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The difference between price and value

"It's money for old rope" - I was half listening to Edward Leigh, Chairman of the House of Commons Public Accounts Committee. At the end of a parliament disgraced for all time by its attitude to expenses and ruinous banking practices, was he talking about being an MP or a banker?

He then mentioned *"letting your hedges grow"* and I reasoned he was referring to that irresponsible, unnecessary activity ironically called hedge fund management. That's one type of hedge to be cut down or grubbed up instead of getting laid, I thought, when I woke up and realised he was actually talking about the Organic Entry Level Scheme (OELS). Or more precisely the National Audit Office report on OELS.

In the wake of the financial crisis, it is difficult to think of any occupation more likely to get things wrong than politicians and auditors. Clearly Edward Leigh is wrong about hedges; it's not easy to manage a hedge properly. And the NAO knows little about the management of ecosystems (see article page 3). Even worse its report is uninformed, unimpressed or at odds with the approach known as *"broad and shallow"* on which many of Europe's environmental stewardship schemes are now based.

It is not alone in this, which is concerning, as discussions of CAP reform begin again in earnest. Framing the concept of *"value for money"* solely around things that are easy to count and easy to price leads to a very limited perspective; missing the interactions that make ecosystems work and the way farming systems can enhance or destroy them.

This audit of OELS was undertaken because as a small scheme it was easy for the NAO to do. Criticisms contained in the report also apply to the bigger ELS. These schemes and others were a good starting point to encourage environmental stewardship on farms. They might now reasonably be made less shallow, but they are about land use and should be broad and will therefore continue to be difficult to audit using narrow pricing methods. That doesn't mean they are not value for money.

Lawrence Woodward

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An end to premature culling of male dairy calves?

In response to pressure from animal welfare groups, the Soil Association has decided, on the organic farms it certifies, to end the practice of culling male dairy calves at birth. It wants such culling to stop within the next five years and has asked its dairy producers to draw up transition plans (starting January 2010) to achieve that end.

"Most of our members agree that culling and disposing of young calves is wasteful and a symptom of an unsustainable farming system. The change is also in line with the government's food security agenda," says Phil Stocker director of farmer and grower relations at the SA.

Good alternatives

There are good alternatives to ensure male dairy calves become a useful resource while giving them a quality of life, says Mr Stocker. *"Many farmers are evolving their breeding strategies towards more dual purpose strains, giving greater levels of robustness while avoiding poor conformation male calves. Others are working to grow the UK organic rose veal market, as well as collaborating to rear calves more cost effectively."*

But not all organic certifiers agree that this SA calf initiative is a good idea. Richard Jacobs, chief executive of Organic Farmers & Growers is among them. *"I'm sure everyone agrees that it is desirable to stop the slaughter at birth of dairy bull calves, both organic and non-organic. However we do take some issue with the approach being taken by the SA. We feel that forcing the farmers to stop slaughtering, with very little available in terms of alternative outlets for the calves, is merely pushing the problem onto the farmers, not tackling it as an industry-wide approach. We're currently talking to our licensees to understand their experiences and this will inform our strategy on the issue."*

Stores into conventional

Brian Goodenough who runs 400 organic Jersey X Friesians at Eling Farm just outside Newbury has been pondering the male calf problem for some time. *"I have tried fattening the steers but not really making any money. I have found a reasonable market for stores into conventional but it is still not great profit."*

"But this year I have managed to sell most of them as calves for £35 each. They have all gone as conventional but I cannot see why someone should need to shoot them. Of course this may well be different the further West you go and an allowance would need to be made for people with TB in their herd who may struggle to move them on. There is a good argument for sexed semen as this takes much of the problem away and delivers more quality beef into the market."

Organic standards permit sexed semen if it is physically (rather than chemically) separated. It seems most effective on heifers, although it currently narrows the choice of bulls. However, it will inevitably become more widespread and cheaper over time, and should massively reduce the number of male dairy bred calves being born.-

Case study: Eastbrook Farm, Wiltshire

Fifteen years ago, Helen Browning decided to experiment with rearing calves for veal. She erected a new building that made it possible to use older or temporarily unfit cows to rear calves. All her calves – around 180-200 a year – are reared by these 'nurse' cows. While the dairy heifers are weaned at around four months, and the beef crosses at four to six months, the veal calves stay on the cows all through their lives. In every other way, however, they have the same high standard of care that all calves receive; plenty of space and bedding, free access to quality hay, silage and oat diet, and go out to grass with the cows in the spring.

A cow will usually rear four calves, depending on her stage of lactation, general health and productivity. It is assumed that each calf will need around six litres of milk a day, so the cow needs to be fed as though she is a reasonably high performance dairy animal. When a cow comes into the calf unit for the first time, she will often be reluctant to take calves. The building has some pens with yokes that allow the cow to be held while feeding, so that calves can suckle under supervision.

Occasionally, cows do not take to calf rearing at all. But once they have reared one batch, they will usually accept new groups without any fuss. Heifers seem to have an amazingly strong maternal instinct and will love calf rearing, often much more than the milking routine.

In the spring and summer, cows are turned out with their calves once they have bonded well and the calves are strong enough. This may be at only a week or two; if the calves are very young they will not usually join a group of older ones. Once the group dynamic has been established, it is better to keep it stable. It is fine to remove calves as they are selected for slaughter, but young calves may be pushed off their mum by the older, stronger ones.

A clean grazing system is maintained for veal and all first year calves but, unlike the rest of the calves, they do not get a lung worm vaccine, so it is important to keep an eye out for coughing. A faecal sample will be taken every couple of months to check for this and other parasites.

Cows and veal calves will continue to receive an oat/pea supplement at grass at around 1-2 kg/day, depending on grazing quality. The calves are not castrated, which aids rapid growth and good muscle development, and any calves that are not sold as veal by 8-9 months go on to beef at 14-16 months.

In Helen Browning's opinion, the challenge is not so much in producing veal but in finding a good market for it. Her veal is sold through her own home delivery system, in her pub and to independent butchers and restaurants.

She points out the key challenge in the production system is maintaining good growth rates on a mostly forage diet, especially if rearing for beef. High quality silage is crucial to this in winter months. The non-forage part of the ration is 20-25% pea or beans, with 75-80% oats, all home grown.



A critique of organic farming or the Entry Level Scheme more generally? A report from the NAO.

Nic Lampkin

An official report attacking organic farming, and this time its environmental credentials, was published at the end of March. Farmers Weekly (31/03/10) headlined the story 'Defra's organic entry scheme 'not good value for money' and Edward Leigh MP, Chairman of the House of Commons Public Accounts Committee, was quoted in the Daily Telegraph (30/03/10): 'The scheme allows farmers to opt to be paid for activities they were carrying out anyway. I would say that this is money for old rope – being paid for letting your hedges grow.'

At the heart of this mini storm lies a report from the National Audit Office (NAO) evaluating the English Organic Entry Level Scheme (OELS) (www.nao.org.uk/organic-farming-2010). But dig a little deeper and in fact its criticism was not directed at the organic farming component specifically: it actually concluded that: *'to the extent that it has encouraged adoption of organic farming, the Scheme has contributed to the achievement of environmental benefits... Research indicates that organic farming delivers environmental benefits, and in particular has been shown to have benefits for biodiversity.'* However, it also highlighted that Defra *'has insufficient research evidence to quantify the extent to which the Scheme (our emphasis) has contributed to achieving benefits of this kind, or how the impact may vary between farming sectors'*.

Previous participants

The report also identifies that many farmers have been participants in previous agri-environment schemes (presumably earlier versions of the organic schemes) and are continuing with previously adopted practices, but doesn't recognise specifically that this permits environmental benefits to continue to be delivered – implying that there is a one-off gain to be made which does not need to be sustained.

Criticism was focused on the additional Entry Level management measures, and that the money paid for these 'should have had more demonstrable environmental impact over and above the benefits secured from organic farming'. It identified that 57% of agreements featured hedgerow management options and 42% grassland with low/very low fertiliser input options, while only seven per cent had opted for measures to protect birds and insects.

The approach used in the NAO report illustrates two common problems with evaluation of organic farming schemes. Firstly, being 'organic' is treated as a single item with very little attention paid to the individual production practices that have to be adhered as part of meeting organic standards. A full evaluation should include separate assessment of the impact of, for example, reliance on biological nitrogen fixation and soil organic matter accumulation in the fertility-building phase of the rotation, or the non-use of herbicides and heavy restrictions on pesticide use, as equivalent measures to the ELS measures.

Secondly, there is a real challenge as to how the impacts of a 'systems approach' such as organic farming to delivering agri-environment benefits can be measured, because of the very wide range of organic systems that may be encountered and the wide range of potential impacts that can be identified.

The other aspect which the report fails to address sufficiently is the connection to the organic market. The report does identify that market prices are often more important in maintaining viability of organic farm businesses than the OELS payments, and claims that the payments at least mitigate the financial costs, in a few cases more than compensating. However, it does not examine the extent to which producers (particularly beef and sheep but also some dairy and horticultural producers) are actually achieving a premium in the current market situation.

High uptake on larger farms

The report identifies that take-up of the scheme broadly reflects the take-up of organic farming methods in the farming industry as a whole, which is not surprising given that more than 85% of certified organic producers also participate in the OELS. It also identifies that the uptake was highest on larger farms, but fails to recognise explicitly that more extensive farm types, which find it technically and financially easier to convert, tend by their nature to be larger.

Perhaps lack of confidence in the organic market is more of a reason for the decreasing levels of uptake identified, but there are others – not least perhaps a lack of attention to the organic options on the part of Natural England front line officials. There is a real danger that the much heralded Environmental Training and Information Programme will fail to interact and communicate appropriately with the Organic Conversion Information Service.

Organic farming can deliver

There remains a strong case that organic farming can deliver ecosystem services and public benefits. But perhaps we need to look again at the current OELS model where additional environmental measures are patched on to the central organic component, with the core undervalued both in terms of the impact on producers and on the environment.

As more producers adopt systems based on real organic/agro-ecological principles, influenced by the increasing cost of oil-derived inputs rather than the prospect of premium prices, perhaps we also need to be thinking about a scheme that is still system based, but less closely connected to the organic market. This would allow greater uptake of organic farming methods, but with less potential impact on those who currently rely on organic premiums for their livelihoods.



Foliar diseases and their yield effects on organic wheat

Thomas Döring et al*

To achieve high yield performance reliably is a challenge in organic wheat cropping in the UK. However, when trying to optimize organic wheat growing it is not always clear which factors are the most limiting. It is commonly accepted that foliar diseases such as rusts, Septoria, or mildew can seriously curb both yield and quality of cereals. This view is based largely on field trials comparing varieties with and without fungicide but maintaining high fertility with mineral fertilisers, and using susceptible varieties (e.g. Milne et al., 2007; HGCA Recommended Lists). So, the question remains - how do foliar diseases affect wheat yields under organic growing conditions?

In a collaborative research project (Wheat LINK, co-funded by Defra and industry partners), the Organic Research Centre and the Scottish Agricultural College examined the effects of several different management options on the yield of organic winter wheat. Among the factors studied were variety choice, sowing density, row width and undersowing with clover. The field trials were conducted over three years (2005/6-2007/8) at three sites (Wakelyns Agroforestry in Suffolk, Sheepdrove Organic Farm in Berkshire and Chapel Farm in East Lothian).

This article concentrates on the effect of foliar diseases on yield, for which data from seven field trials were analysed (Wakelyns and Sheepdrove from all three years, and Chapel Farm from the third year). We found a strong influence of year and site on the severity of foliar diseases, with differences in disease levels between the trials exceeding a factor of ten. In five of the seven trials, Septoria dominated the disease spectrum, while mildew was the dominant disease at Wakelyns in the first year and yellow rust at Chapel farm in the third year. However, there was no trial in which the total level of foliar disease negatively affected the yield of the wheat crop (Fig. 1 shows a selection of three trials).

In two out of seven field trials, there was even a weak but significantly positive correlation between disease and yield, i.e. in these trials higher disease scores were associated with higher yields. Such an effect might be explained by mycorrhizal associations (Gernns et al., 2001); alternatively, at low levels of fertility there can often be positive correlations of nitrate availability with both disease and yield: it is only at higher levels of nitrate nutrition that the disease reaches damaging levels.

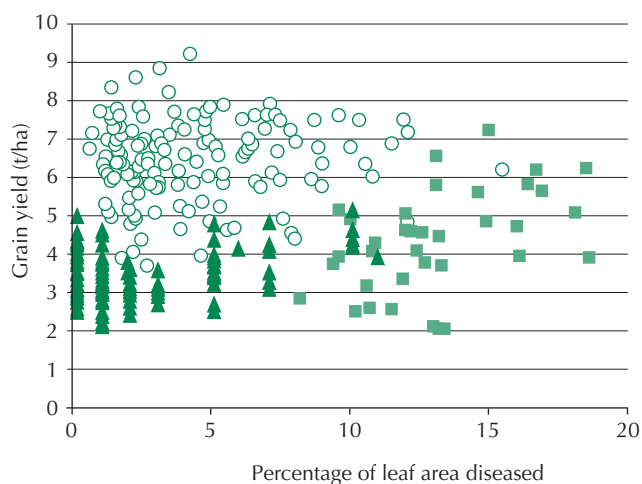
These findings indicate that there are likely to be factors that determine wheat yield that are more important than leaf diseases, at least under the particular organic conditions that were trialled. The results also highlight the ability of wheat plants to compensate for stress, in this case foliar disease.

Of course, the lack of disease-induced yield losses might only be valid under conditions of relatively low yield potential, low disease pressure or low disease susceptibility. With the three trialled varieties (Aristos, Hereward and a wheat population), the choice of variety did not significantly affect the response of yield to foliar diseases in six out of the seven field trials. However, different varieties with higher susceptibility to diseases are likely to show a stronger yield response to disease load (Østergård et al., 2008).

Ambitions to increase yields substantially in organic wheat could therefore face limits set by fungal pathogens under certain conditions (e.g. Cooper et al., 2006). We need to ensure that the entire growing system across the whole rotation has improved resilience against fungal attack. In the field, pathogen populations change over time and frequently develop strains that break resistance genes in varieties (Wolfe & McDermott, 1994), so dedicating large areas to a monoculture of the same variety is a risky approach. Instead, to make the system more resilient against pathogens, it is advisable to increase the diversity in the system, e.g. through rotations, variety mixtures, or mixed cropping (Finckh & Wolfe, 2006).

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Figure 1: Relationship between percentage of infected flag leaf tissue (foliar diseases, x-axis) and grain yield at 15% moisture content (y-axis) in wheat from the third trial year (2007-08). Open circles are observations from Wakelyns Agroforestry, green triangles represent data from Chapel Farm, and light green squares are from Sheepdrove Organic Farm. For Wakelyns the relationship between disease and yield is not significant ($r = 0.00$, $p = 0.59$), for the other two sites, there is a weak but statistically significant positive correlation between the disease score and grain yield (Chapel: $r = 0.42$, $p < 0.001$; Sheepdrove: $r = 0.43$, $p = 0.005$).



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Trans-Atlantic partnership in education for sustainability

In October 2008 ORC, the University of Kassel in Germany and the College of the Atlantic in Maine, USA joined together in a project linking the three institutions in developing education and training in sustainable food systems.

More commonly known by its campus name of “Witzenhausen”, Kassel has been at the forefront of organic research and education since 1981. It is the home turf of a number of researchers, teachers and students well known to the organic movement in the UK. These include Hardy Vogtmann, Angelika Ploeger, Engelhard Boehnke and our own Nic Lampkin and Susanne Padel.

College of the Atlantic, based on the coast of Maine, was created in 1969 to study the relationships among humans and the natural world. It offers a four year undergraduate degree and a Master of philosophy in human ecology. The study of sustainable agricultural systems is an increasingly important component of its curriculum. It has its own organic farm and maintains contact with organic pioneer Eliot Coleman.

The programme is funded by The Partridge Foundation, a US Trust which is committed to environmental projects and to the development of young people to be “advocates for

sustainability”. It began in 2009 with staff exchange visits. ORC’s Roger Hitchings participated and taught in a course in Maine during that spring.

Student activity kicked off in earnest in August last year with a month long course for 11 students in the UK and in Germany looking at all aspects of grain and bread production. A major conference was held in Maine in October. Individual student visits took place throughout the year and the first US student joined the Masters course at Witzenhausen.

March of this year saw the first three interns from College of Atlantic arriving for 10 week stints at ORC. Another grains course is planned for this summer and we plan for more student exchanges to take place.

We are very pleased to be taking part in this programme. The crisis facing our planet and its food systems are global but it affects different parts of the world in different ways. This kind of international co-operation is important in ensuring that a coherent global response can be developed – one which understands differences and builds on what we have in common. Our aim is to roll out the programme so that more students, including those from the UK, can participate in the future.

Global market growth despite the recession

Latest data from the The Research Institute of Organic Agriculture (FiBL) and the International Federation of Organic Agriculture Movements (IFOAM) shows that globally some 35 million hectares of agricultural land are now certified according to organic standards (data as at the end of 2008). There are almost 1.4 million organic producers.

“Compared to the 2007 data, almost three million hectares more were reported,” says Helga Willer of FiBL. “Growth was strongest in Latin America and Europe.”

“This is good news,” says Markus Arbenz, IFOAM's Executive Director. “The markets world-wide continue to demand more organic produce despite the economic turbulence. We particularly welcome smallholders from developing countries into the organic movement. We have learned in recent years that conversion to organic agriculture supports food security, climate change adaptation, and biodiversity conservation.”

The greatest share of the global organic surface area is in Oceania (34.7 per cent), followed by Europe (23.4 per cent) and Latin America (23 per cent). With its vast grazing lands, Australia continues to account for the largest certified organic surface area, with 12 million hectares, followed by Argentina (4 million hectares), and China (1.9 million hectares).

The global market for organic products reached a value of over US\$50 billion in 2008, with the vast majority of produce and

products being consumed in North America and Europe.

The results of the study The World of Organic Agriculture were presented at the BioFach Organic Trade Fair in Nuremberg in February this year. The study includes comprehensive data sets and numerous illustrations and graphs. Further data is available at www.organic-world.net

Organic marketing campaign update

After a busy six months of fundraising, the UK bid to the EU for generic marketing funds for organic has now been sent to Brussels. A decision is due in July this year which will confirm if the EU will award match funding to the campaign.

The total sum raised from more than 70 “pledgers” totals £320,000 per year for three years. This means a £2 million campaign to promote UK organics may be on the cards for later this year. This impressive show of industry support illustrates the enthusiasm and energy that underpins efforts to help the organic market back into double digit growth as soon as possible.



Paying more for added ethics - “Organic Plus” values and their relevance to consumers

Susanne Padel and Katrin Zander

The global market for organic food has tripled in value in the last eight years and was estimated to be worth US\$46 billion in 2007. The vast majority of sales are concentrated in Europe and in the US. In 2007, the European market was estimated to be worth €16.2 billion and several countries reported annual growth rates of more than 10%. The market has grown substantially since the middle of the 1980s as a result of growing consumer demand and increased policy support, including a European Regulation defining organic production (Willer and Kilcher, 2009).

But this strong market growth and globalisation are seen as problems by many organic farmers and consumers and this is reflected in the debate about the conventionalisation of organic agriculture (e.g. Darnhofer, 2006; de Wit and Verhoog, 2007). Producers of organic food are concerned about globalisation because they fear competition from countries where production costs may be lower due to climatic conditions, lower costs of land and/or labour and lower production standards. Many are looking to identify special product qualities that allow them to differentiate their organic products.

On the other hand, consumers increasingly criticise food products which are produced under unsatisfactory social and environmental conditions and ethical considerations are becoming more important to them (Browne et al., 2000; Carrigan et al., 2004; IGD, 2008). European organic consumers appear willing to pay a higher price for regionally or locally-produced food, or to directly support small farmers in disadvantaged (mountainous) areas (e.g. Zanolli, 2004). Very successful ‘fair milk price’ projects have been initiated by organic dairy farmers in Austria and Germany (Anon, 2006; Thiele and Burchardi, 2006). Other ethical arguments could also be used to differentiate organic products in a growing market, where organic products compete with other ethical claims such as local foods and ‘Fairtrade’, especially if they relate to what is important to consumers and if they are communicated well.

The CORE-funded project Farmer Consumer Partnerships (FCP) aims to develop innovative generic communication arguments that can strengthen the link between producers and consumers in the European organic sector (for further details see Padel and Gössinger, 2008; Zander and Hamm, 2009).

Methods

In the first stage of the project ethical concerns and values that have been reported as important to various stakeholders of organic food and farming in the literature were examined and categorised, guided by the Corporate Moral Responsibility Manual (Brom et al., 2006). Concerns including those expressed in the four principles formulated by IFOAM (health, ecology, fairness and care) were contrasted with the new European Regulation (EC) 834/2007 to identify so called Organic Plus values that go beyond minimal organic requirements.

The results of this process and of a screening of arguments used by 100 organic SME companies and farmer groups in five European countries (AT, CH, DE, IT, UK) (see Padel and Gössinger 2008) were entered in the next step. The relative relevance to consumers of seven different ethical attributes and the product price were tested by means of an Information-Display-Matrix (IDM) with about 1200 consumers in the same countries in May to July 2008. The IDM is a process tracing method aimed at monitoring the information acquisition and decision behaviour of consumers (Jasper and Shapiro, 2002; Mühlbacher and Kirchler, 2003). IDM results can be analysed in different ways, in particular through the sequence and amount of information acquisition preceding a purchase decision.

Results

The main concerns of stakeholders of the organic sector can be summarised under principal headings according to impact on the environment, on animals, and economic and social impacts (see Table 1). Concerns about the integrity of the organic supply chain, system health or the preference for local food cannot easily be categorised according to impact.

Table 1: Summary of ethical concerns and values

| Area of impact | Ethical concerns and values | EC Regulation 834/07 |
|---------------------------|--|---------------------------------------|
| Environment | Minimise pollution | Detailed provisions |
| | Sustainable resource use | Limited provision/indirect |
| | Protection of ecosystems/biodiversity | Limited provision/indirect |
| Animals | Health and welfare | Partly/improved provision in 834/2007 |
| Economy | Fair and equitable financial returns for farmers | Indirect |
| | Availability and affordability to consumer | Not directly addressed |
| Social | Food quality and safety contributing to human health | Largely |
| | Safe and equitable workplace | Not directly addressed |
| | Skills, knowledge and information | Not directly addressed |
| | Transparent and trustworthy organic food systems | Partly/improved provision in 834/2007 |
| | Civic responsibility and care | Limited provision in 834/07 |
| Systems and supply chains | Organic integrity throughout supply chain | Limited provision |
| | Local and regional supply chains and markets | Limited provision in 834/2007 |

Source: Padel and Gössinger (2008)

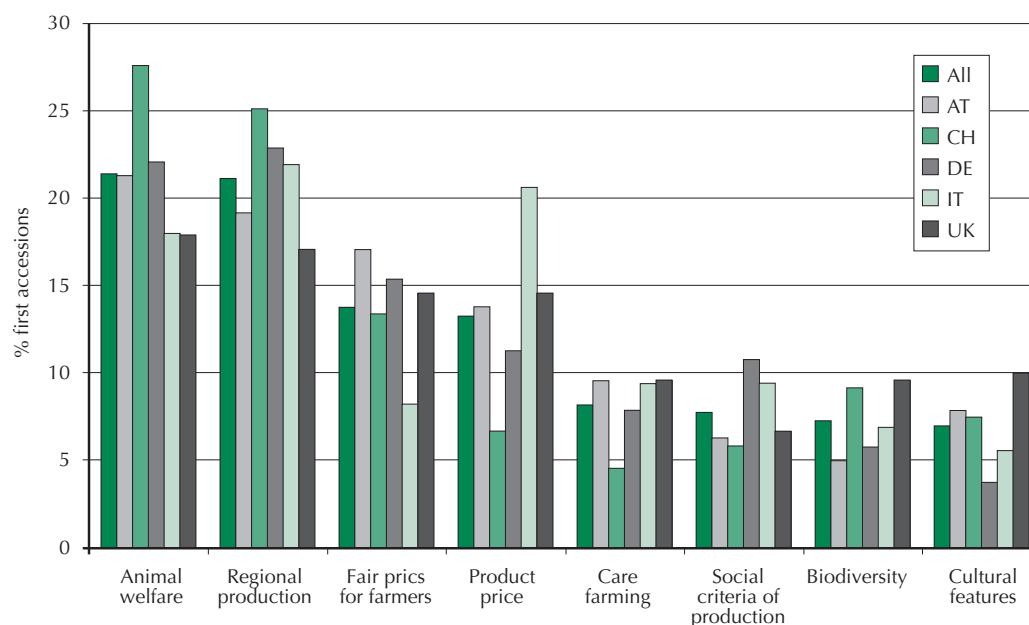


Figure 1: Relevance of attributes: Share of attribute in all first accession incidents (%)

Source: based on Zander und Hamm (2009)

Paper presented at the 1st Nordic Organic Conference 18-20th May 2009 in Gothenburg.

Ethical communication arguments relating to 'biodiversity', 'animal welfare', 'regional production', 'fair prices for farmers', 'care farming', 'social criteria of production' and the 'cultural features' were chosen for further research through IDM. The importance of these different ethical attributes and the product price for the choice of the organic product was determined by the order of accession of information about each of them. According to this indicator, the most important attributes are 'animal welfare', 'regional production' and 'fair prices for farmers', followed by the product price.

Only minor differences regarding the order of importance were observed between the countries (Table 2). The analysis of the purchase decision, particularly the low share of consumers who decided for the cheaper product without any additional 'ethical' value indicates that the majority of consumers of organic products are willing to pay a price premium for additional ethical values of organic production.

Conclusions

Over the years, organic food production has included a broad range of values ranging from care for the soil and the environment, animal welfare and human health to social aspects and people. A broader range of values than those covered by European organic regulations remain part of the core concept of organic farming for producers and consumers today.

An increasing number of individual companies and some certification bodies have introduced the notion of ethical attributes of organic production. However, no comprehensive and accessible framework could be identified that provides practical support and tools for ethical management, for the verification of Organic Plus activities and for the communication between producers and consumers.

Our results show that a considerable proportion of consumers are willing to pay a further premium for some 'ethical' attributes of organic products. Organic Plus products offer an opportunity for product differentiation if such ethical qualities are effectively communicated in an increasingly competitive market. Communication concepts and effort should focus on attributes

that are most important to consumers, such as 'animal welfare', 'regional production' and 'fair prices to farmers'.

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Feed-in-Tariffs leave small-scale biogas out in the cold

Laurence Smith

An opportunity to promote on-farm energy generation has been missed, through the inadequate support payments offered for on-farm generation, in the Feed-In-Tariffs (FITs) recently proposed by the Department for Energy and Climate Change.

Shiny roofs coated with solar panels and legions of wind turbines are the future of renewable energy in this country according to one source, with electricity from biomass, pyrolysis and other developing technologies falling by the wayside. The rates for anaerobic digestion (AD) are way off what was economically required, and will prove disappointing for many farmers, even when an extra heat incentive is added, in April next year.

These inadequate support payments will rule out slurry-based anaerobic digestion systems for the immediate future - unless you have a very large herd. This presents a missed opportunity, as manure based systems have by far the highest potential for greenhouse gas reduction per unit of energy provided, compared to other bio-energy systems (Thyø and Wenzel, 2007). Growing energy crops to increase gas yield will obviously increase economic viability (biogas yields from grass silage are eight times higher than those from slurry) however there are serious ethical, not to mention economic questions, over using land and resources to grow fuel.

This is a real set-back for on-farm anaerobic digestion: the originally inadequate rate of 9 pence per kWh of electricity generated (offered through Renewable Obligation Certificates - see Bulletin 98) has been upped to 11.5 pence per kWh, however with the 'export tariff' for electricity being reduced from 5 pence to 3 pence there is very little change overall.. Other forms of biomass electricity (e.g: from woodchips and vegetable oil) have been left out of the FIT altogether, which is a disaster for those looking to develop or invest in technologies in this area.

Quite why DECC has ignored the advice of the Defra Anaerobic Digestion Task Group, to offer adequate levels of support for small-scale AD, is a mystery but certainly the 'big six' electricity suppliers will be delighted that the opportunity for rural communities to support themselves through this technology, has been dealt a blow.

It is worth noting that by comparison small-scale wind is getting nearly three times this amount of support as AD (24 pence – 34 pence per kWh from the FITs alone) but for farmers without suitable wind-speeds, or planning permission this is not an option. For Solar Photovoltaic cells, the support levels are also much higher: 26 pence to 36 pence per kWh but the technology remains relatively expensive. Naturally suppliers of both of these technologies are pleased with the results, however, rates are much lower for larger community scale installations: the focus seems to be more on supporting individual domestic properties who wish to reduce their fuel bills and secure an alternative source of income.

In any case the return on investment will only be 6-8% under the current scheme, much less than the recommended 10-12% for small-scale renewable to become viable, and considerably lower than the rates introduced in Germany, in 2004 (Germany now sources about 15% of its electricity from renewable sources, compared to a figure of 5.5% in the UK). Attracting finance here for small-scale systems could therefore continue to be difficult.

Having said this, the proposed index-linking of the FIT is a welcome response to industry demands, and will ensure that the rates defined are linked to inflation. The fact that the tariffs are now guaranteed for the next 25 years will help secure investment, and the scheme is much more stable than the quota system of 'Renewable Obligation Certificates' introduced in 2002.

For many agricultural applicants though, there will only be one technology that is worth getting out of bed for – wind power. With the environmental benefits that AD, biomass and other technologies can offer, this is a real disappointment and missed opportunity.



Skewed support for wind power means that on-farm, it's the only technology worth getting out of bed for.

2010 Organic Producers' Conference

January 7th and 8th



Despite the inclement weather, the 2010 Organic Producer Conference at Harper Adams University College in Shropshire was very well attended and information packed, with many inspirational speakers. Working with the Organic Growers Alliance, The Institute of Organic Training and Advice, The Colloquium of Organic Researchers, GM Freeze and other producer and research groups, the Organic Research Centre delivered a stimulating and highly informative programme.

There were many speakers giving presentations in sessions designed to inform and maximise the opportunities to participate. The Plenary sessions focused on the big issues of Sustainable Food Security and Climate Change whilst the workshop sessions covered a range of technical and policy issues including livestock nutrition, varieties and breeding, agro-forestry, farm economics, nutrient management, animal welfare, GM issues, biodiversity management, market trends and communicating the organic message.

Challenging GM

Rapporteur: Thomas Döring

Beatrix Tappeser reported on German developments regarding genetically modified (GM) crops, focusing on ways to reduce GM contamination in the field. German nature conservation laws aim to protect nature reserves by defining minimal distances between nature reserves and GM crops. In addition, farmers have formed GM-free regions with annual renewal of membership. Some towns and churches are GM-free by using tenancy agreements on their estates to prohibit GM use. An unresolved issue is GM contamination in seed.

Pete Riley of GM Freeze presented data on weeds with tolerance against herbicides used in GM herbicide tolerant (GMHT) crops. Monsanto, whose patent on Roundup ran out in 2000, are market leaders in GMHT crops, but all major agrochemical companies developed GMHT crops. Sixteen weed biotypes are currently resistant against Roundup. Problem weeds with tolerance against herbicides include Palmer's Amaranth, which appeared in 2005 and is now affecting up to one million acres. Pesticide spraying is increasing in the US in GM crops, but as problems with herbicide tolerance develop, even hand pulling of weeds is now done in US cotton on a large scale.

Julia Wright focused on work in Cuba to reduce drought vulnerability. Approaches included education, drought tolerant varieties (non-GM) and rainwater capture from roofs. Collaborating with Permaculture Research Institute, Australia,

rainwater use was optimized via swales and mulching (see "Greening the Desert" on You Tube). Despite the project's successes in making farms drought-proof, official Cuban policy remains focused on agro-industrial solutions.

In the discussion it was noted that forecasts for GM drought resistant varieties have been vague. There is not much awareness in the UK about herbicide resistant weeds and actions were proposed to make these more widely known. It was commented that underestimated complexity of gene regulation has resulted in poor delivery of GM technology in complex traits like drought resistance.

Biodiversity and ecosystem services

Helen Pearce

This session focussed on the ecosystem services that a farm can potentially provide, and offered an insight into the inspiration that positive experiences of biodiversity can offer. Laura Hathaway-Jenkins (Cranfield University) reported on her PhD project, which studies the effect of agricultural management on soil structure and infiltration rates. John Bacon's (Values in Nature and the Environment) presentation was given in absentia, but he encouraged us to share our passion for biodiversity in order to enthuse and inspire others. Nick Cooper (Natural England) presented the CALM (Carbon Accounting for Land Managers) tool: software that allows the measurement of the effect of Environmental Stewardship options on greenhouse gas emissions from farms.

Feeding livestock from the farm and on-farm processing

Phil Thomas

Three presentations and two important messages -

At present, the UK is very dependant on imported feedstuffs but it doesn't have to be this way. Work done at two research sites in UK has demonstrated that it is possible to increase the proportion of home-grown protein and that monogastrics can perform well on greater amounts of feed from the farm.

Protected cropping: new EU standards

Margi Lennartsson

Protected cropping will soon be subject to EU scrutiny to fill in the gaps in the EU organic regulation. The purpose of this session was to take a view from the industry as to where the standards should be going. Roger Hitchings fronted a presentation from Wight Salads, as Philip Morley could not be present, outlining their system of long-season heated organic tomato production. He also gave a picture of the current situation across Europe, with widely different interpretations of the regulations.

Jill Vaughan covered the current standards and issues arising from them. The Soil Association has produced a draft paper on protected cropping standards and is planning a wider consultation later in 2010.

Innovative models for producer co-operation

Roger Hitchings

Andrew Trump spoke about the recent initiative between the Organic Milk Suppliers Co-operative (OMSCo) and Organic Arable (formerly Organic Arable Market Group). The idea for a combined feed project first arose in 2004 but did not happen for a number of reasons.

The lessons from that early experience enabled a successful re-launch in 2009 where a key factor is the buying relationship between Organic Arable and the individual OMSCo member, not OMSCo itself. This kind of initiative relies on personalities, commitment and simplicity.

The second discussion centred around the activities of Thames Organic Growers, an organic growers' group based primarily in Oxfordshire, Wiltshire, Gloucestershire and the London area. The strengths of TOG are in the information exchange that takes place at the monthly meetings and the ability to bulk purchase where appropriate.

Cereal breeding: new approaches

Sally Howlett

This session focused on the need for cereal varieties bred specifically for use in organic systems which will perform better than pure lines bred for high-input agriculture.

Two complementary presentations were made: Dr Thomas Döring (Organic Research Centre) described the theory behind genetic, ecological and economic approaches to improve yield reliability under increasingly variable climates, whilst Michael Marriage (Doves Farm) gave a farmer and processor perspective, reporting on his practical experiences using older strains of wheat in a commercial setting.

Audience discussion included the measurement of yield, and the role of selection in shaping wheat population characteristics.

Sustainable energy for all

Oliver Crowley

Whether powering a tractor or heating a farmhouse the use of energy generates both financial and environmental costs to the farming business. The Sustainable Energy session aimed to expose hotspots of high energy use on organic farms and examine possible ways of replacing the financial costs associated with importing energy onto the farm with a financial income generated from producing energy on the farm.

As farms are the ideal place on which to produce sustainable energy from sources such as wood biomass, wind, or anaerobic digestion, the environmental impact of agriculture can also be reduced through on-farm energy production.

The session began with a talk by Laurence Smith (ORC) whose research has revealed the typical sources of energy use on organic farms and the efficiency of energy use from different agricultural enterprises in the organic system. This research allows energy factors, including costs to both farmer and environment, to be included in decision making.

A major hotspot for energy use on the organic farm is transport and it was suggested that these costs could be reduced through an increase in direct sales. A discussion followed during which one member of the audience argued that, in isolated communities, direct sales might increase transportation costs to the environment.

Three presentations followed which aimed to demonstrate how a farmer might be able to generate sustainable energy. Nick Maskery began by highlighting the potential energy resources available from woodland. The talk revealed that producing energy from wood biomass generates substantially less CO₂ than gas or oil based energy.

Sam Usiskin followed by demonstrating how wind turbines can provide a farmer with a potential income of £89,400 a year with an initial investment of £500,000.

Finally Richard Tomlinson presented a talk on Anaerobic Digestion. With an investment of £207,000, slurry can be converted into cash by harnessing the methane released during fermentation.

Legume LINK managing legume mixtures – pros and cons

Sally Howlett

Legume LINK studies the growth characteristics of an array of legume species as monocultures at research hubs. Mixes of legumes are also grown at a number of participatory farms throughout the UK in order to assess their performance across a climatic gradient on a range of soils, rotational and management conditions.

Early results from the trials were presented, showing the variability between individual legume species with respect to establishment and weed suppression, and contrasting this with an 'all species mix'. The rationale behind combining species in mixes was explained in relation to the modification of C:N ratios and staggered release of nitrogen to subsequent crops following ploughing. The potential to model and create 'tailor made' legume mixes suited to different regions of the country was raised during discussions with enthusiastic interest from growers.

Interactions between establishment rates of various legume species and weed suppression received considerable debate due to marked differences between trial sites. Faster establishing legume species seem generally to be better at suppressing early weeds, although it was noted that soil type and sowing depth are likely to influence the identity of the 'best' species at diverse locations.

A number of related topics for future research were suggested, such as the impact of alternating legume species on pest and disease levels. It was emphasised that the current research was at a 'proof of concept' stage, but with further funding validation of results taking into account the effect of legume mixes on following crops is an ideal next step.

Making organic farming work financially

Stephen Clarkson

Four presentations were given on the use of benchmarking and the financial performance of organic farms compared

to conventional. The final presentation was an interesting take on money recycling and how to keep this within the organic system. A number of questions were then taken that ranged from 'How much will the consumer be prepared to pay for organic food?' to 'The biggest cost to my business is the cost of certification - can this be justified?'. The conclusion from the discussion was that we must not be despondent as co-operation is working within different sectors. However, we need to co-operate more and be willing to commit to a price.

Animal health and welfare planning for livestock producers

Susanne Padel

Mette Vaarst (Aarhus University) introduced seven principles of good animal health planning developed by the ANIPLAN*project. Health planning is a process of dialogue between the farmer and external expertise that involves assessment of the current situation as well as a plan. There is need for farmer ownership as well as external expertise, the framework of organic principles, the need to for a plan to be written and including an acknowledgement of good aspects on a specific farm.

Lindsay Whistance (Aarhus University) illustrated with many pictures natural dairy cow behaviour in terms of feeding, resting and defecation and how this can be hindered by the construction of troughs, feeding gutters and cubicles in the barn. The presentation from the veterinarian Peter Plate highlighted the environmental implications of animal health control as well as illustrating the potential benefits of new developments, such as the dairy cow fertility index and new diagnostic tools for BVD. The account from the organic dairy farmer, Will Best, highlighted the importance of a very good animal-human relationship where the cows develop trust of the person looking after them.

The discussion focused on the value of health planning as a 'living' document, 'owned' by the farmer, the need to include statement of status quo of herd health as well as proposals for steps to be taken for improving the situation. It should be developed by the farmer

together with external support. Farmers could also get together in groups and use 'benchmarking techniques' to help each other in achieving improvements of animal health.

A number of questions were raised in relation to fertility, for example a potential link between lameness and fertility, the role of minerals and of farm specific mineral applications to address fertility problems. The open question is how the good work from the ANIPLAN project can be of further use to the wider community of organic livestock producers. Pilot groups using the Danish "Stable School" approach are currently being run on organic farms in Devon.

*ANIPLAN Project (Minimising Medicine use in organic dairy herds through animal health and welfare planning, CORE organic project 1903). Stephen Roderick (Duchy College) and Pip Nicholas (IBERS) are the UK partners in ANIPLAN. The work in the UK is funded by Defra.

<http://aniplan.coreportal.org/>

Participatory Research: making research relevant, practical and applicable

David Gibbon

The session was chaired by Mark Measures and included contributions from four speakers who each contributed different experiences of participatory research. Bruce Pearce gave a perspective which showed the increasing development (by ORC) of participatory partnerships with farmers. Gareth Davies reflected on the multiple methods of interaction with farmers which were employed in the effective Weeds Management project of HDRA.

Mette Vaarst showed how international experience in Farmer Field Schools could be effectively transferred to Europe in an action research and learning programme. David Wilson related his experience with researchers over 24 years by showing increasing confidence about the importance of early and continuing farmer engagement in the process of on-farm research.

Food quality: Which production practices make a difference?

Thomas Döring

Prof. Dr. Hartmut Vogtmann highlighted the need to integrate decision-making regarding food quality with biodiversity issues. Gillian Butler reported that fresh forage intake improves milk quality in respect to fatty acids and antioxidants. Johannes Kahl reviewed approaches of food quality assessment and proposed that a more holistic approach be used. The discussion compared food quality assessment with a reductionist vs. a holistic approach and stressed the importance of consumer education.

Sustainable food security

Bruce Pearce

"Sustainable Food Security" was led by Niels Halberg who presented a paper titled "Is Organic Farming an unjustified luxury in a world with too many hungry people?" and by Lawrence Woodward with a paper titled "Organic Farming and Food Security – A UK Perspective".

Niels spoke of how an increasing world population and climate change will be a challenge to food security but there is a need for a new production paradigm to integrate natural resource management with food and nutritional security. He suggested that organic can significantly contribute to this new approach. Lawrence raised the questions of why UK governments and policy makers do not see organic farming as being part of the solution and concluded that it was probably due to the focus on yields rather than total productivity. We need to embrace food sovereignty and this will allow us to call for and make fundamental change.

Agroforestry: Integrating trees with crops and livestock

Helen Pearce

A lively discussion followed three informative and engaging presentations to a packed audience. Dr Jo Smith (The Organic Research Centre) presented an overview of previous research in this area and Mike Townsend (The Woodland Trust)

explained the many and wide-ranging benefits that agroforestry offers. These two presentations were put into context by Stephen Briggs (Abacus Organic and Bluebell Farm), who has recently converted 125 acres of his Cambridgeshire farm into an agroforestry system incorporating apple trees with combinable crops.

Despite the benefits that agroforestry has been shown to provide, this agricultural approach is uncommon in the UK and agroforestry research to date has been limited. This is particularly true for organic agroforestry. The new agroforestry programme at The Organic Research Centre, funded by The Ashden Trust and led by Jo Smith, seeks to redress the lack of research in this area.

The benefits of integrating trees into farming systems are numerous. Besides mitigating greenhouse gas emissions, agroforestry results in resilient farming systems more adaptable to climate change. Trees can provide a wind-break for crops and shelter for livestock, as well as attracting beneficial insects. Components of agroforestry systems can be used as an energy source, such as wood chips from coppiced trees, and can generate additional income. The increased habitat has a positive effect on biodiversity, which can add to the aesthetic benefits of such a system.

Stephen Briggs explained why he became interested in agroforestry – the idea of multi-functional land use, reducing soil erosion, a desire to do something different and a hint of (self-professed) madness. He now has 4500 apple trees of 13 different varieties, grown in rows 27m apart, allowing for a combinable crops strip of 24m between each row. As a tenant farmer, the initial hurdle was getting the landlord's agreement. Issues surrounding policy and available grants were explored in the discussion. The key message of the session was that agroforestry can deliver, but careful management of the system is crucial.

New approaches to nutrient management in organic farming

Jo Smith

This session, chaired by Christine Watson from the SAC, explored how new

research results contribute to improving nutrient management for food and feed crops in organic systems. Excellent presentations from Francis Rayns (Garden Organic) and Robin Walker (SAC) discussed results from a number of trials investigating a range of management approaches to N and P availability, while Liz Stockdale (Newcastle University) used a novel approach involving chocolate, toffees and delegates to demonstrate K availability in soils. Discussion focused on the practical implications of these research results for producers.

The Solanaceae: novel crop potential for the UK

Dr John Samuels

This session discussed the potential for novel solanaceous crops. Although in the UK there is a history of use of some exotic solanaceous crops, such as African eggplants, huckleberry and goji, these have only been available through imports. Only *Solanum tuberosum* (Irish potato), *Solanum lycopersicum* (tomato), *Solanum melongena* (brinjal eggplant) and *Capsicum annuum* (sweet and hot peppers) are commonly cultivated in the UK on a significant commercial basis.

Eleven species have high novel crop potential for organic production in the UK. Most of these are semi-hardy, perennial shrubs which suit protected cropping or sheltered outdoor situations. Their fruits are often unusual and attractive, and high in vitamins and minerals. Most have never been grown in the UK, except on an amateur basis, and several should be considered for trials, development and marketing as highly lucrative novel crops.

Organic farming and climate change

Laurence Smith

Much is claimed about the impacts of organic farming on climate change, both positive and negative – the evidence is mixed and a real understanding depends on looking in more depth at the impacts of specific organic management practices on key components of climate change. This session compared the emissions and energy efficiency of organic farming and

conventional systems, and looked at how the damaging greenhouse gases of methane and nitrous oxide can be reduced within agriculture. The key issue of carbon sequestration was also touched upon, and the difficulties with making accurate predictions in this field.

New crops, new varieties, new directions

The session drew on issues facing growers in the current financial climate and highlighted how the organic sector needs to think out of the box regarding new markets. David Shaw highlighted the value of blight resistant Sárpo potato varieties and the challenges surrounding the new strain of the disease.

Roger Hitchings stepped in for Laurence Hasson who could not make it due to the weather. He presented the agronomic potential of various Bioselect varieties highlighting the resistant Toluca. The grow-your-own phenomenon has been cited as one reason for declining organic sales. Jill Vaughan presented the issues and opportunities of organic plant production to sell to this market.

Growers update and new initiatives

The session started with Alan Schofield, chair of the Organic Growers Alliance (OGA) giving a short review of the season. The new highly interactive OGA website was launched www.organicgrowersalliance.co.uk

Organic seed production and supply is a major issue facing the sector.

The New EU Organic Directive has spawned the European Consortium for Organic Plant Breeding (ECO-PB) to develop international policy on organic seed regulation. There is a strong need to balance the needs of producers and seed companies. Various methods to achieve this exist on a national level but they require clear communication between the sector and national government and other member states. The aim of this session was to discuss these possibilities.



Animal welfare benefits from agroforestry systems

Becky Nelder

Animals interact with trees in their environment in two different ways - directly, for instance by eating it or, indirectly by gaining shelter. The welfare of an animal can be influenced by both methods of interaction.

The welfare of animals farmed for meat, eggs and dairy products is high in the minds of many modern British shoppers. They like to think of the animals roaming around a natural environment that delivers the highest welfare standard. This can lead to a premium being paid for products which adhere to the image. This premium is a driver for new systems to be developed or for existing landscapes to be adapted for the benefit of the animals.

Trees in livestock systems can increase welfare in a variety of ways -

Protection from the elements

The British seasons bring with them challenges from sun, rain, snow and wind. Many breeds used are modern hybrids developed for fast growing meat, not for hardiness and although they may be able to cope well in some seasons, do less well in others. Mature trees can reduce wind speed at sheep height by as much as 84% depending on density of planting. Cattle have been shown to benefit from reduced heat stress in agroforestry systems, as more time was spent grazing rather than loafing in hot weather and animals were more evenly spaced than in the purely grassland equivalent.

Display natural behaviours

The implications of a natural environment that includes novel stimuli and physical barriers can help displace aggression and reduce stereotypic behaviours often found in intensive production facilities. Intensive pig units are plagued by behavioural problems such as stall and tail biting. Likewise intensively kept hens suffer from vent and feather pecking. By providing an outlet for the tendency to explore, root, chew and peck, animals no longer need to bite each other.

Wild boar are naturally found in woodland and particularly like to nest in well covered areas. Although in modern outdoor pig production arks and straw are provided this is usually in the middle of an exposed, open field. The flight zone of a pig can be reduced by half if she can find something to hide behind; trees and shrubs easily provide the protection she craves.

Red jungle fowl, the wild ancestors of our modern laying and broiler chickens - as the names suggests - are from the tree filled jungle. It is hardly surprising that chickens prefer and range further in a habitat consisting of trees and bushes rather than just short grass. If the range provides areas of mottled shade and an area to perch, more birds will be encouraged from the house and this can also help with foot pad dermatitis caused by wet bedding.

Protection from Predators

Although trees will provide the illusion of protection from predators for all species of farm animal, the wolves that haunt the dreams of cows are long since gone from British farms. They can however provide chickens with shelter from aerial predators and allow them to access parts of the range that would normally require crossing large open spaces. Chickens like to roost in trees but can be trained from an early age to go to bed in the house at night. If they refuse to return indoors at night it may not be so much of a problem; all poultry farmers will know from experience the horror of finding a fox has gained access to the hen house in the night, few however will report headless chickens found in trees...

Self medication

Farm animals evolved naturally without any help from humans, although we put them in artificial situations and provide feed and protection. When allowed, animals will look after themselves to some extent. Cows will graze willow after calving for its pain killing attributes and chickens will select plants such as comfrey and marigold for their anti-inflammatory properties. Tree rubbing by pigs has been attributed to removal of skin parasites in much the same way as birds dust bathe.

Agroforestry systems have much to offer our farm animals in terms of welfare as well as providing habitat for wild mammals and insects, thus increasing biodiversity, timber and fruit from the tress, restoration of landscapes and increased crop production.

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Soil analysis – is it worth it?

Roger Hitchings

The pioneers of the organic movement recognised that in order to deliver health, farming systems need to build and conserve natural soil fertility through the development of humus. In order to achieve this, farming practice needs to observe and emulate biological cycles of growth and regeneration. It is these observations that underpin the principles and practices of organic farming today.

But, despite recognition by organic farmers and growers that soil health is at the heart of successful organic production, best soil management practice on farm is still, surprisingly, the exception rather than the rule.

What makes a good soil?

The answers to this question will depend on who has been asked, but in general most would agree that a good soil for cropping should have good structure, an ability to withstand cultivations and a good reserve of fertility.

How to judge your soil

Before looking specifically at soil analyses it should not be forgotten that there are many other ways in which producers can assess and monitor their soils. Awareness of the soil and its condition should be a continual process and everyone will be doing this - often unconsciously. Picking up early warning signs is vital as it can take time to address a problem that has gone undetected for a period of time.

- A healthy soil should smell like the broken down leaf litter of the forest floor – this wholesome earthy smell is typical of a healthy, well-aerated and biologically active soil. A rank marshy smell is a strong indicator of poor aeration while little or no smell could indicate a low level of biological activity.
- The sense of touch will tell you much about the physical state of the soil as you are harvesting, weeding, etc. but also be aware of how the soil feels beneath your feet as you walk across your land. Hardness can indicate surface compaction or dry conditions while a general stickiness will be fairly obvious evidence of poor drainage and a springy softness will indicate a reasonable optimum. Tracking the changes to the surface across a field can highlight problem areas.
- The most useful sense is that of sight because it is possible to observe the condition of the soil itself, the appearance of the crops that are grown, the kind of weeds that are growing (and their condition). There are a number of methods for visually assessment but one of the most common and consistent is the 'Spade-Diagnosis method', widely used in Germany, Switzerland and Denmark. It provides a simple method for the assessment of soil structure and the identification of problems such as compaction, impeded drainage and restrictions to roots.

The 'Spade-Diagnosis' method

This involves taking an undisturbed slice of the topsoil and carefully examining it to determine the gross structure, the texture, aeration, rooting depth and a number of other properties. The test is best carried out when the soil is moist so that compaction problems are obvious. The advantage of this

method of visual examination is the consistency of technique. These observations should be used to guide subsequent choices for cultivation and fertilisation. If there are dead layers or compacted horizons in the soil, they should be loosened at the earliest dry weather opportunity using a chisel plough, deep tines or a sub-soiler.

It is possible to gain a lot of information from this test but the main focus is an assessment of the structure of the soil in the profile. A range of actions can be taken to address identified problems but it should be remembered that there is generally no immediate success with the various measures that can be taken – it can take several years before improvements can be seen.

Plant health

If weather and light conditions are favourable, crops should be demonstrating good vigour if they are getting what they need from the soil. Colour is another important indicator – an even green colour from top to bottom of a crop plant and across the bed is a sign that things are reasonably optimum. Any variation in colour on a single plant or across the bed should be investigated – this might be a variation in the 'greenness' or there might be stress colours such as yellow or red creeping in.

Weeds can be very useful in providing clues about the fertility and condition of the underlying soil. Keep an eye on the vigour of your weeds and if they are struggling be worried. Some weeds can provide specific indications of particular conditions e.g. chickweed and fathen are indicators of good friability and nitrogen content, sorrel is an indicator of acidity and horsetail is linked with poor subsoil drainage.

Soil analysis

It will be argued by many that it is important to monitor pH, organic matter and available nutrients on a regular basis. Soil analysis can tell you a lot about the nutrient status of your soil and also about changes over time. It can be particularly useful when taking on a new holding or when adding new land. But remember, analysis costs money and it could be money wasted if the results cannot be accurately interpreted.

There is potentially a wide range of different soil analyses ranging from the so-called 'standard' type of analysis offered by many laboratories to the very complex analyses offered by companies such as Independent Soil Services and Laverstoke Park. As a general rule the more complex the analysis the more it costs and the more external interpretation is required.

'Standard' soil analysis generally provides estimates of crop available phosphorus (P), potassium (K) and magnesium (Mg), along with a measurement of the soil pH. The estimate is based on a chemical extraction of available nutrients but it cannot predict precisely what will happen in the field, given the important influences of weather and soil biology on nutrient uptake. This can be a problem for biological systems where much of the nutrient supply at any one time is stored in humus and soil organisms and is therefore not detected through chemical soil analysis. Other factors, such as sampling and laboratory procedures, will also introduce variable results and



must be taken into account when interpreting soil test results. There are a number of laboratories offering this type of analysis but probably the most experienced is Eurofins (formerly Direct Laboratories and before that the central ADAS analytical laboratory) (www.eurofins.co.uk) .

Other more complex analyses are available including the comprehensive analysis based on the Balzer method formerly offered by the Organic Research Centre, Elm Farm. As the name implies it attempts to cover a wider range of soil parameters including clay content, organic matter levels, pH in water and in potassium chloride solution, calcium , phosphorus measured using 3 different extractants to give an assessment of the ratios between different fractions in the soil, potassium, magnesium and 4 micro-nutrients (iron, manganese, copper and zinc). The results of the analyses were always accompanied by a reasonably detailed if slightly formulaic commentary on the results. In recent years the actual analysis had been sub-contracted to NRM Laboratories (www.nrm.uk.com) and it is now offered directly by NRM who have secured the services of a former ORC employee to provide commentary and interpretation.

NRM, from its history as the soil testing laboratory of ICI, based at Jealott's Hill, has been testing soil for over 40 years. It has been for some years the largest soil testing laboratory in the country, analysing over 50% of the agricultural soil taken for analysis in the UK.

Another type of complex soil analysis is based on the Albrecht method of soil analysis and is offered by companies such as Independent Soil Services (www.independentsoils.co.uk) and Glenside Fertility (www.glensideorganics.co.uk). ISS provide what they claim is the world's most comprehensive Soil Audit Report and it includes a measurement of the cation exchange capacity (nutrient holding ability of a soil), pH, the labile pool of nutrients, plant available nutrients, nutrients that might be 'locked up' and why, total and available trace elements, nutrient ratios, organic matter, humus and biological activity. The audit involves a preliminary meeting to gain an understanding of the farm and subsequent meetings to provide interpretation and remedies.

ISS will also offer what they describe as soil food web assessments but the only licensed Soil Foodweb laboratory in Europe is based at Laverstoke Park (www.laverstokepark.co.uk).

This means that this laboratory is able to offer proprietary soil health testing developed by Elaine Ingham in the USA. As the name implies the testing offered by this laboratory is much more focused on the biological activity of the soil and the components that contribute to the overall picture. The assessments can include total and active bacteria, total and active fungi, protozoa, nematodes, mycorrhizal colonisation, leaf organisms, E. coli, etc. They can also carry out nutrient analysis but the focus is on the biological health of the soil.

All the companies that offer soil analyses will provide guidance on how and when samples should be taken. Sampling should aim to be representative of the area to be evaluated so up to 25 sub samples might be taken and mixed and a final sample of 200-400 grams taken from the mix. It is absolutely vital to use clean equipment, containers, surfaces and bags and to also avoid touching the soil. Spring or autumn are generally considered to be the best time to take samples though late winter is also recommended. Consistency is essential so always take samples at the same time of year, use the same sampling protocol and ensure that the same analytical methods are used if comparisons over time are to be made.

Conclusions

Soil is so complex that it is impossible to define with absolute certainty. Account must be taken of the surroundings including prevailing climate, topography, drainage patterns, previous use and inputs, geology, etc.

There is a place for soil analysis and it can be very useful in helping to define the baseline on new land and it can also be a useful check on progress when used on a three year cycle on the same fields. The other area where it comes into its own is when a problem arises that is difficult to assess through local observations and assessments. The choice of analysis might be difficult and it would be easy to understand why cheaper options might be preferred but once again it might be necessary to bite the more expensive bullet to solve an intractable problem.

Whatever approach is taken it is important to respond to the outcomes of the assessments and/or analyses. It might actually require a significant change to cropping sequences and cultivation methods and this should not be delayed however difficult this might appear. It is important that producers take responsibility for their soils. Don't let the cropping tail wag the soil health dog.

Organic Fortnight 2010

From 3rd to 17th September the Soil Association is once again organising Organic Fortnight, the UK's biggest celebration of all things organic. The big push is to convince consumers to "swap your shop" to organic during the fortnight and discover why there are no hidden costs. The message is – "Organic means better for you and our soil, happy animals, flourishing wildlife and a healthier planet".

There are lots of enjoyable things everyone can do to get involved - visit an organic farm, try your hand at learning a new skill at the Soil Association Organic Farm School, treat

yourself to an organic holiday, look out for organic clothes on your High Street, switch one of your beauty products to organic or cook up an organic feast on a budget for friends with help from SA top tips.

The Organic Food Festival, a highlight of the fortnight, is back on 11th and 12th September at Bristol Harbourside. Now in its tenth year the festival celebrates the full range of organic fare with hundreds of stalls selling delicious food and drink, organic clothes and beauty products.



Weedy science – the Arabidopsis research boom

Thomas Döring



Figure 1: The thale cress, *Arabidopsis thaliana* – Photo by A. Salguero Quiles en Getafe (GFDL)

You may not be familiar with it, but there's a plant (Fig. 1) more heavily researched than wheat, barley, rice, potatoes and maize combined. It is a tiny weed called *Arabidopsis thaliana*, and it causes no economic damage in any major crop. That's right - its economic significance is virtually zero. And yet, more people are currently conducting research on this plant than on any food crop. In the years 2004 to 2008 the number of scientists working on Arabidopsis was roughly four times as large as the number of scientists working on wheat'. In times when the term "food crisis" is swiftly moving up the agenda the world over, this is, to put it mildly, rather astonishing.

So what is the reason for the weed's curious career? The answer is simple. Arabidopsis has become the toy plant of molecular biology and plant physiology. Researchers use it as a model species to understand cellular, physiological and molecular mechanisms in detail, and it serves as a reference point against which other plant species can be compared. In fact, so excited have biologists become about Arabidopsis that the number of scientific publications about this flimsy flower has increased more than tenfold during the last two decades, and is now well above a staggering 100 per week² – resulting in 5500 to 6000 Arabidopsis research publications per year (Fig. 2).

This development is particularly striking when these numbers are compared with the publication output for staple food plants. For the last 20 years, the numbers of scientific papers on wheat, barley, potatoes and maize have all stagnated at a level well below 1500 publications per year, with rice being the only staple food plant that shows (slightly) growing attention by scientists (Fig. 2). Since 1996, all these major food crops have received less research interest than our tiny, inconsequential weed plant.

Questioning these contrasting developments could be dismissed as mere envy, if research on Arabidopsis was completely unconnected and unrelated to agricultural research. However, research on this small weed species directly competes against crop research for resources. There is of course competition for

money from biological research funds and there is also competition for people. Scientists are often judged not only by how many publications they have produced but also by how many times their publications are cited by other papers. Following just this criterion, it would be more "reasonable" for a scientist to study Arabidopsis than to study wheat, because there are more colleagues around who will cite an Arabidopsis publication. Also, as it currently stands, Arabidopsis simply offers a gateway to larger networks, i.e. more job opportunities for biologists than research on crop plant biology.

The standard reply to this critique would be that only the focus on one plant species can generate the comprehensive knowledge that is needed to understand how plants work in general. Arabidopsis is a model plant, so knowledge gained in this species may then easily be transferred to other species – such as crop plants. Indeed, fundamental research is necessary and justified, as long as it is kept in a reasonable balance with applied research, and as long this type of knowledge transfer within science actually happens. Undoubtedly, many findings from Arabidopsis research have improved the understanding of crop genetics and physiology.

However, the promise to deliver in the area of food plants by studying model species, has so far come to only relatively limited fruition. If the exciting advances in Arabidopsis research were indeed easily and readily transferred to crop plants, would we not expect a noticeable increase in the research output for these food plants as well, stimulated by new knowledge gathered in the "model" species?

A look at Figure 2 shows that this has, at least in the last 15 years, not been the case. A closer look at Arabidopsis papers confirms that their direct impact on crops research has been relatively marginal. For example, in the years 2004 to 2008 Arabidopsis publications were cited by a total of 26,555 papers. Of these, 62.5% were again papers on Arabidopsis, but only 1.4% were papers on barley, and only 0.2% were on rye. Arabidopsis research, it seems, is mainly just generating more Arabidopsis research. Second, Arabidopsis is not even an ideal model plant, because in many respects it is a quite untypical plant species (e.g. regarding its relatively low number of chromosomes³).

Belonging to the crucifer family, it is only very distantly related to cereals. Of course, understanding the molecular and physiological intricacies of Arabidopsis does not help in many questions of designing and optimizing cropping systems. Although Arabidopsis research has helped to solve some major physiological and molecular conundrums in crop species, how much will that facilitate the design of intelligent rotations, the optimization of seed rates and sowing dates, or the improvement of mechanical weed control?

Although it is clear that fundamental research on model plant species is essential to understand plants in general, it appears that current Arabidopsis science is at risk of becoming mostly self-referential.

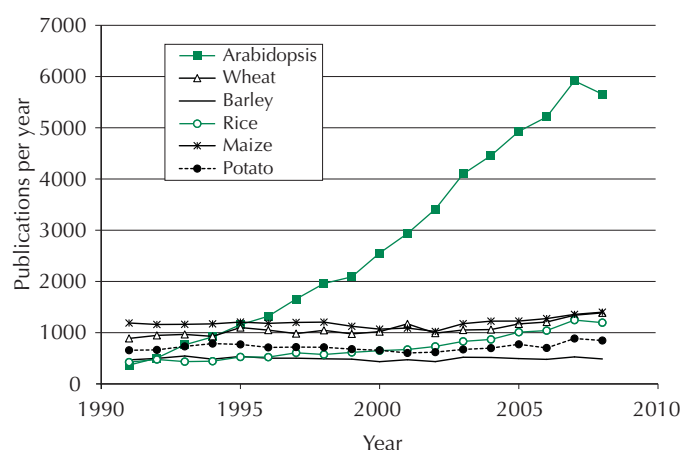


Figure 2: Number of scientific publications per year for Arabidopsis and selected crop plants

This is of particular concern if scientists defend their research on this model species with arguments of applicability to food plants.

In the last few years, the aim “to feed nine billion people by the year 2050” has been taken up almost universally as an explicit target for food production and is being repeated over and over again. Even allowing for some media hype, we might need to acknowledge that the sense of urgency regarding the future of food production is based on real developments. In that case, should we not expect that agricultural research is being boosted,

that public research funds are increased to find the best and most resource-efficient ways of producing healthy food, and that scientists, even if they are only following the funds, increasingly turn their efforts towards solving this “food crisis”?

In fact agricultural research is stagnating, if not positively crumbling, while at the same time immense research efforts are being put into an ever-more meticulous understanding of an insignificant crucifer. If we are to have any hope that agricultural productivity can be maintained and increased sustainably in the future, research priorities in biology need an urgent review. While fundamental research into plant biology is essential and should not be dismissed in general, it is crucial that its applicability in designing sustainable food production systems is questioned and monitored. Importantly, future crops research should not just concentrate on a few species of staple crops, thereby neglecting the vast diversity of usable crop plants. In the end, the massive work on the tiny thale cress may play a role for understanding the diverse species suitable for human consumption, but we expect that it will be rather limited. We may be able to eat many plant species, but Arabidopsis is not among them.

Notes and References

- (1) According to a search on ISI Web of Science, the largest database of scientific publications.
- (2) Again based on a search on ISI Web of Science; the searched publications comprise only peer reviewed papers, i.e. conference proceedings and abstracts are not included in the numbers.
- (3) LYSAK MA ET AL. 2006. Proc. Nat. Acad. Scie. 103: 5224. doi: 10.1073/pnas.0510791103.

Using non-organic plant material and animals in organic production – a Swiss solution

Hardy Vogtmann

Amongst the countries of the world, Switzerland has the reputation of being one of the toughest regulators of organic production. In practice though, how true is that image?

Swiss organic farmers are strictly controlled with regard to conversion of the whole farm in contrast to only partial conversion from conventional to organic farming in many other countries and they are also very regulated with regard to the use of plant material and animals from non-organic production systems.

However, even Swiss organic farmers have had to acknowledge that it is very often difficult to obtain such material from organic production and there is therefore a need for some exemptions - which again have to be controlled very closely.

Bio Suisse creates solution

With typical Swiss discipline a creative, pragmatic solution has been developed. The Swiss umbrella organization for organic producers “Bio Suisse” has created a procedure for such exemptions from organic standards, in which all the producer organizations in Switzerland are very much involved.

They have also decided that the use of non-organic plant materials and animals should not be “a cheap way out” for organic producers.

The system is based on a levy, put on the plant and animals from non-organic production to bring the price up to the comparable level of such materials from organic production systems. This means that there is no financial incentive for organic producers to use non-organic material.

Funding future fixes

The income from the levy is then used to reduce the price for organically produced seed and for funding support to increase the production of organic plant materials and animals. This delivers fair regulation of the exemptions today, but also builds hope for a truly organic-sourced production system for the near future.

The whole system is very transparent and all producers know why there is an exemption, for how long this exemption will last and what is happening with the money from the levy.



Breaking the GM logjam

Lawrence Woodward and Hardy Vogtmann

Early last year the journal *Nature* published an article talking about “Europe’s GM quandary”. The Commission and some member states want to press ahead, some don’t and this has led to an impasse.

It concluded that - “The whole problem might be solved if countries opposed to GM crops could simply opt out of the legislation. But that would violate a core philosophy of the EU, which is the free movement of goods and people between all countries. Tinkering with the existing law is no solution, either: GM crops currently have too little support in Europe for any form of legislation to be robust. So the only other option is to wait: let the current stalemate continue until the public opposition to GM crops begins to fade..... Ultimately, the onus is on manufacturers to deliver the products that will help to shift that political deadlock.”

Pressing PR buttons

As the year went on it became clear that the GM industry can press all the PR buttons it can find but continues to fail to find products that anyone actually wants. And far from fading, public opposition continued to grow. More and more of Europe’s regions declared themselves to be GM Free Zones or set out their intention to be so. In Germany, Thuringia followed Bavaria and joined the GM Free States. The list is now a long one and growing with Ireland joining the club at the end of 2009.

The GM industry responded of course by stepping up its PR campaign and its dodgy dealings. Not content with persuading the Obama administration to appoint a GM lobbyist to its official WTO negotiating team, it managed to convince them that US ambassadors and consuls in Europe should become active in pro-GM briefing.

They shouldn’t have worried. The EU has plenty of home grown dodgy dealers and at the start of this year it became apparent that by utilising an unholy alliance of The Netherlands (which wants GM) and Austria (which doesn’t) they found a way to break the European impasse. For different reasons these two countries have been arguing for the repatriation of authority (subsidiarity) to control the growing of GM crops.

Cleverly, the Commission is now proposing to transfer sole responsibility for safety and health issues relating to GM to DG Sanco (the “sponsoring” authority for the European Food

Standards Agency – EFSA) and under the subsidiarity concept to allow member states to implement regulations relating to the environment in accordance with their own individual requirements and interpretation.

The proposal is attractive to all types of politicians as it lets them agree to the establishment of GM Free Zones where there is pressure for their creation, without hindering agro-food businesses. It also places EFSA in an even stronger regulatory position than it currently is in. An early indication of the sort of mixed up but invidious decision-making this will mean was given in March this year when John Dalli, European Commissioner for Health and Consumer Policy, talked about amendments to mandatory GM labeling. He also announced two decisions concerning the genetically modified Amflora potato. The first authorises the cultivation of Amflora in the EU for industrial use, and the second relates to the use of Amflora’s starch by-products as animal feed.

Dalli made three additional decisions allowing the placing on the market of three GM maize products for food and feed uses but not for cultivation. These were the first approvals of a GM crop for cultivation in Europe since 1998. There are a further 17 products in the approval’s queue for cultivation and 44 products awaiting authorisation for food and feed as well as for import and processing in the EU.

Shambolic regulation

The regulatory process led by the European Food Standards Agency is so shambolic that it verges on negligent, as evidenced by the case of the Flax/linseed contamination of last year. Some argue that it is corrupt – not the money in the paper bag or hidden bank account corrupt – but that the revered peer review system has been fatally infected by a pro-GM culture and overly populated by GM industry associates or fund holders. It is more hollowed than hallowed.

Certainly, any proposals giving more influence and power to EFSA should be given short shrift. One good thing is that opposition to EFSA’s position is growing throughout the EU. It is currently somewhat disparate but these latest developments could well lead to the formation of a unified anti-GM movement in the EU. John Dalli’s attempts to sweep away the logjam might just release a flood, with a wave of opposition he hadn’t expected.

Stealth GM spread

Attempts for the stealthy penetration of world food markets by GM crops continue. A shipment of genetically modified maize was blocked in April at the Kenyan port of Mombasa after protests by environmentalists.

The 40,000-tonne cargo came from South Africa - whose maize exports mainly go to Kenya - and contained four maize varieties, three of them developed by Monsanto. Protestors claimed that safety checks had not been carried out on the maize and they worried that it could contaminate the soil.

GM imports have been banned in several African countries, including in Kenya.

Mariam Mayet, an activist at the South African-based African Centre for Biosafety, criticised her government’s policy. “*The way it is, one is inclined to say that South Africa was a springboard to contaminate the rest of the African continent by allowing multinationals to export from South African soil.*”



Homeopathy - disappointing conclusions and incomplete evidence

Sir -

Your headline "Homeopathy results that demand attention" (Bulletin No 98) was true, but your attention was misdirected. It should have been directed at the inadequacies of the study.

The HAWL (Homeopathy At Welly Level) study involved a self-selected group of six farmers; themselves part of a self-selected group who attended a HAWL course. Their "general feeling" was that homeopathy was useful. However, there was no attempt to establish a control group; no assessment of past veterinary history to understand problems, causes, trends and costs; nor any evaluation of the use of homeopathic remedies as distinct from changes in animal management e.g. removing stress and other contributory causes of illness and which might also promote self-healing, or simply, selling high cell count cows.

The final paragraph, incredibly, proposes that further research into homeopathy is unnecessary. May I propose that my neighbour's cockerel, which I hear every morning, is responsible for causing the sun to rise. This happens with such regularity that my "general feeling" is that it must be true. I don't propose any research into this phenomenon because the conventional straightjacket of experimental proof is so irrelevant.

The Bulletin rightly criticised the Food Standards Agency for reaching conclusions based on incomplete evidence, so it is disappointing to find the ORC embracing similar sloppy thinking.

If Monsanto or a pharmaceutical company had issued a study similar to HAWL's in support of a GM / herbicide programme or antibiotic use would the Bulletin think that the results demanded their attention?

There is no convincing evidence to show that homeopathy works. The fact that many people think that it does is no more relevant than that millions believe in Creationism and discount evolution. If the ORC wishes to promote homeopathy it is vital that proper research is commissioned and published with full validation. We must not imitate Planet Blair where facts are carelessly selectable and beliefs become truth.

Ed Goff
Whittington
Shropshire

Editor's note to Ed Goff's response

Thanks to Ed Goff for sending his comments. We welcome such contributions and urge other readers to send views and comments on this or any other topic.

Ed's blistering letter, like the original article, provides much to think about. Although they are miles apart in their views on homeopathy, they both raise valid points worthy of attention and discussion and that justifies their place in the Bulletin.

It is not my role to defend the original article and Chris Lees and her team are much more capable than I am of addressing Ed's views if they wish to.

However, I must make three points. Firstly, the article was edited by me from an original paper written by Chris Lees. It is obvious from Ed's comments that I did not do a very good job: in particular for not making it clear that the study was; a) small scale and therefore limited, and b) an attitudinal survey of farmers who had attended the HAWL course and therefore self-selecting. The original paper is clear on this (see www.hawl.co.uk) and on other aspects of the methodology which may also have suffered in the editing process.

Secondly, we consider ourselves to be an evidence-based organisation and that means embracing reductionist scientific methods, holistic scientific methods and experience as appropriate. Sometimes what Ed refers to as the "experimental straightjacket of scientific proof" – although I'm not sure if he is being satirical – is appropriate; sometimes a more engaged - what is now called participatory – approach is apt.

In our view as long as the process is open, transparent and accessible for discussion it can all add to knowledge and should be embraced and considered appropriately.

This study is an attempt to investigate how farmers use their knowledge of classical homeopathy in their overall farm management. Whether real or imagined they seem to be having some success, shouldn't others be able to share either the reality or the fantasy?

Lawrence Woodward
Editor



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Wakelyns – Arable Events Open Day

June 15th 2010

ORC Wakelyns Agroforestry, Fressingfield, Suffolk, IP21 5SD

With agroforestry as a backdrop, view the latest cereal research trials, including the wheat populations work, organic oats and wheat agronomy in the company of Prof. Martin Wolfe and his team. Stimulating presentations and discussions and tour of the farm.



Full details are
available from
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01379 586021

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