



Annual Status Report 2001 and Application for Continuation in 2002

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.9 Resource use, environmental impact and economy in organic pig production systems

3. Head of project

John E. Hermansen

4. Participating institutes

Danish Institute of Agricultural Sciences (Departments of Agricultural Systems, Crop Physiology and Soil Science, Animal Health and Welfare, Agricultural Engineering), Danish institute of Economics in Agriculture and Fisheries, and The national Committee for Pig Production.

5. Contact persons

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Niels Tvedegaard, SJFI (NT)

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6. Other project staff

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Merete Studnitz, DIAS (MS)

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- 7. Start of project:** 1.8.2001
End of project: 31.12.2004
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8. Annual report/Application for continuation in 2001

A. Objectives and expected achievements (from application)

The overall perspective of the project is to create knowledge, which can support the development of organic pig production in Denmark. This implies knowledge on how the system at farm level can be constructed so that the production is economically feasible for the farmer and at the same time respects the farmers' and the consumers' perception of the organic ideals as well as societal goals for environmental impact of animal production. The objectives are, during experiments, farm studies, and modelling:

- to identify optimal strategies for growing pigs at pasture combined with a possible barn fed period in relation to growth, nutrient load at the pasture and an appropriate utilisation of the farm buildings,
- to identify appropriate strategies for keeping sows on pasture without being ringed in relation to sward quality and risk of nutrient losses,
- to quantify the risk of nutrient losses in a range of grazing systems with particular focus on 'improved' grazing strategies,
- to assess different systems in relation to production efficiency, resource use, and environmental impact within an LCA framework,
- to propose an economically and environmentally viable future strategy for organic pig production in Denmark.

B. Project summary (from application)

In Denmark, the organic pig production is very scarce today and need to be developed in order to fulfil the expected potential hereof. In relation to this there is a need to develop new systems in which the pig production is more integrated into land use in order to fulfil the expectation to the organic pig production from different stakeholders and probably also in order to make the production economical feasible.

In the preliminary work for this research initiative, two in principle different systems have been suggested as alternatives to the dominant way of production of organic pigs today. Today, the sows are outdoors on pasture whereas the growing pigs are indoors with access to an outdoor run of limited size. The two alternatives are characterised by either mobile huts, which can be moved in an appropriate way in the crop rotation allowing the pigs to forage, or by establishment of decentralized, strategically positioned fixed units, where the pigs have easy access to the surrounding area.

However, such a development raises several questions, which are being addressed in this project. The project has three work packages (WP). The first WP focuses on grazing strategies for sows and growing pigs. Through two experiments, it is expected that we can 1. Propose alternatives to ringing of sows in the effort to maintain sward quality, and 2. Propose appropriate strategies of combining grazing and barn feeding for growing pigs.

The second WP focuses on the environmental impact of different grazing regimes. In the before mentioned experiments with sows and growing pigs, the level and spatial variation in nutrient load of the grazing areas will be determined (N, P and K) and the distribution between N-losses as leaching, ammonia volatilization and denitrification will be estimated. Furthermore, different pig production systems will be assessed in relation to nutrient losses through strategic sampling on the area grazed. Hereby it is expected that strategies for improved nutrient utilisation and an acceptable environmental load of nutrients in organic pig production can be proposed.

The third WP includes an overall assessment of different pig production systems within a life cycle assessment (LCA) framework and also including economic considerations. Suitable LCA indicators will be selected and data will be collected from commercial organic farms as well as from experimental units. Through modelling a range of systems will be assessed not only including the actual systems already present but also 'future' relevant systems improved with the knowledge obtained in other WPs in this project.

Table 1: Work package list (from application)

No.	Work package title	Participants*	Budget (1.000 DKr)	Start	End	Deliverable No:
1	Strategies for grazing systems in organic pig production	KSU, MS	1,147	Oct 2001	April 2004	D1.1-D1.3
2	Nutrient load and environmental consequences of pigs on grass-land	JE	1,036	Jan 2002	Aug 2004	D.2.1-D2.3
3	System assessment in an LCA perspective and co-ordination	JHE,NT,KSU, BHA,VAL	1,317	Aug 2001	Dec 2004	D3.1-D3.5
Total			3,500			

* Responsible participants are underlined

C. Progress

C.1 Annual description (resume) of main results and conclusions

The Project is in the starting phase after the message of funding received in July this year and only planned activities have been carried out. Plans have been substantiated and progress have been monitored at a project meeting in October.

C.2 Fulfilment of tasks and deadlines in individual work packages

(To be completed for each work package)

WP1: Strategies for grazing systems in organic pig Production	Time schedule according to application	Deviations, if any*
Task		
1 – Initiatives to reduce rooting by unringed pregnant sows	Jan 02 – June 03	
2 – Strategies for weaners/finishers on pasture/in barns	Jan 02 – June 03	
3 – Propose appropriate strategies for management of pigs grazing	June 03 – Jan 04	
Deliverables		
1 – Paper on rooting by unringed pregnant sows	Dec 03	
2 - Paper on comparison of four strategies for grazing/housing of weaners and finishers	Dec 03	
3 – Project report on proposed optimal strategies for pigs grazing management to be used in system analyses	Jan 04	

Milestones		
1 – Design of experiments concluded in the entire project group (including determination of the relevant stocking rate and feeding strategies to be used for different groups of pigs)	Dec 01	
2 – Completion of experiment covering activity 1	June 03	
3 – Completion of experiment covering activity 2	June 03	

- *Deviations are to be further discussed at C3*

WP2: Nutrient load and environmental consequences of pigs on grassland	Time schedule according to application	Deviations, if any*
Task		
1 – Environmental impact of growing pigs on pasture	Jan 02 – June 03	
2 – Environmental impact and pasture damage without nose-ringing of sows	Jan 02 – June 03	
3 – Characterization of environmental impact of different production systems	June 02 – Dec 03	
Deliverables		
1 – Paper on the nutrient losses related to different strategies for keeping growing pigs on grassland.	Feb 04	
2 – Paper on the effect of nose-ringing of sows on pasture damage and nutrient utilization.	March 04	
3 – Estimates of nutrient losses from grassland in different outdoor pig production systems to be used in system analyses.	April 04	
Milestones		
1 – Environmental guidelines for keeping growing pigs on pasture have been developed and published	Sept 04	
2 – Environmental recommendation for nose-ringing of sows have been developed and published	Sep 04	

- * *Deviations are to be further discussed at C3*

WP3: System assessment in an LCA perspective and co-ordination	Time schedule according to application	Deviations, if any*
Task		
1 - LCA indicators	June 01 – March 02	Nov 01-March 02
2 – Data collection	Jan 02 – Dec 03	
3 – Systems modelling	June 02 – Dec 03	
4 – Systems assessment	June 03 – Dec 04	
Deliverables		
1 – Report on relevant indicators for an LCA assessment	Feb 02	
2 – Paper on LCA and economics of different systems	Oct 04	
3 – Report on future proposed systems	Nov 04	
4 – Annual status report for the project	Nov 01,02,03	
5- National meeting with advisors and producers/producer organisations interested in organic pig production	Nov 04	

Milestones		
1 - A set of indicators discussed in national and international fora and agreed upon in the project group	March 02	
2 - Co-operation with the farmers established and recording scheme developed	Sept 01	Dec 01
3 - Conceptual model developed	Dec 02	
4 - A series of analyses carried out	Sept 04	

* Deviations are to be further discussed at C3

C.3 Discussion on the progress, incl. deviations and achievements in the project as a whole and in the individual work packages and

There is a delay in the starting activities of about 3 months partly because of a delay in funding and partly because of lack of personnel. It is expected that this delay is cleared within Jan 2002 without any delay in other plans than indicated above.

D. Description of plans and future work in the project as a whole and in the work package (Including plans for publication and communication)

The future plans are according to the application as agreed on a project meeting in October this year.

E. Project publications

1. Articles in international, scientific journals with review procedures
2. Presentations at congresses, symposiums etc.
3. Articles in agricultural journals etc.
4. Other presentations at meetings, field days etc.

F. Scientific education (ph.d. and post doc.), including visiting scientists and visits abroad

G. National and international co-operation

H. Possible elaboration of project and achieved results

