



## **Progress Report 2005 and Application for Continuation in 2006**

For research projects financed by grants from  
The Directorate for Food, Fisheries and Agro Business  
under the Danish Ministry of Food, Agriculture and Fisheries

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### **1. Research program**

Research in organic farming 2000-2005 (DARCOF II)

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### **2. Project title and number**

V Co-ordination, synergy and education – increasing the width and depth of research in organic farming

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### **3. Head of project**

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### **4. Participating institutes**

All institutes in DARCOF

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### **5. Other project staff**

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## 6. Project period (month, year)

Start of project: 2000  
End of project: 2006

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## 7. Description of the project, its results and progress, and application for continuation in 2006

### A. Project summary

The Danish Research Centre for Organic Food and Farming (DARCOF) is a "centre without walls", which is to say that the researchers remain in their own research environment but collaborate across institutes. The overall remit is to coordinate Danish R&D for organic farming, with a view to achieving optimum benefit from the allocated resources.

The specific objectives of the SYNERGY project are to secure the continued interdisciplinary development of Danish research in organic farming and to explore the many possibilities of synergy in DARCOF II.

In relation to these objectives, the assignments of SYNERGY are to:

- Co-ordinate, evaluate and manage DARCOF II as a whole
- Analyse, discuss and synthesis knowledge across research projects and disciplines
- Develop research methodology and investigate values associated with organic farming
- Contribute to the education of research scientists involved in the DARCOF II
- Communicate the research findings to the organic farming community and society in general
- Contribute to international co-operation and communication

In this way the project intends to secure the completion of the overall objectives of the programme; namely to contribute to increased production, and closer relationships between organic and inherent qualities in organic farming.

**Table A.1: Work package list (from application)**

No.	Work package title	WP ledere	Budget (1.000 DKK)	Start	End	Deliverable no(s):
1	Co-ordination, evaluation and management of the whole programme	Erik Steen Kristensen	1.900	2000	2005	D1-D2
2	Synthesis of knowledge	Erik Steen Kristensen	5.300	2000	2005	D3-D4
3	Systems research methodology and value inquiry	Hugo Fjelsted Alrøe	900	2000	2004	D5-D9
4	Education of postgraduate students (Ph.D.'s)	Erik Steen Kristensen	7.800	2000	2006	D10
5	National communication and mediation	Claus Bo Andreassen	2.400	2000	2006	D11-D31
6	International co-operation and communication	Claus Bo Andreassen	2.000	2002	2006	D32-D40

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## B. Objectives and expected achievements

The overall objective of DARCOF II is to contribute to increased production, and closer relationships between organic and inherent qualities.

The principal objectives of this project is thus to

- I exploit a unique opportunity to synthesise and communicate relevant scientific information across traditional scientific boundaries and disciplines, and to
  - II improve both the width and depth of research in organic farming
- The objective of the individual WP's:

- WP1:** To coordinate, evaluate and manage all research projects in accordance with the overall objectives of the whole programme, to produce knowledge that can be promoted into increased production and closer relationships between organic and inherent qualities of organic foods.
- WP2:** Synthesise information on complex and relevant problems in organic farming in order to:
- a) analyse different aspects of the transition from conventional to organic farming
  - b) identify areas where new research is most needed, and
  - c) clarify complex problems
- WP3:** To establish a general framework (a "research paradigm") for research in organic agriculture, involving systems research methodology and value inquiry, in order to:
- a) promote co-ordination and collaboration between different research groups and disciplines (WP1)
  - b) facilitate the elaboration of conceptual models for synthesis of knowledge (WP2) and communication (WP5 and WP6)
  - c) investigate and clarify the interplay of values and facts in research and practice
- WP4:** Contribute to the postgraduate education of ph.d.-students and researchers in the disciplines and research areas of greatest relevance to organic farming.
- WP5:**
- a. To strengthen the interdisciplinary research and contribute to synergy through increased collaboration between research groups and institutes dealing with organic agriculture
  - b. To ensure mediation to the organic sector and to strengthen the relevance and the holistic perspectives through increased collaboration with the users of research in organic farming
  - c. To employ the synergy of research knowledge resource purpose etc. in both organic and sustainable agriculture
- WP6:**
- a. Contribute to international exchange of research results in organic farming
  - b. Secure that the Danish research in organic farming is at a high international level
  - c. Improve knowledge about the EU research programme system and contribute to development of international research co-operation in organic farming.

## C. Midterm results and progress. Description (summary) of main results and conclusions

### WP1. Co-ordination, evaluation and management

23 research projects that was initiated and granted in 2000 have all started up and progressing quite well. In two projects (I.3 and I.2) supplementary WP's was granted in spring 2001 in order to fulfil further targets. At the same time more resources were allocated to knowledge synthesis (WP2, 2.000 KKr.) and education (WP4, 5.000 KKr.) in this project. According to this the name of the project has been changed to " Synergy, co-ordination and Education".

In spring 2001 6 new proposals has been prepared and granted by the Food Ministry. Also these projects are well initiated. At the end of October 2001 there are totally 30 projects and with a total budget on 170 mill. Dkr. established in DARCOF II.

In autumn 2001 and spring 2002 14 complementary projects has been prepared and granted by the Ministry of Food, and at the end of September 2002 there are totally 43 projects with a total budget on 227 Mill. DKK.

In May-June 2002 all projects established in 2000 and 2001 were visited by 1-3 persons from the secretary. Similarly all projects established in 2001 and 2002 were visited in May-June 2003.

During 2003-2005 several project has been phased out according to the plan. In 2004 2 final reports have been made and approved. In 2005 15 final reports have been made and approved and several other projects are in the process of description of the final report. Only 4 projects have made a status report and have asked for continuation in 2005. These reports are planned to be approved during November 2005.

<b>WP1: Co-ordination, evaluation and management</b>	Time schedule according to application	Deviations, if any*
<b>Deliverables</b>		
D1 Holding annual status meetings in November each year	November 2000 and 2001, 2002, 2003, 2004	Evaluated in written procedure and individual visits
D2 The progress and results of DARCOF II will be described through annual status reports	November 2000, 2001, 2002, 2003, 2004	✓
<b>Milestones</b>		
M1 95% of projects in DARCOF II has been initiated	December 2001	✓
M2 The status reports have been accepted	March 2001, March 2002, 2003, 2004, 2005	✓

\* *Deviations are to be further discussed in D*

## **WP2 Syntheses of knowledge**

The results of the 3 knowledge synthesis initiated in 2000 (task 1, 2 and 3) has been published in FØJO reports no. 8, 9, and 14. These results have been very valuable in the establishments of the new research projects in DARCOF II. Preliminary results from task 6 and 7 have been very help full in preparing the new research programme on organic GMO-free seed. The results have been published in FØJO-report no. 15 and 16. In June 2002 task 5 was initiated. Project description appears at [www.okoforsk.dk](http://www.okoforsk.dk) and the result of the work has been published in FØJO-report no. 19

In December 2003 a new knowledge syntheses named "Organic Farming in a Global Perspective" was initiated. As a part of this there was an international workshop 22-23 April 2004 with more than 50 participants. This work has been a major activity in DARCOF both in 2004 and 2005. The work has been finalized during the autumn 2005. A major outcome of this work is a new book with the title: "Global development of Organic Agriculture: Challenges and prospects". This book consist of 12 chapters and in total 349 pages. 31 authors have contributed. An agreement has been made with [CABI Publishing](#) to publish the book. At the DARCOF Board meeting 3<sup>rd</sup> October 2005 the major results from the syntheses were presented and it was concluded that in conjunction to the date of publishing (expected in January-February 2006) relevant Danish medias will be approached in order to ensure that also relevant Danish target groups will be informed. More information appears on [www.EcoWiki.org](http://www.EcoWiki.org).

<b>WP2: Synthesis of knowledge</b>	Time schedule according to application	Deviations, if any*
<b>Tasks</b>		
1: Regional protection of groundwater with organic farming	Jan.-Oct. 2000	✓
2: Organic food and human health	Jan. 2000-Jan. 2001	✓
3: Organic pig production – animal health and welfare	Apr.-Oct. 2000	✓
4: Nature quality in organic farming, on local and regional levels	Apr.-Oct. 2000	✓
5: Energy use in organic farming	Nov. 2001 Nov. 2002	June 2002 – March 2004
6: Organic plant-breeding	Nov. 2000 Nov. 2001	✓
7: Consequence of GMO for organic farming	Jan. 2001 Nov. 2001	✓
<b>Deliverable</b>		
3: DARCOF reports has been delivered for task 1, 3 and 4	Dec. 2000	✓
4: DARCOF reports has been delivered for task 6 and 7	Dec. 2001	Dec. 2001, May 2002
<b>Milestones</b>		
M3 Areas where new research is most needed has been identified in task 1, 2, 3 and 4	Oct. 2000	✓
M4 Areas where new research is most needed has been identified in task 6 and 7	Sept. 2001	✓

### **WP3 Systems research methodology and value inquiry**

There is ongoing work on the further development of systems theories in agricultural research in cooperation with, in particular, Egon Noe (Dept. of Agricultural Systems, DIAS). The development of the concept and practice of animal welfare in organic farming is done in cooperation with Mette Vaarst (Dept. of Animal Health and Welfare, DIAS), Henk Verhoog (Louis Bolk Institute, Holland) and Vonne Lund (Dept. of Animal Environment and Health, Swedish University of Agricultural Sciences). The development of the concept of nature quality in organic farming has continued in cooperation with Knud Tybirk and Pia Frederiksen (National Environmental Research Institute, Denmark). See the publication list for details.

The more theoretical work has been implemented by us and by others. The procedures for the mid-term evaluation of DARCOF II in 2002 and 2003 has been adjusted to reflect the work done on systemic research methodology - a new section on critical reflection has been added to the status report and reflexive objectivity has been included as one of the criteria for evaluation. In DARCOF II project I.7, Per Schjønning (Dep. of Crop Physiology and Soil Science, DIAS) – together with colleagues Susanne Elmholt and Bent T. Christensen – has edited an international book on soil quality as related to the major challenges in modern agriculture. The directing chapter, authored by the editors, utilizes the key concepts from the work on systemic research methodology. These results are also used in the work on bias in peer review of organic farming grant applications, lead by Jesper Rasmussen (KVL). DARCOF project III.9, led by Jan H. Ingemann (Aalborg University), has taken up the three organic principles, that were suggested by DARCOF's secretariat in November 2000, and used them as a basis for their work on the possible mismatch between principles and practice. Hugo Alrøe has been included in the Delphi expert panel of that project. A widespread discussion of the organic principles was initiated in Denmark when the DARCOF secretariat in November 2000 prepared a discussion paper to the user committee of DARCOF.

The discussion on organic principles is now taken up by other countries and international organisations. IFOAM has initiated a procedure for rewriting its Principles of Organic Agriculture, and Hugo Alrøe has been invited to participate in the task force that leads the work. In November 2004 the latest draft will be discussed at the IFOAM Summit in Bonn, and the final proposal will be presented at the

IFOAM General Assembly in Adelaide, September 2005. Updated information on the rewriting process is available at <<http://ecowiki.org/lfoamPrinciples>>. Inquiry into the basic values of organic agriculture is also in focus in a new EU project " Research to support revision of the EU Regulation on organic agriculture ", which is lead by DARCOF. Hugo Alrøe is leading a work package on "Identifying and integrating basic ethical values of organic agriculture in the development of EU regulation".

The work in this work package has been presented in national and international fora (see the publications list), and the researchers involved are often invited to speak and teach on the subjects of systemic research and organic principles. See the publications for details.

Much work has gone into establishing an electronic archive for papers related to organic agriculture, called Organic Eprints ([www.orgprints.org](http://www.orgprints.org)) as a very practical implementation of research methodology in its widest sense (see WP6 for further details). The interactive EcoWiki website ([www.ecowiki.org](http://www.ecowiki.org)) has been established as a tool for doing international cooperative work on organic agriculture and food systems and as a means to open the research process to more participation and dialogue. This "open-editing" system is something between traditional web pages and email, which allows globally extended groups to participate in cooperative writing and development processes where the current result is always available to all.

<b>WP3: Systems research methodology and value inquiry</b>	Time schedule according to application	Deviations, if any*
<i>Deliverable</i>		
<b>D5</b> Contributing to report on follow-up workshop on research methodology in organic farming	2002-2003	✓
<b>D6</b> Contributing to report on the knowledge synthesis "Quality of nature in organic farming"	2001	✓
<b>D7</b> Writing and submitting one or more international papers each year	2001-2004	✓
<b>D8</b> Writing or contributing to Danish papers on DARCOF activities involving systems research methodology and value inquiry	2002-2004	✓
<b>D9</b> Establishing an international electronic forum for dialogue on systems research methodology and value inquiry in agricultural research	2003-2004	✓
<i>Milestones</i>		
<b>M6</b> Presentation of a general framework (a "research paradigm") for research in organic agriculture	2004	✓

#### **WP4 Education of post graduate students (Ph.D.'s)**

Year 2001 was busy in making a procedure for evaluation and selection of the most qualified candidates within the most relevant topics. In order to be able to stimulate the maximum no. of Ph.D.-students and at the same time cover as many topics as possible it has been decided to offer shared cost scholarships.

32 Ph.D. projects have been established. At present 30 Ph.D. projects are in progress. 2 students have stopped due to new positions. At November 2005 5 has finalised their project.

During the summer 2001 the Research School for Organic Agriculture and Food Systems (SOAR) was established with a base at The Royal Veterinary and Agricultural University. DARCOF is supporting SOAR and all the Ph.D.-students have an obligation to take part in SOAR.

The progress reports for the students co-financed by DARCOF can be seen at <http://www.okoforsk.dk/funktion/udd/phd/index.html>

<b>Name of student</b>	<b>Title of Ph.D.-project</b>
Achmed El-Naggar	Effect of using water extracts on compost and organic materials on soil fertility and plant nutrition
Anders Pedersen	Optimisation of nitrogen use efficiency in organic vegetable production
Annette N. Jensen	Bacterial infection risk associated with outdoor organic pig production with special reference to Salmonella and Campylobacter infection
Bjørn Molt Petersen	Modelling of processes at the farm level, with special emphasis on nitrogen and carbon slow and turnover
Christina E. Adamsen	Organic meat processing – non-nitrite alternatives to conventional meat curing
Dorte Bodin Dresbøll	Optimization of growing media for organic greenhouse production
Dorthe Ilsøe	Consumer demands on organic food products
Elisabeth Christine Fossing	Application of alternative medicine in organic dairy herds with special emphasis on the effect of veterinary
Gregor Levin	Landscape changes under ecological farming
Guillaume Laberge	Dual purpose groundnuts and soybeans, impact of their adoption on soil cyclin and forage protein availability within the farming systems of the moist savanna of Benin and Togo
Helena Mejer	Management and alternative crops as a means to reduce parasite infections in organic pig production systems
Jeanette Hyldal Vollmer	Modelling development of disease complexes on barley cultivar mixtures under organic farming practice
Jim Jul Rasmussen	Below ground C and N transformation processes in perennial grass-clover mixtures with impact on the farming system and the environment
Kamma Westergaard	Økologisk jordbrug, driftspraksis og landskab
Kirstine F. Jørgensen	The importance of nutritional factors and the physiological background for the development of liver abscesses in veal calves and young bulls – Perspectives for organic beef production
Klaus Horsted	Strategies for increased foraging in organic layers
Lene Hegelund	Control systems inorganic egg production, focusing on animal welfare and food security
Maj-Britt Quitzau	Cultural barriers and potentials for recycling of human town-waste
Martin Nørregaard Hansen	Technology for reduction of nitrogen loss and environmental effects of solid manure systems
Merete Møller Nielsen	Content and stability of vitamin E in organic milled wheat and spelt
Mette Klindt Andersen	Competition and complementarity between intercropped barley, rape and field pea in ecological cropping systems – the role of plant available nitrogen and sulphur as well as cropping design
Mette Sustman Carter	Production of N <sub>2</sub> O in grass-clover pastures
Mette Weinreich Hansen	Empowerment of organic enterprises – values, identity and learning in food processing
Naja Steen Andersen	Consequences of growing genetically modified crops in co-existence with organic crops
Natalia Belostas Murguerza	Control of soil-borne diseases by the biofumigation effect of <i>Brassicac</i> s
Nicoline Maag Eigaard	Investigation on mortality and interactions of selected diseases in free-range chickens
Paul Rye Kledal	Future supply and marketing strategies in the Danish organic food sector

Preben Klarskov Hansen	Crop-Weed interactions determined by sensor techniques
Thomas Larsen	Soil ecological studies of decomposition of urban fertilisers
Tina Slots	Production of high quality organic milk considering the future demands for use of organically produced feed and natural vitamins

<b>WP4: Education of postgraduate students (Ph.D.'s)</b>	Time schedule according to application	Deviations, if any*
<i>Tasks</i>		
11 Initiate and contribute financially to postgraduate education in co-operation with relevant Danish research environments	2001, 2002, 2003	✓
<i>Deliverable</i>		
<b>D10</b> Descriptions of Ph.D. scholarship	2001-2002	✓
<i>Milestones</i>		
<b>M7</b> Announcement and assignment of Ph.D. scholarships	2001, 2002, 2003	✓
<b>M8</b> Approval of Ph.D. degrees	2006	

## WP5 Communication and mediation

### Task 12 -15

Work on securing high levels of communication internal between institutes and research groups and externally between research and the various users groups are continuing. The Danish newsletter from DARCOF was transformed to an electronic version (FØJOenyt) in January 2003. This made an immediately dramatically reduction in subscribers from 1.500 to 350. However during the year 2003 subscribers has increased so in November 2003 there was 718 subscribers. In November 2004 there was 797 subscribers. In November 2005 there was 917 subscribers.

In the following it is described how the individual task contributes to the objectives of the work packages and the programme as a whole.

<b>WP5: Communication and mediation</b>	<b>Remarks</b>
Task 12: International research communication	Task 12 is together with D11 - D16 moved to the new WP6
Task 13: Internal communication	See D17 - D19
Task 14: Mediation and external communication	See D20 - D30
Task 15: Policy advice etc.	See D31
<i>Deliverable</i>	
<b>D11 - D16</b>	These deliveries have been moved to WP6
<b>D17</b> Internal newsletter aimed at researchers, institutes and organisations participating in DARCOF	8 issues issued in 2001 7 in 2002, 6 in 2003, 6 in 2004, 6 in 2005
<b>D18</b> Internal workshops, seminars etc. aimed on development of research and collaboration between research groups	No internal seminars in 2001 Midterm evaluation 23 October 2002, April 2004. Workshops in April and Dec. 2003. Workshop in May 2005.

<b>D19</b> Developing DARCOF's internet communication to support internal communication	The site okoforsk was established May 2002. The site EcoWiki.org was established March 2004. Electronic version of FØJOintern July 2004
<b>D20</b> Publishing reports, which intend to synthesis and mediate research in organic agriculture	10 major reports together with a number of proceedings
<b>D21</b> External newsletter (FØJOenyt) on new research results, new projects, new publications, meetings, workshops etc.	6 issues each year
<b>D22</b> Initiating seminars etc. to give researchers, farmers, advisers etc. possibilities to discuss ongoing and future research	In 2001 four national meetings has been conducted. DARCOF participates in the conduction of the national organic congress in November 2002 and 2004 in Odense
<b>D23</b> Holding field demonstrations to present ongoing research activities to farmers, advisers etc.	6 field walks /demonstrations with 500-700 participants every year
<b>D24</b> Research information on organic agriculture in Danish agricultural magazines	Monthly 2 articles in leading national magazine
<b>D25</b> Annual reports giving an overall view on research in organic agriculture	A biannual report are available together with a Danish version of this status report edited for Danish research users
<b>D26</b> Information materials giving an introduction to the overall research and specific projects	Information materials are available
<b>D27</b> Increasing its activities on the Internet to improve possibilities for seeking information about research in organic agriculture	A new site has been constructed. The Organic Eprints archive has been established as another, growing source of information.
<b>D28</b> Re-establishing DARCOF's travelling exhibition in order to provide information about research in organic farming at agricultural shows, environmental congresses etc.	Posters on the individual project has been made
<b>D29</b> Disseminating knowledge about organic agriculture in newspapers, electronic media etc.	Two TV-productions 30 min. each on research in organic farming has been sent on the national Danish TV. In 2005 several articles/features in newspapers and TV has been based articles in FØJOenews
<b>D30</b> Offering "communication services" to participating research groups.	Done on a routine basis
<b>D31</b> Contributing to national and European investigations and distanglements in connection with preparation of policies for agriculture and environment	Among others, DARCOF has contributed to distanglements on principles for organic farming, food safety

## WP6 International research co-operation

At the beginning of year 2002 it was decided to get more focus on international research co-operation in order to contribute to international exchange and research in organic farming and to secure that the Danish research is at a high international level

In 2003 preparation of proposals for EUs 6<sup>th</sup> Frame Work Programme (FWP 6) has been important. In total 6 proposals has been forwarded during spring and summer 2003. Four has got a good evaluation and are at present in negotiation for financing.

The newsletter DARCOFenews was initiated in February 2003. In November 2003 there were 380 subscribers, In November 2004 there are 444 subscribers.

The electronic archive called Organic Eprints ([www.orgprints.org](http://www.orgprints.org)) was opened for deposits in September 2002, in connection with the midterm evaluation of DARFOF. Now, 3 years later, the archive has over 3500 articles from 24 countries and receives more than 2500 visitors per day. The full research production from the DARCOF II programme has been made available, and more than 2000 users from all over the world have registered in the archive. A German language interface has been implemented, in 2003, and FiBL and BLE has joined the archive as responsible partners, leading efforts to compile the most important results and projects conducted in organic farming research in Switzerland and Germany. In 2004-2007, the EU financed CORE Organic project will utilize the archive to provide a European-wide overview of organic research.

In the SYNERGY project, the Organic Eprints archive contributes to WP1 by way of documenting the production in individual projects; to WP3 by way of providing an international electronic forum for dialogue on research methodology and values; to WP4 by making new research results immediately available to present and future Ph.D. students; to WP5 by way of making it possible for different kinds of users to keep up to date on what goes on in their field of interest; and to WP.6 by way of allowing institutes and individual researchers to make their research papers easily available to an international audience and by way allowing for comments on individual papers within the archive.

In June 2003 "International Society of Organic Agriculture" (ISOFAR) was launched. Erik Steen Kristensen is member of the board and working actively to support more quality in research in organic farming. The first congress in ISOFAR was made in Adelaide September 2005 in conjunction to the IFOAM Congress. Approx 20 Danish scientist contributed and senior scientist Niels Halberg was elected to the board replacing Erik Steen Kristensen (more information in FØJOenyt no. 6, 2005).

In March 2004 a proposal named "Coordination of European Transnational Research in Organic Food and Farming (CORE Organic) was prepared and submitted under the ERA-net Scheme in EU. The project was granted in June 2004 (see [www.Core-Organic.org](http://www.Core-Organic.org)).

<b>WP6: International research co-operation</b>		<b>Remarks</b>
Task 16: International research communication		
Task 17: International evaluation of DARCOF II projects		
Task 18: The EU research system and international co-operation		
<i>Deliverable</i>		
<b>D32</b>	Construction and develop the international internet site of DARCOF	✓ DARCOF's own sites have been supplemented with the international Organic Eprints archive
<b>D33</b>	Regularly update the international internet site of DARCOF	August 2002 and onwards
<b>D34</b>	Publish an international newsletter (first no. June 2002, 4 times yearly)	First no. February. 2003 4 issues annually
<b>D35</b>	Publish biannually DARCOF reports (July 2003, July 2005)	December 2003
<b>D36</b>	Coordinate midterm international evaluation of DARCOF II projects (Nov. 2002 and nov 2003)	✓
<b>D37</b>	Make agreements of co-operation with EU partners and research institutes	Co-operation through expression of interest June 2002
<b>D38</b>	Participate in or co-ordinate future EU proposals (at least one per year)	Participation in 3 concerted actions in FWP 5. 4 projects in FWP 6
<b>D39</b>	Contribute in EU conferences on organic farming	September 2002, November 2002
<b>D40</b>	Arrange international conferences and workshops	April 2004, May 2006
<i>Milestones</i>		
<b>M13</b>	International research societies has acknowledged the international internet site and newsletter (at least 500 subscriptions of the newsletter)	350 subscribers in November 2003 551 subscribers in November 2005

<b>M14</b>	Alle Danish research projects have been evaluated and acknowledged by an international scientific panel (Feb. 2003)	✓ The Organic Eprints archive was a valuable tool in the evaluation
<b>M15</b>	DARCOF has obtained expert status and has made network contact to relevant persons in the EU System (at latest Jan 2004)	July 2002

## E. Project publications and other products

Products from Organic Eprints archive

### Peer-reviewed and accepted

#### English

- Alrøe, Hugo Fjelsted and Kristensen, Erik Steen (2003) [Toward a Systemic Ethic: In search of an Ethical Basis for Sustainability and Precaution](#). *Environmental Ethics* 25(1):pp. 59-78.\*\*
- Alrøe, Hugo Fjelsted and Kristensen, Erik Steen (2002) [Towards a systemic research methodology in agriculture: Rethinking the role of values in science](#). *Agriculture and Human Values* 19(1):pp. 3-23.\*\*
- Halberg, Niels; Alrøe, Hugo Fjelsted and Kristensen, Erik Steen (2006) [Perspectives for organic agriculture in a global context](#), in *Global Development of Organic Agriculture: Challenges and promises*, chapter 12, page pp. 344-368. CABI Publishing.
- Hansen, Elly M.; Thomsen, Ingrid K. and Hansen, Martin N. (2004) [Optimising farmyard manure utilization by varying the application time and tillage strategy](#). *Soil Use and Management* 20:pp. 173-177.\*\*
- Jørgensen, Uffe; Dalgaard, Tommy and Kristensen, Erik Steen (2004) [Biomass energy in organic farming - the potential role of short rotation coppice](#). *Biomass & Bioenergy*.
- Kristensen, Erik Steen and Thamsborg, Stig Milan (2002) [Future European market for organic products from ruminants](#), in Kyriazakis, I. and Zervas, G., Eds. *Organic meat and milk from ruminants*, page pp. 5-15. EAAP publication 106. Wageningen Academic Publishers.
- Noe, Egon and Alrøe, Hugo Fjelsted (2004) [Combining Luhmann and Actor-Network Theory to see Farm Enterprises as Self-organizing Systems](#). *Cybernetics and Human Knowing*\*\*.
- Noe, Egon and Alrøe, Hugo Fjelsted (2003) [Farm enterprises as self-organizing systems: A new transdisciplinary framework for studying farm enterprises?](#). *International Journal of Sociology of Agriculture and Food* 11(1):pp. 3-14.\*\*
- Rasmussen, Jesper; Langer, Vibeke and Alrøe, Hugo Fjelsted (2004) [Bias in peer review of organic farming grant applications](#). *Agriculture and Human Values*\*\*.
- Tybirk, Knud; Alrøe, Hugo Fjelsted and Frederiksen, Pia (2004) [Nature quality in organic farming: A conceptual analysis of considerations and criteria in a European context](#). *Journal of Agricultural and Environmental Ethics* 17(3):pp. 249-274.
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- Watson, C.A.; Alrøe, H.F. and Kristensen, E.S. (2005) [Research to support development of organic food and farming](#), in Kristiansen, P. and Taji, A., Eds. *Organic Agriculture - A Global Perspective*. CSIRO Publishing.

### Submitted for peer-review but not yet accepted

#### English

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## 8. Budget

### A. Account for any change in budgets

### B. Budget for the whole project (1.000 DKK)

Total consumption of funds from DARCOF and expected consumption this year and coming years

Year:	Consumption before 2003	Consumption 2003	Consumption 2004	Expected consumption 2005	Budget 2006	Total
WP1	587	400	200	300	413	1.900
WP2	3.050	700	1.000	550	0	5.300
WP3	350	250	300	0	0	900
WP4	1.950	1.750	2.100	1.450	520	7.770
WP5	750	400	400	400	450	2.400
WP6	300	500	300	400	500	2.000
<b>Total</b>	<b>6.987</b>	<b>4.000</b>	<b>4.300</b>	<b>3.100</b>	<b>1.883</b>	<b>20.270</b>

**Comments:**

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## 9. Signatures and stamps

Name	Institute	Date	Signature
Head of project Erik Steen Kristensen	Forskningscenter for Økologisk Jordbrug	15 November 2005	