



**defra**

## **SID 5** Research Project Final Report

- **Note**

In line with the Freedom of Information Act 2000, Defra aims to place the results of its completed research projects in the public domain wherever possible. The SID 5 (Research Project Final Report) is designed to capture the information on the results and outputs of Defra-funded research in a format that is easily publishable through the Defra website. A SID 5 must be completed for all projects.

- This form is in Word format and the boxes may be expanded or reduced, as appropriate.

- **ACCESS TO INFORMATION**

The information collected on this form will be stored electronically and may be sent to any part of Defra, or to individual researchers or organisations outside Defra for the purposes of reviewing the project. Defra may also disclose the information to any outside organisation acting as an agent authorised by Defra to process final research reports on its behalf. Defra intends to publish this form on its website, unless there are strong reasons not to, which fully comply with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

Defra may be required to release information, including personal data and commercial information, on request under the Environmental Information Regulations or the Freedom of Information Act 2000. However, Defra will not permit any unwarranted breach of confidentiality or act in contravention of its obligations under the Data Protection Act 1998. Defra or its appointed agents may use the name, address or other details on your form to contact you in connection with occasional customer research aimed at improving the processes through which Defra works with its contractors.

### **Project identification**

1. Defra Project code
2. Project title
3. Contractor organisation(s)
4. Total Defra project costs (agreed fixed price)
5. Project: start date .....   
end date .....

6. It is Defra's intention to publish this form.  
Please confirm your agreement to do so..... YES  NO

(a) When preparing SID 5s contractors should bear in mind that Defra intends that they be made public. They should be written in a clear and concise manner and represent a full account of the research project which someone not closely associated with the project can follow.

Defra recognises that in a small minority of cases there may be information, such as intellectual property or commercially confidential data, used in or generated by the research project, which should not be disclosed. In these cases, such information should be detailed in a separate annex (not to be published) so that the SID 5 can be placed in the public domain. Where it is impossible to complete the Final Report without including references to any sensitive or confidential data, the information should be included and section (b) completed. NB: only in exceptional circumstances will Defra expect contractors to give a "No" answer.

In all cases, reasons for withholding information must be fully in line with exemptions under the Environmental Information Regulations or the Freedom of Information Act 2000.

(b) If you have answered NO, please explain why the Final report should not be released into public domain

## Executive Summary

7. The executive summary must not exceed 2 sides in total of A4 and should be understandable to the intelligent non-scientist. It should cover the main objectives, methods and findings of the research, together with any other significant events and options for new work.

### Background

The PACA Res project (OF0347) set out to address a new approach to the dissemination of organic research by providing a single archive of research reports and engaging advisers in the process of analysis and communication of the results of research work. This PACA Res project OF0387, is a continuation of that first project, providing ongoing access to the results of organic research and further analysis and dissemination of the results to advisers and producers.

### Objectives

The objectives of the Project were to:

- 1) Continue to provide Organic Eprints as the common UK database for recording organic research through engagement of relevant parties, by undertaking the role of UK editor of the Eprints website and by uploading reports from Defra funded research.
- 2) Review the research concerned with 2 organic farming topics and produce topic-focused Review papers that collate the findings. The results were to be presented in a way that could be readily adopted in order to take account of results from a variety of conditions and that would improve confidence in the results and provide recommendations in an easily accessible form.
- 3) Provide 2 topic-focused Workshops on organic research for advisers and trainers.
- 4) Publish 6 Technical Leaflets summarising the results of organic research for use by advisers and producers

### Methods

Access to organic research results from the UK was maintained by continuing to undertake the role of UK editor of the Europe-wide Organic Eprints archive [www.orgprints.org](http://www.orgprints.org) . This was undertaken by Organic Centre Wales (OCW) and the Institute of Organic Training and Advice (IOTA). The work included uploading the recent Defra-funded organic research projects and results and promoting the archive widely. The Organic Eprints upload included all the available research projects and 3 research reviews.

Research Review topics were selected by consultation with advisers and others working in organic farming extension. A shortlist was prepared from which the final list was selected with input from individual advisers.

Reviews of the results of organic research on 2 topics were commissioned by IOTA, collated, analysed and written up by advisers and published in the form of Research Topic Reviews on the IOTA website <http://www.organicadvice.org.uk/reviews.htm>

Two Workshops on the Research Topic Reviews were organised and run by IOTA for advisers and researchers, in order to facilitate collaboration between advisers and researchers, undertake analysis of research and to communicate the results. The workshops were well attended, either at or near maximum capacity.

Six Technical Leaflets were written, subcontracted to advisers with the necessary expertise. The leaflets were published as hard copy, distributed widely within the organic sector and put on the website for free download. [http://www.organicadvice.org.uk/technical\\_leaflets.html](http://www.organicadvice.org.uk/technical_leaflets.html)

### **Findings**

Organic Eprints is an effective primary archive for organic research in the UK. It remains primarily a site to be used by researchers, however it is sufficiently user friendly to be used by others, including advisers, to provide a source of information when preparing Reviews or researching a topic for a technical handbook or similar.

It is important that research results are presented in a format suitable for quick and easy use by advisers and others. The Research Reviews which were commissioned under the PACARes project successfully drew together the results of a number of research projects and provided a summary of the key findings.

Production of Technical Leaflets from the research Reviews is relatively straightforward and provides information in a form easily accessible by producers.

### **Conclusions and options for the future**

Organic Eprints is an effective and user friendly archive for organic research papers, primarily intended for researchers but also useable by advisers.

Collation and analysis of the research on particular topics in Research Topic Reviews is an important and effective method of drawing together the results of a wide spectrum of research and providing an accessible summary for use by advisers. The level of detail is appropriate to the needs of professional advisers wishing to understand the outcome of specific research projects and the background to the recommendations for producers.

Workshops provide an invaluable interaction between advisers and researchers and are a most effective means of extracting the most out of research and dissemination of the results.

Technical Leaflets provide a summary suitable for use by producers, identifying key practical recommendations.

The project OF0387 reinforced the conclusion of OF0347 namely that there is an ongoing need to disseminate the results of organic research through:

1. Undertaking further research Reviews
2. Provision of further research Workshops
3. Continued provision of a UK editor of Organic Eprints
4. A mechanism for drawing on relevant non-organic research and applying it to organic farming and vice versa
5. Centralised hosting of the dissemination output from all organic research projects
6. Provision of a forum for exchange of information between researchers, advisers and farmers
7. Continued development of more effective methods of dissemination and communication.

In addition it demonstrated that Technical leaflets summarising the practical recommendations arising out

of research are a concise and useful mechanism for getting the results of research applied in practice.

Currently organic research results are disseminated through a variety of uncoordinated mechanisms, by a number of organisations, producing material with variable life spans and with sub-optimal engagement between stake holders. **The overarching recommendation from the PACARes projects is that there is a need to establish an organic research and development “dissemination centre” which will provide a common point of access to research results on an ongoing basis, ensure communication and collaboration between farmers, advisers and researchers and disseminate the results of research through reviews, workshops, publications and a website.**

## Project Report to Defra

---

8. As a guide this report should be no longer than 20 sides of A4. This report is to provide Defra with details of the outputs of the research project for internal purposes; to meet the terms of the contract; and to allow Defra to publish details of the outputs to meet Environmental Information Regulation or Freedom of Information obligations. This short report to Defra does not preclude contractors from also seeking to publish a full, formal scientific report/paper in an appropriate scientific or other journal/publication. Indeed, Defra actively encourages such publications as part of the contract terms. The report to Defra should include:
- the scientific objectives as set out in the contract;
  - the extent to which the objectives set out in the contract have been met;
  - details of methods used and the results obtained, including statistical analysis (if appropriate);
  - a discussion of the results and their reliability;
  - the main implications of the findings;
  - possible future work; and
  - any action resulting from the research (e.g. IP, Knowledge Transfer).

### 1 Introduction

The importance of research to the development of organic farming is universally recognised; by farmers seeking to improve production and profitability, by policy makers seeking to quantify or enhance the environmental and social impact of farming systems and by others seeking to supply local markets. Indeed there is a general view amongst organic farmers and those concerned with the development of organic farming that there is a need for more research in order to resolve technical problems and to meet the new environmental, social and economic agenda of agriculture in the UK.

Organic research is uniquely challenged by the “systems” nature of organic farming; the need to think and practice holistically implies consequences that go beyond the immediate outcome of an action or input. Combined with the fact that organic farming is primarily about management rather than inputs, that the results tend to be very site specific and that it is concerned with biology and ecology rather than chemistry, organic research has particular issues to address with regards to how it is conducted and most pertinently how the results are interpreted and communicated.

The Defra organic farming research programme encompasses a wide range of topics undertaken by numerous research providers. This has involved over two hundred research projects, the results of which are communicated with variable effect to farmers and extension workers by various means including final reports, published papers, articles in journals and seminars.

All Defra funded research projects are required to identify a knowledge transfer strategy within the work programme. Although this ensures a basic level of communication and dissemination of the results of research to farmers and those working in extension it is not always effective in providing practical information for advisers and farmers.

Research is also disseminated through reports to Defra, mostly available through the Defra website, published papers and presentations at scientific conferences. Dissemination through peer-reviewed papers is designed to reach a scientific audience. Dissemination through conferences has been targeted at a different audience, is sometimes aimed at farmers (for example the Soil Association Annual Conference) or at researchers. It is recognised that further knowledge transfer to farmers and advisors is required to make best use of organic research funded. Through enhanced communication and dissemination processes, it is hoped to bring research outputs to the attention of specialist advisors leading to them being more widely applied in practice.

There are various factors at play including 1) access to information by advisers and farmers, 2) pressures from the market place, 3) financial constraints to investment due to the poor profitability of farming and 4) the need to prioritise research on the most relevant issues. Advisers and particularly farmers are notoriously short of time; the challenge is be able to communicate new techniques and ideas, informed by the results of research, in a manner which will be readily understood and is therefore more likely to be adopted.

The PACARes project OF0347 set out to address the problem through a number of approaches: 1) establishing a central point of reference for all research reports relevant to organic farming through Organic Eprints, 2) creating links with other European research, 3) facilitating access to existing dissemination programmes and 4) collating, interpreting and disseminating the results of research through the production of 21 topic focused Research Reviews and 6 Workshops. The project further supported the potential for Europe-wide collaboration on organic research through mapping UK organic research facilities which was subsequently used by Defra as a contribution towards the Coordination of European Trans-national Research in Organic Food and Farming (CORE).

This PACA Res project OF0387 is a continuation of OF0347, it builds on the work of that project, focusing on knowledge transfer, maintaining a central point of reference for all organic relevant research, facilitating existing research transfer programmes and collating and disseminating the results of research in a way in which advisers and farmers can readily adopt them.

## **2 Objectives and extent met by the PAC Res project**

### **2.1 Organic Eprints**

*Provide the organic research archive - Organic Eprints in the UK, offering unique access to European organic research and the provision of an effective search facility, with free public access, particularly for use by advisers, trainers, researchers, inspectors and others*

*Upload onto Organic Eprints the results of recent Defra funded organic research projects.*

The project completed the objective, maintaining Organic Eprints as a research archive and including the following activities:

2.1.1 Liaison with ICROFS (formerly DARCOF) the International Centre for Research in Organic Food Systems, which is the coordinator and manager of Organic E-Prints ([www.orgprints.org](http://www.orgprints.org)) a pan-European organic research archive

2.1.2. Undertaking the role of UK editor of Organic E-Prints from June 2008.

2.1.3. Uploading the results of recent Defra funded organic research

## **2.2 Research Reviews**

*Collation and analysis by specialists of the research results relating to 2 organic farming topics and publication on the web for public access as topic-focused Research Review papers for use by advisers, trainers, researchers and others*

The project completed the objective producing 2 topic focused Reviews collating and analysing the results of a wide range of research and presenting it in a standard format for use by advisers and others.

## **2.3 Research Workshops**

*Provision of 2 research-focused seminars with input from researchers, for advisers and trainers with the objective of communicating the outcome of research to those who are in a position to guide farmers.*

The project completed the objective, providing 2 topic focused research Workshops

## **2.4 Technical Leaflets**

*Publication of 6 Research Technical Leaflets summarizing the results of research for use by farmers, advisers and others*

The project completed the objective, producing 6 Technical Leaflets

## **3. Method**

### **3.1 Provide Organic Eprints as the UK database for recording organic research.**

Undertaken by Institute of Biological, Environmental and Rural Sciences at Aberystwyth University and IOTA.

The work to maintain Organic E-Prints as the UK database for recording organic research included the following activities:

- 3.1.1** Liaison with ICROFS and FiBL to ensure the operation of Organic Eprints system in the UK was kept up through regular E-mail contact and through detailed response to national editors' questionnaire in preparation for the roll-over to new E-prints software that was carried out by ICROFS in the summer 2009. The survey was circulated to the PACARes team and returned to the Organic Eprints staff at ICROFS in June 2009.
- 3.1.2** All papers submitted by UK authors during the period were reviewed and approved or returned to the user for further clarification. Several papers originating from the CORE FCP project were also approved. An update to the entries of the browse tree for UK research institutions was suggested and implemented by Organic Eprints staff. Any questions from Organic Eprints users are dealt with by email or phone.
- 3.1.3** Several approaches to Defra were made to obtain copies of recently completed projects for uploading but no further reports were made available.
- 3.1.4** With help from ICROFS staff a list of all UK users was extracted from the data base. This proved a little more difficult than anticipated, because the database had no specified country description code and a number of different words were used. Feedback about this was provided to ICROFS (see below). A list of registered UK users of Organic Eprints has been established and an E-mail (Annex 1) was sent to all registered users on 30<sup>th</sup> July 2009 to promote E-prints, but had only a limited response in terms of submission.
- 3.1.5** Permission was obtained from AAB, the publisher of the 2006 COR conference proceedings and the restrictions to all papers from this conference were subsequently lifted.
- 3.1.6** Uploads have been submitted of the 2 PACARes research Reviews completed under this project.

**3.1.7** Requested and received constructive comments on how to improve organic Eprints from ORC and confirmation that it is the policy of ORC to upload all research papers and other material to Organic Eprints.

**3.1.8** Provided support to and liaison with advisers, trainers and researchers on the use of Organic Eprints (uploading and downloading). Information, links and written guidelines on using Organic Eprints is available on the IOTA website <http://organicadvice.org.uk/eprints.htm>

### **3.2 Provide topic focused Research Reviews.**

This work was undertaken by IOTA with Reviews commissioned from subcontractors selected for their expertise according to topic.

#### **3.2.1 Consultation and prioritisation of topics**

Used the analysis of topic priorities undertaken in OF0347.

Consulted with selected advisers on priorities, including Garden Organic who provided a summary of growers needs.

Produced a short list of 4 which was discussed with advisers and reduced to 2.

#### **3.2.2 Undertake Research Reviews**

The reviewers were drawn from UK organic advisers and others servicing the organic industry and selected on the basis of their expertise in the topic concerned.

The Reviews were commissioned using a standardised format for the report and a specification detailing the objective, scope and remit of the Review. Guidance on the source of research material (including Organic Eprints, Defra research website and other references) was provided along with suggested research projects where known. Further information and guidance to the reviewer was offered and provided as required. Each Review was required to include the following;

- 1) scope of the Review,
- 2) summary of research projects and results
- 3) analysis and conclusions
- 4) references

The reviewer submitted an initial search of potential research projects for Review. These were considered, and further suggestions were sought from the Organic Eprints editor where necessary and the list finalised.

The reviewer submitted a first draft of the Review within a specified time scale, which was approved or further work requested and finalised.

#### **3.2.3 Publish Reviews**

The final Reviews have been published on the public/free access side of the IOTA website at <http://organicadvice.org.uk/reviews.htm> and have been submitted to Organic Eprints for uploading onto the website [www.orgprints.org](http://www.orgprints.org) , providing free access to all.

### **3.3 Provide Research Workshops**

This work was undertaken by IOTA.

The aim of the workshops is to provide a forum for advisers and researchers to access the result of research and to discuss the implications of the research findings with a view to more effective understanding and dissemination to farmers. Experience and feedback to the researchers is an important element of this process. The key to the PACARes Research Workshops is:

- 1) Focus on a particular topic
- 2) Availability of the Research Reviews which provide a digest and summary of the relevant research
- 3) Attract a group of specialist advisers from all quarters of the UK organic advisory world
- 4) Involve researchers who have been involved in undertaking the research
- 5) Facilitate a level of debate which is not found in other forums such as organic conferences.

### **3.3.1 Workshop Topic selection**

The workshop topics were selected on the basis of proposals and interest from the IOTA membership and issues and needs raised in the Reviews as well as issues raised by Defra as a result of comments received in research reports.

### **3.3.2 Workshop Programme**

The programme was dictated by the topic but in each case included presentations from a number of researchers involved in relevant research, an overview of the findings of the Review by the reviewer and considerable discussion and debate. Research Reviews were provided to delegates prior to the workshop. A record of technical comments, workshop feedback and future research priorities was kept and used to update the Review reports.

Dates and programme for the Workshops:

#### **Profitable Management of Organic Farming**

Tuesday 31<sup>st</sup> March 2009 at Builth Wells

#### **Organic Poultry Management and Feeding**

Wednesday 15<sup>th</sup> April 2009 at Sheepdrove Organic Farm, Lamborne

### **3.3.3 Promotion**

The Workshops were promoted to over 150 IOTA contacts by email, through ORC, research organisations, Organic Centre Wales (OCW), Soil Association (SA), Certification Bodies and marketing organisations and on the IOTA website.

### **3.3.4 Follow up**

Workshop presentations were provided to delegates.

### **3.4 Provide Technical Leaflets.**

This work was undertaken by IOTA with Leaflet text commissioned from subcontractors selected for their expertise according to topic.

The Technical Leaflets are aimed at farmers and others using the results of research.

#### **3.4.1 Prioritisation**

Identified the topics by assessing the Research Reviews, identifying gaps in the market including an assessment of existing technical leaflets and discussing with advisers.

#### **3.4.2 Undertake the Technical Leaflet**

Selected advisers undertook the writing for the Leaflets on the basis of their knowledge of the subject, in most cases they were the authors of the relevant Review.

Commissioned the Leaflet on the basis of a standard format, production of a draft and final text.

#### **3.4.3 Publication of Leaflets**

The Leaflets are published in hard copy which have been distributed free to organic farmer helplines and the advisory services of Abacus, ADAS, Duchy College, Organic Advisory Service, Organic Centre Wales, Soil Association and regional organic groups and to organic producer groups including Organic Milk Suppliers Cooperative, Graig Producers, Organic Arable and Organic Livestock Marketing Cooperative. These will be available for redistribution to farmers. The Leaflets are available for free download from the IOTA website.

### **3.5 Promotion of PACARes and Research Reviews**

Undertaken by IOTA.

Promotion of the PACARes project, and in particular the Research Reviews, Technical Leaflets and Organic Eprints, has been undertaken through a variety of mechanisms including widespread emailing, through articles, reports and conference papers. Specifically this has included the following:

#### **General promotion:**



*E-mail to 150 IOTA contacts including the majority of organic advisers (including all OCIS advisers) and trainers*

*Promotion of Organic Eprints, Research Reviews, Workshops and Technical leaflets to the organic farmer helplines and advisory services of Abacus, ADAS, Duchy College, Organic Advisory Service, Organic Centre Wales and Soil Association, together with information to the primary research centres undertaking organic research in the UK.*

### **E mail letters promoting the Research Reviews to:**

**Advisory groups:** Soil Association, Organic Centre Wales(OCW), Organic advisory Service (OAS), ADAS, Garden Organic (HDRA), ABACUS, Farm Consultancy Group, SAC and SOPA.

### **Certification Bodies**

Articles submitted to the press:

- 1 to Soil Association Organic Farming magazine
- 1 to Organic Inform (Organic Research Centre Elm Farm) Newsletter
- 1 to Organic Centre Wales electronic news

### **Conference Presentations and Reports**

**Graig Producers/SA Feed Summit 2008:** Arranged for a paper on the output from the UK organic research programme, based on the PACA Res Research Reviews on Grass clover Leys, Whole crop, Dairy cow nutrition and financial performance. Contributed to the Conference Report, referencing PACA Res Research Reviews.

**IOTA/OMSCO Organic Dairy Cow Nutrition Conference 2009:** Arranged for a paper on the output from the UK organic research programme, based on the PACA Res Research Reviews on Grass clover Leys, Whole crop, Dairy cow nutrition and financial performance. Contributed to the Conference Report, referencing PACA Res Research Reviews.

**IOTA/ORC 2009 Annual Conference:** arranged for a presentation by one of the PACA Res research reviewers on the PACA Res research dissemination work, including Organic Eprints.

**Organic Centre Wales 2009 Annual Conference:** provided a presentation of the outcome of the PACA Res project including key practical recommendations for producers.

### **3.6 Future Research Priorities**

Future research priorities for poultry and financial management were identified during the respective workshops and recorded for subsequent use by researchers and funders.

## **4. Results**

### **4.1 Organic Eprints**

*Provide the organic research archive - Organic Eprints - in the UK, offering unique access to European organic research and the provision of an effective search facility, with free public access, particularly for use by advisers, trainers, researchers, inspectors and others*

The project successfully provided the Organic Eprints archive and ensured its continued development and use in the UK.

### **4.2 Research Reviews**

*Collation and analysis by specialists of the research results relating to 2 organic farming topics and publication on the web for public access as topic-focused Research Review papers for use by advisers, trainers, researchers and others*

The project completed the objective producing 2 topic focused Reviews collating and analysing the results of a wide range of research and presenting it in a standard format for use by advisers.

The results of the Reviews are available on the IOTA website <http://www.organicadvice.org.uk/reviews.htm>

The Research Reviews which were undertaken are listed below.

#### **4.2.1 Poultry Management**

This Review focused on research into management techniques of organic poultry production. Breeding: slow growing strains and cross breeding. Rearing: range rearing systems and indoor units. Housing: early ranging, health issues. Management issues: including recent feed information. Health: immunity, parasites, foot problems

[http://www.organicadvice.org.uk/papers/Res\\_review\\_24\\_poultry.pdf](http://www.organicadvice.org.uk/papers/Res_review_24_poultry.pdf)

#### **4.2.2 Pest and Disease Control in Organic Vegetables**

This review takes the development of a balanced system as the starting point for pest and disease control. Within that it draws on research to provide recommendations on crop management and rotations, varieties, control products, biological control, other strategies and the potential for new products.

[http://www.organicadvice.org.uk/papers/Res\\_review\\_23\\_pests\\_field\\_vegetables.pdf](http://www.organicadvice.org.uk/papers/Res_review_23_pests_field_vegetables.pdf)

### **4.3 Research Workshops**

*Provision of 2 research-focused workshops with input from researchers, for advisers and trainers with the objective of communicating the outcome of research to those who are in a position to guide farmers.*

#### **4.3.1 Workshops**

The Research Workshops provided an invaluable opportunity for researchers and advisers and in some cases others including organic producers, inspectors and traders to engage in a process which involved 1) a summary of the Reviews, 2) the researchers involved presenting their work, 3) contribution from delegates and 4) a discussion of the results between all parties. The consequence is that the Workshops have given the opportunity for the results of research to be considered in the light of other related research, which may have been undertaken in different conditions or addressed different questions. The results in some cases were contradictory, in others complementary. The research workshop discussion, in the context of adviser's practical on-farm experience, contributed to the development of a consensus and an understanding of the application of the research to commercial farming. Not only that but the dialogue between advisers and researchers was productive in terms of a better understanding of commercial realities, a sense of gaps in our knowledge and new working relationships were developed.

Overall the Workshops achieved a high level of engagement between the parties, added to the interpretation of the research results in a practical manner, informed the researchers on practical issues and strengthened the quality of the Reviews.

The Workshops were both well attended; all the invited speakers accepted the offer to attend. Numbers at the Poultry workshop were: 15 delegates and 5 speakers, and at the Financial Management workshop: 22 delegates and 5 speakers, reaching maximum capacity with the final Workshop.

The delegate feedback from the Poultry Workshop was largely "good" to "excellent" in all respects except for one presentation where the presentations skills of the Research Reviewer was not of the necessary standard.

Comments: 6 volunteered that the most useful part of the day was the discussion between researchers and advisers, "Variety of topics was good. Farm tour - excellent to see it in action", "Good overview of current projects and chance to meet with researchers."

There was a request for further exploration of how the research can be applied in practice and a suggestion that producers be involved in the workshop.

### **4.4 Technical Leaflets**

*Publication of 6 Research Technical Leaflets summarizing the results of research for use by farmers, advisers and others.*

#### **4.4.1 Leaflets**

The Technical Leaflets are available on the IOTA website:  
[http://www.organicadvice.org.uk/technical\\_leaflets.html](http://www.organicadvice.org.uk/technical_leaflets.html)

The Technical leaflets published are:

##### **1. Organic Dairy Cow Nutrition**

The Dairy Cow Nutrition Leaflet summarises the key recommendations arising from research, in particular focusing on the absolute priority of improving production from forage and the importance of rumen and cow health as well as addressing issues of forage quality, the effect of season on forage protein, the role of mixed forages and self sufficient dairy systems.

[http://www.organicadvice.org.uk/tech\\_leaflets/dairy\\_cow\\_final.pdf](http://www.organicadvice.org.uk/tech_leaflets/dairy_cow_final.pdf)

##### **2. Financial Performance, Benchmarking and Management of livestock and mixed organic farming**

This Technical Leaflet provides an overview of the financial performance of a range of organic farm types and an analysis of the key factors that affect profitability, including variable costs, particularly focusing on feed and forage, and fixed costs. It provides an introduction to benchmarking and improvement of farm profitability by comparing performance with other similar farms and focusing on under performing areas to make improvements.

[http://www.organicadvice.org.uk/tech\\_leaflets/finance\\_final.pdf](http://www.organicadvice.org.uk/tech_leaflets/finance_final.pdf)

##### **3. Organic Beef and Sheep Nutrition**

This technical leaflet reviews relevant research on beef and sheep nutrition, takes account of the experience of producers and provides practical recommendations on making better use of forage and guidance on ration formulation.

[http://www.organicadvice.org.uk/tech\\_leaflets/beef%20and%20sheep\\_final.pdf](http://www.organicadvice.org.uk/tech_leaflets/beef%20and%20sheep_final.pdf)

##### **4. Soil Analysis and Management**

The Soil Analysis and Management leaflet provides a summary of how soil analysis can be useful in the management of individual nutrients, provides information on sampling and different analytical techniques and considers the role of soil analysis in the context of other soil monitoring tools.)

[http://www.organicadvice.org.uk/tech\\_leaflets/soils\\_final.pdf](http://www.organicadvice.org.uk/tech_leaflets/soils_final.pdf)

##### **5. Compost: the effect on nutrients, soil health and crop quantity and quality**

This Technical Leaflet provides a short practical guide to different composting techniques and the role and use of compost and fresh manure for different purposes and conditions.

[http://www.organicadvice.org.uk/tech\\_leaflets/compost\\_final.pdf](http://www.organicadvice.org.uk/tech_leaflets/compost_final.pdf)

##### **6. A guide to nutrient budgeting on organic farms**

This Technical Leaflet provides an introduction to Nutrient Budgeting to aid nutrient and crop planning on organic farms. It includes information on the principles of nutrient management and details of nutrient contents of crops, stock, manure and fertilizer for use in calculating nutrient budgets.

[http://www.organicadvice.org.uk/tech\\_leaflets/nutrient\\_budgeting\\_final.pdf](http://www.organicadvice.org.uk/tech_leaflets/nutrient_budgeting_final.pdf)

##### **5.1 Identify Future Organic Research Priorities**

Throughout the PACARes project there has been an active programme of recording and prioritising organic farming research objectives. The research priorities have been identified in the PAC Res OF0347 Final Report. They will not be repeated here, only to reiterate that there is a common view that there is a need for a programme which is dedicated to the needs of organic farming and that more effective dissemination mechanisms are essential.

In addition the research priorities relating to the two workshops have been recorded:

### **5.1.1 Organic Poultry Research Needs**

#### **Feeding**

The difficulties posed by the impending changes in the organic standards to 100% organic rations remains a problem for both layers and table birds. In particular this is related to the difficulty of supplying adequate Methionine, due to the anticipated ongoing prohibition of synthetic sources, but it is also influenced by the use of existing “conventional” breeds with their high growth rates and nutrient requirements.

- Development of suitable breeds, including use of local, traditional and dual purpose breeds
- Development of balanced organic diets with existing and new feed sources
- Identification/development of range plants that can provide appropriate amino acids
- Development of novel crops to meet nutritional needs and integrating into organic system
- Research into the use of whole-crop (e.g. cereal/pea silage mix) and crimped grain
- Resolution of the problems of growing sunflowers in the UK
- Development of target weights for growing organic birds
- Assessment of the potential for dehulling peas and beans as means of raising nutritional value
- Assessment of what is actually consumed by birds from the range e.g. plant and seed type, insects, worms.

#### **Other important poultry issues requiring research and development.**

- Identification of the causes of Footpad dermatitis
- Systems development i.e. better integration of birds, feed production, range in crop rotation and manure recycling in organic farms
- Risk with regard climate change.

### **5.1.2 Financial Performance of Organic Farming**

The existing Organic Farm Incomes in England and Wales report and reports on the financial performance of hill farms provides a good basis for being able to understand the profitability of organic farms, benchmark commercial farms and advise on their development. There are gaps which have been identified:

There is a need to increase the number of farms being monitored in order to improve the reliability of the data.

There is a need for more data and better analysis of the performance of mixed and cropping farms.

## **6 Dissemination of results**

6.1 As a result of the dissemination programme under taken by PACA Res OF0347 and OF0387 the following relevant links and references are provided by other organisations:

The SA Food and Farming website now provide links to the PACA Res Research Reviews, Organic Eprints archive and is being updated with links to the PACA Res Technical Leaflets.  
[http://www.soilassociation.org/web/sa/psweb.nsf/B2/organic\\_research.html](http://www.soilassociation.org/web/sa/psweb.nsf/B2/organic_research.html)

The Organic Research Centre Elm Farm website now provide links to the PACA Res Research Reviews, Organic Eprints archive and links with the PACA Res Technical Leaflets are being established.

<http://www.efrc.com/?go=ORC&page=Research>

The Organic Centre Wales website provides links to the Organic Eprints archive and links with the PACA Res Research Reviews and is being updated with links to the PACA Res Technical Leaflets.

<http://www.organic.aber.ac.uk/research>

The Newcastle University QLIF website now provides links to Organic Eprints archive

<http://www.qlif.org/Library/pub/index.html>

SA Organic Farming magazine provided a reference and webs link to the PACA Res Research Review “mineral Soil Analysis and Management” in an article in Spring 2009.

As a result of the PACA Res Research Review on Non Inversion Tillage IOTA organized one study tour to Germany to see the farm and development centre of machinery manufacture F Weinz and another study tour to Romania to see the equipment being used on a large scale arable farm.

The result of the Poultry Research Review and Workshop contributed directly to a technical publication which is currently in production by OCW/ORC on Poultry Management. The PACA Res project and material will be referenced.

## **7 Discussion and implications**

This continuation of PACA Res confirmed the findings in the Final Report of OF0347, which will not be repeated here apart from reiterating the key points which are

1. The focus of the PACARes project is the analysis of research findings and dissemination to support change in farming practices. It set out to address the gap which exists between the publication of research reports or scientific papers by researchers and implementation by a farmer. The project has gone some way to plugging that gap.
2. There is a need to ensure that the dissemination material produced by research projects is made more accessible and available after the life of the project
3. More effective dissemination and the application of research results generally is particularly important
4. There remain intractable technical problems for organic producers which require further research
5. A variety of dissemination mechanisms is important including: articles, guidebooks, websites, conferences and workshops, which all have their place, targeted at both advisers and farmers.
6. Recognition that advisers and farmers have essential technical know-how to bring to a research project and that advisers, farmers and researchers should all be engaged throughout in a process of project initiation, information sharing and discussion of the results.

The PACARes project has endeavoured to plug the gap in dissemination by ensuring that research papers can be tracked down relatively easily with ongoing editing of the UK facility of Organic Eprints which has been successful in terms of operation and service. Organic Eprints as a research archive is likely to remain primarily a tool for researchers but the PACARes Reviews have shown that it helps with the production of information for advisers and farmers.

Secondly the project has plugged the gap by collating the work from a number of projects and synthesising it into Research Reviews which are easily accessed on the web. One of the most valuable aspects of the project has been the engagement of advisers with the outcome of research on a certain topic when undertaking the Review and sharing the knowledge with peers at Workshops.

The new aspect to this PACA Res project is the production of Technical Leaflets for use by producers and advisers. These Leaflets draw primarily on the outcome of research however they do take account of commercial conditions and their practical application.

The Leaflets are a natural development of the project; Organic Eprints providing access to the research projects, Research Reviews and Workshops collating the research results in a form for use by advisers and Technical Leaflets summarising key practical recommendations for use by advisers and producers.

At the IOTA Conference January 2009 the need to continue undertaking the dissemination of research was identified as the top priority for IOTA. Clearly advisers consider that there is an ongoing need to provide dissemination and knowledge transfer and that the past work of IOTA and in particular the PACA Res project is recognised and valued.

At the IOTA/OMSCo conference Organic Dairy Cow Feeding for Production, Health and Profitability April 2009 the Technical Leaflet No.1 Dairy Cow Nutrition was made available to delegates and the conference feed back session demonstrated that advisers and farmers separately had understood key findings of the Defra funded research programme.

An unsolicited comment from a farmer reading two of the Research Reviews: "I took very good information and advice about this topic. I am very impressed. Thank you again."

The uptake by farmers of the information disseminated by the PACA Res projects has not been monitored however there is some anecdotal evidence that the project has been effective in supporting the adoption of new techniques. One example comes from grassland management, where research showing the potential for herbs in pastures is being adopted by farmers in their selection of seed mixtures. In the case of Non Inversion Tillage there is a demonstrable link between the Research Review, the Research Workshop and the subsequent study tours and the adoption of tillage practices not using the plough, together with the introduction into the UK of two Eco Dyn tillage machines from Germany.

## **7 Conclusions**

Organic Eprints continues to be the primary archive of organic research in the UK and provides a valuable facility to organic researchers and others. Its future is dependent on securing funding for undertaking the role of UK editor. Funding for the management and hosting of the site is covered by the Organic Eprints partners including ICROFS and FiBL.

The concept of disseminating the results of research to advisers through Research Reviews and Workshops continues to be popular and effective.

The production of Technical Leaflets is straightforward provided that the appropriate Research Review has been undertaken. The Leaflets ensure that the results are made available in a form which is accessible to the end use i.e. the farmer or grower.

The application of the research in practice remains dependent on what has been learnt by advisers and producers and their ability to implement on their farms. This needs the appropriate conditions whether that is policy, incentives, legislation, market or field conditions and the necessary motivation and support.

Involvement of advisers at Workshops is a particularly effective means of knowledge transfer and information exchange.

There are indications that producers are understanding the research recommendations and changing their practices accordingly.

## **8 Future work**

The PACA Res projects OF0347 and OF0387 have established an effective mechanism for archiving, collating and disseminating the results of organic research to advisers and producers. As was concluded in the OF0347 Final Report there is a need to provide these facilities and services on an ongoing basis and to undertake further analysis in the future, in particular to provide the following:

**8.1** Maintenance and updating of a **UK database** of organic research institutions, facilities, programmes and projects.

**8.2** With the uploading of further available Defra research (containing an organic component) onto **Organic Eprints** there is a need for:

- 1) Continued provision of a UK editor of Organic Eprints, to include liaison with FIBL/ICROFS on the maintenance of the archive and record changes to UK research institutions in the archive.
- 2) In order to ensure access to all future research results it is recommended that the results of all future Defra funded research projects (containing an organic component) are uploaded onto Organic Eprints by the research contractor.

**8.3** Dissemination of research is an ongoing process, the PACARes project has covered a certain amount of the past research but there remains much which has not been covered and there will be more in the future. There is therefore a need to continue to undertake research **Reviews** and **Workshops** for advisers and others and to develop a constructive engagement between research and advice. Inevitably the Workshops were only available to a limited number of people; there is also a need to replicate some of the Workshops in other regions of the country.

In the future dissemination should be an ongoing and two way process including the following:

- 1) Undertaking further research Reviews
- 2) Provision of further research Workshops
- 3) Continued provision of a UK editor of Organic Eprints
- 4) A mechanism for drawing on relevant non-organic research and applying it to organic farming
- 5) A mechanism for disseminating organic research to non-organic farming
- 6) Better understanding of how to support producers and consumers in the process of change towards new techniques and a more sustainable society
- 7) Centralised hosting of the dissemination output from all organic research projects, including websites, electronically formatted information, research reviews and technical leaflets, articles etc. in order to facilitate access and prolong their use
- 8) Provision of a forum for exchange of information between researchers, advisers and farmers.

Currently organic research results are disseminated through a variety of uncoordinated mechanisms, by a number of organisations, producing material with variable life spans and with sub-optimal engagement between stakeholders. The overarching recommendation from the PACARes project is that there is a need to establish an organic research and development “dissemination centre” which will provide a common point of access to research results on an ongoing basis, ensure communication and collaboration between farmers, advisers and researchers and disseminate the results of research through reviews, workshops, publications and a website. This could be established by building on what has been achieved by IOTA in the PACARes project and through collaboration with the principle organic research, advisory and extension organisations in the UK.

During the life of the Project OF0387 further discussions have been held between the major organic advisory groups in the UK with a view to further collaboration on knowledge transfer. IOTA has also discussed the concept of an organic Research “Dissemination Centre” with a number of key organic research organisations and secured support for collaboration and further development of the proposal.

## References to published material

---

9. This section should be used to record links (hypertext links where possible) or references to other published material generated by, or relating to this project.

## References to published material

### 1. Written articles

Article submitted to Organic Inform (ORC) 2009

[http://www.organicadvice.org.uk/misc\\_docs/Research\\_into\\_practice\\_OI\\_ORC.doc](http://www.organicadvice.org.uk/misc_docs/Research_into_practice_OI_ORC.doc)

Article submitted to Organic Centre Wales Bulletin 2009

[http://www.organicadvice.org.uk/misc\\_docs/Research\\_into\\_practice\\_OCW.doc](http://www.organicadvice.org.uk/misc_docs/Research_into_practice_OCW.doc)

Article submitted to Soil Association Organic Farming magazine 2009

[http://www.organicadvice.org.uk/misc\\_docs/Research\\_into\\_practice\\_Research\\_Reviews\\_and\\_Technical\\_Leaflets\\_SA.doc](http://www.organicadvice.org.uk/misc_docs/Research_into_practice_Research_Reviews_and_Technical_Leaflets_SA.doc)

### 2. Conference Papers

Report from the *IOTA/OMSCo conference Organic Dairy Cow Feeding for Production, Health and Profitability April 2009*

[http://www.organicadvice.org.uk/misc\\_docs/IOTA\\_Dairy\\_cow\\_conference\\_report\\_final.doc](http://www.organicadvice.org.uk/misc_docs/IOTA_Dairy_cow_conference_report_final.doc)

*Report from the Graig Producers/SA conference Organic Beef and Lamb: Feeding to succeed December 2008*

[http://www.organicadvice.org.uk/misc\\_docs/Feed\\_Summit\\_Report\\_final.pdf](http://www.organicadvice.org.uk/misc_docs/Feed_Summit_Report_final.pdf)

### 3. PACARes Research Reviews and Technical Leaflets published on the IOTA website

The published Research Reviews are available on the IOTA website

<http://www.organicadvice.org.uk/reviews.htm> and a full list is provided in Annex 2.

The Technical Leaflets are available on the IOTA website:

[http://www.organicadvice.org.uk/technical\\_leaflets.html](http://www.organicadvice.org.uk/technical_leaflets.html)



