



Status Report 2002 and Application for Continuation in 2003

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

1. Research program

Research in organic farming 2000-2005 (DARCOF II)

2. Project title and number

III.5 Nature Quality in Organic Farming

3. Head of project

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6. Project period (month, year)

Start of project:	2001
End of project:	2004

7. Annual report of the project, its results and progress, and application for continuation in 2003

A. Project summary

The work in this project is organised in 5 workpackages (Table A1). In summary, the project was initiated with some delay due to budgetary adjustments. This has postponed some activities and result in a very intensive phase in the project during 2003. However, since the start in July 2001 the following work has been accomplished:

- WP 1. Starting up seminar and the first annual seminar has been fulfilled. The general project co-ordination and planning of field work and selection of case study areas has also been stimulated. The first Cross-Cutting has been accomplished in close co-operation with WP 5 and all projects scientists. A Homepage for the project is under construction.
- WP 2. Ten case areas with high concentration of organic farmers have been selected and some 300 farmers have been interviewed. A database with information is under construction. A ph.d. has been vacant and has postponed some of the planned work on landscape analysis.
- WP 3. Preliminary treatment of botanical inventory data from 24 organic farms in two case areas served as the basis for selection of 109 plots for arthropod collection in 2002. Arthropods are under sorting and identification. Colonisation experiment was established as planned in 2001 and the work is a part of a ph.d. project (Erik Aude).
- WP 4. Studies have been carried out in 2002 in experimental fields of Foulum and Flakkebjerg. Soil dwelling and surface living arthropods have been collected in case areas of WP 3. A 10x10 km landscape has been selected for scenarios in the ALMASS model and new procedure for landscape generation is under construction.
- WP 5. The first project workshop (CC₄) has been held involving all project scientist in formulating indicators for esthetical qualities of farming systems and the results are under publication. Some work has been postponed due to the vacant ph.d. in WP 2.

Table A.1: Work package list

No.	Work package title	Participants*	Budget (1.000 DKK)	Start	End	Deliverable no(s):
1	Project management and interactions	<u>Jesper Fredshavn</u> , Knud Tybirk	0.6	2000	2004	D1-12
2	Localisation, diversification and extensification in organic farming	<u>Pia Frederiksen</u> , Vibeke Langer; Pernille Kaltoft, Gregor Levin	1.7	2000	2004	D13-22
3	Biological diversity and organic farming	<u>Rasmus Ejrnæs</u> , Knud Tybirk, Erik Aude, Thomas Secher, Peter Gjelstrup	2.0	2000	2004	D23-30
4	Ecosystem diversity and function of the fields in organic farming	<u>Jørgen A. Axelsen</u> , Paul Henning Krogh, Peter Odderskær, Chris J. Topping, Søren Toft, Gabor Löwei	3.0	2000	2004	D31-39
5	Organic Farming and Landscape Quality – Perceptions and Practices	<u>Kathrine Højring</u> , Egon Noe	1.7	2000	2004	D40-48

* Responsible participants are underlined

B. Objectives and expected achievements

The overall aim of the project is to identify the key components that ensure a continuous development of organic farming towards a closer integration of nature quality with food production. To accomplish this, the project will develop a common platform of understanding of how the localisation, diversity and

intensity of organic farms influence landscape and nature quality (Driving forces and Pressure indicators). WP 2 will achieve this. This platform will qualify and give perspective to the discussion of how the three major components (State-Impact indicators) of nature quality as identified recently (Tybirk & Alrøe 2001) can be combined locally and regionally:

- biological diversity (WP 3)
- ecosystem functioning (WP 4)
- esthetical landscape perception (WP 5)

The project will develop relevant definitions and simple indicators to identify each aspect separately. However, the multi-disciplinarity of this project gives us an opportunity bring the separate analysis together and investigate how these potentially conflicting considerations can be integrated (WP 1) and suggest future pathways for the development of organic farming. The project will focus on identifying relationships between the three aspects separately and in combination, and scenarios will be used to show the consequences of organic farming practices for selected nature quality aspects.

The project is expected to achieve detailed information on the historic development of localisation of organic farms and the conditions that influence this. The organic farmers, their farming practices, their intentions and actual ability to conserve and promote biological and ecological as well as esthetical qualities will be characterised in details with the aim of identifying barriers and possible solutions for the development of organic farming. The project will be able to characterise organic farmed landscapes and their biological attributes and develop tools for communication of different conceptions of nature.

Relevant indicators will be developed to enable farmers, the public and the administrative bodies to set goals for an integration of nature quality considerations in the future development of a sustainable organic farming on the habitat, the farm and the landscape level. These indicators will also be appropriate to measure whether organic farming is actually approaching these goals.

C. Annual results and progress

C.1 Description (summary) of main results and conclusions

The project is progressing well in general, but at vacant ph.d. in WP2 has delayed some of the work, but it most of it will be caught up with during the project period. The finalisation of the Ph.d. will not be until May 2005.

WP 1

- Reporting procedures have been followed and a co-ordination meeting with DARCOF secretariat has been held.
- Co-ordination of fieldwork between WP 2, 3 and 4 has been undertaken. Annual project meeting was organised and held in June 2002 with discussions of progress in the WP's with special focus on the interactions between WP's and the planning of the scheduled Cross-Cuttings.
- A project homepage is under construction.
- Contribution to international paper based on the synthesis of knowledge

WP 2

- Selection and adjustment of preliminary study areas has been carried out. Parish is used as basic selection unit. 10 areas finally selected. Organic producers have been identified from 1990, 1994 and 2001.
- Schemes for interviews have been developed included wished from WP 3 and 4. Tested by consultants.
- PhD vacancy filled and a M.Sc. study attached
- Interviews in the 10 selected areas have been completed.
- Preliminary results indicate that major regional patterns in conversion are related to the regional specialisation in the conventional production in combination with the market conditions for organic products. Moreover subsidies which are obtainable for specific farm types adds to this regionality. These aspects in combination with results from qualitative questions will be the basis for the readjustment (part D).
- Contribution to international paper based on the synthesis of knowledge

WP 3

- Floristic inventory of 24 farms in two case areas farms has been reported to the project group, and further analysis of data is ongoing.
- Arthropod sampling of 109 selected uncultivated biotopes was undertaken in June 02 and samples are under procedure for sorting and identification.
- Colonisation experiment is running and recording of first year establishment in experiment has been undertaken.
- Close co-operation with project on nature (botanical and arthropod) values of hedges in organic and conventional, including field studies and experimental studies as part of Ph.d. (Erik Aude)
- M.Sc. study on biological values of hedges in organic farming estate (Kalø) has been initiated.
- Contribution to book-chapter (in Danish) on the contribution of organic farming to biological diversity has been submitted (D 23)

WP 4

- Soil mesofauna has been sampled on 8 different farms in two study areas selected to be as different in terms of cropping system and history as possible.
- The sampling scheme in task 1 has been planned to suit participation in cross-cutting 5.
- Detailed sampling programme was worked out (Milestone 44) before the cropping season. The programme was carried out in winter wheat with for treatments: manure (fertilised), undersown catch crop (during winter, to retain nutrients in plot), a combination of the two, and control (neither) with 4 replications per treatment.
- The sampling programme consisted of catching: 1) flying arthropods - by sticky trap, 2) ground-active arthropods, (mainly for natural enemies) by pitfall trapping, 3) soil microfauna.
- Soil samples have been taken to determine the soil fungal activity and experiments carried out to evaluate the pest bio-control (aphids).
- The sampling programme has been carried out according to the plans, and the sample treatment will be carried out during the coming winter.
- Interaction between WP 3 and 4 has been strengthened by initiating a M.Sc. project (Sune Petersen) on the difference in vegetation and insect fauna in field adjacent linear biotopes on organic and conventional farms in one of the study areas. A large dataset has been collected and is presently being analysed.
- The development of an easier procedure to create digitised copies of real landscapes has progressed as planned. A 10x10km large are North-West of Herning has been selected as the new landscape model area in which scenarios will take place. This choice has been made in co-ordination with WP 2, 3 and 4.
- Selection of specific model scenarios and crop rotations will be done in October 2002.
- Actual crop rotations for conventional farmers in the area are discussed and defined in co-ordination with WP 2 (CC7).

WP5

- A two-day workshop with the participation of researchers from all parts of the project was held in June 2002. The aim of the workshop was to discuss the preconditions for the creation of indicators, which would be immediately recognisable through the physical senses. This kind of indicators is found to be useful as an everyday tool for the organic farmers to estimate development in nature quality on their farms.
- The workshop consisted of practical exercises and discussions enlightening relationships between sensuous perception, the collection of scientific data and the formation of individual and professional cosmologies. The workshop demonstrated the differences in language and conceptions between the different scientific disciplines, and the challenges in making conceptions of nature quality accessible to persons outside ones own profession. The practical result of it was
 - suggestions for a group of simple indicators, which would be easily perceivable by non-biologist, and
 - a common basis for the creation of more indicators, based on the same principles.
- The results of the work with aesthetically based indicators for nature quality, so far, will be presented in a report ultimo 2002.

C.2 Fulfilment of deliverables and milestones

(To be completed for each work package)

WP 1 Project management and interactions	Time schedule according to application	Deviations, if any*
<i>Task</i>		
1. Project co-ordination		
2. Cross-cuttings		
<i>Deliverables</i>		
1. Starting-up seminar	04.01	OK 09.01
2. Annual co-ordination meeting	01.02-04	OK 06.02
3. Annual status report	01.02-04	OK 11.01
4. CC ₁ Impact of farm localisation and character on biological diversity.	03.02 and 06.04	OK 06.02
5. CC ₂ Farm management, ownership, collaboration, value conceptions and nature values.	10.04	
6. CC ₃ Farmers conception of nature and actual biological quality of his farm.	12.03	
7. CC ₄ : Workshop on the aesthetic perception of biological quality.	10.02	OK 06.02
8. CC ₅ Functional interpretation of the response of arthropods to the organically farmed landscape.	03.04	
10. CC ₇ Landscape scenarios.	06.03	
11. CC ₈ Workshop on identified correlations.	09.03	
12. CC ₉ : Workshop on Indicators.	03.04	

* *Deviations are to be further discussed in D*

WP 2. Localisation, diversification and extensification in organic farming	Time schedule according to application	Deviations, if any*
<i>Task</i>		
1. Regional analysis of organic farms in Denmark		
2. Selection of case areas		
3. Local social and cultural context		
4. Production, diversity and nature practice on existing farms		
5. Structural farm characteristics and nature practise		
6. Changes in farm diversity		
7. Landscape changes following conversion to organic farming	late start due to ph.d. vacancy	
8. <i>Forms and levels of organisation for management of nature quality</i>	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>
<i>Deliverables</i>		
13. Spatial statistical description of farm types, densities and land use intensity	05.02	03.03
14. Regional processes in Danish organic production	04.04	
15. Social relations and spatial pattern: case area 1	03.03	06.03
16. Social relations and spatial pattern: case area 2 and 3	12.03	03.04
17. Integration of spatial and social processes in organic farming	12.04	
18. Database fully available for cross-cuttings	02.03	
19. Production, diversity and nature practise on existing organic farms in Denmark	12.03	

20. Changes in farm diversity and nature practise with conversion to organic farming	05.04	05.04
21. The impact of organic farming on landscape structure and –change	09.03	04.05
22. <i>Potentials of among-farm collaboration for management of nature and landscape qualities</i>	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>
<i>Milestones</i>		
M1: National analysis of localisation and diversity completed	06.02	12.03
M2: Landscape analysis completed	06.03	09.03
M3: Historical analysis completed	12.03	
M4: Localisation of organic farms completed, two case areas selected	09.01	OK
M5: Additional case area(s) selected	06.02	OK
M6: Interviews with key persons, case area 1 and 2	03.02	03.03
M7: In depth interviews completed, case area 1	08.02	06.03
M8: In depth interviews completed, case area 2 and 3	09.03	02.04
M9: Farm information from central registers retrieved	09.01	OK
M10: Survey scheme designed and tested	03.02	OK
M11 Survey in case areas completed	12.02	OK
M12: Data analysis completed	06.03	09.03
M13: Conversion data from applications for autorisation processed	03.03	09.03
M 14: Supplementary interviews completed	06.03	12.03
M15: Data analysis completed	12.03	
M16: Case area for pilot study selected		10.02
M17: Pilot study finished, method adjusted		02.03
M18: Selection of all case areas completed		04.03
M18A: GIS analysis of landscape structure completed		08.04
<i>M19: In-depth interviews carried out</i>	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>

* Deviations are to be further discussed in D

WP 3. Biological diversity and organic farming	Time schedule according to application	Deviations, if any*
<i>Task</i>		
1. Floristic inventory of organic farms		
2. Experimental test of colonisation limitation		
3. Gradient analysis and modelling of biological diversity		
4. Synthesis – models, indicators and principles		
<i>Deliverables</i>		
23. The contribution of organic agriculture to biological diversity	07.02	submitted 08.02
24. Manuscript: The importance of colonisation limitation for the diversity of grassland and hedgerows on organic farms	12.03	
25. Manuscript: Gradient analysis of plant and invertebrate communities in organic farms	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>
26. Manuscript: Predicting plant and invertebrate diversity in grassland habitats of organic farms	03.04	
27. Manuscript: Functional interpretation of the distribution of arthropods in the agricultural landscape	05.04	

28. Indicators for habitat quality in organic agriculture	09.04	
29. Impact of farm localisation and land use on biological diversity	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>
30. Integration of biological conservation into organic agriculture	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>
<i>Milestones</i>		
M20: 30-50 farms selected	06.01	OK
M21: Field inventory completed	09.01	OK
M23: Statistical summary for area, farm, and species data	03.02	06.02
M24: Experiment established	09.01	OK
M25: Recording of first year establishment in experiment	10.02	OK
M26: Recording of second year survival in experiment	10.03	
M27: Statistical analysis of experiment completed	12.03	
M28: Selection of sample sites	03.02	06.02
M29: Completed sampling of plants	09.02	OK
M30: Completed sampling of arthropods	09.02	07.02
M31: Completed identification of arthropods	08.03	
M32: Completed sampling and analyses of environment	10.03	
M33: Gradient analyses and statistical models.	12.03	
M34: Tests for hypothesised relationships	02.04	
M35: Completed analysis of indicators and models for prioritisation.	06.04	

* *Deviations are to be further discussed in D*

WP 4 Ecosystem diversity and function of the fields in organic farming	Time schedule according to application	Deviations, if any*
<i>Task</i>		
1. Development of indicators of nature quality on organic fields.		
2. A test of the hypothesis that increased biodiversity enhances the beneficial ecological mechanisms		
3. Modelling of consequences of crop rotations, tillage and landscape structures on mobile organism		
<i>Deliverables</i>		
31. Suggestion to indicator system	09.04	
32. Scientific paper on indicator system	12.04	
33. Suggestions for changes in management practice to promote desirable species in organic fields	12.03	
34. Scientific paper on crop rotations and polyphageous predators	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>
35. Scientific paper on the connection between soil fauna and polyphageous predators	12.03	
36. Scientific paper on the relation between biodiversity and aphid control	12.03	
37. Entry at the Danish Plant Protection conference	Every March	
38. Scientific paper on the impacts of various organic farm practices on the mobile organisms	09.03	12.03
39. <i>Scientific paper on the impacts of farm location on the mobile organisms</i>	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>

<i>Milestones</i>		
M36: Plan for low intensity sampling ready	03.02	OK
M37: Low intensity sampling finished	06.02	10.02
M38: Low intensity data treatment finished	12.02	
M39: Tentative indicator system designed	03.03	
M40: High intensity sampling plan ready	03.03	
M41: High intensity sampling finished	09.03	
M43: High intensity data treatment finished	03.04	
M44: Detailed research plan for the year is developed	03.02-04	OK 02
M45: Additional extractors manufactured	06.01	OK
M46: The years experiments finished	03.02-04	OK
M47: Digitisation of new model landscape (revised title)	08.02	12.02

* *Deviations are to be further discussed in D*

WP 5. Organic Farming and Landscape Quality – Perceptions and Practices	Time schedule according to application	Deviations, if any*
<i>Task</i>		
1. Landscape analysis		
2. Analysis of the farmer's role in the production and maintenance of nature and landscape quality		
3. Development of methods for communication about nature and landscape quality		
<i>Deliverables</i>		
40. The aesthetic perception of biological quality	06.02	OK
41. The aesthetic perception of biological quality	12.02	
42. The aesthetic quality of organically farmed landscapes	02.04	
43. Nature and landscape quality – organic farmers value conceptions	12.03	
44. Value conceptions, farm maintenance and biological quality	08.04	
45. The contribution of farming practice to aesthetic quality	08.04	
46. Local participation in nature and landscape quality assessment	12.04	
47. Operational indicators in communication and decision-making processes	<i>relict from earlier projectdescription</i>	<i>deleted in approved project</i>
48. Indicators for nature and landscape quality as instruments in awareness raising and decision-making	12.04	
<i>Milestones</i>		
M48: Selection and description of study areas	12.01	12.02
M49: Landscape analysis	06.02	06.03
M50: Basic interviews	06.02	12.02
M51: Collection of production data	12.02	06.03
M52: Collection of biological data	09.02	
M 53: Analysis and description of aesthetic landscape quality	03.04	
M55: Data collection – individual interviews	07.02	01.03
M56: Data analysis – individual interviews	03.03	
M57: Data collection – focus group interviews	12.02-06.03-12.03-06.04	

M58: Data analysis – focus group interviews	12.04	
M59: Development of indicators	06.04	
M60: Interviews with key persons, case area 1 and 2	12.04	
M61: Synthesis of objectives	12.04	

* *Deviations are to be further discussed in D*

D. Description of deviations and subsequent adjustments of plans

General:

Status report from 2001 contained some errors – some of the changes in the final approved project description had not been taken into account. Several deliverables and milestones should have been omitted due to budgetary changes in the final project version, but these were by mistake not corrected in 2001 report.

This accounts for

WP 2 Task 8, Deliverable 22 and milestone 19

WP 3 Deliverable 25, 29 and 30

WP 4 Deliverable 34 and 39

WP 5 Deliverable 47.

WP 1

The start of the project was delayed as reductions were required and annual project meeting was held after one year.

WP 2

Some changes in schedule was based in the fact that it was believed that all interviews about year 2001 should be completed before harvest 2002. Task 4 was completed earlier than scheduled and the consequence is that some elements in the regional analysis and in-depth interviews concerning social and cultural aspects have been delayed. The latter part will be discussed and readjusted in October 2002, on the basis of findings in the localisation analysis and the results from the interviews.

Task 3 will subsequently not start until ultimo 2002.

Possible synergy with a Nordic project on landscape analysis will alter the timing of some activities to fit with this project.

Additional data from similar conditions in N. Zealand may be included with interviews on parallel issues. This will add information on effect of agricultural incentives on production intensity. This will alter the time schedule slightly for task 5 and 6.

Gregor Levin has been appointed a ph.d. with some delay and the activities in task 7 have been postponed with approx. 12 months. Some of the milestones (M16- M18) have been reformulated.

WP 3

Statistical summary of farm inventory was slightly delayed, but served as basis for selection of farms and plots for arthropod sampling. Arthropod sampling was only carried out once in 2002 due to technical problems and a second sampling will be considered (depending on the arthropod sample quality) for 2003 concomitantly with M32.

Task 2 will be carried out as a part of a ph.d. study (Erik Aude) entitled 'Habitat quality and recruitment limitations in the agricultural landscape' and several positive interfaces with this project is developing concerning vegetation of hedges, nutrient enrichment etc. A M.Sc. study adds further to this end by comparing field verges of organic farms with conventional farms in the Herning study area – this would strengthen the links between WP 3 and 4.

Deliverable 'The contribution of organic farming to biological diversity' is expected to be published ultimo 2002.

WP 4

For all fields the following data are registered: actual crop, sowing time, crop rotation, soil type, tillage and mechanical weeding and fertilisation. The spring sampling has been done and the animals extracted, but not yet identified and counted. We have changed the sampling scheme to include both a spring sampling and an autumn sampling in order to get the effects which shows up during the cropping season. This is meant to improve the scientific quality of the sampling programme. This, however, means that Milestone 37 (End of low intensity sampling finished) has been delayed. This will

be done during the autumn 2002, presumably with a stronger data set than obtained according to the original plan.

Selection of scenarios and crop rotations to be used will be discussed with WP 2 in October 02. M47 has been reformulated, so the next text is: "Digitisation of new model landscape, by combining traditional and new techniques." (Time schedule 08_02 - 12_02).
The time schedule for the Deliverable 38 is changed to 12_03 due to the delayed start of the project .

WP 5.

A series of tasks in WP5 (Milestones M48-M51 and M55) have awaited the appointment of a new Ph.D.-student in WP2, as these tasks rely on information collected in collaboration with this work package. As the necessary information becomes accessible the solving of the different tasks will begin. We expect to catch up with the delay during 2003.

E. Project publications and other products

1. Articles in international, scientific journals with review procedures

*Tybirk, K., Frederiksen, P. & Alrøe, H.F. Submitted. Nature Quality in organic farming. *Agric. Ecosyst. Env.*

2. Papers presented at congresses, symposiums, etc.

3. Reports, articles in agricultural journals, etc.

*Tybirk, K., Ejrnæs, R. Elmegaard N., Langer, V, Holmstrup, M., 2002 in revision. Kapitel om naturkvalitet og biodiversitet i Holmstrup, M. (Ed.) *Gør økologisk jordbrug en forskel?* Gads Forlag.

4. Oral presentations, public meetings, field days, etc.

Tybirk K. 2002. How does agricultural production systems affect botanical diversity in semi-natural areas? Oral presentation at Danish conference on biodiversity in agricultural land.

Krogh, P.H. 2002. "Soil environmental applications of machine learning". Oral presentation at seminar on "Analysis of environmental data with machine learning methods" 22.-25. April 2002, Ljubljana, Slovenia.

F. Scientific education

2 ph.d. studies are partly financed by this project. (Gregor Levin, Erik Aude)

Course on "Analysis of environmental data with machine learning methods" Ljubljana 22-25. April 2002. Krogh, P.H.

G. National and international co-operation

WP2: Vibeke Langer KVL is a guest at Lincoln University, New Zealand, in the period 1.nov 2002 til 15.marts 2003.

WP 3: Co-operation with group of French hedgerow researchers from INRA-SAD Armorique, Ecobio lab of CNRS/Rennes University has been initiated on social and biological values of hedges in the organic and conventional landscape.

H. Critical reflection on the project

The work in WP 2 has suffered a delay due to the late upstart of the PhD, and this has had minor implications for the choice of study-areas for WP5.

The challenges are great in order to complete the level of integration and to develop the indicators in the final project period.

8. Budget

A. Account for any change in budgets

Under each institutional budget, minor changes are described and the requests for each change are summarised into the budget for the whole project in 8.B.

In general some delay in specific activities interact on other activities so some budgetary changes have been necessary, but it is still believed that the project can accomplish with the assumed aims and deliverables.

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 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Man-months						
Scientific personnel	9	28	60	34		131
Technical personnel	5	18	23	8		52
Students		1	2			3

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Salaries						
Scientific personnel	376	1093	2309	1368		5.146
Technical personnel	150	552	657	234		1.593
Students		11	26			37
Other operational costs	48	166	238	143		595
Equipment	0	53	74	0		127
Others (please specify)						
Direct costs	573	1875	3304	1745		7.497
Indirect costs (20% of direct costs)	115	375	661	349		1.499
Total	688	2250	3965	2094		8.997

Comments:

The small changes that have occurred in all WPs sum up into the revised budget of the total project.

9. Signatures and stamps

Name	Institute	Date	Signature
Head of project			

Appendix I. Detailed budget

A. Budget for each participating institute (1.000 DKr)

Name of Institute: NERI-Landscape Ecology

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Man-months						
Scientific personnel	6	14	13	8		41
Technical personnel	5	6	1	1		9

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Salaries						
Scientific personnel	235	534	620	317		1706
Technical personnel	143	117	90	30		380
Other operational costs	43	63	73	86		264
Equipment		21				21
Others (please specify)						
Direct costs	421	735	783	433		2371
Indirect costs (20% of direct costs)	84,2	147	157	87		474
Total	505,2	882	940	520		2847

Comments:

The arrangements in WP 1 (seminars etc) have been less costly than foreseen, but it is anticipated that the co-ordination and exchange of information between the project participants will be extremely crucial for obtaining the expected results of the planned Cross-cuttings. Therefore, it is requested to convert some of the lower expenditures into salary for the final project phases as indicated in the revised budget.

Due to delayed start of the project, the work on scenarios (WP 4) has been postponed with up to one year. Unspent resources from 2001 are requested to be transferred to 2003 as indicated in the revised budget.

The work in WP3 has been carried out with less use of resources for equipment. This was possible due to the borrowing of D-vac suction equipment in DMU-TERI and in return WP 4 collected arthropods data on fields for WP 4. Therefore it is requested to convert some of this surplus from 2002 into salaries in 2003 to ensure the collection of high quality data on biomass from uncultivated areas as indicated in the revised budget.

A. Budget for each participating institute (1.000 DKr)

Name of Institute: NERI- Policy Analysis

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Man-months						
Scientific personnel	2,27	6,25	10,65	9,70		29
Technical personnel		2	1	1		4

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Salaries						
Scientific personnel	91	250	426	388		1.155
Technical personnel		41	26	30		97
Other operational costs	2	12	70	20		104
Equipment		38	22			60
Others (please specify)						
Direct costs	93	341	544	438		1.416
Indirect costs (20% of direct costs)	19	68	109	88		283
Total	111	409	653	526		1.699

Comments:

It is requested to postpone the salaries of the Ph.d. and other personnel due to the described delays in various components as indicated in the revised budget for 03 and 04.

Name of Institute: Naturhistorisk Museum, Århus

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Man-months						
Scientific personnel		5,00	2,00			7
Technical personnel						

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Salaries						
Scientific personnel						
Technical personnel		150	60			210
Other operational costs		30				30
Equipment						
Others (please specify)						
Direct costs		180	60			240
Indirect costs (20% of direct costs)		36	12			48
Total		216	72			288

Comments:

The expected consumption for 2002 may be lower as the identification is awaiting the ongoing sorting in WP 3.

Name of Institute: NERI-Terrestrial Ecology

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Man-months						
Scientific personnel	1,00	2,20	6,30	4		14
Technical personnel		4,00	7,00	2,00		13

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Salaries						
Scientific personnel	41	90	258	164		558
Technical personnel		124	217	62		399
Other operational costs	1,5	25	30	9		66
Equipment						
Others (please specify)						
Direct costs	42,5	239,3	505,3	235		1022
Indirect costs (20% of direct costs)	9	48	101	47		204
Total	51	287	606	282		1226

Comments:

Due to leave of PHK in the autumn of 2002, some scientific salaries are requested to be transferred from 2002 to 2003 as indicated in the revised budget.

Name of Institute: Aarhus Universitet, Biologisk Institut, Afd. for Zoologi

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Man-months						
Scientific personnel			12,50			12,50
Technical personnel		1	4			5,00

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	2005	Total
Salaries						
Scientific personnel		0,00	380,00			382,00
Technical personnel		30,00	90,00			120,00
Other operational costs		0	52,00			50,00
Equipment						
Others (please specify)						
Direct costs		30,00	522,00			552,00
Indirect costs (20% of direct costs)		6	104			110,40
Total		36	626			662,40

Comments:

The planned post.doc position will not be filled in before 2003 and it is requested to postpone the fundings for this into 2003 as in the revised budget. The experiments will be carried out including data treatment and publishing in a concentrated period.

Name of Institute: DIAS, Danmarks Jordbrugsforskning, Afd. for Plantebeskyttelse, Flakkebjerg

Year:	Consumption before 2000	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	Total
Man-months						
Scientific personnel			2,5	3		5,5
Technical personnel			3,5	4		7,5

Year:	Consumption before 2000	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	Total
Salaries						
Scientific personnel			95	120		215
Technical personnel			105	124		229
Other operational costs			15	20		35
Equipment						
Others (please specify)						
Direct costs			220	259		479
Indirect costs (20% of direct costs)			44	52		96
Total			264	311		575

Comments:

Due to lower costs in 2002, we would like to move 5000 Dkr to operational costs to 2003.

Name of Institute: DFLRI: Forskningscentret for Skov og Landskab

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	Total
Man-months					
Scientific personnel		2	7	7	16
Technical personnel			1	2	3

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	Total
Salaries					
Scientific personnel		60	290	295	645
Technical personnel			31	64	95
Other operational costs		5	24	12	41
Equipment					
Others (please specify)					
Direct costs		65	345	371	781
Indirect costs (20% of direct costs)		13	69	74	156
Total		78	414	445	937

Comments: As a series of tasks, originally planned for 2002, have been postponed, the original budgetary plan will not be fulfilled. DFLRI would like the budgetary overshoot to be divided between the two following years, as indicated in the above, revised budget.

Name of Institute: DIAS, Danmarks Jordbrugsforskning, Afd. for Jordbrugssystemer

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	Total
Man-months					
Scientific personnel	0,25	1,5	5,5	5	12
Technical personnel	0,25		1,5	1,5	3

Year:	Consumption before 2002	Expected consumption 2002	rev. 2003	rev. 2004	Total
Salaries					
Scientific personnel	9	60	220	205	494
Technical personnel	7		45	48	100
Other operational costs	1	10	15	15	41
Equipment					
Others (please specify)					
Direct costs	17	70	280	268	635
Indirect costs (20% of direct costs)	3	14	56	54	127
Total	20	84	336	322	762

Comments: As a series of tasks, originally planned for 2002, have been postponed, the original budgetary plan will not be fulfilled. DIAS would like the budgetary overshoot to be divided between the two following years, as indicated in the above, revised budget

C. Budget for co-financing from each participating institute (1.000 DKK)

Name of Institute:

WP2 "Interdisciplinær forskning og undervisning i økologisk jordbrug – læring i et tværfagligt og målorienteret miljø" with RVAU, afd. for Økologisk Jordbrug

Year:	Consumption before 2002	Expected consumption 2002	2003	2004	2005	Total
Man-months						
Scientific personnel	4	6	4	4		18
Technical personnel						

Year:	Consumption before 2002	Expected consumption 2002	2003	2004	2005	Total
Salaries						
Scientific personnel	160	240	160	160		720
Technical personnel						
Other operational costs	90	90	90	90		360
Equipment						
Others (please specify)						
Direct costs	250	330	250	250		1080
Indirect costs (20% of direct costs)	50	66	50	50		216
Total	300	396	300	300		1296

Comments: