

ORGANIC STUDIES CENTRE

Technical Bulletin

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Overview of Duchy College projects

We are all told that for agriculture to survive and thrive farmers and farm business must look afresh at what they do and how they do it. It is my belief that Duchy College must show the same flexibility and willingness to change that is expected of farmers if the College is to continue to serve the industry into the future. The Organic Studies Initiative is just one of a number of industry led projects that reflect these new approaches. Others include our Vocational Training Scheme. This programme will help fund seminars, workshops or whatever format of development activity you require. It can even fund relief staff if you are away from the farm taking part in such programmes. We have secured funding from the South West of England Regional Development Agency to assist businesses involved with food manufacture or production, so if you have any queries in this area please contact us. In addition, the college is involved in growing biomass crops for renewable energy. We even heat part of Rosewarne campus with our own biomass boiler. We are involved in green waste composting, and are seeking to build on this work. Most recently we have formed a partnership with Promar International to help to increase the range of professional development opportunities we can offer to the industry.

Dr Phil Le Grice, Director of Trials and Research, Duchy College

Duchy College Organic Studies Initiative

The Objective 1 funded (EAGGF and DEFRA) Organic Studies Initiative is now fully operational and is being managed by the Project Team from their base at the Organic Studies Centre, Duchy College, Rosewarne.

Project aim

The aim of the project is to establish a cross sector, near market trials and demonstration-based programme for organic agriculture in Cornwall and the Isles of Scilly. This will be achieved through the continuation of established organic demonstrations, trials and development activity, including those at Coswinsawsin Organic Demonstration Farm, and expansion of the programme across all areas and sectors within the region to include dairy, beef, sheep, pigs, poultry, arable and horticultural systems.

Project objectives

The objectives of the programme are to

- facilitate ongoing near market development studies through the establishment of industrial and academic partnerships in order to attract funding and expertise to the Objective 1 Region;
- facilitate the establishment of relevant trials and development activities within the unique climate and growing conditions in the Objective 1 Region of Cornwall and Isles of Scilly;
- maintain links with trials, demonstration activity and the dissemination of information at farm level and to address the needs and benefit farm businesses in all sectors of organic agricultural production
- encourage the acquisition of knowledge, attitudes and skills necessary to improve the competitiveness and financial viability of farm businesses.

Organic Studies Centre

Mission Statement

The Organic Studies Centre is committed to the delivery of a high quality trials and demonstration programme for organic agriculture in Cornwall and Isles of Scilly. This will be achieved by working closely with organic producers, conducting sound scientific investigation and ensuring effective dissemination of information.

The purpose built Organic Studies Centre was constructed at Rosewarne during the latter part of 2001. The project team moved into their new office base on 24th January 2002. The Centre includes offices and work stations for staff. A small meeting room within the Centre will double as a reference library and drop-in centre for farmers, students and others requiring information about organic production and related issues. The library is in the early stages of establishment. There will be more detail available on the shelf contents in the next Bulletin.

The key focus of the work of the Organic Studies Centre is farmer participation in research in real farm situations. In this way, farmers will be increasingly involved in trials and demonstration and results that are made accessible at farm level. A postal survey of organic farmers conducted last year demonstrated a keen interest in participation in the work of the Centre. If you did not participate in this survey, but would like to register your interest in involvement in on-farm research through the Organic Studies Centre contact Jean Burke on 01209 722148.

The project team at the Organic Studies Centre

Dr Jean Burke, Organic Project Leader

With a background in conventional agriculture as a farmer and a researcher Jean has lived and farmed in Cornwall since 1977. Previously a Research Fellow in Animal Ethology at Seale-Hayne Faculty, University of Plymouth, she joined Duchy College in June 1999 to establish Coswinsawsin Farm as a demonstration farm and a focus for research and development in organic vegetable and cereal production.

Responsibilities: the management of the Organic Studies Initiative project including the establishment and ongoing development of the Organic Studies Centre, its staff and a comprehensive trials and demonstration programme.

Dr Stephen Roderick, Organic Programmes Co-ordinator

Steve joined the Organic Studies Centre in September 2001 from the University of Reading where he had been involved in organic farming research since 1995.

Previous to this he worked in Africa and completed his PhD studies on livestock production in the Maasai region of Kenya.

Responsibilities: assistance with the development of the Centre including development of trials proposals and funding applications and management of organic related trials and associated demonstration activity.

Ms Caroline Bolitho, Project Finance Controller

Caroline joined Duchy College in January 2002 and has a part-time role as a member of the project team.

Responsibilities: provision of up to date budget detail to assist the Project Leader with financial control of the project; the preparation and submission of claims for funding according to agreed deadlines.

Mrs Ros Smith, Demonstration and Trials Recorder

With a Soil Science and Plant Physiology background, Ros became a part time member of the Organic Studies Centre team in June 2002.

Responsibilities: monitoring and recording a wide range of crop performance and agronomic parameters at Coswinsawsin Organic Demonstration Farm and other Organic Studies Centre trial sites.

Organic Studies Initiative Steering Group

To comply with Objective 1 funding requirements a project Steering Group has been established. The membership of the Group represents academic, sector body and farming interests and expertise and includes individuals from:

- The Institute of Grassland and Environmental Research
- The United Kingdom Register of Organic Food Standards
- Organic Farmers and Growers Ltd.
- Organic South West/Soil Association
- Cornwall County Council
- Cornwall Agricultural Council Agricultural Facilitation Team
- Farmers with both organic and non-organic farming backgrounds.

The Group will meet twice a year to discuss project progress, provide constructive comment and advice, bring relevant suggestions for trials and development and offer recommendations to assist in project continuation post-Objective 1. Two meetings have been held so far: on 25th April at the Organic Studies Centre and again on 25th July at Coswinsawsin Organic Demonstration Farm.

Trials, Development and Demonstration Projects

Trials and development budget

The Organic Studies Initiative project funding package includes an annual trials and development budget to be used to fund a number of small scale on-farm studies. In order that this funding can be accessed it must be matched by private sector contributions. The Centre has several ongoing studies under this heading.

1. Organic Farmer Survey

Currently there is little or no information on the extent, range and levels of organic production in Cornwall and Isles of Scilly. Without such evidence it is not possible to develop a strategy for trials and development at the Organic Studies Centre that truly reflects the needs of the producers. Without knowledge of levels of production it is not possible to develop a realistic marketing strategy for Cornish organic produce. In order to address this shortfall, the Organic Studies Centre has developed a detailed questionnaire and trained a team of interviewers who will visit all organic farmers in the region during the coming weeks to conduct one-to-one interviews. Following the publication of the Government Organic Farming Review and the recent NFU Organic Farming Survey Results, Cornwall and IoS will lead the way with this very timely study. This study will:

- provide a wide range of previously unavailable detail on organic farming and the economics of organic agriculture in Cornwall and Isles of Scilly
- provide baseline and continuing data on the numbers of producers and production parameters for each sector of organic production
- describe systems of production, identify needs and develop a strategy for organic trials and development in organic agriculture
- inform the industry and assist in the development of marketing strategies.

2. Brassica variety testing

Autumn and winter cauliflower studies conducted by Duchy College over a number of years have yielded valuable information for growers in Cornwall and IoS about performance parameters of different varieties in non-organic production systems. In order to provide similar information on variety performance in organic systems, a parallel trial has been established at Coswinsawsin Organic Demonstration Farm. Sixteen varieties of autumn and winter heading cauliflower have been planted in replicated plots and at two different plant spacings. The varieties will be assessed during the heading period from the end of October 2002 until April 2003.

The results will enable organic producers to compare a range of commercial varieties according to criteria including establishment and growth from transplanting to harvest, disease and pest tolerance, marketable yield and quality. Thus this information will assist growers to select cauliflower varieties best suited to organic production in the region.

3. Detailed recording at Coswinsawsin Organic Demonstration Farm

Detailed crop production including field cultivations, crop management and harvest information has been recorded at Coswinsawsin from the start of conversion in 1999 to the present. With the assistance of our newly appointed Demonstration and Trials Recorder, this data collection procedure has been intensified. A wide range of data will be collected, including:

- timing and detail of cultivations, planting/drilling dates, crop emergence counts, crop husbandry, timing and quantities of all inputs
- crop pest and disease occurrence/levels, arable weed populations
- crop harvest information, yield, quality
- soil quality and nutrient status, results of analyses of soil and organic manures
- climate and weather records.

Using these data and financial performance records for each crop, the Organic Studies Centre will be able to provide valuable detail on the farm's commercial cropping programme. This will be used to inform the industry and enhance the quality and quantity of demonstration material available for the benefit of farmers and growers.

4. A study of organic table bird production

Small scale table-bird production systems offer an opportunity for organic farmers to generate additional income as well as introducing a system suited to integration with existing cropping and grassland systems. However, there is little practical and scientific information available to producers. The analysis of production records extracted from on-farm recording sheets for poultry flocks in the South-West will provide:

- base-line data about the performance characteristics of flocks
- identify constraints to production
- develop recommendations for future developments
- develop guidance and best practice systems of production.

The results will provide descriptions of production and previously unavailable information for those considering diversification into organic table birds.

Demonstration projects

A proportion of project funding is allocated to demonstration activity that must also be matched by private sector contributions. Demonstration work at Coswinsawsin Farm this year has included:

Potato variety plots

- potato variety demonstration plots of 100 tubers each of Exquisa, Premiere, Milva, Recolta and Sante
- development trial plots of 20 tubers each of 9 numbered and 8 named potato varieties including three eastern European and three new salad varieties.

This is our third year of involvement in this work, which is supported by MBM Organic Produce Ltd and repeated on two other organic sites in Hereford and Norfolk. The potato variety plots were hand planted on 16th April 2002, then mechanically weeded and banked three times to control weeds. A total of 8kg copper per hectare over five spray applications between 31st May and 6th July was used for blight control. The plots will be hand lifted and each variety assessed for tuber quality and yield as well as fry colour and taste. The information generated will assist in informing the industry and the major food retailers of potato varieties best suited to organic production systems.

Lupin variety plots

Lupins offer an opportunity for the production of a highly digestible, high protein crop, eligible for Arable Area Payments, whilst at the same time providing some fertility in the form of nitrogen fixation. New varieties considered to be well suited to different harvesting and conservation methods are said to mature within 150 days from sowing. Lupins might therefore be of interest to producers for inclusion in organic rotations. The demonstration plots drilled on 11th April contained varieties with different growth habits.

- branching varieties Bolivio, Bora and Boltensia, drilled at 88 lbs (40kg) per acre
- spike-like varieties Prima, Borweta, Boruta and Bordako, drilled at 110 lbs (50kg) per acre

All varieties established reasonably well, however weather and soil conditions prevented mechanical weeding operations. Even though plots were hand weeded between 1st and 6th June, the demonstration had to be abandoned and the plots topped on 26th July. This decision was forced by serious weed infestation, a situation common to a number of organic and non-organic lupin crops this season. This demonstration was supported by Gorham and Bateson (Agriculture) Ltd.

Externally funded projects

Other investigations conducted by the Organic Studies Centre, which are frequently longer and larger, are funded wholly from outside sources. This work will increasingly involve the Centre in collaborative work with academic and research institutions both within the UK and further afield. Examples of such work include:

Recently completed studies

Green waste composting pilot project

The application of good quality compost to farmland increases the microbiological activity within the soil. Benefits include improved soil fertility and structure, and increased availability of trace elements essential for healthy plant growth. The EU Landfill Directive on Landfill of Waste requires a 65% reduction in biodegradable waste entering landfill sites by 2016. The immediate benefits of on-farm green waste composting would be a significant reduction in organic waste entering landfill and the provision of a valuable soil conditioner for farmers. This study, funded by Kerrier District Council and County Environmental Trust Ltd., provided an opportunity to integrate waste management and organic agriculture for the benefit of both industries. The final report for this project is in preparation.

Soil erosion risk assessment

Water run-off and associated soil erosion from cultivated land causes gully erosion together with soil and nutrient loss. In turn this may cause off-farm hazards and pollution of watercourses, in some cases resulting in prosecution. The soil type and condition, slope and use of the land all contribute to the vulnerability of any particular site. Soils covered by vegetation or closed crop canopy are least susceptible. Ridges for potatoes and daffodils and disturbance of soil by tractors and human traffic during harvesting of winter brassicas and flowers can generate water run-off and soil loss. It is important to realise that organically farmed land is not immune to these problems. The aim of this Environment Agency funded project is to assist in the development of prescriptions for best practice for growers of these crops so that risk of pollution and cost to the farmer is minimised. The final report for this study is in preparation.

Ongoing

Ecological survey of agricultural land during conversion and into full organic production.

UK farmland bio-diversity has declined over recent years. There is some evidence to suggest that organic farming provides benefits for wildlife and encourages increased bio-diversity on agricultural land. The conversion of Coswinsawsin Farm to organic production provided an opportunity to monitor wildlife and document information from the beginning of conversion and into full organic production. This study, funded by the Cornwall College Research Committee, includes small mammal surveys, over wintering and breeding bird surveys, butterfly and invertebrate surveys. This will contribute to a growing body of information to inform farmers and policy makers about the effect of organic production on wildlife populations and species diversity on agricultural land.

New projects

The development of improved guidance on the use of fertility building crops in organic farming.

Fertility building crops are a key component of organic rotations where they provide nitrogen and other nutrients required for plant growth. Although estimates of the amount of nitrogen provided by different crops are available, a more comprehensive assessment of nitrogen fixation, release and availability for and uptake by subsequent crops is required. Project partners in this three year DEFRA funded study include ADAS, IGER, Organic Studies Centre and Abacus Ltd. The aim is to provide guidance for organic farmers on N supply from fertility building crops by

- identifying gaps in current knowledge
- conducting new experimental work on N residues
- preparing a tool for estimating soil N
- making information available to farmers in the format they require

Farmer involvement is key to the project by providing information and sites for in field measurement, then reviewing information packages produced prior to their wider publication. The first of a series of workshops for farmers and researchers was held recently in Bodmin, organised by the Organic Studies Centre. Meetings at ADAS Turrington and ADAS High Mowthorpe are also being held.

Evaluation of garlic based products

It has been observed that insects and other pests rarely attack garlic crops. It is suggested that garlic based products might protect brassica crops from damage by insect pests, including the cabbage root fly. This study, funded by Garlic Farms (UK) Ltd. will evaluate effect of the product Garlic Barrier AG both in a spray and a granular form on root fly damage in a crop of autumn cauliflower. The study includes eight plots each of 1,200 cauliflower, variety Optimist. Four plots will be treated with garlic products from planting on 29th July to October, whilst the remaining four plots will receive no protection from root fly attack during the trial period. The plots will be monitored for plant growth and performance and the cause of plant losses identified. Local populations of root fly will be monitored using water traps within the trial area. The results will be used to inform both organic and non-organic farmers and assist them in selection of control strategies against root fly damage to crops.

Improving wireworm risk assessment and control

Wireworms (the larvae of the click beetle) tunnel into potato tubers and cause serious damage and reduction in marketable potato yield. The amount of damage by wireworms has increased over recent years so there is a need for improved risk assessment methods to identify high risk fields well in advance of planting. This British Potato Council funded study is being co-ordinated by ADAS and will test the effectiveness of pheromone traps for click beetles on commercial farm sites such as Coswainswin. The data collected will assist in the determination of the relationship between click beetle populations and subsequent wireworm infestation of soil and risk

of damage to the subsequent potato crop. The inclusion of Coswinsawsin Farm as a trial site in this study will provide the opportunity for growers to receive first hand information on the progress of this important investigation.

Please contact the Organic Studies Centre if there are any areas of organic farming trials and development that you would like to see conducted and that might be of benefit to organic agriculture and your business.

Coswinsawsin Organic Demonstration Farm

Background

The Duchy College took over the tenancy of this Cornwall County Council owned farm in October 1996 and undertook to set up an Organic Farming Demonstration Unit. Conversion to organic production began in January 1999 and the first fully organic crops were harvested and sold in 2001. The farm is registered with the Soil Association Certification Ltd. and is the most westerly of both the Elm Farm Research Centre Organic Demonstration Farm Network and the Soil Association Organic Farms Network.

The farm is run as a stockless organic system producing field scale vegetables for sale through established marketing routes. The crop rotation has been designed to mirror the typical cropping pattern of West Cornwall, as well as to provide information to local producers and to investigate new methods of production.

Key features

- 280 feet above sea level
- 26 ha Grade 3 land in organic arable production
- medium clay loam soils
- 1092 mm annual rainfall

Current cropping

Wheat

This year a mixture containing varieties Clare and Deben is being grown with the aim of achieving milling quality. The crop was drilled on 21st November 2001 at a seed rate of 1.75 cwt/acre (215kg/ha), following lifting of the sugar beet crop. Following good establishment, the crop received 2 cwt/acre (245kg/ha) Cumulus K fertiliser and 1.5 litres/hectare Marinure on 4th March 2002. The crop was rolled and harrowed on 25th March to encourage tillering and control weeds. In order to increase grain protein levels, a further application of Marinure was made on 17th June. Grain samples will be taken at harvest for detailed laboratory analysis.

Potatoes

The potato ground was ploughed, rolled and deep cultivated prior to being destoned on 15th April. This year organic potato seed was planted in good conditions on 16th April following a crop of autumn and winter brassicas. The crop, varieties Premiere and Remarka, was weeded and banked four times during May and early June to control weeds. The crop received spray applications of Marinure in May and June. A total of 8 kg/hectare of copper oxychloride was sprayed in five applications between 31st May and 6th July to control foliar blight (*Phytophthora infestans*). Foliage finally had to be topped on 24th July. The crop will be lifted after skins have

set in approximately one month from topping. Over 12% of the Premiere crop has been lost to potato blackleg, a common problem in susceptible varieties this season.

Sugar beet

Sugar beet variety Roberta, was drilled on 25th April following incorporation of an over winter wheat stubble. The stubble was green burned to control both weeds and an infestation of aphids before the application of Limex and farm yard manure followed by ploughing and rolling on 25th March. The land was subsoiled on 6th April, then given an application of 1cwt/acre (122kg/ha) Culmulus K fertiliser before cultivating and rolling. Following recommendations from British Sugar plc, the crop was sprayed with a salt solution at 100 gals/acre (1100l/ha) on 18th June. Following establishment the crop was inter-row hoed five times between 1st June and 6th July for weed control.

Brassicas

A range of autumn and winter heading cauliflower transplants were planted on 24th July following an over winter forage rye and vetch green manure crop. The rye was cut on 7th May and chopped with a forage harvester to aid incorporation. A mixture of farmyard manure, green waste compost and seaweed was applied to the land before ploughing on 31st May. Soil analysis revealed a potash deficiency so 2cwt/acre (245kg/ha) muriate of potash was applied on 10th July. An application of ground limestone preceded cultivation on 18th June and 20th July to exhaust the soil weed seed bank.

Lupins

Lupin variety Prima was drilled at 50kg/acre (120kg/ha) on 11th April. The crop was part weeded on 3rd May with an Einbok type harrow. The operation was suspended, as it appeared to be causing too much damage to the plants. Subsequently weather conditions prevented further attempts to mechanically weed the crop so it was hand weeded between 1st and 6th June. Nevertheless, weed infestation has become a serious problem forcing the decision to abandon and top the crop at the earliest opportunity. This is apparently a familiar picture in both organic and non-organic lupin crops this season.

Peas

In the search for fertility building cash crops to fit into the rotation at Coswinsawsin culinary peas, variety Endeavor, are being grown this year. The crop was drilled in two blocks on 29th June and 4th July and has been drag harrowed on three occasions so far to aid weed control.

Organic Studies Centre Programme of Events 2002

In addition to the trials and development activity, the Organic Studies Centre staff run an ongoing programme of organic farming events and technical courses. The subjects covered are selected according to feedback from farmers, their advisors and agricultural industry representatives in order to reflect and meet industry needs. The Centre also hosts farm walks and visits for a range of interest groups, students and schools in order to raise awareness and educate a wider audience about food production on our farms.

February

6th Homeopathy – on farm practical training day. Trerice Dairy Farm, Newquay

March

13-14th Thinking Globally, Acting Locally two-day conference exploring sustainable development. Duchy College, Rosewarne

19th Soil Fertility Management on Organic Farms workshop, Trethorne Leisure Farm, Launceston

April

8-9th Organic Research in Wales farmers visit to IGER and ADAS organic research projects, Aberystwyth

May

6th Country Link National Meeting farm walk, Coswinsawsin Farm
13th Education Otherwise home-educated children visit to Coswinsawsin Farm

31st Meet the Buyer Event and farm walk, Coswinsawsin Farm.

June

6-8th Organic Studies Centre stand at the Royal Cornwall Show

18th Penponds CP School activity day, Coswinsawsin Farm

25th Leedstown CP School activity day, Coswinsawsin Farm

July

2nd Leedstown CP School activity day, Coswinsawsin Farm

9th Elm Farm Research Centre Demonstration Farm Network organic potato event, Coswinsawsin Farm

17th Duchy College Staff Awareness Day and farm walk, Coswinsawsin Farm

18th Penponds CP School activity day, Coswinsawsin Farm

22nd Threemilestone YFC farm walk, Coswinsawsin Farm

August

7th Organic Poultry Production workshop, St Mellion

September

tbc Feeding the Organic Dairy Cow. A one day course, venue tbc

October

15th Ludgvan CP School activity day, Coswinsawsin Farm

19th Organic Open Day, Organic Week, Coswinsawsin Farm

Events are advertised in the local press and in industry newsletters and detail is distributed to all organic farmers and others interested in organic production. Please contact us if you

- do not receive this information and wish to be included on the Organic Studies Centre mailing list
- have a suggestion for a technical course/workshop, event or farm visit
- wish to arrange for your group to visit Coswinsawsin Farm

For further information please contact:

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