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THE ORGANIC RESEARCH CENTRE

is an international research, advisory and educational organisation based in the UK.

The business of The Organic Research Centre is to develop and support sustainable land-use, agriculture and food systems, primarily within local economies, which build on organic principles to ensure the health and wellbeing of soil, plant, animal, man and the environment.

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Not so bootiful now

So, Bernard Matthews is personally devastated at the havoc to his turkey factories wrought by the H5N1 avian flu virus. He told the nation's media that there was nothing he could have done to have prevented the outbreak amongst his birds in Suffolk.

Well, far from cracking open the Kleenex and sobbing along with Bernard, we thought we'd be better employed pointing out that indeed there are many things that could have stopped this whole sorry saga.

Global, trans-boundary diseases require vectors (carriers) to spread them around the world. The vectors beloved of UK chief veterinary officers are wild birds which were promoted as the Suffolk case villains from early on. For Bernard Matthews though the vector turns out to be his international trade from Hungary where H5N1 was discovered earlier this year. So, prevention number one is not to indulge in international poultry production with attendant vehicle, people, stock and virus movements.

Number two, is to turn one's back on intensive poultry production – the horror of 160,000 turkeys in sheds on a Suffolk airfield. Increasingly across the globe it is intensive units which are going down with the H5N1 strain from Java to Hungary to France to the UK. Intensive birds are immune compromised, provide a perfect vehicle for virus cycling and mutation, and pose a serious threat as virus factories to the environment and other more sustainable poultry units.

For some time now we have argued that outdoor poultry such as organic and free range units should have access to preventive vaccination as a precaution against H5N1 avian flu. This Suffolk affair has shown that more than ever we need vaccination to protect such birds from the "filthy practices" of intensive production.

And we agree wholeheartedly with Philip Lymbery, Compassion in World Farming chief executive, when he says - "This avian flu outbreak underlines the need for a root and branch review of food policy in the UK and Europe. Intensive poultry production provides the ideal breeding ground for new and highly virulent strains of disease. It is vital that we learn the lesson from this incident that Britain's cheap food culture comes at too high a price for animal welfare and food integrity."

Contents

- Not so bootiful now
- Eastfeast and creative learning in primary schools
- The David Astor Memorial Lecture
- Deforestation diesel - the madness of biofuel
- Standards, standards
- The transition to sustainable resilience
- Superbug crisis fuelled by mis-use of farm drugs
- Farmers keep agronomy trials on the straight and narrow
- Global area of organic land
- Populations performing - 2005/6 trial update
- The view from Wales
- Red alert on blue tongue
- Organic Growers Alliance takes root
- Soil Analysis



Eastfeast and creative learning in primary schools

Mary Pendered – Eastfeast gardener

Wakelyns Farm, one of The Organic Research Centre's key trial sites, was recently involved in 'Eastfeast' - a primary school project aimed at reconnecting children to food production. Martin Wolfe, research director at The Organic Research Centre, donated wheat seed for the children to grow and to harvest themselves.

Eastfeast is a creative learning programme which helps primary school children in East Anglia to understand that living off the land and the sea is a skilled and creative process. Aldeburgh primary school in Suffolk was the first school to experience Eastfeast in the academic year 2005/6. The creative learning programme focused around horticulture work on 2 sites with a walled garden and an allotment, providing the main focus for all subjects taught in the school's curriculum.



During the year the children worked with me (a gardener), cultivating, sowing, planting and harvesting whilst celebrating the cycle of seasons and exploring local traditions and history with seven artists (musician, visual artist, ceramicist, circus artist, story-teller, puppeteer and sculptor). Working in partnership with the teaching staff the children were able to express their thoughts and experiences around growing food throughout the seasons with the year punctuated with celebrations for the solstices and equinoxes. The programme was concluded on the evening of the 23rd September 2006 when the children, having harvested the produce of their years' work in the gardens, helped to prepare and serve a feast for 300 guests.

Served with the food was bread for all the guests resulting from our 'from seed to loaf' aspect of the project. This part of the programme followed the cycle from sowing cereal

grain by hand and then tending it through the growing season until it was ready to be cut and tied in stooks. We then put these on a trailer and with a coach full of children went to Wakelyns to watch Martin feed the wheat through a thresher. It was an exciting and new experience for the children to see the wheat going in one end of the small combine, the straw coming out of the other and the grains pouring out into a bag! We then travelled on with our bag of grain in the front of the bus to William Kendall at Maples Farm, Kelsale, where he fed it through his beautiful wooden Austrian Mill and gave us a good size bag of Eastfeast - Aldeburgh flour. With this we made bread together in school the following day and carried it down to the allotment where earlier in the term, with one of the artists on the project, a bread oven had been made out of clay and we cooked the bread (about 3 minutes a batch) with the whole school watching. It was a true celebration of the modest loaf.

Over the next three year period Eastfeast is taking the project out into other schools in Suffolk, Essex and Norfolk as part of a 'Proving sustainability' programme with a view to undertake small scale and affordable versions of the original Aldeburgh programme. The headteacher, Linda Berry, said of the project - "Eastfeast has provided all the children at Aldeburgh Primary School with a unique opportunity and experience. We have made the project the focus for all areas of the National Curriculum. As well as giving them the essential tools for learning, primary education is about children experiencing the joy of discovery, solving problems, being creative....developing their self confidence as learners and maturing socially and emotionally."

GENETICALLY MODIFIED CROPS AND HUMAN HEALTH

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Dr. Bruce Pearce, The Organic Research Centre, Elm Farm
Dr. Gundula Azeez, Soil Association
Betty Price, GeneWatch UK
Pete Riley, GM Freeze campaign



The David Astor Memorial Lecture

Royal Society of Arts – February 6th 2007

The man who founded and inspired much of the work of The Organic Research Centre (Elm Farm Research Centre) was remembered in thought-provoking style in London in February.

In front of a 200 strong audience, the inaugural David Astor Memorial Lecture was given by Klaus Toepfer, the outgoing head of the United Nations Environment Programme (UNEP). His topic - "How can democracy and liberal values survive in a world of finite and diminishing resources?"

Lawrence Woodward, director of the Organic Research Centre introduced the lecture and paid warm tribute to David Astor's life, work and influence.

"One of David's most important gifts was his clear vision of the big political and social picture and his ability to link activity at the micro or human level to that global overview. It was this skill of perception and insight that led him to support organic farming.

In the wake of the oil crises of the early seventies he saw with a piercing clarity that our affluent society was based on the rapid consumption of finite resources which we were doing nothing to replace or protect. He put it simply, if our agriculture is based on the use of oil, how are we going to feed ourselves when the oil runs out – not to mention when the water is depleted and the soil is degraded and the climate destabilised?

But he also realised what many people still haven't grasped, that is the dire social and political consequences of approaching these environmental "limits to growth". As early as 1975 he was talking about the social upheaval that will occur if our political and economic systems do not recognise and come to terms with the reduction, degradation and limits of finite and vulnerable primary resources. His fear, that a failure to grasp this will lead to a new totalitarianism, grew with the passing years.

In the last 5 years of his life he encouraged us to look again at the fundamental issue of how to produce and distribute food as the limits of finite resources are approached and the critical role that an equitable and ecological food system must have in maintaining social and political stability.

For this reason, we have chosen the theme "How can democracy and liberal values survive in a world of finite and diminishing resources?" for the inaugural David Astor Memorial Lecture."

Klaus Toepfer began his address with a nod towards the recently published report of the International Panel on Climate Change (IPCC) with, at last, the three Ds of delay, denial and do-nothing having been overcome. Perhaps future generations will come to see the report as a turning point when global society started to take serious action. Perhaps not.

But that action, and the starting point for action, is not

equally applicable across the globe. Developing nations, says Mr Toepfer, rightly argue that in gazing towards the affluent north and west their attitude is to *"get rich first and then clean up"*, exactly in the mould of wealthy, industrialised countries.

His central argument was that nature capital, the degradation and use of natural resources, is something we have to repay now and not postpone endlessly for our children and grand children to resolve. Without properly addressing the depletion of nature capital we are simply building problems of societal instability and conflict.

Ecological aggression was another theme with such factors as climate change being generated by the rich north, having in turn a disproportionate effect on the poor and developing south.

Klaus Toepfer would like to see a new model of globalisation for the future. A model based firstly on a respect for regional and ethnic identity. He is anxious for the "throw away society" to be ended and for closed cycle systems to be encouraged. To the three Rs so beloved of global environmentalists – reduce, re-use and re-cycle – he adds a 4th R, repair. And a plea to resolve the pointless loss of materials and to provide employment to those willing and able to carry out repairs.

Such changes in consumption patterns will be driven in the future by the very real bottleneck of limits to nature capital – the very basis of all notions of sustainable sufficiency.

Inequality of wealth and access to resources was another Toepfer theme. What sort of world society is it, when a pampered cow living in the European Union under the Common Agricultural Policy has more money than many of the world's poor? Too many people are living on less than a dollar a day. On the other hand, he noted, that wealth and quality of life around the world, do have measures other than hard cash. When meeting with African environment ministers, Klaus Toepfer was reminded that *"whilst he had the watch, they had the time"*.

So what of democracy and political stability in the future? Recent surveys have shown a diminishing support for democracy from Germany to Peru, he said. But whatever political systems are in place there has to be a single guiding motto –

"Act in a way which is line with the permanent future of human life on this plant".

Pretty hard to argue with that.

The Organic Research Centre will be publishing a full text of Klaus Toepfer's lecture -

"How can democracy and liberal values survive in a world of finite and diminishing resources?" as a pamphlet. Details available soon on our website and in future Bulletins.



Deforestation diesel - the madness of biofuel

A year ago we wrote in the Bulletin – “Beware of biofuels”. We listed our concerns that such sources of energy are not as green and sustainable as many commentators suggest, with a real threat of re-introducing vast swathes of mono-cropping to developed farm economies such as the UK. Even worse is the likelihood that far from protecting endangered habitats such as the forests of Indonesia or Brazil, biofuels will actually accelerate their decline as trees are cleared for palm oil plantations, sugar cane and vast cereal fields destined for ethanol production. Little wonder then, that in some quarters biofuels are tagged as “deforestation diesel” – as the natural world dies to fuel our driving.

Our concerns remain just as profound today. There is a real danger that the techno-fix of biofuels allows governments and companies to avoid proper engagement with far more sustainable solutions in tackling climate change and in fundamental reform of transport and lifestyle behaviour.

The question has to be asked – are we prepared to destroy habitat, slash biodiversity, put food supplies at risk and even destroy established social structures for our energy thirst? Is conservation to be upstaged by consumption?

Bio-fuels are often seen as attractive components of a low-carbon energy economy because they are seen as “renewable”. Carbon emitted to the atmosphere when bio-fuels are burned is offset by carbon removed from the atmosphere by growing energy crops. But even simple energy inputs and outputs from biofuel crops fail to add up. Growing maize as a feedstock for biofuels is reckoned to use 30 per cent more energy than the finished fuel provides. George Bush’s new found love affair with bioethanol will therefore still gobble up the world’s rapidly diminishing fossil fuel reserves.

Putting the squeeze on food

If bio-fuels do become major crops, they will be in serious competition for land with food. Across the world, the UN Food and Agriculture Organisation and the US Department of Agriculture estimate that the 2006 world harvest won’t be enough to feed everyone for the sixth time in seven years. The move to bio-fuels exacerbates the problem while increasing the amount of carbon dioxide in the atmosphere. Food production dropped from 2.6 billion tons in 1994 to under 2 billion tons in 2006, while food stocks dropped from enough to feed the world for 116 days in 1999 to 57 days in 2006.

The US Department of Agriculture also reports world wheat stockpiles at the lowest level in 25 years. Global wheat production is expected to drop causing stock levels to fall further to a level some 20% below 2005. This could have a serious impact on food aid to Africa and other hungry areas in the year ahead. None of this is helped by a crop production switch from food to fuel. Projections of land required for bio-fuel production in Europe show that the current EU position – that we are cultivating too much land, so that some should be “set aside” – will be rapidly

reversed by the development of bio-fuels.

A flawed policy

The chief policy vehicle in the UK for encouraging biofuel development and use is the Renewable Transport Fuel Obligation (RTFO) with accompanying sustainability and greenhouse gas reporting mechanisms. The RTFO will require fuel companies in the UK to replace 2.5% of their total transport fuel with biofuels by 2008/09, 3.75% by 2009/10 and 5% by 2010/11.

A recent report commissioned by engine maker Rolls Royce says the final figure is equivalent to 1.2 billion litres of bioethanol and 1.35 billion litres of biodiesel. If this were to be produced in the UK, 1.2 million hectares would be required, about 20% of the UK’s arable land. In reality, all the major biofuel processing plants are being developed in close proximity to ports and much of our biofuel requirement will be imported and based on soy and palm oil (biodiesel) and sugar cane (bioethanol).

The RTFO will also require companies to report on the greenhouse gas savings of their fuels using a carbon calculator (still being developed) and against sustainability criteria which are also in development.

Environmental groups, including The Organic Research Centre, consider the RTFO to be seriously flawed in its current form.

1) The Obligation is not linked to greenhouse gas savings

Biofuel producers will receive a certificate for their biofuels regardless of the greenhouse gas saving and environmental impact. A company can then report a biofuel that has created a net increase in greenhouse gases and caused tropical deforestation, and still receive an RTFO certificate as well as a 20ppl tax duty cut relative to fossil based transport fuels. Effectively we will be subsidising environmental degradation and have absolutely no mechanism in place to ensure the RTFO will deliver true greenhouse gas emissions savings.

Far better for the Obligation to be directly linked to greenhouse gas savings so that a biofuel that produces an GHG saving below a certain threshold – say 20% – does not receive a certificate (or the tax break), a saving of 20-70% receives 1 certificate, and a saving of >80% receives 2 – thereby rewarding best practice.

2) The Greenhouse gas (GHG) reporting mechanism fails to account for land-use change

While companies will be asked to report on the provenance of their biofuels and on land-use of the production site prior to 2005 as part of the sustainability reporting, this detail is not accounted for in the GHG calculation. Land-use change can cause huge GHG emissions: researchers reckon tropical deforestation is responsible for 10-30% of GHG emissions worldwide, whilst an EU funded study found that the ‘payback time’ of growing biofuels on previously unploughed grasslands ranged from 17 to 100 years. Thus, biofuel production that has caused huge net increases in GHG emissions will still



be able to claim reductions. Far better that the GHG reporting mechanism accounts for land-use change by effectively refusing to assign any saving to fuels that are associated with deforestation or ploughing of natural and semi-natural grasslands.

Solid – ligno cellulosic – biofuels

We should remember that the term biofuel also embraces solid “woody” fuels as well as liquid and gaseous products.

Given that competition for land use will soon re-emerge as a key issue, energy yield per cultivated area is a major concern. In northern European latitudes, the highest yields are obtained with short-rotation coppice (SRC) cultivation of willow (salix) or with elephant grass (miscanthus), both of which are perennials. They can be grown on land which is considered marginal for conventional agriculture. They are “non-domesticated” plants, and much effort is being devoted to developing “domesticated” strains of these and other crops (notably poplar) to give high energy yields. Woody bio-fuel is already available as forest residues; materials, such as “thinnings”, removed during forest management; and even in urban areas from parks and roadside plantings. Some forms of agricultural residue, notably straw, can also be seen as ligno-cellulosic bio-fuels. Woody bio-fuels have low mass and energy density. Therefore transport distances by road in particular have to be kept short. Ideally, woody bio-fuels are processed or used close to their source. However, if they are chipped or pelleted close to source, they can be shipped by sea without having a disastrous effect on the carbon balance. This lies behind the current international trade in wood chips and pellets, notably from Western Canada into Europe; the sea passage accounts for less emission of carbon dioxide than moving the bio-fuel by road, for example from Bristol to Didcot Power station in the Thames Valley where they are co-fired with coal. This leads to the conclusion that the preferred use for woody bio-fuels is in local heating or combined heat and power (CHP) plants. This approach has been followed in Austria, where

bio-fuels have achieved the greatest penetration (15% of primary energy) in the energy economy. The same approach is being followed in Germany, Denmark and Sweden. Development in the UK has so far been inhibited by the lack of a market for solid bio-fuels; there is now recognition of this problem, and some evidence of concern and effort to remove barriers to the development of a market in the UK.

Where there is a demand for heat – primarily in urban areas – woody biomass is likely to be used for local heating plants once the principle of heat distribution systems is accepted; this is already the pattern elsewhere in Europe.

A model biofuel future

Recent studies on the likely future development of biofuels have reached the following conclusions -

1. Once markets have stabilised, bio-fuels markets should be dominated by ligno-cellulosics, used locally. Processing of biomass into liquid fuels is not a realistic, long-term prospect.
2. Bio-ethanol, produced in tropical latitudes and traded internationally, will continue to develop as a gasoline additive. Bio-diesel should decline over time once the perverse incentives which have promoted it as a short-term fix are removed.
3. Transport will be the priority user of fossil hydrocarbons for the foreseeable future.
4. There is a need for small-scale, combined heat and power (CHP) systems fired by ligno-cellulosic biomass.

As we said a year ago, it is folly to pursue biofuels at such environmental cost. Policy makers and government must devote far more effort to diminishing demand – getting cars and other vehicles off the road – and to making us all far more aware of our carbon and energy footprints. We are currently involved in a joint project with Friends of the Earth to analyse “the case for biofuels” and to assess their true impact on sustainability.

Richard Sanders

Standards, standards

In an attempt to address both sustainability and animal welfare issues, the Soil Association is urgently to investigate the “organicness” of air freight and modern livestock breeds such as Holstein cattle and hybrid broiler chickens. Each issue is to be resolved “within twelve months” said SA officials speaking at the organisation’s annual conference in Cardiff (January 26th). One of the spurs to the SA action was the strong vote in favour of limiting air freight for organic produce at the Organic Research Centre producer conference last December.

SA director Patrick Holden says - “There is a strong demand, from the public and many of our licensees, to reduce food miles. Although there is very little airfreighting of organic produce, we believe there is an urgent and pressing need to make every contribution to curbing climate change that we can. This is a complex issue, especially for producers in

developing countries where it involves equity and ethical trading issues, and that’s why we shall actively engage a wide-range of stakeholders to ensure we get it right.”

Options available to the SA range from labelling produce and carbon offsetting to an outright ban on airfreighting and are to be brought forward regardless of any parallel actions taken by the British Government or the European Union.

The livestock breeds issue was raised during a conference workshop session on Livestock for the 21st century. The incompatibility of a dairy breed such as the skeletal Holstein for organic farming and the use of intensive hybrid broilers (bred to finish in six weeks) on organic poultry units was questioned. The SA standards board is busy addressing this issue, but the difficulties of bringing forward rules and regulations (when is a Holstein cow not a Holstein cow in cross breeding with other dairy breeds..) were highlighted.



The transition to sustainable resilience

David Fleming and Lawrence Woodward.

In our world, some very big shocks are on the way. They include energy, climate, water and food, social fracture, displaced populations and pollution from unstable waste, especially nuclear waste.

Sustainable development is not an adequate response to serial crisis.

It is time now to move on to sustainable resilience. That means a political economy which can cope with shocks.

It will need to be decentralised into relatively small-scale localised communities, so that:

- If one part is destroyed, the shock will not ripple through the whole system.
- There is wide diversity of character and solutions developed creatively in response to local circumstances.
- It can meet its needs despite the substantial absence of travel and transport.
- The other big infrastructures and bureaucracies of the intermediate economy are replaced by fit-for-purpose local alternatives at drastically reduced cost.

And that in turn opens up some new possibilities:

- Local closed systems conserving fertility and materials will become feasible.
- Local energy production, distribution and storage can be established, linked by local grids.
- Local social capital and culture can be rebuilt as a necessary condition for the cooperation and reciprocities needed to achieve the transition.

There are several degrees of sanity in this model. It is the only coherent response to the coming shocks. It is a realistic outcome of local initiatives. And such places will be good to live in, benefiting from the latest in technology, but not suffering from the latest in congestion and alienation. It has a chance of achieving the critical property of intelligent design: it is fit for the task. A large-scale economy which crashes very shortly after experiencing the first few outages in the supply of oil is not an intelligent design. Decentralised energy-efficient political economies, by contrast, have at least a chance. We need them now. We had better be quick about it.

Being quick about it does not just mean starting soon; it means taking a route that can get there quickly. What matters now is to find the point of leverage – the point at which it is possible to steer the whole system by making it want to go the way you want it to go. The heart of the matter is energy. If we can find a way of moving down a steep energy descent, learning to get by with less and less energy, then we have the link to every other part of the system. It is like the child's "cat's cradle": pull one string and all the rest come together. The low-energy economy

has to be the localised economy; and localisation here includes a very substantial local contribution to the supply of food. It will not be possible to live within the energy constraint in any other way.

So, how to you make energy descent happen? By using Tradable Energy Quotas. Here are their main features:

- Every energy-user in the economy is included.
- The currency of the scheme consists of electronically-traded "TEQs units", defined to represent specific quantities of energy, such as a litre of fuel; the definition may be based on (a) the global warming potential of the carbon released on combustion by that quantity of fuel, or on (b) actual quantities of the scarce fuels.
- All adults get a free and unconditional Entitlement to TEQs units. They can sell any surplus and top up their supply if they need to.
- All other users (e.g. businesses and public bodies) buy their units through a weekly Tender.
- There is a (rolling) 20-year TEQs Budget which reduces step by step, while clearly announcing the quantity of units that will be available in 20 years' time.

TEQs guarantee that the Energy Descent will be achieved. They are equitable, since everyone gets the same Entitlement. They are efficient, because they are based on an efficient market, and they give everyone 20 years' notice to cope with the structural changes that will transform our whole concept of the supply and use of energy.

Planned transition is a key process. It requires:

- A view of where you have to get to.
- A timescale.
- A way of involving everyone.

The model that at present we are calling "transition towns" cannot at present fulfil these criteria. It is hard for them really to commit themselves to the deeply unfamiliar vision of the low-energy/local-food (lo-lo) economy which the coming climacteric of peak oil and climate change will demand, or to commit themselves to the timescale set by the oil peak. It is impossible for them to include everybody: it will be an achievement if as many as one household in ten becomes seriously involved. And they are working in the context of a dominant and mature market economy, so they do not have the advantage of being able to go with the flow of a consensus about a deep change in the way we live, move, work and think: people with expensive families and flourishing careers are simply going to carry on for as long as they can.

And yet, the educative process in planning transition towns, the cooperative networks that are formed, and their experimental and practical results, are important. The people who are actually doing it are pioneers. They are



taking ideas off the page and starting to work out how to make them stand up on the ground. And they have the crucial and rare insights that a liveable future will look sharply different from our present understanding of what “sustainable” means, and that it will take some time to build a future that works.

The twenty years of the TEQs Budget is about the time needed to develop Lean Energy far enough to begin to cope with the deep reductions in oil and gas that are on the way. The task for transition towns would be made much easier, and the whole concept would be seriously effective, if a TEQs scheme were up and running. It would then be possible for them to focus on how to achieve the transition to which everyone had already become committed, rather than how to commit people to it in the first place. Twenty years is slow, given the imminence of the problems, but it is quick, given the scale of the change that is needed. If an actual energy descent in the form of a binding TEQs budget within which we all had to live were in place, transition towns could get things moving locally and, by example, they could massively help things along in other places, too. And while we are thinking about speed, it is worth giving a thought to what would happen if the outages that can be expected around the time of the oil peak, and increasingly after it, occurred before any substantial progress had been made in reducing the energy dependence of food production – and in some areas at least, reducing it dramatically. The immediate sequel would be food scarcities, mainly because of the lack of transport. Food would not get onto supermarket shelves in towns in sufficient quantities to feed urban populations. If food does not get in, the people living in towns will come out to get it. It could be hard for orderly transition towns to keep their crops, and indeed many of their other possessions, intact.

There would have to be a response by the Government: a “law-and-order” response which could be fierce, but also, in many ways, welcome. The effect of the Government’s longer-term policy, in the form of intervention in agriculture, may be less welcome. During the World War II, the War Agricultural Committees (“War Ags”) had draconian powers over farmers. They could order them to grow certain crops in certain ways, and if the farmers refused, the committees had the power to sequester their farms. There could, in the future, be a stand-off between local organic farmers who used little energy to grow for their local customers, and the officially sanctioned methods of farming for unconditional maximum yield: agriculture will undoubtedly have priority for the use of whatever energy is available, and Government will use the leverage this gives them over farmers. Government insistence on intensive, large-scale, GM farming as part of a corporately run food distribution system, backed with the full power of the state, is a prospect we must try to avoid. We need now to move fast.

A mechanism, such as TEQs, for providing the framework and incentive structure for the transition needs to be put in place. Local initiatives that engage people, as transition towns are doing, are indispensable. In fact, “transition” itself is a little bit misleading. Things are not going to be as leisurely as that. The time for waiting is past. The oil peak and the climate are waiting for no-one. The shift from sustainable development to sustainable resilience is truly profound.

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Superbug crisis fuelled by mis-use of farm drugs

Urgent Government action is being demanded to prevent an emerging farm ‘superbug’ problem turning into a major public health crisis. The new superbug has been confirmed on 11 cattle farms in the UK, and more cattle and pig farms are under investigation.

The serious new infection, a strain of E.coli which is exceptionally multi-resistant to antibiotics, emerged in 2003 and has since spread rapidly. Full national statistics on deaths are not available, but an outbreak in Shropshire led to 28 deaths out of 105 patients and an outbreak in Southampton led to 29 deaths.

Richard Young, Soil Association Policy Adviser says, ‘There is growing evidence that the excessive use of antibiotics on intensive livestock farms is a central factor in the spread of this new type of E.coli. Seven years ago, the Government agreed that the use of farm antibiotics needed to be reduced, but it has done very little to bring this about and some of its policies have even encouraged use to increase. Overall there has been no significant change in the overall farm use of antibiotics since 1999, even though livestock numbers have declined, but the most serious indictment of the Government’s inaction is that it has allowed a recent substantial rise in the farm use of the very drugs which are believed to be contributing to the new superbug problem.’

To address the crisis the demand is for a ban on advertising the suspect drugs to farmers, something the minister has previously refused to do, as well as the provision of advice to vets and all livestock farmers, including organic farmers, on how to reduce reliance on them.

Government scientists are still unsure exactly how this type of E.coli (known as CTX-M ESBL E.coli) developed, and why it is spreading so quickly. However, many accept that the infection is sometimes carried on food and that the farm use of a group of antibiotics known as cephalosporins is likely to be part of the growing problem. These are licensed for dairy cows, beef cattle and pigs, and occasionally used under special exemptions in poultry production.

The Health Protection Agency has warned that there is evidence that ESBL resistance genes are slowly emerging in salmonella as well, and acknowledges that this may be related to the veterinary use of cephalosporins.

Professor John Threlfall from the HPA and Dr. Miranda Batchelor from the Government’s Veterinary Laboratories Agency, have argued that, “Wherever possible the use of newer generation cephalosporins should be limited in veterinary medicine.”



Farmers keep agronomy trials on the straight and narrow

Do we really know how to optimise the agronomy in arable systems? Trials assessing single variables such as seed rate often fail to address the inter-relationship between drilling arrangement, variety, bi-cropping and weeding.

The Sustainable Arable LINK 'WheatLINK' (LK 0970) project, funded by DEFRA, is making some headway in determining the interaction between:

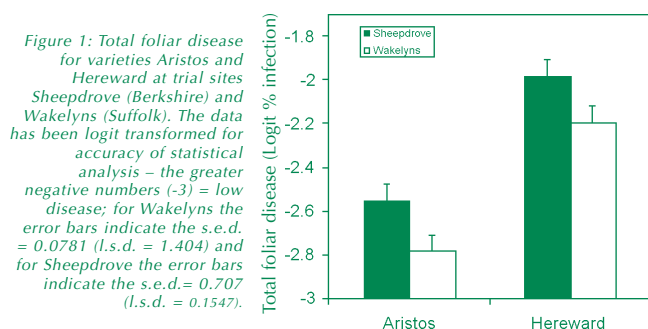
1. seed rate (at 250, 200 and 150kg/ha; ranging from a mean of 319 to 531 seeds per square metre);
2. drilling arrangement (row widths of 12 (narrow) and 24 cm (wide), 10cm wide strips with the Claydon drill, or broadcast);
3. varieties (Hereward, and Aristos);
4. under-sowing with a white clover mixture.

Workshops held with farmers and growers at three Organic Crop Demonstration Project (OCDP) meetings led by Abacus Organic Associates Ltd. in York, Barton, Cambridgeshire and Rushall, Wiltshire provided essential feedback for the trial variables, and scope for future work.

Varieties

In the first year of trials, the low input variety Aristos, a sister variety to the German varieties Levendis and Pegassos, consistently out-yielded Hereward. Furthermore, the thousand grain weight and specific weight was higher for Aristos, but no significant differences in protein content were detected between the two varieties across the other trial variables. Popular varieties amongst farmers at the OCDP meetings included Claire, Deben, Alchemy and Paragon.

In selecting these varieties disease resistance, yield and weed competitive ability were considered the most important factors for variety performance.



The variety Aristos therefore would be considered a valuable variety for organic production, demonstrating not only high yields but having good clean straw, high disease resistance (Figure 1: Septoria and powdery mildew were the dominant diseases at the trial sites) and green leaves that extend longer into the summer. Interestingly, Hereward exhibited better characteristics for weed competitiveness, such as better emergence, establishment, and canopy cover than Aristos. This competitiveness was most evident at the lowest seed densities (150kg/ha equivalent to 37 grains/m² and broadcast).

Drilling Arrangement

The performance of both varieties in the first trial year was significantly affected by drilling arrangements such that a better

spatial distribution of wheat plants in the narrow row drilling arrangement resulted in higher yields (Figure 2). In the field there was reduced plant density per coulter in narrow rows compared to the equivalent seed rates for the wide row systems. The higher yields that can be achieved with improved wheat plant distribution, are equivalent to less well distributed seeds (i.e. such as in wide rows) but with higher seed rates. Wheat plants do have a capability to buffer development relative to competition, such that more tillers per unit area exist at high competition, but with fewer grains per head. At low competition there is an increased grain mass per ear but yields remained higher at high seed rates. Clearly the economics of seed rate to yield advantage will influence the viability of these agronomic criteria.



Figure 2: Grain yield (tonnes per hectare at 15% moisture content) for varieties Aristos and Hereward, across 4 drilling arrangements (broadcast, narrow row, strip and wide row) for three seed rates (high(h): 250kg/ha, medium (m): 200kg/ha, and low (l): 150kg/ha) at the Wakelyns trial site. The error bars indicate the s.e.d. = 0.8703, l.s.d. = 0.4385

Increased straw yield per unit area was recorded for the wide and the strip drilling arrangements, compared to narrow row and broadcast systems. The increased straw mass is likely to be the result of an increased height in the wheat; a result of the greater wheat to wheat competition. Clearly this increased straw yield is at the expense of grain yield. Conversely, at low seed rates individual straws were heavier, verifying standard advice that reducing seed rates reduces the risk of lodging.

In the first year trials, the broadcast drilling arrangement failed at one site, and performed relatively poorly at the other. The experiences of the researchers are in agreement with the views of some farmers who had tried broadcasting; the mechanization of such methods needs to be improved to provide a more even seed distribution, and depth. Clearly, other farmers had used broadcasting as a last resort in seasons where rain had prohibited more conventional methods of drilling.

Seed rates

Farmers indicated that yields for feed and for milling wheat needed to reach five to seven tonnes per hectare to justify drilling seeds at 250kg/ha (531 seeds/m²). This high seed rate resulted in the highest yields across drilling arrangements in the first year trials at both Wakelyns (in Suffolk) and Sheepdrove (in Berkshire). The yield data for year 1 (Figure 2) realised over 6 tonnes per hectare in the first year, but issues associated with trial plot size compared to farm size, and feedback from farmers indicated that these yield expectations are unrealistic in some areas of the country. The final year of the project will include a full economic analysis, with guidance from Abacus Organic



Associates Ltd, to determine which seed rate and therefore what seed costs can be justified for the equivalent yield advantage.

Bi-cropping

Under-sowing the cereals can be used for weed control as well as extending the fertility building ley period, but few farmers had experience of under-sowing beyond the problems of red clover interfering with the combine at harvest although one grower at the Barton meeting had success with trefoil. The performance of clover in the trial plots was variable; at Wakelyns the high plant establishment stopped clover developing, but at Sheepdrove an extensive area of clover was evident two weeks post-crop senescence.

Mechanical weeding

There is much farmer experience in the use of mechanical weeding very early in the season, but the potential benefits of soil disturbance in late April have been less well investigated. As with early season weeding, the farmers at the OCPD meetings cited weather and soil conditions as the main determining factors for success. One of the ten farmers involved in discussions in Yorkshire suggested that he saw significant benefits from nitrogen released following the mineralization of organic matter. In the year 2 trials of the WheatLINK project, the potential benefits from nitrogen release, and the yield losses will be quantified on the wide row drilling arrangements as part of the replicated field trials at the two of the three trials sites, at Chapel Farm (North Berwick) and Wakelyns.

The trials in year two focus on the assessment of the interactions between:

1. seed rate (at 250 kg/ha and 150kg/ha; ranging from a mean of 319 to 531 seeds per square meter);
2. drilling arrangement (row widths of 12 (narrow) and 24 cm (wide), 10cm wide strips with the Claydon drill, variety (Hereward, Aristos, and the yield – quality population);
3. undersowing with a white clover mixture;
4. mechanical weeding in April/May.

The trial sites will be based at Wakelyns (Suffolk), Sheepdrove (Berkshire) and Chapel Farm (North Berwick). Trial work will be carried out by the Scottish Agricultural College (SAC) in Scotland.

This second year of trials will provide additional data with potential to validate the results described. The continued input from all industry partners¹ for this work ensures that the agronomy of winter wheat is improved, is directly relevant to the farming community and possesses novel scientific merit.

Acknowledgements

Thanks go to Stephen Briggs of Abacus Organic Associates Ltd for chairing the discussion, and for his input, and to all farmers who contributed to the workshops.

¹ SAC, Claydon Yieldometer Ltd., Grain Farmers PLC., Norton Organic Grain Ltd., OAMG, OF&G, OFF, Progressive Farming Trust, SAC Commercial, SOPA, Sheepdrove Organic Farm, Soil Association, SA Cert, Wakelyns Agroforestry.

Hannah Jones

Arable Events 2007

If you would like to find out more about this, or any of our other arable research projects, put a date in your diary to come along to one of our events.

They will be held on:

20th June at Wakelyns Agroforestry, Suffolk

27th June at Sheepdrove Organic Farm, Berkshire.

Organic experts will be on-hand to cover subjects such as agronomy, varieties and marketing.

Look out for more details in the next issue of The Organic Research Centre Bulletin and on our website

Global area of organic land

Latest figures, gathered from around the world show that nearly 31 million hectares are certified globally to organic standards. The data, gathered by the International Federation of Organic Agriculture Movements (IFOAM), the Research Institute for Organic Agriculture (FiBL) and the Foundation for Ecology and Farming (SÖL), underline the growing international importance of the sector.

The global market for organic products reached an estimated value of 25.5 billion in 2005, with the vast majority of products being consumed in North America and Europe, according to the market research experts of Organic Monitor. For 2006, the value of global markets is estimated to be at more than 30 billion. Australia continues to account for the largest certified organic surface area, with 11.8 million hectares, followed by Argentina (3.1 million hectares), China (2.3 million hectares) and the USA (1.6 million hectares). The most significant portion of global organic surface area is in Oceania (39 per cent), followed by Europe (23 per cent) and Latin America (19 per cent). In terms of the certified organic

agriculture as a proportion of all arable agricultural surface area, the Alpine countries, such as Austria with more than 14 per cent, top the statistics. In addition to the certified organic arable land, nearly 62 million hectares are currently certified to organic standards for the collection of wild product, according to research by the International Trade Center (ITC).

Despite the big, and growing, area under organic certification, the market for produce is still constrained by under supply. Shortages are most evident in North America, and, according to Organic Monitor, many US-based companies are currently scouring the globe for organic ingredients. Several European countries are also experiencing supply shortages, as consumer demand for organic foods escalates.

The results of this year's study, *The World of Organic Agriculture: Statistics and Emerging Trends 2007*, were presented in February in Germany at BioFach, the world's largest trade fair for organic products.



Populations performing - 2005/6 trial update

Composite Cross Populations (CCPs) of wheat are now in their sixth generation, having been grown successively for four years at both organic and non-organic farms.

The Organic Research Centre's strategy of 'evolutionary, or population, breeding' challenges current pedigree line breeding approaches.

Composite Cross Populations (CCPs) are the collective progeny of multiple crosses of pure line cultivars. Such populations can be adaptable to different and changing environments over seasons.

For this project, three CCPs were produced from:

- 1.) parent varieties selected for good milling potential- Quality (Q) CCP;
- 2.) parent varieties selected for high yield (Y) potential- YCCP; and
- 3.) both sets of parent varieties - YQCCP.

The three CCPs are further divided into those without or with plants with heritable male sterility (ms), which facilitates cross-fertilization amongst plants.

Latest results...

The CCPs are being compared to their parent varieties grown as pure stands, and physical mixtures of the parents, on four main sites (two organic and two conventional). They are now into their third year of replicated trials.

So far, results have been extremely encouraging. There is a tendency for the CCPs to produce a greater grain yield than the means of their parent cultivars. This was more strongly evident at the organic sites (Tables 1 and 2). Results also showed that the Yield (Y) CCPs had greater yield stability or absolute performance than eight out of nine of the Y parents. Furthermore, at the organic sites the greatest total protein levels were achieved with the CCPs with male sterility, followed by the CCPs, mixtures and then the parent varieties.

Table 1. Mean grain yield (t/ha @ 15% moisture content) for categories Yield (Y), Quality (Q) and Yield/Quality (YQ) of Composite Cross Populations (CCP), Composite Cross Populations with male sterility (CCPms), parental means (P) and physical mixtures of parents (M) at non-organic sites.

		Grain yield (t/ha @ 15% mc)				
		Subcategory				
		CCP	CCPms	CCPms	M	Mean of categories
Category	Q	8.956	8.711	9.231	8.755	8.913
	Y	9.962	9.962	10.356	9.708	9.951
	YQ	9.343	9.343	9.686	9.232	9.417
Mean of categories		9.42	9.299	9.758	9.232	

Category: $P < 0.001$, s.e.d. = 0.1225, l.s.d. = 0.24542, Subcategory: $P = 0.002$, s.e.d. = 0.1415, l.s.d. = 0.2832, Category x Subcategory: $P = 0.964$, s.e.d. = 0.2450, l.s.d. = 0.4904

Table 2. Mean grain yield (t/ha @ 15% moisture content) for categories Yield (Y), Quality (Q) and Yield/Quality (YQ) of Composite Cross Populations (CCP), Composite Cross Populations with male sterility (CCPms), parental means (P) and physical mixtures of parents (M) at organic sites.

		Grain yield (t/ha @ 15% mc)				
		Subcategory				
		CCP	CCPms	CCPms	M	Mean of categories
Category	Q	6.33	6.46	6.32	5.95	6.26
	Y	6.65	6.65	6.79	6.55	6.66
	YQ	6.78	6.68	6.89	6.25	6.65
Mean of categories		6.59	6.6	6.67	6.25	

Category: $P = 0.350$, s.e.d. = 0.309, l.s.d. = 0.618, Subcategory: $P = 0.648$, s.e.d. = 0.356, l.s.d. = 0.713, Category x Subcategory: $P = 0.998$, s.e.d. = 0.617, l.s.d. = 1.235.

CCPs performed as expected according to their categories; the Y CCPs generally had higher yields and Harvest Indices (HIs; the ratio of grain to straw); the Q CCPs had higher protein concentrations and HFNs. There is also evidence of the CCPs evolving. The Yield/Quality (YQ) CCPs seem to have increased yields since last season, which are now more the level of the Y than the Q populations.

The results show the first indication of local adaptation. At one organic site, the YQ population (grown there for three successive years) yielded more than a 'non-resident' YQ population from the alternate organic site - and vice versa. The difference was not significant but the complementary result suggests that the observation may well have been an indication of reciprocal adaptation.

As well as being tested in our main trials, farmers across the country are working with us to trial small areas of CCPs on their own farms.

Get involved...

If you are interested in growing a small area of a population on your farm (organic, in conversion or non-organic), please contact us (kay.h@efrc.com, 01379 586021).

Depending on your requirements you can choose to grow one or all of the populations. There are no specific management requirements for the seed.

You can incorporate it into your own rotation and manage it according to your own system.

Each farmer has chosen some or all of the populations to grow (Y, Q and/or YQ). The saving of seed at the farm over successive years will result in exclusive populations adapted to each individual area. Not only will the farms potentially have their own adapted wheat, but they will also have stabilised yields and quality year on year.

Kay Hinchsliffe



The view from Wales

The early closure of the English OCIS provision has been marked with an announcement that OCIS is alive and kicking in Wales. This is true but only up until the end of March when a completely new Rural Development Plan (RDP) and associated funding round is due to begin. Discussions about the content and implementation of the RDP have been going on for at least 12 to 18 months and staff at Organic Centre Wales have been working extremely hard to ensure that organic farming is firmly on all the various agendas. The relevant department within the Welsh Assembly Government is Environment, Planning and Countryside (EPC) and it is assisted by the EPC Committee composed of Assembly Members (AMs).

The budget for the Organic Farming Scheme for Wales (OFSW) and OCIS has to cover both schemes and if, as is the case presently, the interest in the OFSW is running at a high level it can mean that there is very little left over for OCIS. This is also experiencing very high levels of interest but there is currently no guarantee that it will continue beyond April i.e. after the final visits from March have been carried out. The overall situation is compounded by the fact that it has not yet been possible to reach agreement about a scheme called Tir Mynydd. This is intended to support upland producers and there had been some concern that it would not feature in the new RDP.

The knock on effect is that all associated funding streams are being affected by the deadlock and there is serious concern that all funding for the organic sector associated with the RDP could be adversely affected. There has been a moratorium on new entrants to the OFSW from 1st January but it had been expected that this situation would

ease later this year. There is currently no guarantee when support payments to new applicants might resume. There may also be implications for Organic Centre Wales itself as it is expected that RDP funding will support those activities previous funded under Farming Connect. These include all the knowledge transfer activities such as events, discussion groups, demonstration and development farms, training courses, etc.

The direct funding for OCW has been assured up to 2009 and it will continue to provide those services that are supported such as policy advice, public dissemination and general promotion. Organic production will not be the only area affected by this deadlock and it is to be hoped that it can soon be resolved. The drawing to a close of the current funding round has brought a number of other problems but these are more positive in nature. A number of projects and tasks have been commissioned using funding that will effectively evaporate unless it is claimed before the end of the financial year.

All the OCW partners have some involvement in these activities but ADAS and the Organic Research Centre have secured the bulk of the available funding. In our case we have to contribute the majority of the input to two major market reviews, one for horticulture and the other for arable production with some reference to pig and poultry production. The horticulture review will build on a similar exercise carried out by the Soil Association over 2 years ago, whereas the arable review will be starting from scratch. The reviews will seek to place the Welsh market situation in the context of the overall UK position.

Red alert on blue tongue

As the world's climate change scientists and politicians drive home the message of future catastrophe in a warming world, European farmers are already "feeling the heat".

Blue tongue is a serious disease of ruminants, spread by midges in hot countries and has previously seen the limit of its range in North Africa. With global temperatures already rising these midges have hopped across the Mediterranean to Spain and spread the blue tongue virus to European midges (*Culicoides*) which in turn have now infected livestock as far north as Holland and Germany.

Running total of EU Blue tongue outbreaks to February 2007

Netherlands = 461 outbreaks
Belgium = 695 outbreaks
Luxembourg = 8 outbreaks
Germany = 951 outbreaks
France = 7 outbreaks
TOTAL = 2122 outbreaks

Last autumn EU vets took comfort from the fact that the cold European winter would kill the midges that spread the disease and stamp out the outbreak. But one of the mildest winters on record has allowed the epidemic to continue.

There have been 89 new cases since 21 December 2006 - 6 in the Netherlands, 1 in France, 3 in Luxemburg and 79 in Germany. There is a 150 km restriction zone in place around each of the infected premises meaning that all of Belgium, the Netherlands and Luxembourg; areas of western Germany and parts of North-Eastern France are under restrictions.

No cases have yet been reported in the UK, but with cases all along the coast of the Continent facing the South East and East Anglia, the fear is that blue tongue will be here soon.

Scientists and epidemiologists studying the spread of blue tongue say it is a perfect illustration of global warming in action and they have precisely mapped and correlated its spread to rising temperatures. They fear that other disease such as African Horse Sickness are also moving rapidly moving North.



Organic Growers Alliance takes root

Launched at the producer conference held at RAC Cirencester in December 2006 the Organic Growers Alliance (OGA) is intended to be an organic growers' support group. It will work in conjunction with all other bodies active in the organic sector but will be able to provide a direct link between growers and those that influence the industry e.g. certification bodies, policy makers, research organisations, the horticultural supply trade, and many others.

The use of the same initials as the Organic Growers Association formed in 1979 and merged with Soil Association in 1992 was deliberate though there is no interest in turning the clock back.

Growers have been concerned for some time that they are not directly represented in the discussions and consultations that can influence the future development of the organic marketplace. The OGA will therefore engage with Defra, ACOS, Soil Association charity, HDRA, HDC, and others to ensure that the concerns and needs of organic growers are being addressed. The Organic Research Centre is happy to have played central role in its establishment.

Experience has shown that social aspects can be just as important as technical issues when it comes to organising events so there will be a deliberate move to organise farm walks. These will be just as described i.e. a walk around a holding with the grower and others to talk about the practical aspects of growing crops, weeds, soil issues, machinery, marketing, and anything else that is relevant and important to the participants. It is likely that at least one of these events will have a stronger social component with music, food and drink. It is also

planned to support members through the holding of a biennial conference that will again focus on the unique combination of technical content and fun that typifies organic growers.

Other planned developments include the publication of a bi-monthly organic horticultural journal dedicated to all aspects of organic growing – the first is likely to be published in May and is intended to be primarily electronic. A website is also planned – negotiations are underway to secure an appropriate domain name. The Alliance will also seek to provide support to members that have specific problems with certifiers, planning authorities or trading standards departments – this will depend very much on the experience and willingness of suitably qualified members to become involved.

Membership is open to all who are actively engaged in commercial organic growing and the initial annual fee will be £25. Progress is being made on the setting up of bank accounts and contact points for members and potential members. Full details will be announced through press releases and mailings over the coming weeks. Some 40 people expressed an interest at the Cirencester conference and it is hoped to achieve a target of over 400 members inside the first year. An ad hoc Committee is in place for the first year to get things up and running and this will be replaced by an elected body inside 12 months.

The support of Triodos Bank in providing a small start up grant is gratefully acknowledged by the OGA Committee.

Roger Hitchings

Soil Analysis

The Organic Research Centre no longer offers its Soil Analysis Service. We are referring all calls asking about the service direct to Natural Resource Management, (NRM) Coopers Bridge, Braziers Lane, Bracknell, RG42 6NS
Tel: 01344 886338 Fax: 01344 890972

Soil samples sent to us will be sent on to NRM for testing but we are now unable to offer the report checking and detailed extra report writing that we used to provide. All reports sent out to clients will be as received from NRM.

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