

THE ORGANIC  
RESEARCH  
CENTRE  
ELM FARM

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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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# The Organic Research Centre

Elm Farm Research Centre

# Bulletin

*with Technical Updates from  
The Organic Advisory Service*

## “Organic Salmon” – a precedent for God knows what?

The Soil Association’s decision to adopt formally standards for “organic salmon” has upset many people committed to organic principles and production, including us. It is not simply that caged salmon so obviously do not comply with organic principles; it is that this issue has emphasised just how far away the “certified organic” market has moved from any notions of a deep, underlying, organic philosophy.

Some of the longest established organic producers have been the most angered. Iain Tolhurst, a leading organic grower and one of the key figures in the founding of the modern organic movement in this country has written to us expressing the view that farming salmon “is akin to battery chickens.” He believes that many small organic growers and farmers are upset by “this appalling misuse of organic standards, on the basis that it is conning the public and diluting the credibility of organic produce.”

Of course the Soil Association is not the only body to certify caged sea fish – and our dismay is not aimed at them particularly - but their announcement has stirred up a lot of disquiet about standards and certification in the global market that has been simmering for some time. For Iain Tolhurst, “the real issue is not so much about animal rights although this is important, but the double standards that are in place here.” He compares how all certification bodies are constantly tightening up the regulations affecting small - scale producers but readily use derogations, loopholes and ignore principles to benefit multiple retailers and large-scale suppliers.

The fear amongst many people committed to the true organic approach – producers, consumers and supporters – a list far longer than what Iain calls the “remains of the organic movement” is that the market is being grown on the back of production systems that are increasingly removed from organic principles. Sadly, it seems, certification and regulatory bodies are aiding and abetting this in their own interest, to the detriment of genuine organic producers.

Iain Tolhurst is clear “It is time to get the movement back on course and end this selling out to the mass market, global economy idea. Something has to be done about this fish thing - it really is just too awful, as it now sets a precedent for God knows what?”

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## A leap too far – pushing standards over the edge

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**Conventional farmed salmon is an abomination for animal welfare and the environment; and it is hugely unsatisfactory in terms of food quality and health. As the wild salmon symbolises all that is beautiful, spectacular and miraculous in nature; sea caged salmon farming represents that which is tacky, mean spirited and degrading about man's relationship to nature. It also speaks volumes about our lack of understanding of wellbeing, the quality of food and life and the essential dishonesty of our commercial use of nature's bounty.**

So any endeavour to improve salmon farming should be applauded and to this end we welcome the Soil Association's work towards improving sea cage salmon systems. Which is why, although there are things in it we question, we have printed an article by the Soil Association on their work.

But it is not organic, probably never will be and should not be labelled organic, whatever certification bodies and regulatory authorities say. How can we say that? If the EU says it is, if Defra says it is, if the Soil Association Council says it is, if famous chefs and food writers say it is, how can we say any different?

Leaving aside our perception of what has driven this issue - the hidden agendas, the blind but wilful pursuit of markets, the lack of knowledge, the ignorance, the confused motives and taste buds – we say that because that is what organic principles say; clearly, without ambiguity and repeatedly; sea cage salmon production is not organic.

Let us examine this by considering sea cage salmon farming against the universally recognised "Principles of Organic Agriculture" published by the International Federation of Organic Agriculture Movements (IFOAM) which have been accepted by all of the world's leading organic organisations, including the Soil Association.

*The organic Principle of Ecology "roots organic agriculture within living ecological systems ... production is to be based on ecological processes, and recycling. Nourishment and well-being are achieved through the ecology of the specific production environment. For example, in the case of crops this is the living soil; for animals it is the farm ecosystem; for fish and marine organisms, the aquatic environment."*

Sea cage salmon (and cod) have no relationship to the aquatic environment other than the cage is suspended in water. A cage hanging about in water is not a "living

ecological system"; it does nothing for fish nourishment – rations are poured in through the cage; and it does nothing for their well-being.

The text continues; "*Inputs should be reduced by reuse, recycling and efficient management of materials and energy in order to maintain and improve environmental quality and conserve resources.*" Claims made for the feed conversion efficiency of salmon do nothing to offset the manifest failure to comply with this as the cage contributes absolutely nothing to the fish's production cycle. Even worse, all the food which the fish fail to eat on its way through the cage, litters and pollutes the seabed and is joined by all the faeces which either festers below or is spread by currents to pollute further afield. There is no recycling – developments are talked of where other marine organisms could feed on this waste and then be harvested, these may exist on paper but are a long way from existing in the water – no (let alone efficient) management of materials and energy, and a built in characteristic of degrading environmental quality and resources.

*Finally the Principle of Ecology states "Organic agriculture should attain ecological balance through the design of farming systems, establishment of habitats and maintenance of genetic and agricultural diversity. Those who produce, process, trade, or consume organic products should protect and benefit the common environment including landscapes, habitats, biodiversity, air and water."*

Not only does sea cage salmon farming systematically degrade the environment around it through its wastes, also through escapees, which is an inevitable and accepted part of salmon farming, it participates in the destruction of genetic diversity in wild fish stocks. The fact that it might be somewhat better than conventional salmon farming does not change the fact that on this point too it does not meet the principles.

Turning to the fish itself, *The Principle of Fairness "insists that animals should be provided with the conditions and opportunities of life that accord with their physiology, natural behavior and well-being."*

Salmon are territorial creatures; they essentially operate as individuals marking out their own boundaries within which they live their lives. They do not shoal except when they feel threatened or feel they are in a dangerous environment which occurs at specific times when they migrate. Moreover their lives are led around different habitats using rocks, variety in sea or river beds and



critically waterflow and currents. None of this happens in sea cages; indeed cages create all of the conditions that maximise stress and minimise well-being. They cannot create their own territory; they are forced to shoal and ironically the method adapted to mitigate pollution – consistently strong currents – cuts across the basic need to experience diversity in waterflow.

And they migrate: this is one of the things that defines salmon and makes them the naturally wonderful creatures they are; their entire physiological system changes to allow them to adapt from fresh water to salt water and back again. Obviously they can't migrate if they are in cages and the whole production system is geared to hold back the natural physiological development of the fish so they can be grown to saleable weight and sold before their body begins to change to its migratory state.

One of the most disingenuous arguments used in favour of farmed salmon is that the species is actually changing. Farmed salmon, it is argued, are losing the will to migrate because they are fed so well they do not feel the urge to seek food; therefore their whole physiology is changing. If that is true then they are no longer salmon; call them something else and market them as something else.

This however serves to underline another critical point; all certified, so-called "organic" salmon are conventionally bred and reared. In every other livestock system we are making strides towards and insisting on organic breeding and rearing.

Feed composition is another issue; physiologically salmon are geared towards feeding solely on marine organisms, they are being forced to eat material they are not designed to consume. One of the most muddle-headed aspects of this issue is the recent call for organic farmers to grow oil seed rape to feed to salmon. Salmon

are not designed to eat plant oil; they eat fish oil; that is one of the things that makes them a healthy food for humans. As with chicken when they are fed inappropriately the fat content and ratios change adversely.

So on none of these grounds does sea cage salmon comply with the organic Principle of Fairness. Nor does it with the *Principle of Care* which states: "*Practitioners of organic agriculture can enhance efficiency and increase productivity, but this should not be at the risk of jeopardizing health and well-being. Consequently, new technologies need to be assessed and existing methods reviewed. Given the incomplete understanding of ecosystems and agriculture, care must be taken*".

The Soil Association says it has been working for a number of years to develop this system but the fact is that like one or two other certifiers it prejudged the issue and ignored the precautionary principle. Some retailers demanded an organic line in salmon and the approach was taken to give them one by trying to modify existing conventional practice rather than carefully considering ecosystems and the salmon's fundamental physiology and well-being. Effort would have been better spent working on an aquaculture – like carp – that can comply with organic principles.

The final point relates to the organic Principle of Health which sets out; "*The role of organic agriculture, whether in farming, processing, distribution, or consumption, is to sustain and enhance the health of ecosystems and organisms from the smallest in the soil to human beings. In particular, organic agriculture is intended to produce high quality food that is nutritious and has a function in preventive health care and well-being.*"

There is not a single way in which sea cage farmed salmon delivers and complies with this.

Lawrence Woodward

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## Sustainable fish - the Soil Association rationale

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During its rapid expansion in the UK in the 1980s, fish farming (particularly of salmon) developed an image of high stocking densities, damaging environmental impacts, disease, and over-fishing to supply feeds. Despite considerable improvements, it is still an image that clouds the industry today.

But there is an alternative view.

Salmon is well-suited to farming; research shows its welfare needs can be met, it performs well in captivity,

and it converts its food extremely efficiently (nearly three times better than a pig, for example). The lifecycle is easy to manage, it is being increasingly domesticated, and it produces a highly nutritious food - increased consumption of which is associated with a wide array of health benefits.

Organic salmon are grown at very low stocking densities (a third lower than the RSPCA's Freedom Foods limit), and at less than half the density at which the best scientific evidence indicates welfare may be



compromised. They are kept in their natural geographical surroundings, with natural environmental parameters and are dependent on the health of marine ecosystems.

The feed for organic salmon differs fundamentally from the conventional alternative. A large majority of global fishmeal and fish oil supplies come from industrial fisheries of dubious sustainability – while fishmeal in organic feeds is made only from the trimmings from fish caught for human consumption. This also produces more than enough oil to supply the small but fast-growing organic fish sector – which recycles these wastes into high quality food.

Nutrient discharges from farmed salmon are currently dispersed and recycled back into the food chain by the same natural processes that convert wild fish wastes. While recent comprehensive research has shown the environmental impact of salmon farming to be minimal, the loss of these nutrients does challenge a fundamental principle of organic production – the recycling of wastes. We are therefore promoting the development of mixed

farming – combining the production of fish, seaweeds and shellfish to capture waste nutrients and produce valuable secondary crops.

With the development of effective vaccines, antibiotic use is now virtually zero. Parasitic outbreaks such as sea lice have been a serious problem on salmon farms and can be very damaging to wild fish stocks. The Soil Association's standards on lice levels and the use of treatments are probably the toughest in the world. Detailed monitoring and reporting of lice levels is compiling a picture of lice distribution and incidence that will guide farm siting to avoid areas with parasite problems, and allow us to tighten them still further.

There is much work still to do. The FAO estimates that nearly half the fish consumed worldwide are now farmed. For any organisation promoting the sustainable production of healthy food, it would be a dereliction of duty to neglect the sustainable production of farmed fish.

*Hugh Raven, Director – Soil Association, Scotland*

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## Piling on the organic milk and Omega 3 pressure

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A group of leading nutrition scientists has been piling pressure on the Food Standards Agency (FSA) asking it to recognise the mounting body of evidence that organic milk naturally contains higher levels of Omega 3 fatty acids than non-organic milk. In a letter sparked by the publication of new research and sent to Dame Deidre Hutton, Chair of the FSA, in August the call is for the agency to revise its position and recognise for the first time that there is a nutritional difference between organic and non-organic milk.

### Limited health benefit

In response the FSA has concluded that whilst this study shows that organically produced milk can contain higher levels of types of fats called short-chain omega-3 fatty acids than conventionally produced milk, the evidence suggests that these fatty acids appear to be of limited health benefit when compared to the longer chain omega-3 fatty acids found in oily fish.

The Journal of Dairy Science recently published the most comprehensive research on the issue to date – a three year study which illustrates a direct link between the whole organic farming system and the higher levels of Omega 3 fatty acids in organic milk. Dr. Kathryn

Ellis, the lead researcher on the paper, had written the letter to Dame Deidre, with the backing of her co-authors and a number of other internationally respected scientists, 14 in total.

The Ellis study was sponsored by the Organic Milk Suppliers Cooperative (OMSCo) and conducted independently by the Universities of Liverpool and Glasgow. It is the first to consider a cross section of UK farms over a 12-month production cycle. According to the research a pint of organic milk contains on average 68.2% more total Omega 3 fatty acids than non-organic milk and has a favourable ratio of Omega-6 to Omega-3 fatty acids, which is believed to be beneficial to human health.

### Clover linkage

The naturally higher levels of Omega 3 fatty acids in organic milk have previously been linked to the organic cows' diet, which is high in clover. However, although the latest research acknowledges that this factor is partly responsible, it also concludes that the higher levels of nutrients in organic milk are a result of the entire organic system.





Dr. Ellis' paper reports that, "Despite accounting for management and feeding variables, an 'organic' and 'conventional' effect was seen for some fatty acid groups. This is important at retail level as 'organic' and 'conventional' labeling is one of the only differences that consumers can currently determine."

The FSA's position to date has been that it cannot advise consumers to eat more organic foods, including milk, because of a dearth of evidence to prove it is healthier or more nutritious. However, the agency says it is open to the provision of more scientific data on the issue and "will keep its position under review".

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## Science in the service of disease control – lessons from FMD

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**Five years on and industry and Government lessons are still being learned from the 2001 UK FMD disaster. Elm Farm Organic Research Centre is still active in any effort that avoids blanket culls and allows the proper application of civilized science to livestock production and preservation.**

"Disease Control Workshop: Stakeholders' Interests in the use of Science/Technology and Decision Making" was held in May 2006 by the EU-funded FMD & CSF Coordination Action at the Institute for Animal Health, Pirbright. The participants included representatives from the NFU, BVA, RCVS, RVC, VLA, Elm Farm Organic Research Centre, COPA-COGECA, European Livestock Alliance, NBvH (Dutch Smallholders Association), European Livestock and Meat Trading Union, Federation of Veterinarians of Europe, Defra, SVS-Scotland, and the Netherlands Ministry of Agriculture.

Discussions focused on the use of diagnostic tests; control measures; and stakeholder involvement in disease control. The meeting's draft recommendations to policy makers here and across the EU make interesting reading.

- Rapid portable diagnostic tests that are currently available should be used as part of a surveillance programme, especially at sites where there is a greater risk of exposure/spread such as markets and shows, and should be included in contingency plans to avoid slaughter of uninfected animals and to facilitate rapid and appropriate movement restrictions.
- Consideration should be given to removing the monopoly of reference labs on the deployment of diagnostic tests. Other entities, such as regional veterinary services, veterinary practices, quarantine facilities, and ports of entry, should be accredited by the reference labs to use approved diagnostic devices according to standards and quality control subject to agreed inspection regimes. Confirmation of an initial positive and identification of serotype and sequencing

for vaccine production should remain under the sole jurisdiction of the reference labs.

- To overcome potential problems of the disinfection of portable diagnostic devices when used on-farm, samples can be taken by one person and the device be operated at the farm gate by another person. Such procedures should be incorporated in contingency plans and refined through emergency exercises.
- Greater use should be made of multiple surveillance tools, including the use of sentinel animals. Such tools should be incorporated in contingency plans and refined through emergency exercises. Conversely, no one tool should be excluded because it is considered insufficient on its own or not as good as other tools that are being developed.
- Vaccination to live is a strategy that must be prepared for in advance and requires availability of vaccine and reagent banks. To overcome problems of limited shelf-life, consideration should be given to rotate such banks so that, in a timely manner, vaccines and reagents could be made available to developing countries where disease is endemic.
- Government should be more transparent and inclusive in its consultations and responses to diverse needs of stakeholders. The goals of disease control are fundamental to specific strategies. Mass slaughter, as a response to disease, can be avoided if the goal is optimisation of animal health and food production.
- New mechanisms for disease control that include cost sharing with the livestock industry and other industries involved in disease should be examined. Small-scale livestock units must also be represented. Possible mechanisms include national animal health associations, a European Animal Health Association, and/or certified production standards which would be determined and monitored democratically by a Livestock Stewardship Council.



## Defra and the model response to avian flu

A year has passed since the first rallying call from Defra for UK poultry keepers to plan ahead and be ready for an imminent arrival of H5N1 avian influenza (AI).

During those twelve months that swan in Fife has been the single H5N1 infected agent within these shores, although there have been other false alarms and of course H7 AI in Norfolk.

Organic poultry producers, along with all bird keepers have been busy with their biosecurity and contingency planning and Elm Farm Organic Research Centre has been at the heart of efforts to ensure Defra has within its policy armoury an option of preventive vaccination.

So, as we drift into the 2006 season of mists and mellow fruitfulness how far has Defra itself come in AI preparedness? The simple answer is not nearly as far as EFORC would like. Despite several announcements regarding the imminent arrival of 10 million doses of AI vaccine for UK poultry, at the time of writing these vaccines have not been secured by Defra. There is no contingency plan on Defra's shelf (agreed by the European Commission) for preventive vaccination if H5N1 AI threatens to become endemic in the UK. In fact, Defra is only now assembling a specialist industry working group to develop such a detailed contingency document. It is unlikely to be finalised and agreed this year.

### Computer model worries

At its latest AI stakeholder meeting, Defra put the spotlight very firmly on its computer modelling studies of the disease. These models are designed to monitor the AI threat from inward bird migration and other vectors; to identify priority areas of the UK for AI surveillance; to model the behaviour of AI outbreaks; to prepare for modelling during an actual outbreak.

It is a great concern that Defra is concentrating so much resource on modelling. After all, it was the computer modellers employed by the Government during the 2001 foot and mouth disaster who led to such huge cullings of healthy animals. The number crunching on the screens said they had to be killed – and so they were. Modelling, without proper field data input is a blunt instrument. There is no UK field data on the behaviour of AI in our wild birds or poultry industry; no UK data on how vaccination interventions would impact on reality (or on models...).

Even Defra itself confirms that disease models simplify; they are only as good as the data fed in; their results must be set in an overall policy context. Of course it is the very simplicity of these models that appeals to our politicians – they give the yes and no answers that living scientists are unable or sensibly reluctant to deliver.

Elsewhere Defra has embarked on a high profile AI surveillance scheme in priority UK counties looking out for dead ducks, geese, swans, gulls and waders.

In its monitoring of the potential reservoirs of infection that waterfowl and other birds might be winging UK-wards this autumn and winter, there are optimistic signs. Apart from two possible sites in Siberia there is far less H5N1 coming our way this year than last. Both Hungary and Romania report the disease under control

That news does provide some comfort. An even warmer feeling would flow with the knowledge that if the worst did happen here then organic poultry, along with all kept birds, would have access to properly planned, preventive vaccination.

*Richard Sanders*

### Institute of Organic Training and Advice (IOTA)

#### Training Programme 2006/07

IOTA has an exciting upcoming programme of events and activities for advisers and others providing information and support to organic farmers.

- 14 November 2006:** Standards, inspection and policy- (Soil Association)
- 30 November 2006:** Organic Dairy Cow Nutrition
- 11 December 2006:** IOTA Annual Conference
- 20 February 2007:** Understanding the Organic Farm Business
- 7 March 2007:** Using *Org Plan* - a farm business planning tool
- March/April 2007:** Manure Management and Composting

Further details -

Institute of Organic Training and Advice  
[www.organicadvice.org.uk](http://www.organicadvice.org.uk)



## Letters to the Editor

### Sir - Testing manure for GM contamination

I was very interested to read the article by Andrew Armstrong in Bulletin 83 concerning testing for GM contamination.

I have an arable organic farm and because I have no livestock and there are no organic livestock farms in my area, have to import substantial quantities of non-organic manure. Immediately adjoining my farm there is a manure yard where horse manure from a large number of local stables is brought, thoroughly composted (reaching temperatures of around 60C) and resold. However, I have never been able to use this most convenient source as Soil Association standards require that the manure yard owner would have to give me a declaration that the animals producing the manure that he collects had been fed a non GM diet and in turn he would have to rely on similar declarations from all his suppliers. Understandably he says this is simply not practicable.

I offered to have laboratory tests carried out on the finished product. This was referred to the Certification Committee who discussed the matter at length but, though sympathetic, insisted that a declaration would still be required.

In view of this decision I have not had any tests done but I have been told by an expert in the subject that even if some of the feeds did originally contain GM substances, by the time they had passed through the animal and then been composted, it was unlikely that detectable traces of GM would remain in the final product.

Meanwhile, I have to be content with cattle manure from a farm ten miles away which is not composted, is expensive to transport and adds to traffic congestion on the small country lanes.

If the 'instant' test referred to in Mr Armstrong's article became acceptable, it would be possible to check each load coming onto my farm, which I feel would give me more reassurance than any signed declaration.

*Francis Spear, Roughground House,  
Old Hall Green, Ware, Herts*

### Sir - The Eastleigh Trials

There has been a decline from soil climax fertility ever since early man took to agriculture. The decline is reflected in the falling levels of minerals in food and a rise in human mineral deficiency disease. The decline in food minerals has, since 1935, been measured by

MAFF. The most extreme decline is a 76% fall in copper in vegetables.

Soil climax fertility comes primarily from the action of soil micro-organisms. These micro-organisms require energy in organic carbon form, being sugar, starch etc., together with minerals. Some organisms draw their nutrients directly from plants. These include mycorrhizing-forming fungi (mycorrhiza) which directly increase plant mineral uptake, and rhizobium, a nitrogen-fixing bacterium, which is more productive when the host plant contains more minerals. A vast range of other beneficial bacteria and fungi is dependent on organic carbon and minerals in what is commonly called Organic Matter.

Mycorrhiza does not tolerate disturbance, crop rotation or chemical fertilizer. The loss of mycorrhiza reduces plant mineral content by an average of 22%. There is also a loss of plant hormones and anti-biotics.

At Eastleigh we have done extensive trials on the benefits of mycorrhiza. We have done one trial looking at the mineral levels of mycorrhiza and/or Organic Matter. Test plants were onions and broad beans - the organic material was mushroom compost with a low moisture content. Mycorrhiza was introduced and the Organic Matter was added as increments of 1kg per square metre, which is the equivalent of 10 tonnes per hectare.

	Mineral Score	
	Onions	Broad Beans
No addition	65	70
1 kg per sq metre Organic Matter	70	76
2 kg OM	80	80
3 kg OM	90	86
Plus Mycorrhiza	90	98
Plus Mycorrhiza plus 1 kg OM	115	106
Plus Mycorrhiza plus 2 kg OM	117	112
Plus Mycorrhiza plus 3 kg OM	133	132
Plus Mycorrhiza plus 4 kg OM	147	154

The mineral score represents the levels of 13 essential minerals.

*John Reeves*

There is a small book "The Roots of Health" which deals in greater depth with this information. It is available from John Reeves, Eastleigh, Greenfield Close, Joys Green, Lydbrook, Glos. GL17 9RD at £3.50



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## On potatoes and their survival – Prof. Martin Wolfe

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**A farmer always needs two hands. Take the potatoes this year. On the one hand, the hot drought of July looked set to limit, severely, our potato yields at Wakelyns. On the other hand, the weather also held back the spread of the blight disease by more than a month, compared with the average. So at least, blight would not be a problem this year.**

It reminded me of the blight philosophy of the great potato breeder, Harold Howard, at the old Plant Breeding Institute. He and his team produced many varieties of which Maris Bard, Maris Peer and Maris Piper have stood the test of time. Harold was often criticised for his laid back approach to breeding for blight resistance. His response was that he regarded blight as a market leveller. In dry years, potato yields were restricted by lack of moisture, but they were not restricted by blight. In wet years, potato yields were potentially high, but blight was more serious and restricted those potentially high yields. Net result – a similar yield and therefore a similar price - every year. This may have worked in the east of England (the old PBI was at Cambridge) but it would have been more problematic in the wetter west. Also, this was, of course, in the time before heavy irrigation became widespread.

This year the first few lesions of blight did not appear until August 13th, on plants of the old Dutch variety, Bintje, a very susceptible clone which we are using as a control in a small trial to compare with the performance of some of the Sárpo potato lines from the Sárvári Research Trust. In just over two weeks, infection on Bintje went from 0% to 100% - an almost visible rate of spread. However, it's now a month since the blight arrived, but small plots of Sárpo Mira, the blight resistant Sárpo variety, sometimes standing next to the now empty, plots of Bintje, have only occasional traces of blight – effectively nothing. Other Sárpo selections have slightly more blight, but nothing serious.

The excellent performance of Sárpo Mira follows the official trials data for the variety – it's the best available, scoring 9 out of 9 for both foliage and tuber resistance. However, of the 110 or so potato varieties that are currently available for marketing, there are 10% with scores of 8 or more for foliage or tuber blight. Only one of this top group has a high foliage blight score with poor tuber blight resistance. This is a good reflection on the breeding effort since foliage and tuber blight response are partly under separate genetic control.

The next major question is whether or not these resistant

varieties would remain resistant if grown on a large scale – or would some nasty new race of the pathogen with specific virulence for the resistant variety suddenly increase and spread everywhere. Certainly as far as Sárpo Mira is concerned, the laboratory evidence suggests that the resistance is complex, controlled by a number of genes, which should mean that the pathogen will find it difficult to put together a genetic answer to the resistance.

Also if a number of different resistant varieties are grown simultaneously so that blight inoculum is minimal in the locality (see our earlier BlightMOP reports), selection for a knockout strain will be less intense.

We believe that the complex resistance of Sárpo Mira comes from a number of wild potato species related to *Solanum tuberosum*, the edible potato, all from Mexico or the Andes. Not surprisingly, this is said also to be the source of the blight resistance in the GM potato, which BASF now wants to trial in England having lost the case in Ireland. So far, there is no indication that the GM potato has anything special or unusual other than the fact that it is GM – what is the supposed advantage relative to the considerable range of blight resistant options already available? Does it combine foliage and tuber resistance? Is it a single gene resistance and therefore potentially precarious? Does it produce pollen? These are questions additional to the well-rehearsed concerns about the genetical implications for the crop, for the environment and for the user in any GM material.

But I have another concern in relation to testing and separation (a comprehensive analysis of which is being prepared by EFORC). BASF propose that all volunteer tubers will be removed after harvesting the trials (if these are allowed). That may be possible, though unlikely. What really is impossible is total control of volunteer spread under commercial production – if such production ever happens.

Our own experience using a good harvester and a team of potato 'gleaners' is that we can find occasional potato plants even four years or so after a previous crop. And it's clear that this volunteer problem is being exacerbated by global climate change. We do not now have the kind of winters that really helped to kill out un-harvested tubers in the past. There is no doubt at all that GM contamination will occur – the question is not if, but how quickly, it will pass the 0.9% mark. And then what happens?





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## Bedding in...bogged down – a year of OELS and HLS

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The Organic Entry Level Scheme (OELS) and Higher Level Scheme (HLS) have been in operation for a year now and organic farmers, and every one around them including their partners, advisers and the farm dog can, mostly, breathe a sigh of relief that twelve challenging months have passed. Except that it is not really over and as more farms and additional land comes into conversion and as pressures on Defra funding become greater, the opportunity for prolonging the experience continues and of course there are still the gremlin maps...

It has to be said that the scheme itself is not a bad one in principle. Quite rightly organic farmers are receiving a maintenance payment, which is a very welcome payment for the delivery of real environmental benefit. Not only that but the conversion payments have been revised and for many farm systems, particularly the less intensive mixed farms, the conversion payments are adequate to cover the costs of conversion.

There remain serious anomalies of course - the fact that there are no capital grants for crucial aspects of organic farming and environmental protection, such as manure storage, need to be addressed urgently. Small growers still cry in the wilderness for recognition of their enormous contribution to society. We are told that they cannot prove that they contribute sufficiently to the environment in the terms of the Environmental Stewardship Scheme. But overall the application forms and the administration system is potentially doable even if it does seem unnecessarily complex.

While some farmers are doing the OELS themselves many are getting help, and most will need several days of professional consultants time to complete HLS application forms. Despite applying every possible strategy there seems to be no way known to mankind or Defra of agreeing a set of accurate maps efficiently. Stories of 80% of applications being "problem cases" and of the return of maps to one farm six or more times have been reported.

### Environmental gain

Once the OELS has been agreed, however, few practical problems seem to have been experienced, although I know of one case where a farm appears to be 6 months overdue for payment. The HLS in particular is a very attractive option, particularly for those early birds already sitting on agreements and pondering for the delivery of more environmental goods and services. Unfortunately we are beginning to hear that funds are low and that you have to have existing wildlife features (such as an SSSI) before you will be looked on favourably in the future. So that could leave many farms out in the cold and with the removal of the Countryside Stewardship Scheme no means of funding capital intensive work on hedges, margins, tree protection, ponds and so on, which is so important for organic farming. Apparently they do not provide sufficient "environmental gain".

*Mark Measures*

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## Dry summer brings forage woes

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Around a third of organic beef and sheep farmers are looking at reducing stock levels as a result of a lack of forage following this year's dry summer. That's the message from a survey of organic livestock farmers carried out by Graig Producers, the organic livestock marketing group following a survey of producers.

However, the survey, carried out across Wales, the Borders and West Country at the end of September, also shows a very mixed picture of forage availability perhaps reflecting the localised weather conditions over the summer. Whilst half the farmers surveyed described their forage harvest in 2006 as poor or very poor, a further 30% described it as good or very good, with 20% viewing the harvest as normal. Several said that they had good quality but poor quantity. A number, whilst

having a normal harvest, had to start feeding it during and after the dry spell.

There were mixed feelings amongst the survey farmers about pressing Defra for a derogation from the organic regulations, to enable the worst hit organic farmers to feed non-organic forage. Bob Kennard, Managing Director of Graig Producers thought on balance it would not be a good idea, at least not yet. "A number of our members had made great efforts to avoid problems this winter and still remain inside the organic regulations, that a derogation would send a number of wrong messages, both to producers and consumers. Our current view is that with such a variable picture of fodder yields, there is some still for sale, and only when it is physically unavailable should a derogation be considered."



# Farmer enthusiasm for evolving wheat

## Composite crosses countrywide

**The first seed from the Defra funded wheat breeding project reached five farmers across the UK last autumn. The seed was not only under the scrutiny of researchers during field assessments but also, and most importantly, by participating farmers who gave their views on the future of these composite cross populations (CCPs).**

The CCPs were developed from 21 winter wheat parents by EFORC in collaboration with John Innes Centre. Parents were selected according to their success over the last 50 years or so, and included varieties from the commonly known Deben to the Russian-developed Bezostaya. Three main populations were created by carrying out all possible 2-way crosses, either using: all parents to form the yield-quality CCPs (YQCCPs); varieties used for bread making to form the quality CCPs

The value of CCPs comes from their genetic diversity; the enormous range of plant phenotypes that exist in the populations differ for example in disease resistance, canopy cover, and root morphology. The selection pressures of organic agricultural production, in effect, evolve the CCPs over successive years by selecting the fittest individuals, thereby adapting them to a particular region, soil type and even farm. Such adaptation promises to provide performance stability in the face of environmental variation, including climate change. The seed that was grown by participatory farmers had previously been grown over 3 successive years, but under conventional conditions (as a component of the wheat breeding project ARO914) to enable the greatest level of genetic mixing (segregation) but minimising the environmental selection pressures. Therefore, the seed that was supplied to farmers had the greatest level of novel plant phenotypes available for environmental selection.

Different farmers chose different CCPs, with 4 of the 5 farmers choosing YCCP, 3 of 5 the Q CCP, and 2 the YQ CCP. There were a number of discussions relating to the value of growing the milling (Q) compared to the feed wheat (Y) populations – of course high yielding plant phenotypes will be selected in the field, but does a case exist for the selection of quality? Early data from the wheat breeding trial (Evolutionary wheat makes the grade? Bulletin No. 83) has provided the first hints that the CCP yields may be out-performing the mean yield of their parent varieties, and their mixtures. However, at this stage no analyses have been possible to assess their baking quality, and the possibility of quality characteristics selected in the field.

Yield estimates were taken by cutting 4 replicated meter squares within trial plots. Although there is some speculation that this method may overestimate yield, the method was consistent between trial sites, therefore enabling some comparison to be made. This first year of data clearly demonstrated that the yield varied for the CCPs across the farm sites (Table 1). Unsurprisingly, Y CCPs generally out-yielded the QCCPs, and in 3 out of 4 cases the field variety and, in agreement with previous results, the harvest index (Table 2) was higher for the Y CCP than for the Q the YQ CCP.

Farm	Field variety	QCCP	YCCP	YQCCP
1	3.99	3.56	4.57	*
2	5.18	*	*	4.68
3	3.72	3.20	3.82	*
4	7.51	*	4.72	*
5	6.57	6.70	6.59	6.41
Mean	5.39	4.49	4.93	5.55
SE	0.731	1.112	0.589	0.865

*Table 1: Mean yield (from 4 replicated measurements per site) of winter wheat field variety (Farm 1 Maris Widgeon; Farm 2 Consort; Farm 3 Claire; Farm 4 & 5 Hereward) and yield (Y), quality (Q) and yield-quality (YQ) composite cross populations (CCPs). The standard error (SE) is given which indicates the yield variation relative to the number of sites.*

(QCCPs); or high yielding varieties to form the yield CCPs (YCCPs). Naturally occurring male-sterility was integrated into a second set of CCPs to increase the level of out-crossing between plants in an individual stand. It is these 3 sets (Y, Q and YQ) of CCPs with male sterility that were offered to farmers to be trialled alongside their own winter wheat variety according to their standard management.



Across the farms the yield was strongly correlated with head density and with straw yield. However, the lower yields of the QCCPs and YQCCPs appeared to be somewhat compensated for by an increase in the thousand grain weight (Table 3); the YCCP thousand grain weight was generally lower than both the QCCP and the YQCCP

	Field variety	Q	Y	YQ
	0.49	0.52	0.58	0.50
	0.54	0.47	0.53	
	0.45	0.49	0.52	
	0.53		0.50	
Mean	0.50	0.49	0.54	
SE	0.0206	0.0145	0.0135	NA

Table 2: Mean harvest index for the yield (Y), quality (Q), yield-quality (YQ) composite cross populations (CCPs) and the field varieties across farm sites (there is an omission of one field variety due to absence of data). The standard error (SE) is given which indicates the harvest index variation relative to the number of sites.

Farm	Field variety	QCCP	YCCP	YQCCP
1	47.92	45.36	44.06	*
2	*	*	*	45.80
3	41.61	43.45	44.72	*
4	43.63	*	42.96	*
5	39.00	41.09	40.95	41.61
Mean	43.04	43.3	43.1725	43.705
SE	1.883	1.235	0.825	2.095

Table 3: Mean thousand grain weight of winter wheat field variety (Farm 1 Maris Widgeon, Farm 2 no data on straw yield, Farm 3 Claire, Farm 4 & 5 Hereward) and yield (Y), quality (Q) and yield-quality (YQ) composite cross populations (CCPs). The standard error (SE) is given which indicates the thousand grain weight variation relative to the number of sites.

These results are from the first year of exposing wheat to selection on the participatory farm sites. All the farmers who undertook the trials wish to re-sow the seed for a second year. Farmers clearly wanted to see a greater area put to the populations, following the multiplication that has taken place this year. Larger field scale plots will enable a more extensive comparison to be made by the farmers, and yields can be taken from the combine, rather than from small sampling areas with the potential over-estimate of yield (*On choosing an organic wheat – Hereward or Claire? James Norman Bulletin No. 83*).

Most importantly, the successive saving and re-sowing of the CCPs will permit the populations to evolve further to the farm environment and management. The long term potential of the CCPs are absolutely complicit with the opinions of most of the farmers we spoke to; the priority is clearly stability of production of both yield and quality year-on-year rather than out-and-out yield.

Acknowledgements: We wish to thank all farmers involved in these trials- without their time and feedback, such work would be impossible. Their support is also invaluable for the future developments of wheat breeding in the EFORC crops and environment programme.

Hannah Jones, Zoe Haigh, Kay Hinchliffe,  
Sarah Clarke



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## Growing controversy in organic horticulture

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### **Nowhere in UK organic production is the question of standards and certification more practically controversial than amongst growers.**

At the July event at the Welsh College of Horticulture Alan Schofield of Growing with Nature gave a penetrating review of standards issues as they relate to organic horticulture. As Chair of the Soil Association Horticultural Standards Committee, a former member of UKROFS and a grower of considerable experience and reputation, Alan is able to bring a unique perspective to bear.

His review set out to examine the development of organic standards with particular reference to horticulture and to ask some searching questions about the direction that this development might take in the future. None of the standards development (legislative or private) has engaged with the proper development of horticultural standards – where they exist they have evolved by default from what are essentially agricultural standards. This does not work because horticultural yields operate well in excess of those from agricultural crops giving rise to serious questions about fertility and how it is provided. Non-organic sources of fertility should only be used to supplement those that come from within the system or from another organic system. In the classic mixed farming model this can be achieved relatively easily but in the stockless horticultural system it is much more of a serious challenge.

### **Recycled materials**

The challenge arises from making the maximum use of recycled materials from within the organic farming system. This means using homemade composts and the growing of green manures for fertility building and fertility conservation. This is achievable and there are several worthy examples but it has major implications for economic viability. Maintaining fertility from within the system means taking land out of cash crop production in order to build fertility for subsequent crops. This is an important principle of organic growing that is not always recognised by certification bodies and its use can place a grower at a distinct competitive disadvantage. Perhaps more importantly it is not always recognised by the market, partly because recognition would mean acknowledging the fact that higher prices will need to be paid.

The EU Regulation requires that all seeds used in organic farming systems must come from organically raised stock. Is the currently available 'organic' seed fit

for purpose? Are there any benefits from using it? Is it cost effective? Is it going to be available next season? Are companies breeding for biological systems? There is a derogation system in place that is relatively easy to access but it was suggested that it was in danger of being manipulated by large seed companies and growers alike. There is a danger of narrowing the genetic base of the crops grown without a level playing field and considerable common sense.

Next on the agenda was the sometimes vexed question of inputs in organic horticulture and the way their use is managed by certification bodies. The number of pesticides presently allowed is small, though there are a number of non-pesticide materials also available for use.

These inputs have to undergo an approval process that involves both the EU and national controlling bodies and new materials/pesticides are constantly being proposed though few are successful. Certification bodies operating private standards (as opposed to those working essentially to the national standards) are able to take a different view on whether their standards should include all or some of the approved inputs. When approved inputs are not included in such standards, growers can sometimes see this as working against their best interests. Growers also feel that this can often be an unbalanced view given that imported produce from systems that use such an input might be re-labelled with the same UK organic logo. A similar situation can exist in the area of liquid feeding where its use goes beyond the 'topping up' envisaged by the EU Regulation.

### **Soil-less production**

Some certification bodies have introduced standards for forms of soil-less production such as potted herbs and wheat grass. These standards reflect aspects of the so-called 'organic' lifestyle and yet there are still no standards specifically designed for general horticulture and arguably more importantly for protected cropping. There is a major debate on the use of poly-tunnels and the question on whether there is a future for protected cropping in the UK does not yet have an answer. It is important that organic growers engage in the poly-tunnel debate and argue the case for protected cropping in organic systems.

As for the future of organic standards it is vital that we adhere to those original principles set out by IFOAM (International Federation of Organic Agricultural Movements). Among the most important issues should





be an enforcement of the requirement that the majority of the nitrogen required by the crop should come from within the organic system or a collaboration of organic systems. If the standard on organic seed is to be fully enforced then seed companies should be encouraged to breed for organic systems and the organic seed they produce should perform as well as its conventional equivalent. Organic growers should resist the move towards global prescriptive standards as they will by their nature water down the original principles. A focus on localised conditions and principles that minimise external inputs is far more in tune with the IFOAM principles.

It is important for all engaged in the organic sector to realise that standards provide a framework for the production of organic food as well as being a guarantee for consumers. The consumer has never been more receptive to the word 'organic' yet this should not necessarily drive standards in an unrealistic direction. At the same time all concerned should recognise the importance of local organic production and that this is more in tune with both the letter and the spirit of the organic standards and principles, one of which is to keep our roots firmly anchored in the soil.

*Roger Hitchings*

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## **OUT NOW... 2007 Organic Farm Management Handbook... information, analysis, policy at your fingertips**

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The 7th Edition of the Organic Farm Management Handbook has involved a complete review of the organic market, farming costs, prices, grants and sources of information, involving numerous specialists throughout the organic world. It now offers the latest information to help organic and converting farmers budget, analyse their business and identify new opportunities. It provides advisers with invaluable information and it provides researchers, students, policy makers and the market with the data to understand of the organic business.

This edition incorporates the latest CAP reforms introducing the Single Payment Schemes (SPS) which has changed the financial picture of individual enterprises. Decoupling support payments from arable production and removing quotas on cattle and sheep production has created a very different picture of the profitability of individual enterprises, highlighting the need to cover all costs from the market while revealing opportunities for some farmers to de-stock and convert to organic. This fundamental policy change has been dealt with in this edition by strengthening the coverage of whole farm profitability in a new Section 5 which covers the support available for conversion and organic management and SPS in all four UK regions. It models whole farm profitability for a number of farm types based on real farm income data collected by IRS University of Wales, Aberystwyth. The 7th. edition also contains an update of the market developments during 2005/06.

As John Nix says "This book is invaluable both to those already farming organically and to those who are contemplating moving into it. It is packed with up-to-date information both financial and technical. It has been prepared by researchers steeped in the subject, backed by factual data provided by producers. It has become an excellent and essential part of current agricultural literature."

The 7th Edition of the Organic Farm Management Handbook (ISSN 1354-3768) is now available from;

IRS University of Wales, Aberystwyth, (01970) 622248  
E-Mail: [organic@aber.ac.uk](mailto:organic@aber.ac.uk)

Elm Farm Organic Research Centre (01488) 658 298; E-Mail: [oas@efrc.com](mailto:oas@efrc.com)

**Monday 20th November 2006  
10.00 until 4.00**

An opportunity to see Elm Farm Organic Research Centre's on-going research at Sheepdrove Organic Farm, Berkshire.

There will be presentations & discussion on poultry research (systems and feed) and environmental monitoring - followed by a farm tour.

For more information please phone 01488 658298 or visit [www.organicresearchcentre.com](http://www.organicresearchcentre.com)



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## Local Food at the Crossroads – celebration, challenge, opportunity

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**2nd National Food Links UK Conference  
East of England Showground, Peterborough  
29th November 2006 9.30 – 4.30**

Local food stands at the threshold of a huge expansion. Never before has there been such a high degree of consumer demand, such an urgent need for more sustainable food systems, or such interest from funders and government. The practical difficulties are still huge, but Food Links organisations and others have done a great deal to map out and try out solutions, and we have much to celebrate.

Chair: **Baroness Sue Miller**

Speakers -

**Lawrence Woodward O.B.E.**

Director, Elm Farm Organic Research Centre  
**“Feeding a Resource Constrained World” – the imperative to change our food systems in the face of climate change, peak oil and the degradation of soil and fresh water supplies.**

**Dan Keech**

Senior Researcher Food and Farming, New Economics Foundation

**“Local Food at the Crossroads” – groundbreaking projects in the sustainable local food movement.**

**Tully Wakeman**

Director, East Anglia Food Link / Chair, Food Links UK  
**“An East of England Vision for Local Food” – an ambitious programme of work to create a step change in the scale and vibrancy of the local and regional food sectors.**

**Sue Clifford**

Director, Common Ground

**“Growing Food Culture and Local Distinctiveness”**

**Details and booking** - Sarah Davies, Food Links UK, c/o Envolve, Green Park Station, Bath, BA1 1JB.

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### **Congratulations on top awards**

#### **Organic producers of the year**

Elm Farm Organic Research Centre friends, clients and Organic Advisory Service advisers, Tim and Jo Budden, of Higher Hacknell Farm in Devon have won the Organic Producer of the Year gold award from the Soil Association. The judges commented that the Buddens’ farm and business are firmly built on a holistic attitude and a thorough and detailed approach to the organic management involved. Higher Hacknell, they said, is a great example of a family farm with an outstanding level of business, environmental, and social awareness.

Elsewhere in the 2006 Organic Food Awards, EFORC clients and friends Will and Hilary Chester-Master of Abbey Home Farm, near Cirencester, Gloucestershire won the Organic Trophy.

Congratulations to them and all EFORC friends and contacts who lead the way in principled organic production and best farming practice - winning prizes along the way.



## Bats and buffalo briefing

One of our EFORC events during Organic Fortnight was a guided walk around the farm trail, preceded by a presentation on Elm Farm bats. Tony Blunden, and Gareth Knass are local naturalists who have been monitoring our bat population through the year. We have 4 species of bat, ( Pipistrelle, Natterer's, Brown long-eared, Serotine ) each with its characteristic radar frequency on the electronic bat detector. So there is no need to find exactly where they roost, or to watch them fly out of the door in the dark. You just switch on the detector, record the radar signals, and analyse the frequencies on the computer.

The large populations of flying insects at Elm Farm help to make an ideal habitat for bats. Our plans to refurbish the internal structure of the barn, creating space for

meetings and offices, will include preserving a part of the roof space for the bat roost.

A newly arrived group of yearling buffalo, grazing quietly in Quarry Field, provided a surprise sight for the 40 or so visitors as they neared the end of the walk. These beasts are normally placid and friendly animals, but were probably overwhelmed by the crowd and kept their distance. The herd that they came from are mainly producing milk to make organic Mozzarella cheese.

We plan to hold these public access/information events more often. As the organic sector flourishes, the level of public interest in just how their organic food is produced is encouraging people out on to farms to see how it's done...local food networks in action.

## Make a Friend a "Friend"

### Help Elm Farm Organic Research Centre...and give a great gift at the same time

**Our work at EFORC is unique and vital to the future of Organic Farming, but we need ongoing support that will enable us to continue our important research, training and policy work and to demonstrate solutions to seek permanence...**

You as an individual, or an organisation, can make a valuable difference if you help us in one of the following ways:

Become a Friend of Elm Farm Organic Research Centre, or make a friend a Friend!

In addition to the regular Bulletin, you will also receive newsletters on our activities, free EFORC publications, discount on specified events from our Annual Events Programme and many more of our Special Invitation-Only events. Please contact us for a Friends Donation form.

You can make a Donation to Elm Farm Organic Research Centre, or if you have done so in the past, please contact us for a Gift Aid form as we can claim back the basic rate tax on your donation, increasing its value by 28%! Please contact us for a gift aid form.

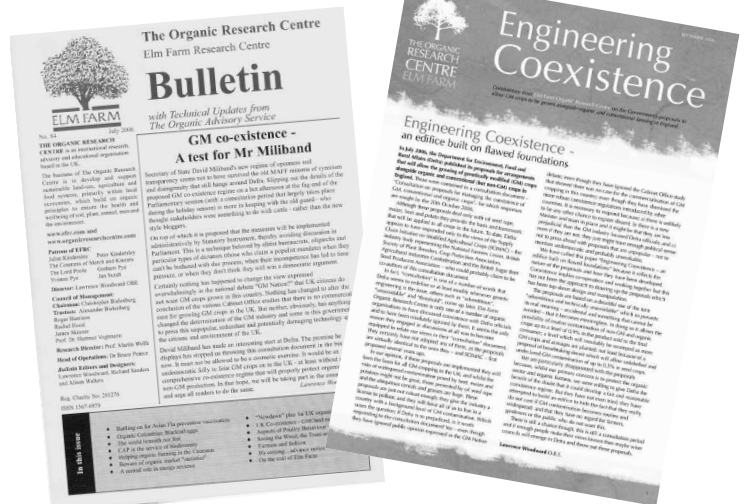
You can donate Shares to Elm Farm Organic Research Centre and significantly reduce your income tax bill as there would be no capital gains tax due on such a donation. This applies to many listed shares and unit and investment trusts.

You could leave a Legacy to Elm Farm Organic Research Centre. By including EFORC in your Will, you are enabling us to continue to develop our work and activities.

As we are a charity, all legacies to EFORC are free from inheritance tax, so your family has less to pay. Please ask us for a legacy leaflet.

For more information on any of the above, please contact Rosie Jordan on 01488 658298 or email [rosie.j@efrc.com](mailto:rosie.j@efrc.com)

Thank you for supporting us.





## **Organic Producers In Principle and In Practice**

A Conference created by organic producer groups and producers  
in conjunction with

The Organic Intelligence Network Collaboration  
and

Elm Farm Organic Research Centre

**Royal Agricultural College, Cirencester**

**11th to 12th December 2006.**

**On the surface organic agriculture appears to be in good shape – there is no need to repeat again the figures of the booming organic success story. But what is happening on the farms and holdings? Are they part of this boom? What are the real views and concerns of Britain's organic small and family farmers and growers? - Those people who have been the pioneers and backbone of the organic movement.**

Technical issues are ever present as producers strive to improve but there are also concerns about things like business survival, incomes under pressure, worries about future livelihoods, being swamped by larger commercial interests, the uneven application of standards and certification, the slide away from principles, the problem of accessing information when it matters, poor or patchy representation.

This conference has been put together by a network of organic producer groups and individual producers to address these issues. It will be organised in parallel "mini-conferences" planned and run by producers, with overall plenary sessions where the UK's organic producer community can come together can share, debate, agree or disagree on the issues that matter to them.

The organisation of the conference has been facilitated by Elm Farm Organic Research Centre as part of the initiation of the Organic Intelligence Network Collaboration (OINC) a Defra/RES part funded initiative to bring and exchange up to date market, research and policy information from its funded projects and other sources (including EFORC, Organic Centre Wales, HDRA, Soil Association, OF&G, OMSCo, Organic farm Foods etc) directly to producers and the organic community. The Institute of Organic Trainers and Advisors (IOTA) will be holding its general meeting as part of the conference.

Organic Producers In Principle and In Practice aims to reassert the link between organic principles and practice and to identify the ways in which technically, structurally and politically this link can be used to strengthen the organic producer movement to enable that to survive and play its critical role in producing food in a world of finite and diminishing resources.

**The Conference is aimed primarily at organic producers but all are welcome.**

**Put the date in your diary – full programme details will be available soon.**

**The Organic Research Centre, Elm Farm, Hamstead Marshall, Nr. Newbury,  
Berkshire RG20 0HR United Kingdom**

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