



Midterm 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

II.4 Improvement of animal health and welfare in organic dairy pro-
duction with special focus on the calves

3. Head of project

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4. Participating institutes

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5. Other project staff

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6. Project period (month, year)

Start of project: 1st Nov 2000
End of project:: 1st Nov 2004

7. Midterm description of the project, its results and progress, and application for continuation in 2003

A. Project summary

Table A.1: Work package list

No.	Work package title	Participants*	Budget (1.000 DKK)	Start	End	Deliverable and milestone no(s):
1	Animal welfare assessment: development of a theoretical and practical framework under organic production conditions	<u>Mette Vaarst</u> , Torben W. Bennedsgaard, Stig M. Thamsborg, Christine Fossing	1.200.000	1 st Nov 2000	1 st March 2003	D1, D4, D7, D8, D9, D10 M1, M2, M3
2	Prevention of coccidiosis among dairy calves	<u>Klaus Lønne Ingvartsen</u> , Charlotte Mad-dox-Hyttel, Ellen-Margrethe Vestergaard	1.300.000	1 st September 2001	1 st March 2004	D6, D12, D13 M4, M5, M6, M7
3	Veterinary homeopathy: development of research model and in-practice pilot studies	<u>Mette Vaarst</u> , Christine Fossing,	500.000	1 st May 2001	1 st Jan. 2003	D2, D3, D11, D13 M8, M9, M10, M11

* Responsible participants are underlined

B. Objectives and expected achievements

The overall objective of the project is to form basis for an improved health and welfare in organic dairy herds with special focus on calves. Two characteristics are regarded as fundamental qualities for the research results:

- a) Theory and practice must be consistently and closely linked together
- b) The flexibility and possibility to apply the knowledge in a wide spectrum of different organic herds must be present.

The following goals are linked to the overall objectives:

- 1) To form a relevant theoretical and practical framework, within which animal welfare can be discussed and assessed under organic production conditions. From this framework, suggestions to improvements can be given on animal, herd and production system level.
- 2) To characterise and analyse the health status and the production conditions including management routines and potential health risks connected to calves 0-6 months of age.
- 3) To develop strategies for preventing coccidiosis in calves on straw and deep litter areas through epidemiological studies and in-practice trials.
- 4) To develop a model for clinical trials in veterinary homeopathic treatments and other holistic treatment methods by carrying through pilot-studies.

C. Midterm results and progress

WP 1: Animal welfare

Based on theoretical considerations (described in Vaarst et al. 2001 (see E1) & Al-røe, H.F., Vaarst, M. & Kristensen, E.S. 2001. Does Organic Farming Face Distinctive Livestock Welfare Issues? – A Conceptual Analysis. (Journal of Agricultural and Environmental Ethics)), the first parameters in the animal welfare recordings were identified within the four terms 'Naturalness', 'Harmony', 'Human care-taking' and 'Freedom of choice'. Recordings were made and herd visits took place over the summer 2002. Based on this, a manual is currently being developed for a graphical animal welfare assessment scheme, showing herd strengths and weaknesses within the four organic key-areas mentioned.

WP2: Coccidiosis

An initial literature review including results from the initial survey in 25 organic Danish herds is under completion. Coccidia are found in all herds in various numbers and of various species. During winter and early spring 2002, recordings and samples were collected fortnightly in 6 selected herds with a total of eight faecal samples and clinical recordings per calf from all calves born in the interim period. Focus was on coccidiosis, but included aspects of calf diseases on a broader basis and, in particular, the living conditions of the calves. During the summer 2002, results have been analysed.

WP3: Veterinary homoeopathy

Ph.D. student Christine Fossing started her Ph.D. study 1st November 2001. Contact was made to nine homoeopathically educated veterinarians. Follow-up recordings of homoeopathic mastitis treatments were initiated from the spring 2002 in 15 dairy herds, including 4 veterinarians in the study.

A literature study is under completion. This literature study focuses on two different aspects of veterinary homoeopathy: 1) possibilities for clinical trials and efficacy testing, and 2) possibilities for evaluation of clinical practice (clinical audit and likewise). Human homoeopathic studies are in focus in both publications. Contact has been made to the Danish authorities administering clinical trials, and the project team still faces considerable work in order to gain permission for the proposed clinical trial.

In January 2002, practising veterinary homoeopaths and practising cattle veterinarians carried out a free choice profiling study of mastitis cows in order to describe terms of health and disease in practice. The results of this is described in Fossing et al. (2003 – in press), and was used in the design of the follow-up-recordings of homoeopathically treated cows.

In November 2001 (in connection to the 5th meeting of the international Network on Animal Health and Welfare (NAHWOA)), research methodology was discussed (Vaarst et al., 2002). In August 2002, an expert panel discussion took place.

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

- A graphical model of animal welfare assessment systems is under development. It is hypothe-

sed that on-farm animal welfare assessment presented graphically with emphasis on the four concrete expressions of animal welfare in an organic context

- Will enable the farmer and his/her advisors to follow improvements in the herd
- Will improve communication about animal welfare between farmers, advisors and stakeholders.
- Several management factors are – based on the initial animal welfare assessments – identified to be crucial for calf welfare – and they are not practiced in most herds in the study.
- Calf rearing systems in organic herds in practice generally contains several identified well-known risk-factors for calf diseases, among others coccidiosis.
- All species of coccidia are identified in the majority of herds
- The variation in amount and consequences of the presence of coccidia seems closely connected to basic management factors (human care-taking and hygiene) in the herd.
- In preliminary analyses, calving areas are identified to be a major risk-factor for disease among small calves.
- Methods of follow-up of homoeopathically treated mastitis have been identified.
- It is confirmed that homoeopathically practicing veterinarians can identify common key parameters describing the health status of cows, which are in accordance with the homoeopathic concepts of health and disease.

C.2 Fulfilment of deliverables and milestones

WP1: Animal welfare assessment: development of a theoretical and practical framework under organic production conditions	Time schedule according to application	Deviations, if any*
Deliverables		
D1 Workshop 1: development of theoretical framework for the understanding of animal welfare.	May 2001	Moved to a later phase of the project.
D4 'Aspects of animal welfare under organic production condition'	Sep. 2001	Current activity
D7 International expert panel: the understanding of animal welfare in organic agriculture	Jan. 2002	Spring 2003, after results of animal welfare assessment system are known.
D8 Manual for welfare assessment	Oct. 2002	None
D9 'Welfare assessment: theoretical and practical framework'	Dec. 2002	None; see C2 for title of publication
D10 Workshop: Welfare assessment among dairy calves; presentation of welfare assessment model and evaluation of different organic herds	Jan. 2003	None
Milestones		
M1. Identification of central conditions and patterns of disease and behaviour among calves	(nothing mentioned in application)	Fulfilled
M2 A profound understanding of the concepts of animal welfare within the organic production has been reached through national and international workshops, working groups and reviews.	(nothing mentioned in application)	Fulfilled. Organised workshops within the project are being planned.
M3 A framework for animal welfare assessment based on the fundamental goals for organic production combined with concepts of animal welfare, and based on a continuous dialectic relationship between theoretical research and practical implementation, has been developed.	(nothing mentioned in application)	Current activities

* Deviations are to be further discussed in D. In appendix 2, an adjusted list of deliverables from 2001 is provided.

WP 2: Prevention of coccidiosis among dairy calves	Time schedule according to application	Deviations, if any*
Deliverables		
D6 Coccidiosis – a review on causal factors of potential importance for the development of coccidiosis in organic farms.	Oct. 2001	Oct. 2002 – combined with publication of two first phases of the project.
D12 Prevention of coccidiosis in organic farms	Sep 2004	None
D13 Meeting for organic farmers and advisors	Oct. 2004	None
Milestones		
M4 Conclusion of results of initial survey on prevalence, characterisation of patterns of coccidia species, housing condition and management routines in organic calf herds. Danish report based on this survey.	(nothing mentioned in application)	Fulfilled. Danish report under completion.
M5 Conclusion and adjustment of study plan in on-farm experimental set-ups on causal factors for coccidiosis including sampling procedures (faeces and blood).	(nothing mentioned in application)	Fulfilled. Observational study completed.
M6 Conclusion and evaluation of laboratory analyses of collected faecal and blood samples, and collected data (clinical examinations etc.).	(nothing mentioned in application)	Current activities
M7 Publication and presentation of results.	(nothing mentioned in application)	Current activities

**) Deviations are to be further discussed in D. In appendix 2, an adjusted list of deliverables from 2001 is provided.*

WP 3: Veterinary homeopathy: development of research model and in-practice pilot studies	Time schedule according to application	Deviations, if any*
Deliverables		
D2: 'Up-dating role and status of veterinary homeopathy in Danish dairy farming'	June 2001	Two publications; current activity.
D3: Workshop, homeopathy experts panel. Models for clinical research in veterinary homeopathy.	Aug. 2001	August 2002; report under publication
D11: Homeopathic treatment: pilot studies presented and published	Feb. 2003	When Ph.D. study is finished, winter 2003-2004.

Milestones		
M8: Updating knowledge and status of alternative treatments in organic farming with focus on homeopathy.	(nothing mentioned in application)	Under completion
M9: An international expert team is established to critically evaluate pilot study design, journals and follow-up procedure after treatment.	(nothing mentioned in application)	Fulfilled
M10: A team of veterinarians who are well experienced in homeopathic treatments of dairy cattle is established	(nothing mentioned in application)	Fulfilled
M11: Journals and follow-up procedure is described in details, as well as the design of the pilot studies.	(nothing mentioned in application)	Follow-up procedure described
M12: Data collection is completed and discussed among the international experts	(nothing mentioned in application)	Expected autumn 2003
M13: A manual with one or more models suitable for clinical trials and research in veterinary homeopathy is completed.	(nothing mentioned in application)	A part of Ph.D. thesis
M14: Publication of pilot studies and the suggestion of a concept of research in homeopathy.	(nothing mentioned in application)	A part of Ph.D. thesis

* Deviations are to be further discussed in D. In appendix 2, an adjusted list of deliverables from 2001 is provided.

D. Description of deviations and subsequent adjustments of plans

Initiation of the whole project

The project started in the end of 2000, and the first project meeting was held in April 2001, which was the first time possible by all project participants. No herd activities made by project participants were possible in the period early March till June, 2001, due to the foot & mouth disease outbreak in UK and NL, followed by restrictions in Denmark. (Samples were mainly collected by local veterinarians, since they had access to the herds in this period).

Project activities

No activities are cancelled. Re-organisation (D1) is due to the original fulfilment of the aim of D1 in other meetings etc., and an increasing need for reflection from many different sources on the actual developed animal welfare assessment system. Delays are due to practical circumstances and not regarded as having substantial impact on the course or the results of the project. Some delays were due to personal circumstances in the summer 2002.

The list of publications is extended significantly from the original plan. This is due to the discovery of several aspects of the animal welfare discussion and research methodology in veterinary homeopathy, which are relevant, but not foreseen at the time of the application.

WP1: Animal welfare assessment

The most essential deviation has taken place with regard to deliverable D1. The workshop is planned to take place together with the expert panel (D7) in a later phase of the project, where practical results of WP 1 & 2 can be presented and reflected on. This has been decided for more reasons:

- The workshop was originally planned to take place at the beginning of the project. During this phase of the project, much contact to experts working with animal welfare in organic animal husbandry was already established. Work shops and meetings with animal welfare researchers through the concerted action project NAHWOA (Network for animal health and welfare in organic animal husbandry) has contributed significantly to the development of a theoretical framework for the development of animal welfare assessment.
- The responsible person for work package 1 has among others participated in the writing and edition of two chapters to a book 'Animal health and welfare in organic agriculture' about the understanding of animal welfare and planning of health and welfare initiatives in organic animal husbandry across animal species.
- Based on this contact and the completion of publications (Vaarst et al. 2001), recordings in herds were planned during winter housing and summer grazing periods 2002. They are now completed and are ready to be analysed and published.
- In UK, initiatives to animal welfare assessment in organic cattle herds are being developed. Collaboration with this group (through Dr. Steve Roderick, Cornwall Agricultural College) is currently being established and will form the background for a more profound coupling of practice and theory in the forthcoming meeting in an expert panel group.

WP2: Coccidiosis among calves

In work package 2, more weight will be put on initiating the collaboration with the herds with observational activities, in order to describe health status and risk factors more coherently. Focus is still on coccidiosis, but the spectrum is slightly enlarged, and in collaboration with work package 1, an emphasis is put on describing perspectives of 'calf health' on a more general basis. This is found to be highly relevant, based on results from the initial survey in 25 herds. Six herds were included in the second phase of the study, and the results of this study are currently being analysed. The third phase will be initiated during the winter.

WP3: Veterinary homoeopathy

The Ph.D. study on veterinary homoeopathy was originally planned earlier, which was not possible due to administration and the current job of the applicant, which should be finished first. All activities connected to homoeopathy are therefore postponed.

An expert panel in veterinary homoeopathy was held in August 2002, after initiation of the first practical study within the Ph.D. study. This enabled the discussions of expert panels to be based on concrete experience from Denmark as well as in the institutions of some of the other participating experts, hence creating a more consistent practice-theory-iterative process. A report is made from this meeting, where several research approaches are described and discussed.

D. Description of plans and future work in the project as a whole and in the

work package (including plans for publication and communication)

WP1. Animal welfare assessment

Winter recordings are planned for the winter 2002-2003, where the graphically oriented animal welfare assessment system will be tried. In early spring, farmers will be confronted with the system and asked to evaluate it, seen from farmers' point of view as a tool to identify herd issues with regard to animal welfare. Writing of an additional publication has been initiated. This is planned to be an international peer-reviewed publication, which was not included in the original plans.

An expert panel discussion (animal welfare experts) is expected to take place in early spring 2003 based on the actual results of recordings during summer 2002 and winter 2003. It is regarded as most convenient to combine practical recordings with theoretical elaboration of the animal welfare understanding.

WP2. Coccidiosis

Recordings and possibilities for interventions to prevent coccidiosis during the winter 2002-2003 will be planned in collaboration with the farmers.

WP3. Veterinary homoeopathy

The follow-up study involving 15 farmers and their veterinarians will be completed in winter 2002-2003. The Ph.D. student will be involved in studies in the Netherlands and UK. Based on experiences from all studies, a final study will be designed and reflections from an expert panel, practical experience and theoretical knowledge will be combined in the final publications and Ph.D. thesis.

E. Project publications and other products

1. Articles in international, scientific journals with review procedures

Vaarst, M., Alban, L., Mogensen, L., Thamsborg, S.M., Kristensen, E.S. 2001. Animal Health and welfare during transition to organic dairy production: problems, priorities and perspectives. *Journal of Agricultural and Environmental Ethics*, 14, 367-390.

Articles expected to be finished within the next half year:

Fossing, C., Vaarst, M. & Wemelsfelder, F. 2003. (Evaluating animal health using free choice profiling (Work title; manuscript under completion; will be submitted late October 2002)

Vaarst, M., Fossing, C., Hegelund, A., Thamsborg, S.M. & Ekman, T. 2003. Mastitis treatments with homoeopathic remedies: possibilities and limitations for evaluation and clinical audit (late spring 2003).

Vaarst, M., Hegelund, A., Padel, S., Nissen, J., Fossing, C. 2003. Veterinary homoeopathy and organic standards in Denmark: an analysis of constraints and contradictions between legislation and institutions. (Spring 2003)

2. Papers presented at congresses, symposiums, etc.

Fossing, C., 2002. Research in homoeopathy – venturing into dangerous waters? (RAPH

Ph.D.course, essay in 'Ethics in Science, RVAU, February 2002)

Fossing, C., 2002. Using qualitative assessment to examine the language of veterinary homoeopaths (Research seminar held at Faculty of Homoeopathy, London, July 2002).

Fossing, C. 2002. Using FCP as a tool to evaluate udder health. Oral presentation, 1st international FCP Workshop, Scottish Agricultural College, Edinburgh, July 2002.

Fossing, C., Klaas, I., Vaarst, M. 2003. Identification of clinical parameters for making a more accurate prognosis for mastitis in lactating dairy cows. What information can be gathered from clinical examination of the mastitic udder. (Abstract submitted and paper to be written in December: SVEPM conference March 2003).

Fossing, C. 2002. Quantitative aspects of research in homoeopathy. NKJ meeting, Oslo, March, 2002.

3. Reports, articles in agricultural journals, etc.

Maddox-Hyttel, C. & Vestergaard, E.-M., 2002: Staldcoccidiose hos økologiske kalve: gennemgang af forskellige coccidiearter og konsekvenserne af infektion. Økologisk Jordbrug (fall 2002).

Vestergaard, E.-M., Maddox-Hyttel, C. & Autzen, S. 2002: Økologiske kalve og risici for coccidiose i deres omgivelser. Økologisk Jordbrug (fall 2002).

Vaarst, M. & Alrøe, H. F. 2003: Velfærd i økologiske besætninger – mål, vægt og praktisk etik (winter 2003).

Vestergaard, E.-M., Maddox-Hyttel, C., Ingvarsen, K.L. 2002. Coccidiose hos kvæg. En oversigt over coccidiearter, patogenese, epidemiologi og forebyggelse i økologiske besætninger. Litteraturreview og rapport fra undersøgelser i økologiske besætninger. (Under completion; Danish Report; to be submitted late autumn 2002).

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

Vaarst, M. 2002. Målsætning og praksis – er der overensstemmelse? Økologikongres 2002, session C7.

Expert panel and workshop reports as described in connection with the deliverables and milestones.

Farmers meetings in WP3 (veterinary homoeopathy) for farmers and homoeopathic veterinarians take place every half year. In addition to this, a couple of field days (evenings) in dairy herds are planned, where farmers and veterinarians train homoeopathic diagnostics.

Two group meetings have been performed for veterinary homoeopaths who participated in free choice profiling activities.

In connection to research schools, Christine Fossing has presented her study plans and discuss results to a wide audience of Ph.D. students and supervisors and received feed-back.

Vaarst, M., Fossing, C., Thamsborg, S.M. 2002. Discussion report: Alternative treatment methods. In: Hovi, M. & Vaarst, M. (eds.) Positive health: preventive measures and alterna-

tive strategies. Proceedings of the 5th NAHWOA Workshop, Rødding, Denmark, November 2001, 52-56.

Fossing, C. 2001: Using clinical methodology as an assessment criteria in evaluating success of mastitis treatment. Poster-presentation, NAHWOA workshop, Nov. 2001.

F. Scientific education

A Ph.D. study is initiated in November 2001 including scientific investigation and practical application of veterinary homoeopathy. The work package 3 in this project is a part of this Ph.D. study.

G. National and international cooperation

The project was initially carried out with close contact to two projects, which are now being completed: one study about development of health advisory service in Danish organic dairy herds, and projects about animal welfare assessment (these projects are taking place at the Department of Animal Health and Welfare).

The project team had beneficial connections to the international EU-network: 'Network on Animal health and Welfare in Organic Agriculture' (NAHWOA), in which Mette Vaarst and Stig Milan Thamsborg were partners. This network had participants from all over Europe.

Close contact is established to national as well as international groups of veterinary homoeopaths, through former project activities. A Scandinavian Network on research in veterinary homoeopathy includes discussions about possibilities for clinical trials in dairy cattle, from which this project benefits. The Ph.D. student connected to WP3 is expected to collaborate with two different research environments on setting up clinical trials for test of homoeopathy: Bristol University, UK, and Louis Bolk Institute, NL.

Parts of the activities and publications in work package 1 will be carried out in close contact with Hugo Fjelsted Alrøe from Research Centre for Organic Farming (DARCOF).

Critical reflection on the project

The project was formed from three original project applications on three different topics. The project group is very diverse, and the aims of the constituent projects are very far from each other with regard to methodology, discipline and focus areas. What possibly can keep the projects together is the challenge of making them suitable for the goals and ways of thinking in organic farming.

We could have chosen to run the three different projects as three separate entities, only kept together by the common source of finances. In the project group, however, we chose the opposite: to try and link things, focus primarily on calves in two of the projects, and to use the project meetings for mutual inspiration to the different activities. One initiative we have taken in the project group in order to build bridges over the gap, is to have project meetings with much weight on the research methods and

results, and less on practical details and administration. One of the meetings has been held with relevant persons, who were invited to the discussions about research approach and results from outside.

The project budget is absolutely cut down to the minimum. This means that project administration and meetings – despite the statement above - have been given relatively low priority, compared to research activities and recordings. In projects of this kind – very diverse – there should be given separate budget for project management in order to ensure that constituent projects are linked properly together. An important part of the process in a project such as this.

With regard to research methodology, completely new initiatives and development of research approaches are in focus. This is particularly the case with work package 3 (veterinary homoeopathy), and to some extent with work package 1 (animal welfare assessment). This is very resource demanding (especially with regard to personnel and time resources). It must be recommended to give more time (man-months) to projects, where not only new topics, but also research paradigms are explored and evaluated.

8. Budget

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 2000	2000	2001	2002	2003	2004	Total
Man-months							
Scientific personnel		1	6,5	11,5	8,5	3	30,5
Technical personnel		0	7	2	3	0	12

Year:	Consumption before 2000	2000	2001	2002	2003	2004	Total
Salaries							
Scientific personnel		38	230.2	474.2	368.6	138.7	1249.7
Technical personnel		0	179	60	84	0	423.5
Other operational costs		20.4	203.8	492	201.2	10.5	927.9
Equipment		0	0	0	0	0	0
Others (please specify)		0	0	0	0	0	0
Direct costs		58.4	613	1026.2	653.8	149.2	2500.6
Indirect costs (20% of direct costs)		11.6	122.4	204	131.6	29.8	499.4
Total		70	735.4	1230.2	785.4	179	3000

C. Budget for each participating institute (1.000 DKr)

Name of Institute: DIAS (project participants from 2 sections at the Department for Animal Health and Welfare participate in this project)

Year:	Consumption before 2000	2000	2001	2002	2003	2004	Total
Man-months							
Scientific personnel		1	5	7	7	2	22
Technical personnel		0	7	2	3	0	12

Year:	Consumption before 2000	2000	2001	2002	2003	2004	Total
Salaries							
Scientific personnel		38	170.2	307	308	92.5	1212.3
Technical personnel		0	178.8	60	84	0	423.5
Other operational costs ¹		20.3	165	391	147	0	326.7
Equipment		0	0	0	0	0	0
Others (please specify)		0	0	0	0	0	0
Direct costs		58.3	514	758	539	92.5	1962.5
Indirect costs (20% of direct costs)		11.7	103	152	108	18.5	392.5
Total		70	617	910	647	111	2355

Comments: ¹The project contributes to the phd-project described in WP 3. The PhD-costs are specified as operational costs.

Name of Institute and department: Danish Veterinary Institute, Section for Parasitology

Year:	Consumption before 2000	2000	2001	2002	2003	2004	Total
Man-months							
Scientific personnel		0	1	1	0	1	3
Technical personnel		0	0	0	0	0	0

Year:	Consumption before 2000	2000	2001	2002	2003	2004	Total
Salaries							
Scientific personnel	0	0	40	41.8	0	46.2	128
Technical personnel	0	0	0	0	0	0	0
Other operational costs	0	0	36.7	89.9	36.7	10.5	173.8
Equipment	0	0	0	0	0	0	0
Others (please specify)	0	0	0	0	0	0	0
Direct costs	0	0	76.7	131.7	36.7	56.7	301.8
Indirect costs (20% of direct costs)	0	0	15.3	26.3	7.3	11.3	60.2
Total	0	0	92	158	44	68	362

Comments:

Name of Institute and department: The Royal Veterinary and Agricultural University

Year:	2001	2002	2003	2004	2005	Total
Man-months						
Scientific personnel	0.5	3.5	1.5	0		5.5
Technical personnel	0	0	0	0		0

Year:	2001	2002	2003	2004	2005	Total
Salaries						
Scientific personnel	20	125	60.6	0		205.6
Technical personnel	0	0	0	0		0
Other operational costs	2	11	17.2	0		30.2
Equipment	0	0	0	0		0
Others (please specify)	0	0	0	0		0
Direct costs	22	136	77.8	0		235.8
Indirect costs (20% of direct costs)	4.4	26.2	16.6	0		47.2
Total	26.4	162.2	94.4	0		283

9. Signatures and stamps

Name	Institute	Date	Signature
Head of project Mette Vaarst	Danish Institute of Agricultural Sciences	3 rd October 2002	

Appendix 1: work package description, wp 1-3

WP1: Animal welfare assessment: development of a theoretical and practical framework under organic production conditions

Work package number: 1

Starting date or starting event: 1st Nov 2000

Responsible persons: Mette Vaarst

Contributing persons: Mette Vaarst, Christine Fossing, Stig Milan Thamsborg, persons from WP2 (Charlotte Maddox-Hyttel, Klaus Lønne Ingvarsen, Ellen-Margrethe Vestergaard,) National and international expert groups. Working groups (project participants and selected partners, with whom co-work is established).

Person-months: Scientific: 14 months; technical: 5 months

Objectives:

- 1) To reach a theoretical foundation for understanding and defining animal welfare in organic dairy herds, actively combining goals of organic farming with concepts of animal welfare
- 2) To develop a practically oriented framework for animal welfare assessment based on and in a continuous dialectic process with objective 1). This should be used as a dialogue tool for the organic farmers to improve welfare among cows and calves in the organic dairy herd.

Description of work:

The basic principle of this project is to keep a close relationship between theoretical development and practical implementation. Both theoretical and practical results will be evaluated, compared and discussed together.

The elements of this work package is as follows:

- 1) Identification of relevant problems and production conditions
- 2) Theoretical discussions in teams of experts
- 3) Development of practical guide lines in working groups
- 4) Reviewing and writing
- 5) Practical evaluation and development of welfare assessment in different types of systems
- 6) Development of a manual for welfare assessment as a dialogue tool between the organic farmer and his partners.

Each activity will be shortly described in the following:

- 1) Identification of relevant problems and production conditions. An initial survey will be carried through in 20 organic dairy herds. Special focus will be offered to the calves, and the activity should form basis for theoretical discussions about understanding and assessment of animal welfare, as well as for the activities in work packages 2 and 3. Herds are chosen among these to continue with recordings in animal welfare and participation in work packages 2 or 3.
- 2) Theoretical discussions in teams of experts. Two expert groups are collected: a) A national expert group of 8-10 persons with knowledge about animal welfare, calves and /or organic dairy production. b) An international expert group of 4-6 persons, primarily chosen through the EU network project 'Network on Animal Health and Welfare in Organic Animal Husbandry' (NAHWOA). Besides, temporary working groups or expert panels can be formed and participate in project group meetings. The project group will participate in all these workshops, as well as a number of invited persons. The choice of these persons – who are national or international experts in the field – will be based on the topic of each workshop.
- 3) Development of practical guide lines in working groups. Smaller working groups will be

formed within the project. Persons from the project group as well as partners from relevant activities, with whom close co-work is established, will develop practical guidelines for data collection and analysis of data.

- 4) Reviewing and writing. Mette Vaarst will be the primary person to synthesise and describe the theoretical understanding of animal welfare as well as the practical implementation process of welfare assessment in the herds. This is expected to be carried through in close co-work with Hugo Fjelsted Alrøe from Research Centre for Organic Farming (DARCOF).
- 5) Practical trying-off and development of welfare assessment in different types of systems. Data collections in the herds participating in the whole project (all work packages) will continuously be carried out. This data will form a practical overall framework for the whole project. Welfare assessment will be done on the basis of a recording manual, which will be continuously adjusted in accordance with the guide-lines given and developed by project participants and connected experts, and feed-back to these persons will be ensured through a practical implementation and data analysis.
- 6) Development of a manual for welfare assessment as a dialogue tool between the organic farmer and his partners. Mette Vaarst will be the primary persons to synthesise and describe the final product of this process. This is expected to be carried out in close co-work with Hugo Fjelsted Alrøe from DARCOF. All project participants and national as well as international experts, who have been included in the process will be offered the opportunity to review and influence the results through a final workshop.

Deliverables:

D1, D4, D7, D8, D9, D10

Milestones:

M1: Identification of central conditions and patterns of disease and behaviour among calves (relevant production conditions, disease problems and behavioural patterns in the organic calf herds with special focus on inter-suckling and coccidiosis). The details of the designs of WP2 will in part be based on these results.

M2: A profound understanding of the concepts of animal welfare within the organic production has been reached through national and international workshops, working groups and reviews.

M3: A framework for animal welfare assessment based on the fundamental goals for organic production combined with concepts of animal welfare, and based on a continuous dialectic relationship between theoretical research and practical implementation, has been developed.

WP2: Prevention of coccidiosis among dairy calves

Workpackage number:	2
Start date or starting event:	1 st Sep. 2001
Responsible person:	K.L. Ingvarsen
Contributing persons:	E.M.Vestergaard, C.Maddox-Hyttel, B.M. Damgaard, persons from other work packages in this project (Mette Vaarst, Stig Milan Thamsborg, Christine Fossing)
Person-months:	14 (scientific) 8 (technical)

Objectives:

The overall objective is to describe the incidence of *Eimeria* coccidiosis in organic farms and how to prevent the disease in calves.

Specific goals are:

- To identify causal factors important for the development of *Eimeria* coccidiosis and their potential importance in organic farming systems
- To investigate the influence of selected nutritional, management and/or environmental factors on susceptibility to *Eimeria* coccidiosis.
- To develop methods for non-medical prevention and control of *Eimeria* coccidiosis in calves.

Description of work:

The line of attack includes the following:

- 1) Identification of causal factors of potential importance for the development of coccidiosis
 - 2) Planning and co-ordination of experimental work
 - 3) Execution of the experimental work and laboratory analyses
 - 4) Development of methods for non-medical prevention and control of coccidiosis
- 1) To identify causal factors of potential importance for the development of coccidiosis. A process like the described "synthesis of knowledge" (Kristensen & Thamsborg, 2000) will be carried out. The work will focus on reviewing causal factors for coccidiosis and relating these to organic farming systems based mainly on results from the screening carried out in WP1. The work will include a description of clinical and diagnostic methods for the identification of coccidiosis.
 - 2) Planning and co-ordination of experimental work. Based on the above knowledge synthesis we will initiate detailed planning of experimental treatments in selected organic farms. We will select organic farms that have been identified to have problems with coccidiosis (WP1). We expect to focus on risk factors related to nutrition, management and/or the environment. The number of farms included in the study is expected to be 5-6 but will depend on the research strategy decided on the basis of the above synthesis of knowledge.
 - 3) The execution of the experimental work and analysis. Coccidiosis during the winter period is expected to be in focus but sampling 8-10 days post turn out on pasture will be considered (depending on recommendations given in the synthesis of knowledge process described above). Each herd of calves will randomly be split in two halves - one group being controls (C) and one group being alternative (A). The controls will receive the nutrition/management/environment previously used. Group A will be an alternative nutrition, management or environmental factor. The age group will be from 0 to 24 weeks. Registration/sampling will be carried out regularly

and is expected to include: 1) calves: live weight and daily gain, blood samples, faecal samples, clinical status, cleanness of calves; others 2) environment: temperature, condition of bedding, oocysts in bedding, cleanness of water bowls and troughs, other factors. If calves have had diarrhoea for more than 4 days a faecal sample will be taken for determination of oocysts. Registrations and sampling will be repeated during the experimental period (3 times) and focused around potentially stressful events for the calves (e.g. feed changes, moving). Expected total number of calves included in these intensive studies is approximately 400 calves.

- 4) Development of methods for non-medical prevention and control of coccidiosis. The work carried out in the knowledge synthesis will be continued. The results from the performed experimental studies (Ad 3) will be integrated and different strategies for prevention of coccidiosis will be suggested.

Deliverables:
D6, D12, D13

Milestones:

- M4:** Conclusion of results of initial survey (work package 1; M1) on prevalence, characterisation of pattern of coccidia species, housing condition and management routines in organic calf herds at work shop within the framework of work package 1. Danish report based on this survey.
- M5:** Conclusion and adjustment of study plan in on-farm experimental set-ups on causal factors for coccidiosis including sampling procedures (faeces and blood)
- M6:** Conclusion and evaluation of laboratory analyses of collected faecal and blood samples, and collected data (clinical examinations etc.).
- M7:** Publication and presentation of results.

WP3: Alternative treatments of dairy cows and calves: development of research model and in-practice pilot studies with focus on veterinary homoeopathy

Work package number: 3

Starting date or starting event: 1st May 2001

Responsible persons: Mette Vaarst

Contributing persons: Christine Fossing (Ph.D. student), International expert panel; a team of Danish practising veterinarians, contributors from other work packages in this project.

Person-months: Scientific: 7; technical: 3.

Objectives:

- 1) To update the status and obtain an overview of the possibilities for alternative treatments in organic dairy farming with focus on veterinary homeopathy
- 2) To develop one or more models for clinical research in veterinary homoeopathy, which meets the demands for documentation from the tradition of natural sciences, and – simultaneously – provides new and useful knowledge for veterinary homoeopathy.

Description of work:

One fundamental red line in this work package is to evaluate the methods and steps in the practical clinical trials continuously on a theoretical level, and to implement theoretical results into practice through adjusted journals and designs of pilot studies.

The elements of this work package is as follows:

- 1) To update knowledge and obtain an overview of the possibilities for treatment of production diseases with so-called alternative treatment methods with focus on homoeopathy
- 2) Establish a team of international experts in veterinary homoeopathy

- 3) Establish a team of Danish practising veterinarians who can carry out the treatments in clinical trials
- 4) To develop a system of journals for anamnesis and clinical findings in a case of disease
- 5) Develop an appropriate follow-up matching the demand for documentation of the development of a disease course.

Each of these activities will be shortly described in the following:

- 1) An updating and overview of the possibilities for treatment of production diseases with so-called alternative treatment methods under Danish organic production condition will be obtained. This will be an update based on the reviewed report from the Danish Institute of Agricultural Sciences (no. 731) from 1996.
- 2) International experts will be pointed out and asked to contribute to the development of this method, partly as critical reviewers of the results and steps in the process of this project, and partly in a workshop to be held half way through the project. The team is expected to be the size of 6-10 people, and veterinary epidemiologists, toxicologists as well as classical veterinary homoeopaths will be included.
- 3) A small number of Danish veterinarians have completed an internationally certified post-graduate education in veterinary homoeopathy, and a small number have carried out homeopathic treatments through a long time period (more than 10 years). Three or four of these veterinarians, who treat homoeopathically in production animal herds will be picked out and included in this study as the ones carrying out the practical treatments. Standardised journals and procedures for follow-up on cases will be worked out in collaboration with these veterinarians (see below).
- 4) Journals will be developed throughout the whole project. The treatment cases will be limited to mastitis among dairy cows and diarrhoea among calves. Mastitis is chosen because that is a classical single cow treatment, and the disease most often treated in Danish dairy farming, including organic farming. Homoeopathy is claimed to be a treatment method very much oriented towards the single individual. The literature review mentioned above nevertheless suggested homeopathic treatments to be used in-groups of animals in cases, where the situation of this group allows one to treat them as 'one individual'. Therefore, diarrhoea among calves is chosen, because it is a condition often found in a group of calves, and calves within the same herd very often react in the same way.

Deliverables:
D2, D3, D11, D13

Milestones:

- M8:** Updating knowledge and status of alternative treatments in organic farming with focus on homoeopathy.
- M9:** An international expert team is established to critically evaluate pilot study design, journals and follow-up procedure after treatment.
- M10:** A team of veterinarians who are well experienced in homoeopathic treatments of dairy cattle is established.
- M11:** Journals and follow-up procedure is described in details, as well as the design of the pilot studies.
- M12:** Data collection is completed and discussed among the international experts as well as at a national workshop meeting within the framework of work package 1.
- M13:** A manual with one or more models suitable for clinical trials and research in veterinary homeopathy is completed.
- M14:** Publication of pilot studies and the suggestion of a concept of research in homoeopathy.

Appendix 2: Adjusted list of deliverables, accepted in status report 2001.

Deliverable no.	Deliverable title	Delivery date	Nature
D1	Workshop 1: development of theoretical framework for the understanding of animal welfare.	March 2002	Re
D2	'Up-dating role and status of veterinary homeopathy in Danish dairy farming'	February 2002	Pro-na
D3	Workshop, homeopathy experts panel. Models for clinical research in veterinary homeopathy (initial group discussion Nov. 2001, where key points are formulated).	Nov. 2001 + May 2002	Pro-in
D4	'Aspects of animal welfare under organic production condition'	Dec. 2001	Pu
D6	Coccidiosis – a review on causal factors of potential importance for the development of coccidiosis in organic farms. Discussions in a calf expert panel ('synthesis of knowledge' process): focus on how coccidiosis is affected by nutrition, housing and management. Confirming project plans in wp 2 & 3. Contributing to welfare assessment manual.	Dec. 2001	Re + Pu
D7	International expert panel: the understanding of animal welfare in organic agriculture	June 2002	Re + pu + pro-in
D8	Manual for welfare assessment	Oct. 2002	Re
D9	'Welfare assessment: theoretical and practical framework' (based on workshop mentioned above)	Dec. 2002	Pu
D10	Workshop: Welfare assessment among dairy calves; presentation of welfare assessment model and evaluation of different organic herds	Jan 2003	Re + pu + pro-na + pro-in
D11	Homeopathic treatment: pilot studies presented and published	Oct. 2003	Re + pu + pup
D12	Prevention of coccidiosis in organic farms	Sep 2004	Pro-in + Pu + pup
D13	Meeting for organic farmers and advisors	Oct. 2004	Pro-na

Pu: International publication in books and journals

Re: Reports

Pro-na: Proceedings at national conferences

Pro-in: Proceedings or abstract at international meeting or conference

Pup: Popular paper