



# ELM FARM RESEARCH CENTRE

# Bulletin

*with Technical Updates from  
The Organic Advisory Service*

No. 75

November 2004

## ELM FARM RESEARCH CENTRE

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

The business of Elm Farm 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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Reg. Charity No: 281276

ISSN 1367-6970

## "NODAM" GOOD TO CONTINUE DEROGATIONS

Is it the grumpiness of age that gives the past a rosy tinted hue or is it true that life really was simpler then?

Some readers might remember "The Monkees" - though probably few will own up to it - but I bet hardly any will remember a song they did which contained the lines, "life was such a simple game, a child could play" and "it was easy then to tell right from wrong". I am sure that there is plenty of "higher" literature that says the same thing in a more worthy form but I can't think of any at the moment so The Monkees will have to do.

In real life it may never have been easy to tell right from wrong - but it was possible to tell organic farming from something that was not organic farming. True, as detail began to be added to the framework of standards, some greyness began to appear; more in some areas than in others. OK some parts of the standards were always as murky as a late November afternoon but we knew where we were going even if the headlights didn't clearly pick out the road ahead.

So that we could keep moving forward and not be thwarted by technical or structural difficulties there was no available answer to, a rather dodgy device that came to be called "a derogation" was employed. Dodgy, because you never really know whether it's going to work well, let you down totally or take to you somewhere you never intended to be.

Over time, standard setters and regulators throughout Europe became rather addicted to derogations. They are a good way of avoiding taking difficult decisions and, in the short-term at least, foster a feeling of wellbeing by generating the pretence that the "nasties" have gone away. So rather a lot of derogations were created, some with extremely long time periods, the sum total of which might make an outsider wonder whether there was really such a thing as organic farming.

We "insiders" comforted ourselves in the knowledge that these derogations were limited and would, in a reasonable period of time, be ended. Well, in many cases the reasonable period of time is up and are derogations quietly slipping away? Not exactly, it seems that many of them are being quietly extended, albeit in a modified form.

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Of course no-one wants derogations but .... ; the phrase John Gummer coined about housing development comes to mind. It was NODAM; in this case "no derogation after mine". Every production sector I have looked at has representatives who make a compelling case that their particular piece of foggy greyness should continue to be tolerated but that light and clarity should be shone on everyone else's.

In reality these cases are less compelling than an old video of "The Monkees" TV show. The particular case that generated this exercise in grumpiness was the news that the Advisory Committee on Organic Standards (ACOS) seems to have come to the absurd decision to advise Defra that the derogation that allows conventional feed should be extended. Sure in a modified form - only 5% non-organic - but that only makes matters worse. Where is the justification for 5%, why not 3 and a third%? Why not just stick a finger into the fog and agree on the first number that comes to mind? Actually that's probably what they did because there is no rational justification for any % let alone 5.

The days of derogations should be ended as rapidly as possible. There may be one or two examples where they are still needed but these should be the exception. In most cases the sector has had ample time to come to grips with the problems that gave rise to the initial derogation. And it is hard to think of an area where some technological progress has not

been made. Even in the area of vegetable seeds, which remains problematic, some seed producers have made investments and are producing organic seed. It is a similar situation with organic chicks.

The problem with derogations is that they stifle innovation and adversely impact on those producers and companies who took the standard setters and regulators at their word when the derogations were initially time limited and actually tackled the problem. Derogations also threaten the integrity of organic production. How, for example can we expect to reduce the risk of GM contamination if we continue to derogate the requirement for dedicated processing and packing lines? And how are we going to maintain the confidence of an increasingly questioning public if our system is so riddled with derogations and amended derogations that you have to be an anorak to remember why there was a derogation in the first place?

Let us accept there was a need for derogations in the past but also that the past is past. Let us not extend any of these derogations save in one or two truly exceptional cases. Let us rather trust to the innovation and skills of producers and companies to find ways of overcoming the problems that still exist. Easier said, or written, than done? Maybe, but in the words of the best Monkees song "I'm a believer".

*Lawrence Woodward*

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## More Organic Action in Wales

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**The Second Organic Action Plan for Wales was launched on July 1st.** The first action plan was launched five years ago and was the first in the UK though all the other administrations have now followed suit. Many changes have taken place in the time since the first plan was published and the Strategy Group responsible has been considering how to move forward in what is a considerably different environment to that of the year 1999.

Many of the aims of the first plan have been fully, or at least partly, achieved although there are issues that still need further attention such as training and supply chain anomalies. It is generally that priority should now be given to supporting the organic sector by raising the awareness of the benefits to both society and individuals of growing and eating a greater proportion of food as organic.

The plan has eight key recommendations that seek to address the new priority.

1. Environmental payments: continue to provide organic farmers with conversion aid and maintenance payments
2. Developing the market: support the work of organic businesses using a range of agencies and

encourage the sustainable procurement of organic food

3. Develop new marketing and processing opportunities: establish a quality food culture in Wales that focuses on tourism, the hospitality sector and the food service sector
4. Public education: increase awareness of organic farming by targeting schools and consumers using best practice from other member states
5. Public health: increase awareness of the links between diet, nutrition and health especially for a number of vulnerable groups
6. Research, market intelligence: liaise with Defra to ensure Welsh needs are included in the funding and focus of research; identify market intelligence needs and address them
7. Minimise the administrative load: streamline assurance and agri-environment schemes, and their verification inspections
8. GM-free Wales: this should be maintained

*Roger Hitchings*  
*Head of Organic Advisory Services*

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## SEED SUCCESS: At least for the moment

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**Recognising that the Commission was not able to agree on the proposal that would allow for GM contamination of seeds, outgoing EU President Prodi withdrew it in the last days of his administration.**

"President Prodi acknowledged the lack of the scientific basis on the economic impact of such (contamination) thresholds" according to Marco Schlüter, from the IFOAM EU office in Brussels. That plus the lobbying efforts of the organic sector, NGOs, members of the European Parliament and above all, ordinary consumers.

The issue will now come before the new Commission and according to Schuler there are some grounds for hoping the new Commissioners will take into account the environmental and economic risks and threats resulting from unlabelled seed contamination.

The Commissioner designate for Agriculture, Else Mariann Fischer Boel has already supported the call for seed purity. She stated in the Council of Ministers, in her role as Danish Agriculture Minister, "in order to secure the best possible conditions for co-existence, Denmark finds that thresholds in any forthcoming proposal should be set at detection level (0.1)."

The UK government has still not given an indication of the position it intends to take. In replying to our letter printed in the last *Bulletin*, agriculture minister Ben Bradshaw stressed that the decision would be made on the basis of sound science. So, as Prodi belatedly acknowledged, the sparseness of the science the proposal had been based on, there may indeed be some hope.

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## ACOS - How is it working?

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**It has been nearly 10 months since the inaugural meeting of the Advisory Committee on Organic Standards (ACOS) and it is perhaps time to take stock of its early progress.**

Minutes of the early meetings can be viewed on the Defra website ([www.defra.gov.uk/farm/organic/acos/meetings](http://www.defra.gov.uk/farm/organic/acos/meetings)) - draft minutes are placed on the website four weeks after the relevant meeting but cannot be taken as a fully accurate record until confirmed at the following meeting.

ACOS is keen that its operations and decisions are as open as possible. As part of this openness a public meeting will be held in Scotland in April 2005.

A number of issues have been discussed during the six meetings held so far with the first major topic being GM labelling and adventitious levels back in January. The other major area of review has been the livestock standards with particular reference to those areas where national variation is allowed. ACOS decided to recommend to Defra that the enhanced standards in the UK Compendium of Organic Standards be retained. This included the early withdrawal (compared with the EU Regulation) of the derogation relating to flock sizes in organic poultry units. It is probably widely known by now that Defra elected to ignore this particular piece of advice after consulting with the industry, and the derogation will now remain in place until 2010 in common with the rest of the EU.

UKROFS was the executive authority in terms of implementing what were the UKROFS standards. Defra has taken this executive function back in-house and the

advisory committee is precisely that - advice can be given but not necessarily acted upon. An array of supporting sub-committees exists to support ACOS in its primary function and these essentially mirror the original UKROFS structures. The *Certification Committee* exists to oversee the monitoring and inspection of certifying bodies including the reviewing of surveillance inspections. A *Research and Development (R&D) Committee* has recently been established which is seeking to gather views and opinions from all the administrative regions to inform Defra's organic R&D spending. The *Technical Committee* exists to deal with the detail of the standards and to consider new inputs, procedures, etc. The *Certifying Body Forum* will meet twice a year to allow representatives of certifying bodies, ACOS and Defra to discuss of mutual interest.

The relationship of ACOS to Defra is evolving but it is clear that recommendations from ACOS will be considered and either accepted or rejected as Defra sees fit. This is an area that will be closely examined when the committee meets in December to review its first year of existence. It is likely that a more supportive relationship will develop between ACOS and the certifying bodies than was the case with UKROFS because direct regulation is no longer part of the remit. The second year of ACOS' existence should see greater definition in the relationships though the precise shape of these relationships has yet to evolve.

*Roger Hitchings is Head of Organic Advisory Services and is a member of ACOS.*

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## A Landmark Decision

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**Development in the countryside is a topic that often creates heated opposition as the protection for our green and pleasant land is sought and fought for at all costs.**

The Organic Advisory Service has had an active role in assisting a Dorset producer gain her planning application and get the Planning Officer's decision overturned by the district planning committee. The reason the committee were prepared to go against the recommendation of the Planning Officer was because a sufficiently strong case was presented to show that this business was unconventional and worthy of support for the potential insight it could give us in how to approach a truly sustainable business and lifestyle.

A planning application for a residential dwelling needs to show that: the business is: financially viable, there is a functional need to live on site, the intentions are genuine and there is no suitable alternative accommodation locally.

The consultants acting for the District Council were unable to understand the integration of the production system and the intrinsic need for the owner to be available to manage a highly complex and interdependent system which has been developed. This was effectively communicated to the planning committee at the meeting by the applicant.

The planning committee were therefore prepared to concede that the unusual nature of this business meant that the conventional assessment of the viability of the business was not applicable. This undermined the basis upon which the planning officer had made the recommendation and so this was disregarded and the decision made in favour of the applicant.

### **So what is this business and why is it so special?**

The business, started in a compacted 2 ha pony paddock 3 years ago, is titled "Evolving Systems" as the intention from the outset was to develop a system which was both financially sustainable and as far as possible environmentally sustainable. The business produces vegetables, salads, fruit, eggs, honey and flowers for sale and supports the owner through the production of, not only these foods, but also biomass for heating and solar energy for power. All the wastes of the business and dwelling are composted and returned to the system and the purchase of external inputs for the business is minimised to some fuel for transport and a mower.

The horticultural production is based upon permaculture techniques with flood irrigation used as both irrigation and frost protection. The poultry are ranged under the biomass willow and are used for ground clearance and pest control within the vegetable production areas and the bees have a function in pollination.

The waste water from the dwelling passes through a willow bed and once clean passes back into the River Brede. A compost toilet is used to recycle nutrient. Nothing is viewed as waste but as a potential resource and managed as such with hedges and verges used to produce either fruit or mulches.

The complexity of the system means that the understanding of the individual managing the system is crucial to the success of the system and therefore the functional need for that person to be on site is proven in a way that would not be the case in a far simpler conventional situation.

The produce is delivered and sold locally with all transport kept to a minimum to reduce costs.

The relative scale of the operation would seemingly make the business financially unsustainable but the choice of high value crops and absolute minimal inputs means that the system turns ingenuity, skill and experience into a high value output. However, as mentioned, the integration of the owner into the system means that the system is difficult to increase in scale because the labour resource is limited. This is obviously a paradox because whilst skill of the owner is vital it also sets the limit to the output of the business. This also limits the potential lifestyle choices the owner can make and convenience and luxury are unaffordable extravagances.

This is production at a human scale. There is little power other than manpower and that produced by solar power. This combined with ingenuity and skill have produced a system which possibly gives a model for a simpler, sustainable way of living for the future.

It was a brave decision by the District Council to approve the planning application as this is a challenging system which questions the conventions of current food production and modern living and it might have been simpler to avoid the challenges this system throws up.



# Disease, varieties and seed treatments in Organic Cereals

The Defra funded project "Cereal Varieties for Organic Production: Developing a Participatory Approach to Seed Production and Varietal Selection" has just completed its second of four years led by EFRC in collaboration with NIAB, Middlesex University, University of Kingston, HDRA and around 20 organic farmers in the south and east of England. Here **Jane Thomas and Rosemary Bayles** of NIAB describe some of the work they have been doing during the 2003/04 season as part of this project.

## Testing organic cereal seed for seed-borne disease

Tests have been completed on a total of 174 samples, predominantly wheat. Samples were obtained from organic seed producers, farm saved organic seed from growers, and seed harvested from organic variety trials. Levels of *Microdochium nivale* (seedling blight) were high on some samples of wheat. Levels of bunt (*Tilletia tritici*) were generally low, and below the threshold for

treatment in conventional seed, though a small number of lots had higher levels, and in one case a seed bulk was considered unsuitable for further organic production. *Cochliobolus sativus* (foot rot) was recorded at high levels in a specific seed lot of barley, and *Pyrenophora avenae* (leaf blight) was seen in some organic oat samples.

Comparisons were made between results of samples of conventional seed sent to NIAB for commercial tests, and the organic seed. Though test numbers were very different (eg about 600 samples of conventional wheat seed), there did not appear to be any consistent trend for organic cereal seed to be healthier or less healthy than conventional seed (eg see Figure 1a and 1b). The predominant seed related problem was ergot in wheat, with very high numbers (up to 80) of sclerotia per kg of seed in some samples, but similar levels have been noted recently in conventional seed lots.

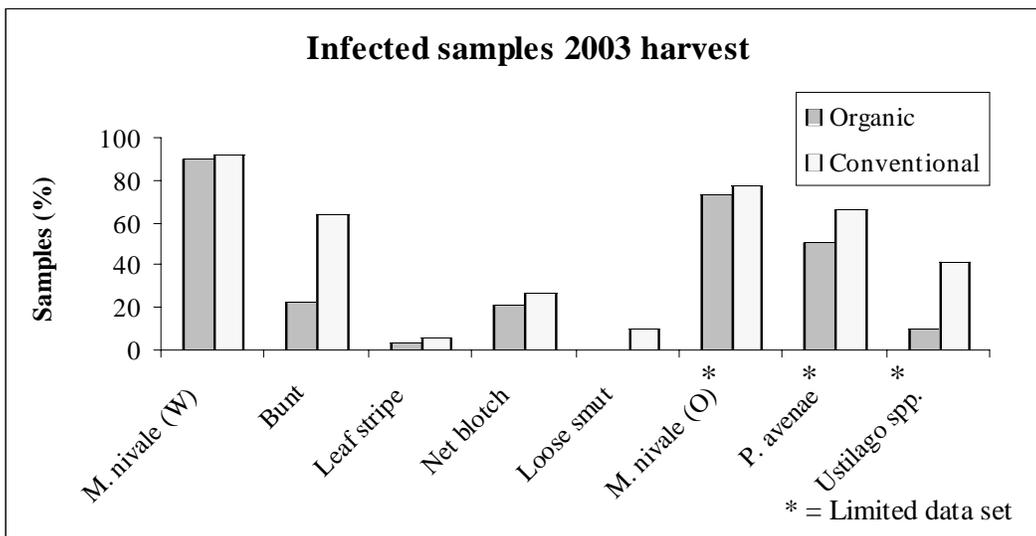


Fig 1a Percentage of samples infected with various seed-borne diseases, 2003, organic and conventional seed (W= wheat, O = oats)

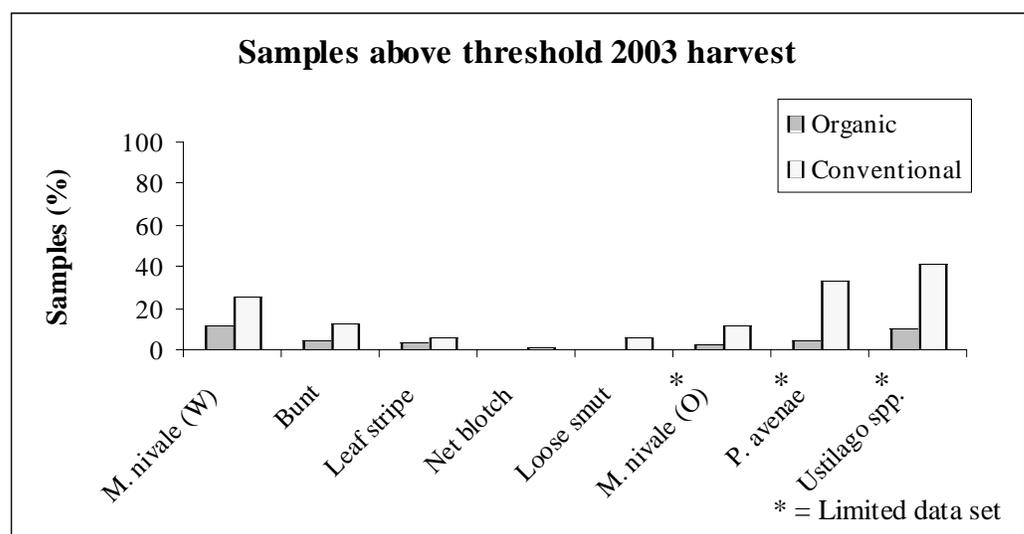


Fig 1b Percentage of samples above advised seed treatment threshold disease levels, 2003, organic and conventional seed (W= wheat, O = oats)



## Organic seed treatment evaluation

A number of seed treatments and processes which are either approved for organic use, or would be highly likely to achieve approval, were applied to diseased seed of wheat (*M. nivale* and *T. tritici*) and barley (*Pyrenophora graminea*, or *Ustilago nuda*). Products were selected to represent a) "chemical" b) physical, or c) biological applications. Treated seed was sown in replicated 12 m plots in autumn 2003, together with untreated seed and conventional product controls. Appropriate records of the occurrence of seed-borne disease expression, plant growth and yield were taken (wheat still to be harvested). The trial was carried out on non-organic land due to the problems associated with some products, and the introduction of diseases such as bunt and loose smut onto organic holdings. Preliminary results indicate that the hot air treatment used as a physical process reduced bunt in wheat to some extent. This treatment clearly reduced establishment as well, though in the barley trial yield was not significantly reduced.

## Controlling seed-borne disease with variety resistance

Trials in 2004 consisted of a second season of investigation for all diseases, and sowing out of seed infected in the previous year. The preliminary analyses of results are summarised below:

### Bunt (*T. tritici*)

For winter wheat varieties, there was good consistency between 2003 and 2004 data, with Hereward and Solstice again showing good resistance and other varieties being fairly susceptible. As in 2003, all spring wheat varieties tested were susceptible to bunt. Winter triticale varieties were totally uninfected for the second successive year.

### Ergot

For winter wheat, there were some inconsistencies between 2003 and 2004 infection levels: in 2004, all varieties tested were susceptible, although Nijinsky (= Socrates) showed some resistance in both years. Spring wheat varieties were also all susceptible in 2004; Chablis appears to be slightly less susceptible, having no infection in 2003 and lower levels than other varieties in 2004. All four winter triticale varieties tested were very susceptible in both years. All winter and spring oat varieties tested showed no infection in either 2003 or 2004.

### Barley leaf stripe

It is difficult to draw any conclusions for this disease, as

the method of spraying spore suspension onto ears produced little infection in harvested seed or resulting plants "grown-on" in 2004. There was a suggestion that the spring barley variety Dandy may be slightly more susceptible than others but this will require confirmation in 2005. It may be necessary to devise a more invasive ear infection method to test varieties for resistance to leaf stripe.

### Loose smut

The winter wheat varieties Exsept and Xi19 exhibited high levels of infection in both embryo and 2004 "growing-on" tests; Claire, Deben and Nijinsky appeared to be more resistant. For spring wheats, there was inconsistency between results of embryo tests and growing-on tests in the field and it is difficult to draw conclusions. All winter barley varieties tested were susceptible to loose smut; spring barley data is not yet complete, although Optic may be slightly more susceptible than other varieties.

### *M. nivale* ear blight

The winter wheat variety Exsept had low levels of ear blight in both years; Claire and Deben had lower infection than most other varieties in 2004 only. There was poor correlation between field assessment data and subsequent levels recorded on the seed in agar plate tests. All spring wheat varieties tested were moderately susceptible in both years and there was better correlation between ear and seed infection. Winter oat varieties ranked the same in both years, with Millennium showing the most infection and Kingfisher the least, although infection levels in the field and on the resulting seed were low. The spring oat Firth appeared to be more susceptible than other varieties in both years and had correspondingly higher seed infection.

Further reports on this work will be published in future issues of the *Bulletin*.

## More Co-existence Consultation

The Welsh Assembly Government (WAG) is carrying out a consultation on GM co-existence that parallels the exercise being carried out by Defra and the other devolved administrations. There could be differences in the final approach but the most likely outcome seems to be a common consultation document for all the regions. There were robust discussions at a scoping workshop held in Carmarthen to inform the consultation process - topics covered included buffer zones, liability, grower registration and crop notification, special rules for organic producers, etc. The majority of attendees were pro-GM, which was somewhat at odds with the general approach of WAG.



## Organic Farms *are* Better for Wildlife

**English Nature and the Royal Society for the Protection of Birds have issued their joint review comparing evidence about wildlife on organic and equivalent non-organic farms and this has concluded that organic farms are better for wildlife.**

The review concludes that a wide range of wildlife including birds, bats, insects and wild flowers flourish on organic farms. In over 50 comparisons it was usually, although not universally, true that organic farms had more individual wild animals and/or plants, including some declining species such as skylark. Some studies showed organic farms had a greater diversity of wildlife than non-organic farms. The research concluded that there were three main reasons for this:

- non-use of synthetic fertilisers and pesticides;
- sympathetic management of non-cropped habitats such as hedges, ditches and ponds,
- a greater tendency for organic farms to be mixed livestock and arable enterprises.

Mixed farms often provide the mosaic of different habitats that wildlife needs to thrive in the farmed environment.

Alastair Rutherford, Head of Agriculture at English Nature said, "This study confirms that consumers are right to be confident in demanding and buying produce

from organic farms in England. Organic farming can make a genuine contribution to the sustainable management of England's farmland benefiting both the public and wildlife. On this basis, English Nature has for some time been supporting Defra in developing provisions to encourage more farmers to farm organically through the Organic Action Plan and also through the development of new agri-environment schemes due to be launched next year."

Sue Armstrong Brown, Head of Agriculture Policy at the RSPB said: "This study shows that organic farming can encourage farmland wildlife. The findings should hearten those already managing organic farms with wildlife in mind, and inspire others keen to reap the benefits of organic methods.

"Farmland bird numbers have plummeted over the past 30 years and both conventional and organic farmers have a role to play in reversing these declines."

English Nature's position statement on organic farming is available on their website at:

<http://www.english-nature.org.uk/news/statement.asp?ID=25>

Information on the RSPB's policy on organic farming is available at:

<http://www.rspb.org.uk/countryside/farming/policy/organiccrops/index.asp>

### Organic farming could increase compost use by 300%, WRAP claims

**The organic farming industry could increase its use of waste-derived compost by 300% to about 120,000 tonnes each year, according to new research from Waste and Resources Action Programme (WRAP).**

The study looked at the needs, scale and value of the markets for composted materials and found that the organic farming sector could use products up to a value of £1 million.

The aim of the research was to provide WRAP with knowledge of market demand so that it can track progress towards increasing the use of recycled composted products in high value markets. It commissioned the Organic Resource Agency, Elm Farm Research Centre, the Soil Association's Producer Services, and the Henry Doubleday Research Association to undertake the study.

The research showed that the main users of compost are currently organic producers of field vegetables, fruit and protected cropping and, to a lesser extent, container plant enterprises.

"Compost is an excellent soil conditioner and has lifted our soil organic matter levels significantly. Crop yields have been consistently good and it is clear there is a high level of biological activity in the soil," said Dr Phil Morley, company agronomist at organic tomato producers Wight Salads, who have been buying in BSI quality assured compost from Hampshire Waste Services since 1998.

Current users and non-users of compost do have some concerns over compost quality and fear contamination from genetically modified materials, heavy metals, weeds, pathogens and pesticides.

WRAP said it is addressing these issues with work to support compost producers to become certified to the British Standard for compost (BSI PAS 100).

Anne O'Brien, WRAP's head of organics, said: "The report has identified a healthy market for compost in organic farming and growing. Our task at WRAP now is to work with compost suppliers and organic farmers to support the manufacture and use of more high quality compost products."



## Developing participation

### Defra funded project OF0330: Cereal Varieties for Organic Production: Developing a Participatory Approach to Seed Production and Varietal Selection.

The aim of the project is to develop a robust system for identifying, testing, multiplying and marketing cereal varieties, lines, mixtures and populations best suited to organic production in different parts of the country. It has eight objectives, which are:

1. To develop a participatory research and development methodology for UK organic farmers using variety trialing and the management of seed-borne disease as examples.
2. To collect information on the range of cereal varieties currently grown by organic farmers to help identify the major priorities and constraints among the varieties available.
3. To establish a pilot programme of cereal variety trials with organic farmers on organic farms using the methodology developed by Objective 1.
4. To obtain information on which seed-borne diseases, including ergot, may cause problems in the organic seed production chain of wheat, barley, oats and triticale, and to examine any relationship between organic husbandry conditions (seed rate, sowing date, rotation etc.) and incidence/severity of disease.
5. To determine whether cultivars with good potential for organic production are resistant to one or more of the seed-borne disease problems.
6. Working with farmers (Objective 1), review and identify a range of organically acceptable seed treatments and processes, considering both

chemical and physical methods, and test these under organic conditions to determine efficacy.

7. To formulate a code of best practice for the production of certified organic seed, and for the processing of seed on organic farms.
8. To evaluate the participatory research and development approach throughout the entire research process and produce guidelines and materials for best practice. Data will be collected throughout the duration of the project.

At a recent review meeting information was presented from the 2003/04 season - variety, seed testing, variety disease resistant and seed dressing trials as well as work by the teams social scientists on how the participatory methodology is developing (and how it can be improved). The 2004/05 seasons plans were also confirmed with 17 of the 20 participatory farmers from 2003/04 returning to work on the project (the three that left were happy with the project but were either not growing winter wheat this year or were no longer able to participate for other reasons not related to the project).

The plans agreed are that we will repeat the trials in a similar way to 2003/04 but also introduce a new pilot trial to look at garlic oil as a seed treatment within a field trial. We are also looking to work more closely with the farmers to extract all the information that we can from the on-going trials and to try and investigate additional approaches, with other partners, in an attempt to broaden the data sets gathered and their relevance to a wider audience.

This year's results are still being fully analysed and will appear as a *Bulletin special* soon.

### Research and Development Review in Wales

EFRC has been carrying out a review of Organic R&D in Wales, on behalf of Organic Centre Wales, and the draft report was discussed at a recent Producers' Conference. A lot of interesting feedback was received and is being used to inform the final version of the report. The revised list of R&D priorities reflects the changes of emphasis that CAP reform is introducing and also has a very strong emphasis on the problems faced by upland farmers when faced with a set of standards that was essentially written for lowland mixed farms. The report can be seen at [www.organic.aber.ac.uk/research/ukrofs/rd2004.doc](http://www.organic.aber.ac.uk/research/ukrofs/rd2004.doc) (Word document).

### Compassion in World Farming Trust:

*"Supermarkets and Farm Animal Welfare;  
Raising the Standard"  
- survey 2003 - 2004.*

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## Minimal cultivations

**In organic arable cropping rotations the plough offers the most effective means that we know of killing the ley and controlling weeds, unfortunately it simultaneously buries organic material which would be better left near the surface and inverts soil organisms to depths which do not suit them.**

The attraction of minimal tillage systems is therefore clear and is further boosted by the opportunity to reduce energy consumption, improve soil structure and avoid the tendency of the plough to aggravate some weed problems, such as wild oats, by encouraging seed dormancy and prolonging their viable life.

The reality is hard to achieve, particularly in a temperate climate where hot summer fallows cannot be assured. Indeed the experience of the Organic Systems Development Group (OSDG) farmers is that it is impossible to dispense with the plough routinely. But that does not mean that we should not be considering using minimal cultivations where there is an opportunity. Several OSDG farmers are now using heavy-duty spring tine machines such as Vibraflex and Terrdisc, particularly in arable stubbles. Given the right weather conditions it is often possible to avoid ploughing before the subsequent arable crop.

The experience with a range of treatments in winter cereals at Lower Pertwood Farm, Warminster this year has been particularly interesting. During a relatively dry August and September 2003 three ley fields and three stubble fields, all adjacent, were either ploughed to six inches or cultivated up to four times using a rotovator on land that ranges from light chalky loam to chalky clay.

### The results:

1. *Ley that was ploughed.* Weed free wheat crop with good yield potential.

2. *Stubble that was cultivated.* Triticale with satisfactory yield potential but unacceptably high weed vetch infestation.

3. *Stubble that was cultivated.* A moderately heavy soil type. Triticale with low weed population and satisfactory yield.

4. *Ley that was cultivated.* A particularly light soil type. Wheat with unsatisfactory yield potential and unacceptable weed infestation - poppies, charlock, vetch.

5. *Stubble that was ploughed.* Triticale with high yield potential and low weed levels.

6. *Ley that was ploughed.* Wheat with high yield potential and low weed population.

During the spring the cultivated crops appeared to have an unacceptable amount of trash on the surface, which appeared to reduce plant establishment - this effect was not apparent pre harvest. At the same time weed levels appeared to be much higher in the cultivated fields.

In conclusion, the use of a cultivator was seen to be effective in both weed control and yield potential for a competitive crop such as triticale, but not for wheat. However it is dependant on dry autumn weather conditions and where there are particular weed problems such as vetches the technique may be inappropriate. There is unlikely to have been any energy saving through minimal cultivations. The cultivations during warmer, early autumn weather are likely to result in mineralisation of organic matter, resulting in increased soil nitrate which is vulnerable to leaching unless a plant can be established early enough to mop it up.

Mark Measures

Head of EFRC's Organic Systems Development Programme

## SINGLE FARM PAYMENTS IN WALES

OCW has been working to clarify the options open to organic producers under the single farm payment (Wales has opted for a pure historic option). These include the changing of one or more reference years to a time when stocking rates were higher i.e. prior to conversion. Longer term organic producers will be unable to do this and so will have to consider making a hardship claim to the National Reserve.

Sue Fowler (OCW Policy and Media Officer) is also in regular contact with Welsh Assembly Government (WAG) on developments relating to the Welsh Entry Level Scheme - this is still under development and the only clear thing that can be said about it is that it will be different to the English scheme.

Calls to the OCW helpline (01970 622200/622248) have increased as producers, both existing and prospective, try and evaluate their options.



## Growing organic field scale vegetables

**“Growing organic field scale vegetables to meet supermarket specifications is technically possible” was the message delivered to growers at HDRA's Beyond Conversion open day at Pollybell Farms.** Nevertheless downward price pressures could affect long-term sustainability.

Pollybell Farms, near Epworth, Lincolnshire, has converted 661 ha to organics over the past seven years and is cropping 200 ha of vegetables this season to supply Marshalls (the packing company who sponsored the event). During the day, they shared experiences and solutions to the technical challenges of growing organic vegetables for the supermarkets.

One example of this is the introduction of an eight-row bed system for growing bunched carrots. This can be a very profitable crop to grow, but requires very careful management - especially in weed control where tolerance is extremely low. The eight-row bed system with a specially modified brush weeder allows far greater accuracy in mechanical weeding, resulting in drastic reductions in costs of hand weeding.

Direct applications of focused research and development can be seen in action in key areas of crop management at Pollybell. The farm now uses birdsfoot trefoil seeded in the modules in all brassica crops to control cabbage root fly, as a direct result of studies done at Warwick University by Dr Rosemary Collier.

These technical advances have helped control costs of production but, as illustrated by Chris Firth of HDRA, falling prices for organic growers are increasing economic pressure. Organic growers are reliant upon the performance of high value vegetables to support lower levels of income from other parts of the rotation, such as fertility building and break crops.

Looking to the future, Dan Carr of Marshalls, predicted continued single figure growth in the market. He stressed that prices to producers should not be cut, as there are other places in the supply chain where savings can be made. He also said that although supermarket sales are slowing, alternative markets such as box schemes are growing more rapidly.

The Sustainable Organic Vegetable Systems network is a Defra funded project launched in 2003 to build on the results of the Conversion project. It is an IOR (Initiative on Organic Research) project led by HDRA in collaboration with Elm Farm Research Centre and Horticulture Research International. This project will, by monitoring the performance of vegetable rotations and new developments and innovations within the context of whole farm systems, identify the agronomic, financial and management factors which contribute towards sustainable organic vegetable systems, and disseminate best practice techniques to other growers.

**For free advice on conversion and to register for free advisory visits contact the Organic Conversion Information Service (OCIS) on 0117 922 7707 .**

### Buy a Christmas tree with a difference!

It wouldn't be Christmas without a Christmas tree, even if they're dropping needles all over the carpet within a fortnight. Yet in Africa, trees can provide families with food, fuel, medicines and even a cash income for many years, as well as improving the environment.

So why not branch out with your Christmas shopping this year and send loved ones a gift certificate that helps reverse deforestation in Africa's drylands.

A donation to TREE AID will help the charity reduce poverty and environmental degradation in West Africa and Ethiopia through community forestry projects and income generating activities. TREE AID will send a presentation certificate explaining the work TREE AID is doing in the field.

**For more information call TREE AID on 0117 909 6363 or email [info@treeaid.org.uk](mailto:info@treeaid.org.uk)**

### 2004 Organic Farm Management Handbook

The 6th edition of this popular publication is now available. Completely revised and updated, it includes a review of agri-environment programmes, a section on 2005 CAP reform, new horticultural crops (celery and sweetcorn), and an analysis of 2003 market development on production.

The handbook is available at £15 inc p&p in the UK. To order your copy, contact Gillian at EFRC  
**Tel 01488 658279, fax 01488 658503 or email: [Gillian.w@efrc.com](mailto:Gillian.w@efrc.com)**



## LUPINS: A Newcomer with Potential

### On 21st September the Organic Arable Marketing Group held a farm walk at Abbey Home Farm, Cirencester to look at the growing crop of lupins.

This event came about because an order for lupins has been placed with the Group and there is a need to assist members in growing the crop in order to fulfill this order. The Organic Arable Marketing Group would like to thank John Newman for hosting the event.

John grew about 5ha (12 ac) of white lupins (variety Dieta) as a trial. They were due to be grown in an a field following pigs but the need for a fine seedbed meant they went into a different field later in the rotation. Whilst the seedbed was better, this was the poorest point in the rotation in terms of fertility and with a higher weed pressure than the original site. The pH of the field was once drilled, the crop was harrowed once with a tined weeder. The crop was combined on the 8th October and found to be reasonable to cut. The crop yielded 2.66 t per ha (1.08 t per ac) at 21% moisture content. This calculates to about 2 t per ha (0.8 t per ac) at 15% moisture content.

John has been satisfied with the crop and is intending to grow a larger area next year at a better point in the rotation.

**Three types of lupins are available to be grown in this country, white, yellow and blue.** The first misconception to address is that flower colour has no bearing on lupin type. **Choosing the correct lupin type is very important to ensure a reasonable crop.** Blue varieties are determinate and so will mature when grown across the UK. The yellow and white types are indeterminate and so require the warmth of a more southerly climate to mature. Even so, harvesting will be late - into mid September.

Soil pH is an important determinant of which type is suitable for your soil. White varieties will tolerate soil pH of up to about 7.8 whilst yellow varieties prefer pH below 6.8 and are happy below 5. Blue types prefer a range between 5 and 6.8.

White types also have higher oil content and possibly more stable protein yield and provide a taller plant with palmate leaves offering greater shading potential. Given these attributes perhaps favours white types on all but the most acidic soils

Establishment is critical and a fine uncompacted seedbed is required with seeds planted on usual row spacing at 3 - 5 cm depth. Seed size varies depending upon the type of lupin as do seed rates. Seed costs are £135 per ha

(£55 per ac) for white and £124per ha (£50 per ac) for blue and yellow types. All types are spring sown.

Seed should be inoculated prior to drilling to ensure good nodulation and effective nitrogen fixation.

Pests and diseases are no more significant than for other crops. There are no problematic invertebrate pests but the usual culprits can be a hazard at establishment. The worst disease is Anthracnose which is a seed borne problem and seed testing is vital to reduce the incidence of the problem. Rotation design is also important and lupins should have a 5-year interval between crops.

Weed competition is the major difficulty and so a clean seedbed is beneficial. The possibility of wide row spacing and inter row cultivations might be a useful technique for those embracing that system. The need to use clean land to reduce weed burden perhaps brings the crop forward in the rotation.

Lupins will yield approximately 1.75 - 2.5 tonnes per ha (0.75 - 1 t per ac) and are valued at about £220 per tonne. With crops such as barley and triticale making £115 and £125 per tonne and oats at unmentionable prices, lupins are an interesting replacement for them in the rotation. Given John's yield of 2 t per ha the table below gives an indication of what yield would be required from other crops to give an equivalent gross margin.

	Lupin	Triticale	Barley	Wheat	Beans
Yield (t/ha)	2.0	3.1	3.3	2.9	2.5
Price (£/t)	220	125	115	135	160
Less Seed (£/ha)	135	84	80	84	88
Gross Margin	305	305	305	305	305

If the yield increases to 2.25 t per ha the following yields need to be obtained to achieve a comparable gross margin

	Lupin	Triticale	Barley	Wheat	Beans
Yield (t/ha)	2.25	3.6	3.8	3.3	2.8
Price (£/t)	220	125	115	135	160
Less Seed (£/ha)	135	84	80	84	88
Gross Margin	360	360	360	360	360

The need for alternative protein sources is undoubted and lupins are certainly an interesting proposition. They are not an easy crop and not for everyone. They certainly have problems in terms of weed management but they are a crop with potential and one which will improve as more is grown and techniques develop.

**If you would like more information about the Organic Arable Marketing Group please contact Andrew Trump on 01488 657600 or 07831 313064**



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## Are organic farming practices appropriate for management of National Nature Reserves?

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**For a number of years EFRC and English Nature have been working together in a variety of ways to explore this question.**

Firstly, through a **dedicated email discussion group** coordinated by EFRC, National Nature Reserve Managers and other special site managers have had access to a range of organic experts to ask specific or generalised questions about organic management methods. Currently there are in the region of 50 members in this group. The range of questions occupying the minds of many land managers is the implications of both entry and higher level schemes, other technical questions have been concerned with marketing, parasite control and local grazing agreements.

Secondly, EFRC has already run a series of five **seminars for National Nature Reserve managers** dealing with issues looking at

- Tackling organic conversion (Aston Rowant, Buckinghamshire, December 2001).
- Grazing Management, flying flocks, parasite controls farmer partnerships. (Thetford, Norfolk, December 2002)

- Organic Farming in the Uplands (Lake Vernwyn October 2003)
- Organic Systems, operating a number of sites to meet organic objectives, public perceptions and weed control issues on sites of historic relevance. (Berry Head, Torbay March 2004).

The last in this series was at Gait Barrow NNR Lancashire in October 2004 and discussed issues of perennial weed control and complementary grazing regimes and the wider issue of sustainability, environmental, social and economic impacts on NNRs.

The third strand to this work has been to produce a **decision support tree** to help NNR managers considering adopting organic management methods on their reserves. It is intended that English Nature and EFRC will jointly launch this document in the near future.

EFRC wishes to acknowledge the financial support of English Nature.

*Lois Philipps  
Senior Researcher*

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## Fair Trade

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**Fair trade seems to be the current marketing buzzword as we hear that Marks & Spencer are now only selling Fair Trade coffee in their cafes and the Soil Association are now offering Fair Trade organic products which offer a fair price to the producer.**

With producer prices falling, this would seem to be a laudable ambition if it helps to support the British organic producer. However surely it is an admission that they have failed to enforce Standard 1.02.06, "Organic produce should be socially, as well as environmentally, sustainable". It is not socially sustainable for farmers to be selling at or below the cost of production.

I would argue that when certifying processors this standard should be rigorously enforced with attention paid to the prices paid to producers and an assessment made as to whether such a price is "socially sustainable". Historically organic prices were high and producers were able to achieve good prices and see a fair return on their labour and investment. This is no longer the case in many sectors as prices have fallen.

Certifiers could agree "base prices" which are considered to be "socially sustainable" for the different products and if processors buy below these they run the risk of having their products decertified. Paying £130 per tonne for feed wheat would be a poor business decision if it meant that the compound produced from it were de-registered and was sold

on the conventional market. Rather the feed compounder would be likely to pay a better price to ensure their compound feed retained its organic status.

This all sounds a bit like a Stalinist approach that pays little heed to market forces but how effectively is the market currently working?

The price paid by two retailers for a beef animal varies with the lower price paid by the store that has the "high quality" brand image which supports fair trade for the coffee in its cafes. Maybe the price differential is explained by different costs within the processing chain but if so should the producer be penalised?

The same is true in the arable sector where the differential between buyers is often £15 per tonne ex farm for feed wheat or approximately 10%. For trading a commodity product with little differentiation there is no quality premium and yet this is purported market efficiency?

The organic farmer is suffering because the conventional marketing model is being followed. This current market model is not delivering any benefit to producers and does not appear to be producing an efficient market so is it not time to search for an alternative or at least ask the question as to whether one is needed?

*Andrew Trump  
OAS Adviser/Business Manager*



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## Having changed the way you farm now you must change the way we market

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**Organic farmers are increasingly becoming price-takers in the market. The optimistic model of local production has been subsumed by an increasingly globalised marketing structure which sees organic farming as a differentiated version of conventional industrialised agricultural business. As with the conventional sector, this leads to an increasing need for homogenisation and scale.**

Producers need to look at the marketplace and consider how to sell their produce. This is not a call to only "produce what the market wants".

That mantra works when buyer and the seller have equal power and strength within the market but, in a system where the buyers are concentrated corporations and the sellers are small businesses, it doesn't.

Why not? Because the individual's output is of huge importance to that individual and inconsequential to the corporation. The result of this is that the many seek the patronage of the corporation and best thing, for shareholder value, is for the corporation to play the many off one against one another, forcing the price down.

Better still from the corporation's viewpoint is to weaken the wholesale trade by trading direct with the individual. "Great" says everyone, we've taken cost out of the marketing chain and increased its efficiency. Tosh! Says I.

What has been achieved is instability as the many individuals have lost the benchmark as to the value of their produce and therefore accept the prices offered by the corporation who are constantly threatening to buy elsewhere or use imported produce. "After all it's cheaper, of more consistent quality and we'll tell you anything to make you sell to us for the same price as last year." Is this ever independently verified? No. Once again we believe it straight from the horses' mouth. Indications from research done by The Organic Advisory Service in Europe last year indicates that the growers there are under just as much price pressure and as disgruntled with the UK buyers as British producers.

### So how to proceed?

It is better to trust the marketing to someone who will value your product, knows the market, can help you grow crops that are in demand and most importantly seek to take the mystery and intrigue out of the

marketing chain. This is best done through co-operation to obtain a position of strength in the market. Not every individual can afford to gain knowledge of the market but by co-operating this cost is shared by many.

Most merchants claim to be your friend but look at the experience of the conventional arable market following the 2004 harvest. Prices were at their highest for about 8 years and the merchants bought early and at seemingly decent prices and then made a fortune selling a few weeks later when the market had risen. The farmer was left regretting this lot. This was not circumstance or good fortune, this was profiteering by the merchants.

And how do the traders make their money? Well, by trading! In other words they negotiate a bid price with you and a sale price with the buyer and then pocket the difference between the two. But do they ever tell you what this difference is? Do you know that its usually about £8.00 per tonne but can be more?

The goal of these traders is to maximise the selling price and minimise the price paid to the farmer, because this gives them the greatest profit. And who can blame them? But the transaction is hardly in your best interests.

Nor is it transparent. Good information flow within the marketplace is anathema to traders. By ensuring that little information is known about market prices they protect their own ability to set prices and hide just how much money they are making at your expense.

By selling through a Group two significant advantages are gained. Firstly, and selfishly, you get the full value of the crop you sell (less commission) without a trader taking his or her slice and secondly, and more importantly, both you and the buyer know what your produce is worth and so a true market is established without a trader manipulating the buyer's price up and the farmer's price down to maximise his or her profits.

Such a simple change can improve trust in the market and reduce volatility. The loser is the trader who can no longer get rich at your expense.

The route to organic failure lies in the hands of the farmers who fail to grasp this concept. They will continue to trade as an individual and may, in the short term achieve some decent prices but ultimately their action will destabilise the market to their and everyone else's disadvantage.

The greatest paradox of marketing organic produce is



that at the time when prices are at their lowest is the time when co-operative marketing is of greatest importance. It is apparent in the conventional sector that farmers are poor at any form of co-operation and are therefore chewed over and spat out by the food processors and retailers on their way to greater shareholder value.

Organic producers cannot afford to suffer the same fate and a novel and innovative production system should not fail because of the weakness shown in its marketing and the failure once again for producers to co-operate.

*Andrew Trump*

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## *Some, not entirely random, thoughts from our Head of Advisory Services*

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### Seeds

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**As predicted there have been problems linked with the issue of organic seed in the vegetable and salad sector though they perhaps have not been as bad as some predictions suggested.** There has been a continuing lack of availability of important varieties as organic seed though there has been some improvement. Many of the larger scale crops destined for the supermarkets are still grown using conventional seed while smaller growers are generally using a higher proportion of organic seed than their larger counterparts. The national seed database that is required under EC Regulation 1452/2003 is now fully up and running as [www.organicxseeds.org](http://www.organicxseeds.org); the COSI website ([www.cosi.org.uk](http://www.cosi.org.uk)) is still available for information on varieties, performance, trials, etc. and it also has links to [www.organicxseeds.org](http://www.organicxseeds.org).

The **present position** as regards the use of conventional or organic seed is broadly the same as it was before except that growers need only to access the national database to check availability of organic seed (or sets, tubers, bushes, canes, trees, etc.) rather than a series of catalogues. If the variety is not listed then a derogation can be sought from your certifying body though be prepared to justify the choice of that particular variety. Certifying bodies are applying more pressure and are being more rigorous in the issuing of derogations.

**Treated seed** has been absolutely banned under the new Seed Regulation and this has caused a number of quite serious problems for growers seeking conventional seed

under derogation. In the past if the only available seed has been treated permission was given for its use. This is no longer possible and the practice of seed companies to treat seed of certain crop species as a matter of course has meant that some varieties have been put out of reach. Particular problems have been encountered with celery, some winter cauliflower varieties and other brassicas.

The only way that such problems are to be avoided for next season is for growers to contact their seed suppliers at the earliest possible opportunity. This may not be as straightforward as it sounds, as growers will need to know the position on organic seed availability and acquire appropriate derogations before deciding to place firm orders for conventional seed. Most of the major seed companies are still in the business of producing organic seed despite their general disappointment at the extension of the derogation at EU level. The sales of organic seed have been generally quite buoyant which suggests that the pressure applied by certifying bodies is having an effect. This is absolutely vital in keeping the industry on-side.

Growers continue to report problems with organic seed - these are anecdotal but are often linked to germination percentages. It has to be said that the numbers of such reports are small but the effects on individual businesses can be profound. It should also be said that many growers have had good results with organic seed, in some cases supplied by companies that have a long track record in the production of organic seed.

### The Market

The market has been reasonably robust with few major problems reported. Downward pressure on prices is a constant feature of the **fresh produce market place** but there has been little actual movement for most crop types. The pressure on specifications at supermarket pre-packer level continues and growers are having to work harder to achieve the desired quality levels. There has probably been greater growth in local marketing compared with supermarket sales though this is a speculative comment. One definite trend has been a significantly increased demand for locally produced organic salad bags following revelations about the production of conventional prepared salads earlier this year.



## Pests and diseases

As the season moved from very dry to very wet with some very cold nights in the mid-season crops have performed erratically at times and there have been some unusual pest and disease patterns. Downy mildew was seen in a number of lettuce crops in June and July despite high levels of resistances in the varieties concerned. Downy mildew has been quite widespread in onions and rust has been seen in main-crop and salad onions, and garlic.

Aphids of several species built up to very high levels by the mid-season due in part to initially low levels of

ladybirds. There were hover-fly population explosions all over the country and they caused some upsets when people mistook them for wasps. The aphid population virtually disappeared in a matter of weeks and it would be easy to see this as a classic case of ecology in action. There is apparently an aphid population crash in July every year irrespective of predator populations I was disappointed to learn. The reason for this is not known but whatever the reason holdings went from 'breathing aphids' to virtually clear inside two weeks. There was always the chance of late aphid attacks like last year but so far they have not materialised.

## Water

My last contribution to the *Bulletin* started with comments about streams running at a trickle, cracking soils and rainfall at 50% of the seasonal average for May. Now, as I write, we have had the wettest August on record for many parts of the country and soil moisture levels have remained high since then. Some growers experienced crop losses (up to three weeks production lost in one case) because crops cannot grow in waterlogged soil. At its worst the crops can just simply die in the field. The reduced light levels associated with prolonged cloud cover have also caused problems. Clearly the best approach when considering short-term weather trends is to keep quiet or to speak in very general terms. That said the general points raised in the article on water and legislation still stand, and if you are planning to install an irrigation system stay with it. The only reasonably certain thing that can be said about the weather is that the variations will become more extreme. This means that when we have dry spells they could be prolonged to the extent that crops will only survive if irrigation is available.

## Organic Farming, Food Quality and Human Health

A major international congress jointly organised by European researchers and the organic farming movement is to distribute and discuss research in organic farming and its benefits on environment, food quality and human health. The event will take place in Newcastle upon Tyne in the north of England from 6 January to 9 January 2005 alongside the Soil Association's annual conference.

For more information about the congress, please contact: Ms Lois Bel,  
Nafferton Ecological Farming Group  
University of Newcastle  
Tel. +44 (0) 1661 830 222. Fax +44 (0) 1661 831 006  
or Soil Association.

## How You Can Help Elm Farm Research Centre

The work of EFRC is unique and vital to the health of the organic sector covering, as it does, research, information, dissemination, training and policy work.

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



You could leave a legacy to EFRC. By including EFRC in your will, you are enabling us to continue to develop our work and activities. As a charity, all legacies to EFRC are free from inheritance tax, so your family has less to pay. Please contact us for a Legacy Leaflet.



You can donate shares to EFRC and thereby also reduce your income tax bill. There is no capital gains tax to pay on such donations. This applies to a wide variety of listed shares, unit trusts and investment trusts.



You can make a donation to EFRC and if you gift aid this, and any previous donations, we can claim back the basic rate of tax on your gift, increasing its value by 28%! Please contact us for a gift aid form.

For more information on any of the above please contact us on 01488 658298 or email [elmfarm@efrc.com](mailto:elmfarm@efrc.com)



## DOES ORGANIC FOOD HAVE AN 'EXTRA QUALITY'?

### New Research, New Perspectives and New Insights

Conference to be held on **Tuesday, 23rd November 2004**  
at **The Kindersley Centre, Sheepdrove Organic Farm, Lambourn, Nr Newbury.**

**This EFRC Conference is sponsored by Sheepdrove Trust and is in collaboration with FQH (International Network for Food Quality and Health) and Sustain (the alliance for better food and farming).**

**Speakers** include Lawrence Woodward (EFRC), Angelika Meier-Ploeger (University of Kassel); Dr. Kirsten Brandt (University of Newcastle); Dr. Jurgen Strube, Kwalis; Dr. Johannes Kahl, University of Kassel; Dr. Rafe Bundy and Dr Steve Hicks of The Hugh Sinclair Unit of Human Nutrition, University of Reading; Alex Smith, Alara Wholefoods; Lynda Brown, Guild of Food Writers. **Chairpersons;** Jeanette Longfield, Sustain and Peter Melchett, Soil Association

**Is organic food different from conventional food? Is it worth the money?**

**Organic farming might be good for the environment but is organic food healthier than conventional?  
Is it more holistic?**

These are constantly asked questions that will be addressed in this conference which presents new research and insights into the concepts and methodologies that can be used to assess organically produced food.

German R&D has given a new boost to the drive to assess organic food holistically. Other research in Europe and the UK has found differences between organic and conventionally produced food but what does this mean for health?

Leading researchers and commentators on organic food and farming will present research findings and encourage participants to air their views on these issues which go to the heart of the question of whether the quality of organic food can be linked to environmental health and that of the soil, plant, animal and man.

At an organic farming conference a few years ago, the audience was presented with pictures of crystalline shapes that were said to have been developed from samples of organic produce. These 'haloes of health' were said to indicate an extra dimension of vitality which was present in organic food.

Such ideas were outside of mainstream science and concepts but other research using established methods was presented that showed there were measurable differences in the chemical composition of organic and conventionally-produced plants. In particular, plant secondary metabolites which, it was postulated, could have a beneficial impact on the health of animals and humans eating these plants.

At the same time, dissatisfaction was being expressed that food quality was normally only concerned with cosmetic components and that environmental and ethical considerations should be taken into account when a food was held to be of high or good quality. Moreover, with the onset of genetic engineering, how can we tell whether a food is really what it seems to be?

**This conference presents up-to-date information on all these issues:**

**How methods have developed - How can we assess food today? - How 'holistic' methods have been validated  
Has progress been made in determining whether organic food has an 'extra quality'  
If it has, does it mean anything for our health?**

Who should attend?

Everyone concerned about the quality of food and its impact on health,  
researchers, policy makers, farmers, 'foodies' whether consumers or writers, and especially citizens.

Cost: £60.00 plus VAT (£70.50) including lunch and refreshments.

Transport will be available for delegates from Didcot Station at 9.30am.

*To book see our website or contact us at Gillian.w@efrc.com, tel +44 (0)1488 658279*

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