



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.5 Use of antimicrobials and occurrence of resistance in organic cattle herds

3. Head of project

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7. **Start of project: 2000**
End of project: 2003
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8. Annual report/Application for continuation in 2001

A. Objectives and expected achievements (from application)

- To determine potential differences in the occurrence of antimicrobial resistance between conventional and organic dairy farms
- To investigate the possibility to perform a continuous monitoring of antimicrobial resistance by evaluating the dynamics of antimicrobial resistance.
- To characterise the treatment pattern of organic herds and based on this, develop guidelines for disease treatment, which fits the goals for the organic herd, meet the demand for animal welfare and minimise the risk for antimicrobial resistance.

B. Project summary (from application)

Organic farming is among other things characterised by a more restrictive use of antimicrobial agents. A low occurrence of antimicrobial resistance can be regarded as a sign of quality. However, to be acceptable a limited use of antimicrobial agents has to be without adverse negative effect on animal welfare to be acceptable. In this study methods to perform a continuous surveillance for antimicrobial resistance at herd level will be used to compare the occurrence of resistance between organic and conventional dairy herds. In addition the treatment pattern of animals in organic herds will be studied based upon this information guidelines for disease treatment will be developed and implemented as herd specific treatment strategies which meet the demand for animal welfare and minimises the risk for antimicrobial resistance.

Table 1: Work package list (from application)

Work-package No	Work package title	Participants*	Budget	Start	End	Deliverable No
1	Monitoring of use of medicine	<u>SMT, KVL</u> TWB, MV	245	1	33	1
2	Occurrence and dynamics of antimicrobial resistance in dairy herds	<u>FAA, SVS,</u> TWB, KVL	868	12	39	3, 6, 8
3	Characterization of treatments in organic farms	<u>MV, DJF,</u> TWB, SMT, KVL	314	7	39	5, 9
4	Use of herd specific plans for control of antibiotic resistance	<u>SMT, KVL,</u> TWB, MV	277	10	39	9, 10

* Responsible participants are underlined

C. Progress

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

Contact has been made to approx. 30 farmers who are potential project participants in the work package 3 focusing on treatment patterns. In 12 of these herds faecal samples were collected in August and analysed as part of an ongoing project, as described in the application, these samples will be the first sampling in the project. The first herd visits, where present treatment pattern will be characterised, will take place during November and December. Based on these visits to the farms, the farms to be enrolled in the full project will be selected.

The frame-work for the initial interview is made, based on key figures from herd data and a step-wise identification of treatment criteria on four different levels (symptom level, cow level, and the levels of the herd situation and perception of alternatives, respectively, identified through previous study; Vaarst et al. 2002). Based on this, expectations and wishes connected to a more explicit future treatment pattern will be made in collaboration with the farmer, and will be made known to the veterinarian through personal contact or letter (depending on the interest of the veterinarian).

An initial model for description of success of treatment has been developed and will be used as a tool in the discussion of future treatment strategies in the selected herds.

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

(To be completed for each work package)

WP1 Monitoring of use of medicine	Time schedule according to application	Deviations, if any*
Task		
Registration and reporting of use of drugs	Continuous	No
Electronic transfer of data on disease and medicine in involved herds	Continuous	No (not all herds report medicine electronically)
Deliverables		
Data on disease, use of medicine and clinical cases of mastitis	Continuous	no
Milestones		
M3 Establishment of a system for registration of use of drugs and disease in herds	May 2000	no
M4 Introduction of registration of clinical mastitis	Febr. 2001	Dec 2001
M13 Termination of data collection	January 2003	April 2003

WP2 Occurrence and dynamics of antimicrobial resistance in dairy herds	Time schedule according to application	Deviations, if any*
Task		
Start of sampling	June 2001	August 2001
Deliverables		
3. Determination of the difference in the occurrence of antimicrobial resistance in conventional and organic dairy herds. (Pu)	Sept 2001	January 2002
6. Description of the dynamics of antimicrobial resistance over time. (Pu)	July 2002	November 2002
8. Description of changes in disease incidence and antimicrobial resistance after conversion to organic farming. (Pu)	July 2003	September 2003
Milestones		
M1 Determination of the difference in the occurrence of antimicrobial resistance in conventional and new and old organic dairy herds.	Sept 2001	January 2002
M10 Description of the dynamics of antimicrobial resistance over time	July 2002	November 2002
M12 Collection of fecal samples	June 2002 – March 2003	August 2002- June 2003
M14 Evaluation of changes in antimicrobial resistance from conversion until 3½ years after conversion to organic farming.	July 2003	September 2003

WP 3, Characterization of treatments in organic farms	Time schedule according to application	Deviations, if any*
Task		
Identification of herds	March-April 2001	November 2001 F&m delay
Preparation of herd specific plans	Oct.-Nov. 2001	Feb. 2002
Data from 50 organic herds have been made accessible, and data analysis is currently being initiated.	Winter 2001-2002	No..
Deliverables		
1 Description of the combination of qualitative studies of treatment choices and quantitative data (pu.)	June 2002	September 2002
9 Recommendations for treatment strategies in organic dairy herds (Danish Report)	July 2003	October 2003
Milestones		
M1: Selection of herds and implementation of clinical examinations	April 2001	F&m delay: Nov. 2001
M7: Qualitative analysis on herd level of treatment patterns carried out	Feb. 2002	May 2002
M9: Analysis of data from 5 herds (in depth studies) and 40-45 herds (overall level; standardised health and production recordings)	June 2002	Sept 2002
M15: Recommendations (Danish Report)	July 2003	October 2003

WP 4, Use of herd specific plans for control of antibiotic resistance	Time schedule according to application	Deviations, if any*
Task		
Preparation of herd specific plans	Oct.-Nov. 2001	Feb. 2002
Deliverables		
9 Recommendations for treatment strategies in organic dairy herds (Danish Report)	July 2003	October 2003
10. Description of the effect of change in treatment strategies on the occurrence of anti-microbial resistance	July 2003	October 2003
Milestones		
M2 Selection of herds and determination of initial occurrence of anti-microbial resistance	April 2001	F&m delay: Nov. 2001
M6 Preparation of herd specific plans	Dec. 2002	Febr. 2002
M8 Midway evaluation and correction of plans	May 2002	August 2002
M11 Final evaluation of plans and status of occurrence of anti-microbial resistance.	April 2003	July 2003
M15 Recommendations (Danish report) including results from WP3	July 2003	October 2003
M17 Analysis of change in antibiotic resistance and changes in use of medicine	July 2003	October 2003

* *Deviations are to be further discussed at C3*
(pu) = planned publication

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

There has been some delay in the plan, due to the fact that all contact to herds has been impossible during the last part of the housing period 2001 (early March-June) because of restrictions in connection with the outbreak of foot & mouth disease. The selection of herds and introduction of registrations has therefore been postponed to the late autumn 2001.

Data on medicine use and resistance in conventional and old organic herds has been delayed because of extensive work on validation of data.

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 project will be carried out in accordance the plans in the application, besides a delay of approximately 3 month. Planned publications can be seen in part C2.

E. Project publications

1. **Articles in international, scientific journals with review procedures**
No
2. **Presentations at congresses, symposiums etc.**
No
3. **Articles in agricultural journals etc.**
No

4. Other presentations at meetings, field days etc.

“Reduced use of veterinary drugs in organic dairy herds – potentials and consequences”, Midterm seminar for ph.d. student Torben Werner Bennedsgaard, October 1, 2001, KVL

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

Elements of the project is part of Torben Werner Bennedsgaards ph. d. study.

G. National and international co-operation

Research stay at Paul Bartlett, Michigan State University by Torben Werner Bennedsgaard march-april 2001.

H. Possible elaboration of project and achieved results

No comments in this status report because the project is still in the initial phase.