



Final Report

For DARCOF II 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

Organic Agriculture in Social Entirety – Principles versus Practices (OASE)

3. Head of project

Thorkild Nielsen
Technical University of Denmark
IPL/Innovation and Sustainability

4. Participating institutes

Technical University of Denmark (DTU). Innovation and Sustainability
Aalborg University

5. Other project staff

Research Group (Danish Technical University), DTU,
Thorkild Nielsen, Assistant Professor
Niels Heine Kristensen, Associate Professor
Mette W. Hansen, Ph.d. student

6. Project period (month, year)

Start of project: May 2002
End of project: May 2005

7. Final report

A. Project summary

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

No.	Work package title	Participants*	Budget (1.000 DKK)	Start	End	Deliverable no(s):
1 B	Principles versus practices - organic food sector			Feb02	2002	7
2 B	Basic Explanations – organic food sector			Mar03	2005	13,14

* Responsible participants are underlined

B. Objectives and expected achievements

The initial objective in this project is to analyse the mismatches between values and praxis in the organic food sector, with special focus on the processing sector. The intension of the project-design was initially that the first part should analyse the values in organic agriculture. When the partner responsible for this part (WPA), for different reasons, decided to leave the project, some adjustments had to be done.

Firstly the changes meant that the focus of the project shifted to a more sector oriented perspective, and that the focus shifted to the **last parts of the food chain**. Secondly the organisational changes mentioned above had the consequences that the initial research question has been narrowed to “identify mismatches between praxis and values in the organic food industry”.

Finally the changes have influenced the initial project tempi. This means that methodological the project will finish the data collection (praxis of the food processing) and finally analyse this data with focus on the values in the organic food production, and these analysis should use the work from other researchers, who has worked with general organic principles.

C. Progress and results

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

The requirements for processing in standards and regulations are only related to technical subjects directly oriented towards the production of the products. A broader view on social aspects in the processing company or the environmental influence of the processing units is not part of any governmental regulations for organic foods.

In general it can be stated that the EU-Regulation 2092/91, with the exception of having rules for the use of additives and processing aids, no significant preferences or only tendencies regarding the possible ways to regulate or harmonise different aspects of organic food processing in a sustainable direction, have been identified.

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Methods of data collection

The data collection has been a combination of methods:

- Documents, literature reviews, “grey” literature (e.g. companies own material) ao.
- Qualitative elite interviews with managers in food companies with an organic production (3 interview with German companies, 10 interviews with Danish companies), and interviews with the Danish authorities involved.
- Meeting with members from the German organisation for organic processors (Assoziation ökologischer Lebensmittelhersteller e.V. (AoEL) and the similar organization for American and Canadian organic processors (Organic Trade Association - OTA).
- Three conferences/workshops about processed organic foods in:
 - Denmark (organic processors, consumer organisations, food consultants, researchers)
 - England (food companies and researchers)
 - Germany (food companies, retailers, researchers, regulatory persons a.o.)

Standards

For more than 20 years, national and international standards for organic farming have been developed on a private basis. These private standards have strongly influenced governmental regulations as well as the EU Regulation 2092/91 and the Codex Alimentarius. For a long time the main focus was on production and not on processing. However, with the growing market, which includes many processed products, the issue of processing is becoming more important

The first specific standards for organic processed food were formulated in the end of the 80'ties. Some of these attempts were not very successful. For instance the very first Danish standards on organic processing stated that it was not allowed to use temperature above a certain degree. This meant that it was not possible to make organic sausages. One of the problems was the lack of experiences with organic processed products besides a few “old” standard products like milk, bread or cheese.

The EU regulation 2092/91 came into force in 1991. In 1993 this regulation was completed with a special Annex VI where allowed additives and processing aids for food processing were listed (EU regulation 207/93). For ingredients of non-agricultural origin and for processing aids two new positive lists were established, which were several times amended later on.

Precautionary principle

The ideas of organic agricultural practice goes many years back, actually back to the 20'ties. There have been several attempts to define the principles *behind organic agriculture*. Historically the ideas of processed organic foods are relatively new. Although the first organic processing standards were formulated already in the 80'ties, it is first in the 90'ties the interest in the area has raised simply because it was in this period the demand for processed organic food boosted and made it interesting for processors to attend the area.

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The main principle behind these standards for processed organic products was the *precautionary*

principle. This principle is relevant in those circumstances where “experts” have identified that there are reasonable reasons for concern that an unacceptable level of risk to health exists but the existing information and data may not be sufficiently complete to enable a comprehensive risk assessment to be made.

Together with representatives from organic organisations The Commission went through all the additives allowed in the conventional food production and removed those additives where experts expressed health concern.

Recently the precautionary principle has been put under pressure, especially from the growing numbers of processors with interest in organic food production. Especially processors who today produce conventional food, and wish to include an organic product in their assortment. The precautionary principle is challenged by the argument that consumers in principle should have the possibility to choose an organic version of *any* of the conventional products. When the Annex VI has been revised, the argument has typically been that a specific product could not be produced without the use of exactly that product. This is what has been called a “*technological need*”.

Religious connections

From the interview with especially some of the German food companies that has used organic foods for many years, we experienced to our surprise - at least from a Danish view – that the religion played a very important role in the way these companies explained why they initially chose to produce organic foods. It seemed as if the religious background of the owner also pervaded the ways these companies were managed, visualised by a crucifix in a central place of company. During the discussions about the companies values behind organic food production religious quotations was often mentioned, for instance: “*God has created this world and we have a responsibility to save it*“. Clearly the owners saw the value of organic food in the way organic farmers related the practice to nature or even soil, and not to in the way he handled the products (specific ways of processing, adding additives or other substances).

Although these south German companies were some of the largest companies in the world (in organic turnover) they expressed their values very similar to what you could find among some of the pioneers of the organic movement.

This is in opposite to what we experienced when we interviewed some of the large conventional companies with a minor organic production. Some of these companies really didn’t consider themselves to be a part of the organic history and value orientation. This is an interesting finding in the light of a future development or regulation of processed organic foods.

Appropriate technology

Historically organic food processing was often associated with a more human-oriented technology frequently described as “appropriate technology”. The term or concept “appropriate” or “intermediate” technology has been a term mainly used in the seventies and eighties of the last century. Although nowadays the term seems to be almost “old-fashioned” this concept has interesting elements to consider when speaking about organic food processing and sustainability. During that time several scientific groups have worked on this concept.

Appropriate technology is used to solve technological problems by providing sustainable solutions, which are beneficial to local communities, and reduces environmental pollution by using renewable sources of energy and recycling materials wherever possible.

Appropriate technology is primarily a small-scale technology. It is structured in such a way that people can manage and implement it at local level. Appropriate technology makes use of skills and technologies that are available or can easily be adopted on small-scale levels. Typical aspects

of appropriate technology are: Decentralized, Technologically sophisticated, though simple in design, environmentally friendly and socially integrated.

Several aspects of appropriate technology are in line with the aims of organic agriculture. But appropriate technology is focusing much more on the social and ecological aspects of food processing than on the purely technical aspects. Regionality of the production, size of the processing units, flexibility of the units, consequences for the job market, environmentally oriented optimization of the whole food chain and ownership are main elements of appropriate technology. These could be important elements for the advanced development of organic food processing and will need further consideration. Some organic food projects already follow this approach in practice.

Careful processing

In several standards, guidelines and publications, organic food processing is strongly associated with “minimal processing” and “careful processing”. The concept has been used in several standards for organic food of careful processing: Private ecological standards, Soil Association, Codex A., EU regulation. For example the standards of Soil Association give the following description: “The basis of processing organic products is that its vital qualities are maintained throughout each step of the process. This is achieved by a combination of: Choosing and developing methods, which are adequate to the specifics of the ingredients. Developing standards which emphasise careful processing methods, limited refining, energy saving technologies, minimal use of additives and processing aids etc.”. It is interesting that also the guidelines for organically produced food in the Codex Alimentarius refer to “careful processing methods”

The integrity of the organic product must be maintained throughout the processing phase. This is achieved by the use of techniques appropriate to the specifics of the ingredients with careful processing methods limiting refining and the use of additives and processing aids. Ionising radiation should not be used on organic products for the purpose of pest control, food preservation, and elimination of pathogens or sanitation. A much broader definition of careful food processing is illustrated below.

Although there exists no clear common definition of the concept of “careful processing” the concept is often mentioned as one of the central values in organic food processing. Typically “Care” is seen as encompassing care for the *product*, but also care for the environment and for the people involved. In relation to the production of organic food, this is manifested, for example, the fact that significantly fewer additives are allowed. Such restrictions for organic food production, together with food producers', retailers' and consumers' interpretation of the concept of care, has resulted in the production of some organic foods (e.g., cheese, bread) which are innovative and apparently exercise more care than this is the case for the same non-organic products.

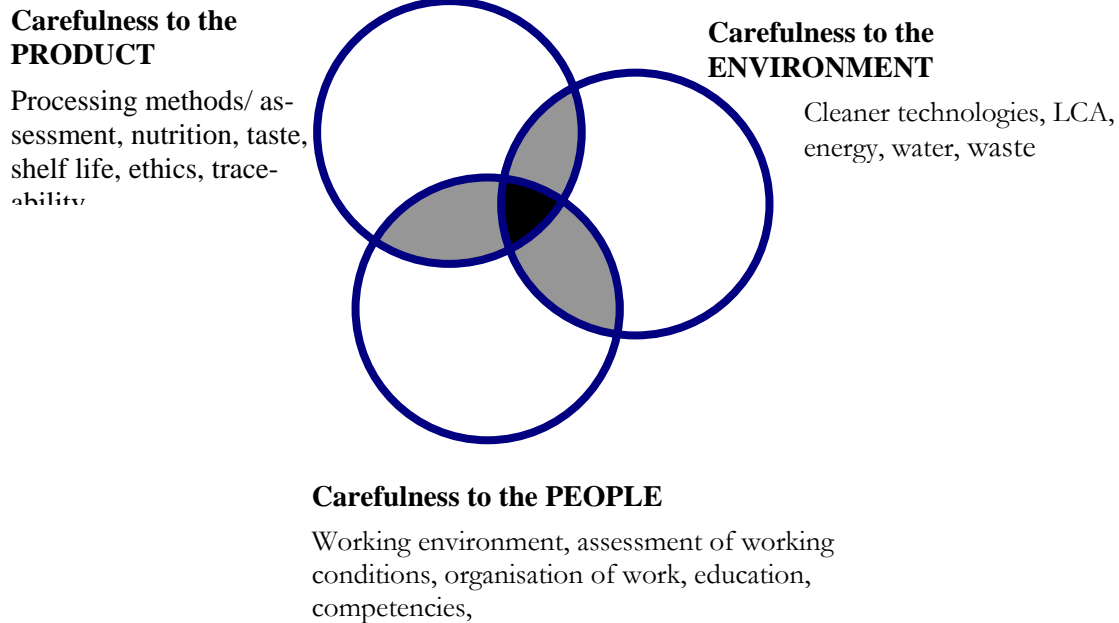


Figure 1. The broad definition of careful processing.

There is a need to systematise and evaluate these changes in processes and products so that they become more accessible to food producers in general. The broad definition of careful processing (product, people and environment (see fig 1) could be a useful concept to develop a broader understanding of organic food processing.

Environmental performance

The use of organic raw material is one of several ways a food companies can consider, if the wish to improve its environmental performance. But there are several others ways, for example: reduce energy and water consumption, transportation, emission, improve the working environment, etc.

Some companies with an organic production argue that they follow ideas and principles of the organic agricultural practice, and one of the ways to introduce these environmental improvements systematically is by using environmental managements systems. The Bavarian brewery Neumarkter Lammsbraü is an example on an organic company where an organic raw material is only one of the elements in the environmental profile of the company. The company already achieved the European Union's Eco-management and Audit Scheme (EMAS) in 1995, and integrated the working environment in their environmental management systems.

Neither the state (eg EU 2092/91 or Codex Alimentarius) or private standards (e.g. IFOAM) has emphasised on the total environmental performance of the company. Some of the private standards have some special regulations on packaging or transport, but none of the standards - public or private - demands an environmental audition. The fact that many of the food companies using products from conventional farms today has achieved an authorisation from these environmental management systems, put the organic oriented companies in a dilemma if they want to be identified as an sustainable choice for the consumers.

Pressure on the *precautionary* principle

The consequence of the rising demand for more processed organic food is that the processing methods have become more complicated and less transparent for the consumers, and successively more difficult to assess the ethical (environment, health, etc) impact from these products. The actual discussion about the EU standards on animal products is an example on this dilemma. The use of nitrite in meat products is one of the areas in the EU Regulation on animal products, which still hasn't reached an agreement. In this case both those who are in favour and those who are against the use of nitrite in meat products assessments from experts in food technology, and both sides used the *precautionary* principle in their argumentation. Some of these experts assessment emphasis the fact that nitrite prevents growth of the deadly bacteria which causes botulism, Clostridium Botulinum, while other experts stress the fact that nitrite can change to nitrosamine which is under suspicion of causing cancer.

Finally it has often been argued that it will not be possible to establish an organic market for processed organic meat if nitrite will not be allowed, mainly because of nitrites ability to color the meat in a way consumers expect it to be. The organization for organic processors and traders BEO (Bureau Européenne Organic) argued the it should be allowed in sausages "*because the consumers have become used over centuries to the typical cured red appearance and cured aroma of meat and sausage products*".

The reason is that sausages without nitrite typically will have a grey colour, which many consumers associate with less delicious ore a more fatty product. The organisation BEO represent organic processing companies from Nederland, Belgium and Germany with a total turnover at 1.200 million €.

The manager of one of the largest organic companies in the world (in turnover) stated, "*that the regulation for organic food processing today is ideological based and lack practise-orientation*". He argued that the standards today are a limiting factor in the innovation of organic food products. As an example he mentioned that today he was not allowed to ad vitamins to his products.

These examples illustrate firstly how the organic actors today have to navigate between several contrary interests, for instance between the marked and the ideals and secondary that the interest in the organic sector has been extended. Today almost all the largest food companies is dealing with organic produced raw material.

Social and ethical dimension

The best-known label that contains social relations is the Max Havelaar label. It is a label for fair trade, and it means that the product has been produced under certain minimum standards for wages, democracy, working condition and environment. Coffee with Max Havelaar label is assuring the consumer that the coffee farmers have received a fair price for the coffee beans.

This ethical label has inspired the English organic organisation Soil Association to develop a national or local *Ethical Trade* certification program. This label will guarantee that the farmers, the distributors and processors are reasonable paid and that the processors are involved in the local area.

Lately the concept *Corporate Social Responsibility*, CSR has gained much attention also from food companies with an organic production line. CSR means that a company undertake a social responsibility in the society, not necessary limited to its own production but also its suppliers. The experiences of CSR are very broad and range from more general societal problems like global warming, use of labour from children or obesity but also more local anchored initiatives like employing people with reduced working ability or involvement in cultural activities in the company's local area.

Future regulation on organic processing

Through interview with central actors in the organic food processing area we have identified three main arguments in relation to regulation.

- 1) The argument that the present regulation as it is formulated in the EU regulation should continue, but successively adjustments of the additive list or a regulation of the allowed processing technologies, packaging, cleaning agents etc. This argument represent status quo and is mainly presented by regulatory authorities and several of the organic organisations (e.g. IFOAM)
- 2) The argument that the regulation should be expanded in order to improve the consumers' confidence in organic food production. Several new areas have been discussed, but especially three areas are often mentioned, namely: the *environmental performance* of the company (energy, emission, reuse, recycle, etc.), the *social relations* (working condition, education, local commitment etc) and thirdly relation connected to *fair trade*. This argument t is presented by different NGO's (environmental organisations, labour unions, organisations dealing with developing countries etc.
- 3) I the last argument it is argued that there should only be very few limitations for processing companies using organic raw material. The regulation should only contain a few limitations (e.g. separation of organic/conventional agricultural products and labelling instructions). The argument is mainly stated by more established and lager food companies with parallel production. It is argued that the consumers demand products that only exist in a conventional version, and that is difficult or impossible to produce these products with the present organic regulation.

C.2 Fulfilment of deliverables and milestones

M1 Workshop I	April 2002	Fulfilled
M3 Seminar I (shared with WP2A)	Nov 2002	Fulfilled
M7 Presentation of compilation at seminar I (shared with WP1)	Nov 2002	Fulfilled
WP number and title 1B, Principles versus practices – organic food sector - DTU	Time schedule according to application	Deviations, if any*
D7 Working paper on key-informants assessment	Feb 2003	Fulfilled Several minor papers
M 5 Seminar with organic food sector	Aug 2002	Fulfilled
WP number and title 2 B, Basic explanations – organic food sector - DTU	Time schedule according to application	Deviations, if any*
D 13 Proceedings from International Seminar	May 2004	Fulfilled OASE participated in a literature survey about organic processing in a EU project. This literature-survey was presented at the seminar.
D 14 Article for International journal	June 2004 June 2005 June 2006	Two articles related to this project have been accepted and the third will be presented at EURsafe conference in Norway June 22 – 24, 2006 *)
M 12 Dialogue workshop	Sep 2003	Fulfilled
M 13 International seminars	Jan/Feb 2005	Workshops in Newcastle and Nuremberg

*) ABSTRACT FORWARDED TO EURsafe-SECRETARIAT:

Title: Ethical principles and practice in organic processing - governance and corporate responsibility

Organic foods are produced according to certain standards that are partly based on the ideas and ethical principles formulated by the pioneers of the organic agricultural movement. The principles and values had their basis in the primary production. Consequently the organic standards mainly have their focus on the agricultural practices while values and principles, and further standards directed to the processing part and distribution in the food chain, are almost absent.

The paper takes a case study perspective and addresses the value discussion in the processing link of the food chain. The paper is partly based on a doctoral (Ph.D.) work in progress on Danish companies, and partly on a recently finished research project about principles and practice in organic processing (OASE). From the work of these projects there seem to be very different strategies in relation to organic ethical values from the companies. Apparently there is less attention to the value background in the organic food companies today than earlier.

One of the assumptions in the paper is that the dominating group of organic companies is not an integrated part of the culture of the initial alternative organic movements. This is one consequence of the overall development of the organic market and the change from alternative to mainstream market operator (from organic shops to supermarkets for example). The paper raises the questions whether more attention to organic principles can be a way of promoting the corporate responsibility, and what this implicates for the companies in daily-life production. The paper draws attention to the notion that it is possible to develop the organic foundations that could facilitate and implement shared paradigms in the whole chain.

D. Description of deviations and subsequent adjustments of plans

The main reason for the deviations in this project is that the project actually was stopped for a period. When the partner responsible for the overall management of the project and WP A decided to leave the project in December 2003 several ideas was discussed. When DARCOF and the remaining partner in the project agreed to finish WP B almost three month had gone.

Another reason for the deviation is that it has been impossible to speed the data collection up. We have been dependent on the resources and time from mainly small and medium sized organic processors with very few resources. It has been impossible to get through all the interviews in the scheduled time. Furthermore we have decided to make interviews with companies in Germany. This has been more time consuming. Qualitative interviews with two German organic processors took place in beginning of 2005. They were planed before summer, but unfortunately cancelled. Also the project was involved in two workshops for processors, researchers, consultants, farmers etc. in respectively England and Germany

The planned papers have been finished but one is in progress, namely the article about values and practise in processed organic foods. This article has been planed to be a co-article with the Mette W. Hansen, a PhD student associated to this project. Because of maternity leave this article have been postponed but will be presented at the EURSAFE conference in summer 2006.

The partner from AUC still has papers in the pipeline. The table below shows the articles that AUC agreed to finalise when they left the project. Two of the persons who were attached to the project, Saki Ichihara and Pia Pia Johansen still haven't finished some of the articles promised in the note from the 5.th of February 2004. They are both PhD students on other institutions.

There is an ongoing discussion on the time for their promised articles.

Ole Horn Rasmussen is now PhD student at AUC, but due to long-term illness his articles will be published in his PhD thesis. Jan Holm Ingemann has finished one article aside from the promised articles, and will finish two of his articles in the next months.

Beskrivelse af det økologiske jordbrugs udvikling i Danmark betragtet i forhold til den samfundsmæssige helhed (Jan Holm Ingemann, Pia Johansen, Ole Horn Rasmussen)	PUBLICERES MARTS 2006
Beskrivelse og analyse vedr. udviklingen af EU's politik for økologisk jordbrug m.s.h.p. principper (Saki Ichihara)	Pipeline
Analyse af den globale opfattelse af det økologiske jordbrugs principper på grundlag af survey m.v. ved IFOAM kongres (Saki Ichihara og Pia Johansen)	Pipeline
Beskrivelse og analyse af organisering, mobilisering, potentialer og begrænsninger for udvikling af økologisk jordbrug på grundlag af komparativ analyse af udviklingen i Danmark og Japan (Saki Ichihara)	Pipeline
Udviklingen af økologisk jordbrug i innovationsteoretisk belysning (Pia Johansen)	Pipeline
Proceedings fra Delfi-gruppens seminar vedrørende metode, praksis og principper (Jan Holm Ingemann, Saki Ichihara, Pia Johansen og Ole Horn Rasmussen samt medlemmer af Delfi-gruppen)	PUBLICERES MAJ 2006
Teoretisk compilation hovedsageligt udarbejdet under inddragelse af økologisk økonomi og institutionel analyse (Ole Horn Rasmussen)	PUBLICERES JANUAR 2007 (Long-term ill)

E. Project publications and other products

Peer-reviewed and accepted

English

Ingemann, Jan Holm (2006) **The Evolution of Organic Agriculture in Denmark**. OASE Working Paper no. 2006:4, Economics, Politics and Public Administration, Aalborg University.

Rasmussen, L.B. and Nielsen, T. (2004) **Entrepreneurial Capabilities: combining knowing and action** . *AI & Society* 18(2):pp. 100-113.**

Dahl, A.; Kristensen, N.H.: The advance and inertia of the organic sector in Denmark – the case of public, organic school meals. Paper for the Organic Workshop, International Rural Sociology Association, Conference, Trondheim July, 2004. Forthcoming in Sage book, 2006

Not peer-reviewed

English

Hansen, M.W., Nielsen, T. and Kristensen, N. H. (2006) Ethical principles and practice in organic processing - governance and corporate responsibility, conference paper.

Ingemann, Jan Holm (2002) **Rural-urban co-development - challenges to post-industrial society**, in Magid, Jacob, Eds. *Urban Area – Rural Areas and Recycling – The organic way forward?*. Report. Danish Research Centre for Organic Farming.

Ingemann, Jan Holm (2002) **The efficiency myth** [Forestillingen om det effektive landbrug]. Paper presented at Greening the CAP - why and how?, Stockholm, 8 february 2002.

Johansen, Pia Heike and Ichihara, Saki (2002) **Discussion Paper for "Changes in interpretation of basis principles" (Draft)**. Arbejdspapirer no. 2002:2, Aalborg University, Institut for Økonomi, Politik og Forvaltning.

Kristensen, Niels Heine (2004) **Sustainable friendly processing**. Working Paper.*

Nielsen, Thorkild (2004) **Minimal and careful processing**. Working Paper.*

Nielsen, Thorkild and Kristensen, Niels Heine (2003) **The concept of 'care' in product and process development in organic food production**. Poster presented at LMC congress, Copenhagen, April 2003.*

Thorkild, Nielsen (2004) **Underlying principles and actual problems for the processing of organic meat products**. Working Paper.*

Danish

Ingemann, Jan Holm (2006) **Andelsorganisering i det landbrugsindustrielle kompleks - en**

historisk oversigt [The evolution of cooperative organisation in Danish agri-industrial complex]. Arbejdsrapport fra Institut for Økonomi, Politik og Forvaltning no. 2006:3, Economics, Politics and Public Administration, Aalborg Universitet.**

Ingemann, Jan Holm (2002) **Økologisk jordbrug mellem historie og principper - Rapport fra OASE workshop I 19. september 2002** [Danish organic agriculture between history and principles]. Working Papers no. 2003:3, Aalborg Universitet, Institut for Økonomi, Politik og Forvaltning.

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

Kristensen NH (2005): The liquidity of the Organic movement – reconversion or reillumination. Paper presented at Working Group 5 at the XXI Congress of the ESRS. “A common European countryside? Change and continuity, diversity and cohesion in an enlarged Europe”.

<http://www.esrs.hu/keszthely2005>. 22-27 August, 2005 Keszthely, Hungary. ISBN 963 460 902 3

Nielsen, Thorkild: Oral presentation in Budapest at the seminar: Processing of organic foods in EU, 2003.

Kristensen, N.H.: Lecture at Research School for Organic Agriculture and Food Systems. Analyzing actor perspectives on sustainability in food chains, Summer school, September 2004

Kristensen, N.H.: Oral presentation on a theme day (“Organic to the People”) at MATFORSK in Ås, Norway: “Danish experiences, October, 2004

F. Scientific education

The project has contributed to a course at DTU: Industrial Food Production and Society. This course is addressed mainly to master students in food science.

Results from the project will also be used in a professional Bachelor in Nutrition and Health at Suhr’s University College. DTU is giving lectures in the specialization called Public Health Nutrition and Food Policy.

The project is also contributing to a PhD student, Mette W. Hansen who is working with values in Danish organic companies. A common scientific article is planned.

G. National and international cooperation

Some of the OASE team has been involved in a European project funded under Key Action 5 of the European Union’s 5th Framework, namely OMIaRD. The focus in this project was organic marketing initiatives and rural development. In this project more than 260 European “organic” companies were localised.

OASE is partner in an Integrated Project under the 6th. Framework. In a subproject the research group is focussing on the processing practices of some selected branches. Partners from Switzerland, Finland, Germany is participating. Knowledge from OASE has informed a literature study

about organic processing.

Technical University is also participating in another EU project under the 6th. framework with special relevance to this project. The project “Ethical Traceability and Informed choice in Food Ethical Issues” also focus on values in food production. Organic food production is integrated in this project, and some of the result from OASE will be continued in this project. The project started in October 2004.

H. Critical reflection on the project

I. Critical reflection on the project

Initially OASE was two separate projects, namely one smaller and more practice oriented project about organic processing, from DTU, and a larger more theoretical project about practice and principles in organic agriculture, from AUC. On the basis of a DARCOF decision one common project was formulated, with the management allocated at AUC, the new project started. The idea was that the project with focus on processing should bring input to the seminars and workshop about principles in organic food production. This worked relatively fine at some of the initial seminars arranged by AUC. When AUC decided to stop finishing the project in the middle of the project, the project was altered once more, now with DTU as the only partner. This also meant that the project entirely focussed on the processing principles of organic foods and that the former focus on the mismatch between principles and practice was reduced.

Although these turbulent “history” of the project it has been shown that the area needs much more focus both in terms of future research in principles a practice but also in terms the future challenges to organic food production. The project have qualified the challenges for the development (expansion) of the organic processing industry and identified the lack of knowledge and the discrepancy in attitudes amongst the relevant actors towards organic processing principles.

8. Budget

A. Account for any change in budgets

B. Budget for the whole project (1.000 DKK)

Year:	Original budget	Consumption before 2004	Consumption 2004	Consumption 2005	Total
Man-months	50,3				
Scientific personnel	45,0				
Technical personnel	22,3				

Year:	Original Budget	Consumption before 2004	Consumption 2004	Consumption 2005	Total
Salaries					
Scientific personnel		905			905
Technical personnel		159	66		225
Other operational costs		135			135
Equipment					
Others (please specify)		25			25
Direct costs		1224	66		1290
Indirect costs (20% of direct costs)		201	45	11	257
Total	1546	1425	111	11	1547

Comments:

9. Signatures and stamps

Name	Institute	Date	Signature
Head of project Thorkild Nielsen	Technical University of Denmark	27. marts, 2006	

Appendix I. Detailed budget

A. Budget for each participating institute (1.000 DKr)

Name of Institute and department:

Department of Manufacturing Engineering and Management
 Technical University of Denmark

Year:	Original Budget	Consumption before 2004	Consumption 2004	Consumption 2005	Total
Man-months					
Scientific personnel	19,0				
Technical personnel	2,9				

Year:	Original Budget	Consumption before 2004	Consumption 2004	Consumption 2005	Total
Salaries					
Scientific personnel	300	336			336
Technical personnel	37		66		66
Other operational costs	90	9			9
Equipment					0
Others (please specify)		25			25
Direct costs	427	370	66		436
Indirect costs (20% of direct costs)	85	31	45	11	87
Total	512	401	111	11	523

Comments:

Name of Institute: AAU (Aalborg Universitet)

Year:	Original Budget	Consumption before 2004	Consumption 2004	Consumption 2005	Total
Man-months					
Scientific personnel		17			
Technical personnel		10			

Year:	Original Budget	Consumption before 2004	Consumption 2004	Consumption 2005	Total
Salaries	1081				
Scientific personnel		569			569
Technical personnel		159			159
Other operational costs	210	126			126
Equipment					
Others (please specify)					
Direct costs	1291	854			854
Indirect costs (20% of direct costs)	258	170			170
Total	1549	1024			1024

Comments:

Disse tal modtaget fra Aalborg Universitet den 16/3/2006.