, the control rules and consumer perceptions.

What we looked at

The evaluation was based on the following sources:

- 13 national case studies (consisting of 246 interviews with key stakeholders, and an analysis of national regulations, private standards and grey literature) which provided in-depth knowledge of the implementation of legislation in individual EU Member States.
- Specific case studies of one fraud case 'Gatto con gli stivali' to understand how effectively the control system deals with fraud.
- Web-based stakeholder survey with 265 respondents, mainly about their attitudes to the control systems.
- Case studies of three 'suspected' cases of organic products imported from countries outside the EU to understand the adequacy and effectiveness of the import regime.
- Interviews with EU-level stakeholders/experts, supplemented by the analysis of a large number of relevant European documents.
- Web-based consumer survey with 3 000 respondents conducted in six Member States (Estonia, France, Germany, Italy, Poland and the United Kingdom) to fill gaps in the literature regarding the degree of knowledge about, and the perception of the EU organic logo and some other issues.

Key conclusions – overall objectives and principles

The evaluation concluded that the Regulation is generally adequate and provides a sound basis for sustainable development of organic production in the European Union, but pointed to a number of areas where the regulatory framework could be improved.

- Scientific literature confirms that organic farming delivers in developing a sustainable management system for agriculture and some of these effects can be directly linked to the rules laid down in the Regulation (see Table 1).
- Stating the objectives and principles of organic agriculture within the Regulation has contributed to a more harmonised perception of the concept of organic farming, particularly among control bodies and competent authorities.
- However, not all areas for which objectives and principles are stated are detailed in the rules: for example, in relation to energy use and water management.
- Nor do the production rules fully limit the intensification of some production sectors, such as housing for poultry or greenhouse production.
- One aim of the 2009 revision resulting in Regulation 834/2007 was simplification, which in the context of agricultural policies in Europe means reducing red tape for both farmers and administrators by making rules more transparent, easier to understand and less burdensome to comply with.
- The evaluation concluded that the current legislative framework for organic farming has significantly improved transparency compared with before 2009, but it has not simplified administration and management.

Key conclusions – exceptional rules

The system of exceptional rules was established to cater for differences in the state of development of the organic sector throughout Europe when the Regulation came into force.

- Our evaluation examined three exceptional rules which allow for the use of non-organic inputs (young poultry, feed for monogastrics and seeds) and found each case to be different regarding the extent of use of exceptions and the present availability of organic inputs.
- The present system of exceptional rules has not resulted in improvements in the availability of organic supplies for all inputs. However, lack of data across the EU and all sectors prevents firm judgment being reached in all cases.

Key conclusions – control, labelling and consumer awareness

The rules relating to control were found to be mainly adequate, but effectiveness and efficiency could be improved through moving to a system based on risk-assessment.

- In some member states shortcomings in the supervision of the control bodies and in the information exchange were noted.
- The labelling rules address the use of the protected terms and include provision on the EU organic logo, which aims to increase recognition of organic products in all EU countries.
- Across six countries, a quarter of respondents recognised the new EU organic logo, ranging from 13% in Poland to 17% in the UK and 36% in Estonia.
- High recognition in France (35%) was attributed to the fact that the 'Euroleaf' has been clearly associated with the well-established French national AB logo.
- It is recommended to explore how the logo could be more visually associated with the protected terms, for example by stating the indication of the control body in the same colour and directly next to the logo.
- The majority of respondents to a consumer survey (3000 participants in total, 500 each in six countries) were familiar with the main issues of organic farming, such as growing without the use of synthetic chemicals, and production by methods protecting the environment or without the use of genetically modified seeds.
- However a large proportion also thought that some 'incorrect' statements were part of the legal definition, such as 'needs to be produced on small farms' and 'needs to be produced locally'.

Key conclusions – import regime

In the last two decades, organic supply and distribution chains have become increasingly organised globally. For farmers and consumers in the EU, it is important that organic products from third countries are produced according to equal requirements and that control systems guarantee conformity to the same extent as within the EU. The present import regime was judged to be largely adequate in terms of achieving the global objectives of the Regulation, but with some shortcomings mainly in relation to the resources required to assess equivalence. Importers reported that the process can be rather slow and remains only paper based.



Overall, the evaluation revealed that the Regulation provides the EU with added value, notably by defining the common rules for the organic market. It has also contributed to the development of the organic farming sector, but regulation is only one factor among many; others include commodity markets, support payments for conventional and organic farming and consumer demand for organic products. Organic sector development continues to vary between Member States, from those in the early stages of development to well established, maturing markets. Barriers to organic conversion continue to exist throughout the EU but again vary in different Member States. There have been clear indications that the EC has taken our evaluation seriously in developing its proposals for a new Regulation and Organic Action Plan. But the EC's own stakeholder consultation and internal impact assessment provide different elements.

Without any doubt the last EU Regulation and Action Plan of 2004 had a massive impact on the development of the organic sector and these forthcoming ones will also.

Reference

Source: Sanders, J (2013) Evaluation of the EU legislation on organic farming. Thünen Institut, Braunschweig, Germany. http://ec.europa.eu/agriculture/evaluation/market-and-income-reports/organic-farming-2013_en.htm

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New EU Organic Regulation: fine words and good intentions are likely to create uncertainty for years to come

*The EU Commission (EC) has published proposals for a new regulation governing the production and sale of organic food in the EU. It is a mix of good intentions and inadequately thought out provisions, based on a limited assessment of the impact on organic production, with too much detail left to delegated acts. Due to be introduced in 2017, it could lead to a decline in the organic sector but before that the proposals will generate much uncertainty. **Susanne Padel** and **Lawrence Woodward** have made an initial assessment.*

In summary, the proposed regulation will:

End all derogations or 'exceptional rules', which means all certified producers will be required to use 100% organic inputs and agricultural ingredients including seed, livestock (including chicks), livestock feed and ingredients for food processing. Transitional rules will be provided separately in a delegated act.

- End parallel production including the use of non-organic livestock on conventional land. It will require the whole farm (unit/holding - not clearly defined) – to be 100% organic.
- Require that all livestock feed – in the case of cattle and sheep, or 60% for pigs and poultry, comes from the farm or 'region', but it does not define what is meant by 'region'.
- Require automatic decertification following low levels of contamination from an 'unapproved substance' (pesticide) even if the contamination is beyond the control of the operator (including farmers). This will create a huge inspection burden which will largely fall on the operator.

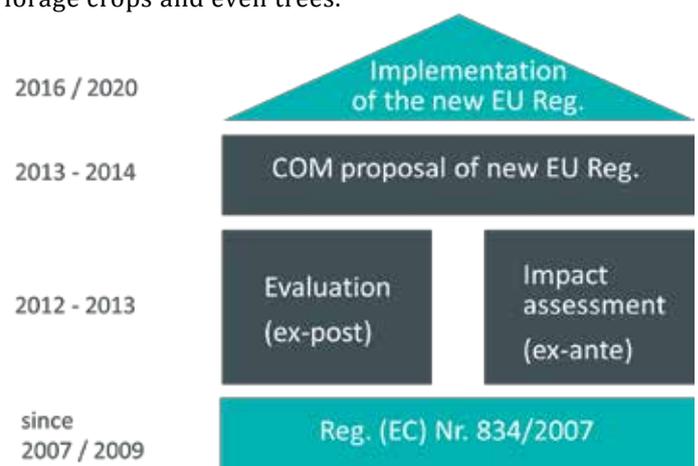
Some of us have been arguing for the end of derogations and a determined move towards whole farm and close to 100%-based organic production for a long time. So shouldn't we be welcoming these proposals? The problem is not so much what they are proposing to do but how and when they might do it.

Uneven development of the organic sector

Organic farming is a biologically based production system that is practised across the ecologically and culturally diverse European Union. As a result it is variable in its development and proximity to being

able to put all its principles into practice. In terms of availability of organic inputs, some countries are much better developed than others, but all have problem areas. At this moment there are few, if any, parts of the EU where the organic sector could operate without some use of non-organic inputs and it is uncertain when this situation can change. DGAgri, the responsible part of the EC, believes that removing derogations will strengthen the organic sector's integrity and environmental performance; although they have produced limited evidence to support the latter claim.

Many countries have major structural obstacles ranging from the make-up of farms to lack of production capacity and market shape and development, not to mention ongoing technical issues, such as nutrition for some classes of livestock and the virtual non-existence of organic plant breeding and organic seed production for a whole range of crops grown including many vegetables, forage crops and even trees.





The dilemma of derogations

It has been frustrating to see how the sector has continuously relied on derogations but there has been some progress. For example, the organic ruminant livestock sector has adapted well to feeding 100% organic rations since the derogation was removed. Some derogations are still needed. Pretending they are not could lead either to a contraction of organic production in some parts of the sector or to higher production costs. The Commission does acknowledge this in its impact assessment and also that *“stricter rules can be seen as a barrier to conversion, notably because insufficient availability of inputs such as seeds in their organic form when stricter rules are implemented.”* It expects this to only be a short-term effect, but we are unclear what this conclusion is based on. The EC has placed much emphasis on the views expressed by citizens but the likely impact on organic producers receives much less attention. The use of delegated acts for the transition from the current rules to the new ones means that the detail of when and which derogation will be phased out is not transparent at present.

The danger and uncertainty of delegated powers

A major problem is that it is unclear how rigidly the new regulation will be implemented. The Commission is proposing to give itself ‘the power to adopt acts to supplement or amend elements of this Regulation’ through ‘delegated acts’ Whilst it can call on a panel of experts for advice it is not obliged to do so and it certainly does not have to hold wide or full stakeholder consultation or engagement on all issues; nor does it have to publish a programme or timetable for its use of such powers. It does have to report their use to the Council of Ministers and the European Parliament but in practice, unless there is a political dimension, this is a formality. The only thing the proposed regulation tells us about how delegated powers will be used is that the EC is obliged to issue a report on the availability of organic seed and plant reproductive material at the end of 2021. In all other areas it is uncertain how flexibly or otherwise delegated acts will be used.

Given the EC’s clearly stated belief that the public want to see an end to exemptions and derogations and that terminating these ‘exceptional acts’ will speed up the development of the organic sector, it can be assumed that, initially at least, the EC will seek to act in a robust and rather inflexible way. It is this and the surrounding uncertainty which could devastate the sector.

Lacking in detail and clarity

One can criticise the way the proposed regulation has been written and how the document has been structured but the EC’s clear statement that it is setting out to create a regulation based on organic principles and in accord with people’s expectations of organic should be welcomed. The fact that the EC is trying to ensure these principles and expectations are brought into practice should be applauded. As it stands, however, the proposal is too full of uncertainty and many seemingly ill-thought-through proposals where difficult details have been left to the EC to sort out with its delegated acts. There are too few places in the document where one can place a tick and far too many question marks.

Here are a few key points:

- ✓ Risk based controls will be introduced removing the need for annual inspections for low risk operators
- ? Control is to be split between DG Agri and DG Sanco with the later taking the lead. An end-product-focused approach is inappropriate to dealing with the nuances of an ecological approach to production processes and systems.
- ? Group certification will be introduced to encourage smaller producers (under 5ha) to become certified. Whilst it should be applauded to reduce certification costs for them, some certification bodies are opposed to this and there are likely to be complaints of unfair treatment from small farmers with holdings over 5ha.
- ? Only one certifier will be allowed in any specific supply chain. This is intended to avoid cracks and opportunity for fraud or miss-selling. It is unclear how it will work and whether it constitutes unwarranted intervention in the Single Market.
- ? Harmonisation of actions for non-compliance throughout the EU will be introduced but there is no definition or detail.
- ? Some good intentions are expressed about harmonising third country equivalence and controls but changes could impact both positively and negatively on domestic production. There has been no adequate risk assessment published.

Unknown impacts could be devastating

Overall and in some specifics the proposals are far-reaching and will have a huge impact on some individual operators, some types of organic businesses and the viability of the whole EU organic sector in its current form. Although alongside the proposal the EC has published its own impact assessment it does not, in our view, adequately assess these impacts. It looks as if the EC has been overwhelmed by its own good intentions and swamped by the unbalanced responses, 60% from France, to a poorly framed public consultation.

It is clear from both the EC’s internal review and the commissioned external evaluation of the existing regulation that changes had to be made. But it is far from clear that a whole new regulation is needed. Nor is it clear who, outside of the EC, supports these proposals.

The proposals will now go into trilogue discussions (between the EC, Council of Ministers and European Parliament). Some member states, including the UK, have already indicated significant unease with the proposals and it is hard to see that the draft will be passed in its current form. However, the EC has built its proposals on the moral authority of the goal of enhancing the integrity of organic production in response to public demand. The perspectives of the organic sector and member states can be cast as protecting vested interests. This would be very short-sighted. Without producers who are willing to farm organically the expectations of consumers for a high quality organic product with low residues cannot be met.

We shall know more in the coming weeks and months and will keep you informed.

The new proposal and all the supporting documents can be found at http://ec.europa.eu/agriculture/organic/home_en



Organic cereal varieties: the need for selection and breeding

Organic farmers are often faced with a lack of information about which varieties to grow. There is no cereal breeding for organic production in the UK and no national data on appropriate variety recommendations. Options for variety selection are a combination of the HGCA Recommended Lists (RL) based on non-organic trials, suggestions from seed merchants and personal experience. **Nick Fradgley** and **Martin Wolfe** from ORC and **Nicola Harris** of Pearce Seeds discuss the problems.

Modern conventionally bred varieties with a high yield potential when grown under ideal conditions are able to realise that potential, but are much less resilient under lower fertility and more variable organic farming environments¹. Trials in the UK and other parts of Europe under organic conditions indicate that, because of the large system differences, information from variety trials run under non-organic conditions can be misleading². We have recently highlighted the limitations of the HGCA yield data for organic variety selection by comparing information from organic trials with that provided by in the HGCA's RL.

Organic trials

Pearce Seeds (www.pearceseeds.co.uk), an agronomy and seed business, have been conducting organic variety trials on a range of crops including spring and winter wheat, barley, oats and triticale to enable them to better advise organic farmers on variety choice. Their winter wheat trials included 15 varieties grown over two years at another farm site in Dorset. This allowed us to statistically examine variety performance for each site during a single growing season. A statistical comparison, using analysis of variance, indicated significant differences in yield between varieties within each year ($p < 0.001$) and variety by year interactions ($p = 0.02$) with some varieties, such as JB Diego and Alchemy, maintaining yield stability across sites. Other varieties, such as Invicta or Gravitas, were less stable producing high yields in one site-year combination but low yields in the other site-year combination (Figure 1).



Pearce Seeds trials site from the air

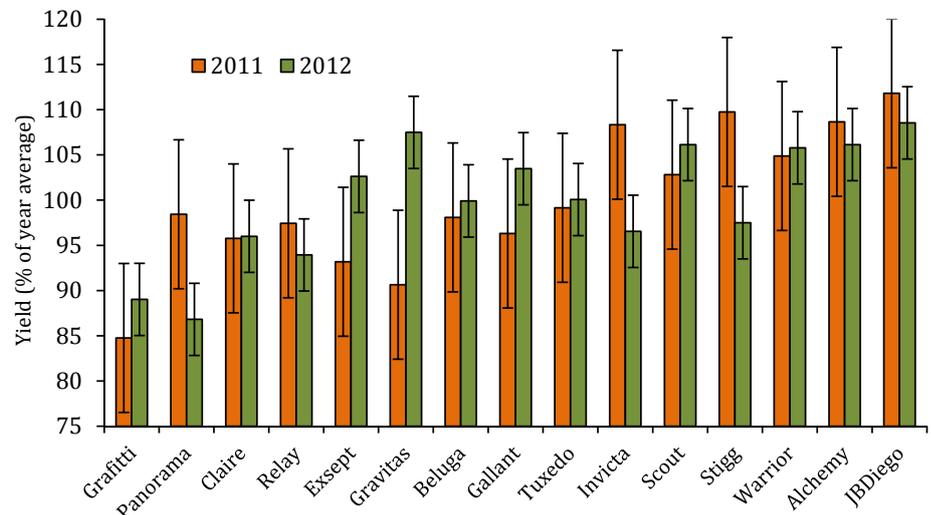


Figure 1. Differences in grain yield between varieties in two organic trials in two years at different sites. Average yields in each year were 8.5 and 6.6 t/ha in 2011 and 2012 respectively. Error bars indicate standard error.

HGCA Recommended List comparison

We compared these results with information provided by the HGCA in their RL from trials in conventional systems. When looking at data from all crops there was only a weak positive correlation between organic and conventional variety yields. Some crops, such as spring barley, actually showed a negative correlation ($p = 0.042$) between variety yields across the two systems (Figure 2). Similar negative correlations have been seen in ORC winter oat trials.

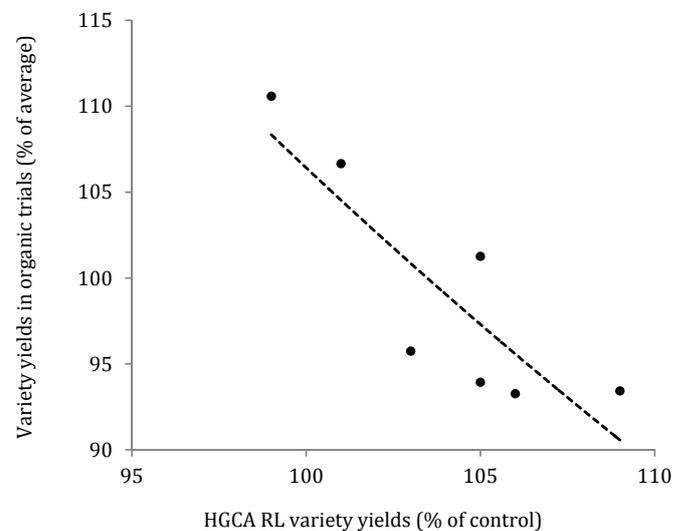


Figure 2. Relationship between average variety yields in conventional HGCA trials and organic trials for spring barley varieties: Garner, Magellan, Propino, Quench, Sanette, Tipple and Westminster.



A note of caution, however, is that the Pearce Seed trials were limited to one region of the country, which leaves open the possibility that the differences between them and the wider scale HGCA trials could be due to site and year effects rather than system effects. Therefore, it is important to highlight the conclusion of Przystalski *et al* (2008)² that, for the moment, farmer choice should be based both on the results from both larger scale non-organic trials (such as the HGCA trials) as well as trials conducted under organic systems. Not forgetting, of course, that farm and farmer experience is vital.

The need for organic breeding

As a variety's potential yield is less of a determinant of performance in the more variable conditions on organic farms, variety choice should be based on criteria other than grain yield such as appropriate disease resistance, grain quality and weed competitive traits including height and early establishment rate. It has been suggested that organic farming can benefit from modern conventional breeding through new disease resistance traits and greater harvest index but lower nutrient requirements and competitive ability may be more important in organic systems³. Older or traditional varieties and alternative crops often prove valuable in this respect, although some modern varieties can have appropriate characteristics. For example the winter wheat variety Claire, on the RL but not hugely popular in the conventional sector, has proved to be about as resilient as ORC's YQ composite cross population in ORC trials.

Breeding cereal varieties specifically for organic conditions could greatly reduce the organic/conventional yield gap. For example, there is encouraging yield data for spring barley variety 'Evergreen', which has recently been developed in Denmark specifically for organic systems. It performed particularly well in the Pearce Seeds trials, yielding 143% of the average, and was also the highest yielding untreated in the conventional trials. Its performance has been attributed to its good disease resistance and tall straw.

Such data from the organic trials suggest that organic breeding programmes could generate better varieties for organic agriculture. The development of regional organic breeding and selection, such as the ORC wheat populations programme⁴ would serve organic farming well and help to increase national productivity and stability.

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New European Commission Action Plan for Organic Food and Farming

On 24th March, the European Commission published its action plan for organic food and farming from 2014-2020. The last one, published in 2004, heralded significant changes in the organic regulations. This one focuses more on support actions, with the Commission undertaking to:

- **Increase awareness of EU policy instruments** by
 1. publishing an informative document in 2014 for farmers, processors and retailers, outlining organic regulations and policy support;
 2. including organic farming as a specific theme in CAP information measures;
- **Ensure awareness of EU organic regs and the logo**, by
 3. continuing to raise awareness of the information and promotion support available.
 4. conducting surveys on consumers' awareness of the EU organic logo and confidence in and understanding of the EU organic farming scheme;
 5. revising its Green Public Procurement criteria by the end of 2015 and developing specific information material on organic products in public procurement.
- **Promote research and innovation to overcome challenges in organic rules**, by
 6. organising a research and innovation priorities conference in 2015;
 7. strengthening research, exchange and uptake of research results in Horizon 2020 ERA-Net and other research funding frameworks;
- **Undertake monitoring and evaluation**, by
 8. Publishing regular reports on EU organic production statistics;
 9. Analysing added value in organic food supply chains and barriers to entry;
- **Ensure consumer confidence in organic products**, by
 10. encouraging Member States to explore synergies and simplifications between activities of Accreditation Bodies and Competent Authorities;
 11. proposing the integration of organic regulation requirements in the TARIC database;
 12. developing electronic certification of imports for the internal market
 13. assisting Member States in developing and implementing an organic fraud prevention policy;
- **Reinforce the external (trade) dimension of EU organic production**, by
 14. continuing to support and cooperate with trade partners in developing countries;
 15. considering increased convergence of standards among leading organic partners and explore the possibility of a plurilateral agreement;
 16. exploring different possibilities to gather and to analyse statistical data on volume and value of trade with third countries;
 17. supporting the development of Codex Alimentarius rules on aquaculture organic wine;
 18. increasing protection of the EU organic logo in Third countries.

http://ec.europa.eu/agriculture/organic/documents/eu-policy/european-action-plan/act_en.pdf



Health concepts in organic agricultural systems

The basis of the principles and practice of the organic agriculture movement is the connectedness of soil, plant, animal, man and ecosystem through health. But 'What is health?'; 'How can health be measured?' **Anja Vieweger** and **Thomas Döring** have led a project, sponsored by the Ekhaga Foundation, to clarify and critically assess 'organic health' concepts; review current approaches to define and measure health, and bring together disconnected debates.

Aspects of health in agricultural contexts are mostly approached in separate discussions within soil science, plant science, animal science and human medicine, with little interaction or communication among these disciplines.

Our study looked at the five agricultural domains of humans – animals, plants, soils and ecosystems and investigated which criteria are used to describe health within each of them and to identify any links or common ground. This was done by performing a quantitative text analysis on health criteria in (a) the current scientific literature and (b) expert statements from conducted interviews. Nearly 50 descriptors of health were rated according to their suitability as criteria of health. Additionally, in two international, interdisciplinary expert workshops, health concepts in agriculture and the IFOAM principle of health¹ were discussed.

Health: pinning down the meaning

In the first workshop, the cross-disciplinary use of the notion of resilience emerged as a universal and measurable criterion. Participants agreed that resilience can be applied to a wide range of subjects – soils, plants, animals, humans and ecosystems². Similar results emerged from the quantitative text analysis, which indicated that the terms most often used to describe health in all five domains are function, resilience, maintenance and resistance (see Figure 1). Other terms are frequently used in one domain (e.g. productivity and sustainability in soil health), but much less frequently or not at all in the others. Overall 42 different terms were used as criteria of health in the studied texts, showing the high diversity of conceptual approaches. At least 24 different terms were used in each domain; with the exception of animal health, where we found only 12.

Communicating health

As concepts are not equally shared among the domains, it becomes clear that the specific 'languages spoken', terms and concepts used in different domains can lead to obstacles and difficulties when the organic principle of health is applied in a general way. This underlines the importance of clear communication of the meaning of health in different domains for research, the formulation of principles and rules and their translation into practice.

The second workshop identified important next steps towards a better understanding, application and communication of the IFOAM principle of health in the areas of practice, policy and research including: a) clear identification and demonstration of health concepts in organic agriculture; b) continued dialogue among disciplines and stakeholders; c) a gap analysis for regulations and standards of organic agriculture; d) establishment of a reference system (e.g. long-term trials) for research purposes.

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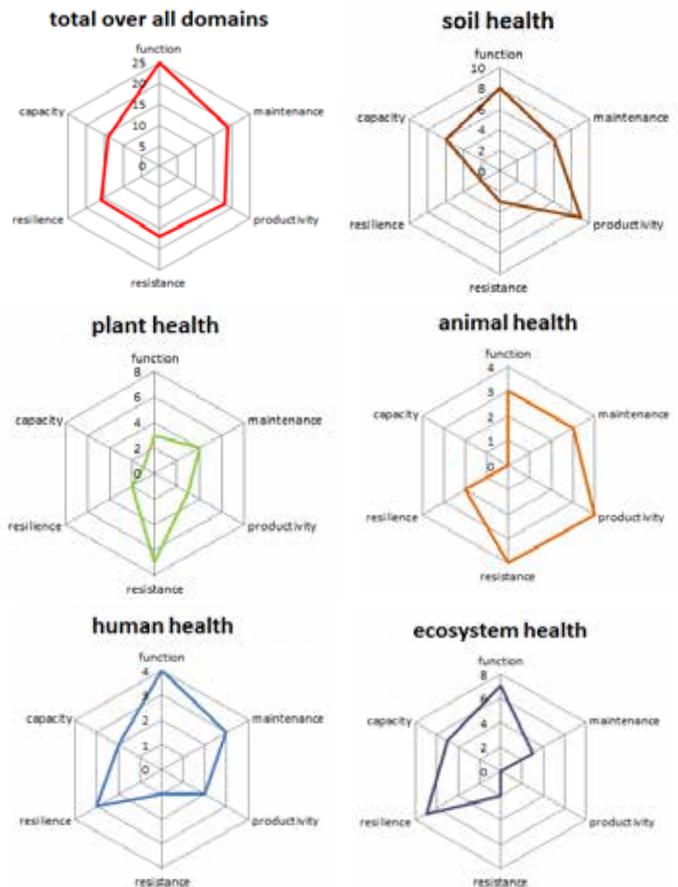


Figure 1: The six terms used most frequently to describe health by the authors of the 75 analysed papers; the graphs show how often these overall 'top-six' terms are used in each of the five domains.

One health or linked healths?

The literature of the past century reveals that many studies describe health links covering parts of agricultural systems; e.g. interactions between soil and plant health; and the 'One-Health' approach, addresses links between human and animal health. However, the system as a whole and links between all domains is not very well described.

Therefore, an intensified and continued interdisciplinary dialogue between soil science, plant pathology, veterinary science and human medicine, is necessary for a more comprehensive understanding of health in agriculture.

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Events and announcements - details at www.organicresearchcentre.com

Events

18 June 2014: Fertility building leys in arable rotations and ruminant diets. Field lab 2 at Wimpole Hall Farm, Cambs.

19 June 2014: ORC Open Day Wakelyns Agroforestry, Suffolk. Seeds to trees – the value of diversity.

1 July 2014: National Organic Cereals 2014. Rectory Farm, Milton Keynes

7-9 July 2014: SOLIBAM final congress. Diversity strategies for organic and low input agricultures and their food systems. Nantes, France.

10 July 2014: Participatory plant breeding with diverse wheat populations. Field lab at Shimpling Park Farm, near Bury St Edmunds

21-24 July 2014: Royal Welsh Show, Builth Wells. OCV Organic Food and Farming Centre.

13-15 October 2014: IFOAM World Congress 2014 - Building Organic Bridges, Istanbul.

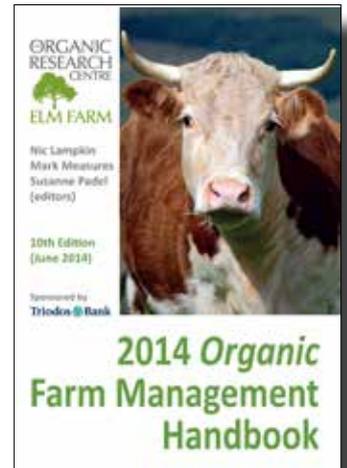
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Can you help us fund a Solar PV installation at Elm Farm?

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This will allow us to complete the energy cycle, with our own renewable electricity powering the heat pumps that make the ground-sourced heating system work, as well as generating funds for our work.

We are inviting donations or preliminary expressions of interest from supporters willing to invest for terms of 5-10 years – capital to be repaid with (modest) interest.

If you are potentially interested, please contact Nic Lampkin at ORC. Early responses would be very helpful to allow us to gauge interest.

