Research for organic agriculture and public goods

Approved September 2009

1. Introduction

The economic importance of organic agriculture is still growing considerably in many countries in Europe as well as outside Europe. The organic market has reached meanwhile a volume of € 14billion € within the EU. This is also due to the fact that organic production is tailor made to serve consumer's increasing demand for valued added and ethical food. Further, it provides a number of public goods as it internalises environmental costs of agriculture and provides numerous others public benefits, especially those in the area of environment, management of natural resources and viability of rural areas.

Therefore it is important to develop the organic sector further. One of the most crucial actions of the Commissions European Action Plan 2004 for Organic Food and Farming among 21 actions was to, "strengthening training and research at all levels, from the adoption of research programmes in universities or other research bodies, to on-farm training to ensure suitable technology transfer to farmers".

The currently finalised research vision for organic food and farming research 2025 which will be launched this autumn highlights the potential of organic food and farming to be the prototype for a sustainable food system and is highly efficient also in producing secure and high quality foods. Furthermore, the multiplication effect of organic farming research for the whole agricultural sector is considerable.

However, there are still many knowledge gaps and research needs. General basic and applied agricultural research cannot cover all the research needs of the organic food and farming systems. The need for interdisciplinary approaches and complex models is distinctive for this field of research. Moreover, it is important that EU maintain and increase its leadership in high quality and high value foods where an innovative organic food production can significantly contribute to strengthen the competitiveness of the EU food sector. In this context it has to be considered that EU organic production competes also with global organic food production. Therefore, its competitiveness and future highly depends on innovation, novel appropriate technologies and scientific evidence of its superior qualities.

The IFOAM EU Group recognizes the efforts which have been already made by the European Commission to support several research and development projects for organic agriculture in the former 5th and 6th

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Research Programmes. It is important that this support does continue and is even strengthened by allocating significant funds to research for organic food and farming systems. As in the first three calls in the 7th Research Framework Programme only limited funds were available, the IFOAM EU Regional group urges, that in the following calls, more funds will be made available to support innovative research on organic food and farming development. This would allow European research to keep its leadership and competitiveness and would contribute to achieving several goals of different EU level policy strategies.

The importance of research for organic food and farming is also mirrored in the broad support of the industry, CEJA (young farmer organisation) and several European civil society organisations, which support the new Technology Platforms "Organics" (official launch in autumn 2008).

2. Priority proposals of IFOAM EU Group for the forthcoming calls of the EU Research Framework Programme

The following detailed descriptions of urgency topics for research are related to the thematic areas of the Work Programme in the 7th EU Research Framework Programme. Only topics, which have not yet been taken up in the work programme are listed. The list of topics is a result of an IFOAM EU periodical consultation process on research priorities, which has been taken place over several years and which has been updated during summer involving the organic sector in all EU 27 and EFTA countries.

The tables on the following pages will give an overview on the topics, which are described afterwards in detail:

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Tab. 1 Overview of relevant IFOAM EU themes for research topics and their relevance

Score: 1 = very high, 2 = high 3= medium

THEMES (Details see separate paper)	Urgency for organic production	Commentary
Activity 1: Sustainable production and management of biological resources from land, forest and aquatic environments		
Area 1.2 Increased sustainability		
a) Improving the utilisation of functional biodiversity in "low input" and organic agricultural production systems	1	**Core topic!**
b) Improvement of soil and plant health to mitigate and adapt to climate change in organic / low-external-input farming systems	1	**Core topic!**
c) Innovation and development in the field of novel plant-protection agents suited to organic farming	1	**Core topic!**
d) Appropriate input use under regional conditions for organic crop and animal production	1	**Core topic!**
e) Self-regulating sustainable agro-eco systems for future high-value horticulture and animal husbandry in Europe	2	
f) Potential of organic and low-input farming systems and its utilization to improve water retention capacity in European river landscape	1-2	
Area 1.3 Optimised animal health production and welfare		
a) Organic dairy production without antibiotics	1	**Core topic!**
b) Innovation in the field of alternative or complementary medication in organic livestock systems	1	**Core topic!**
c) Prototyping, development and impact evaluation of organic aquaculture	1	**Core topic!**
d) Prototyping of organic poultry production in line with principles and market needs	2	
e) Comparing and optimising the livestock immune system, the stress tolerance & stress recovery and problems with zoonoses under different environments and production systems	2	
f) Alternatives to synthetic vitamins in organic animal husbandry	2	
Area 1.4 Socio-economic research and support to policies		
a) Assessment of transition pathways to sustainable agriculture and social and technological innovation needs.	1-2	
b) Analysis of the CAP reform and Rural Development programme on organic farming	1	**Core topic!**
c) Organic farming and requirements of the Green Box (WTO).	2	

THEMES (Details see separate paper)	Urgency for organic production	Commentary
Activity 2: Fork to farm: Food, health and well being		
Area 2.1 Consumers		
a) Psychological and sociological barriers of consumers and market actors along the supply chain, in dealing with organic and low-input food.	2	
Area 2.2 Nutrition		
a) Food quality – actual dietary behaviour – health – public health costs.	2	
b) Enhancing health-promoting properties of organic food and optimising its organoleptic quality parameters	2	
c) Impact of consumption styles with organic food to health related nutritional needs	2	
d) Impact of a natural diet with organic food on the well being of obese children	1-2	
Area 2.3 Food processing		
a) Adaptation of processing methods to the principles of organic production and for maximising the authenticity	1	Possibility to involve SME's. Core topic.
Area 2.4 Food quality and safety		
a) Harmonisation of contamination residue evaluation and development of a risk-based monitoring approach in organic food and farming	1	Possibility to involve SME's
Area 2.5 Environmental impacts and total food chain		
a) Combining "regionality", food-origin and organic farming in European agriculture	2	
b) Assessment of the compatibility of new technologies with the principles of organic food and farming	1	**Core topic!**

3. Detailed description of priority topics

Activity 1: Sustainable production and management of biological resources from land, forest and aquatic environments

Area 1.2 Increased sustainability

a) Improving the utilisation of functional biodiversity in "low input" and organic agricultural production systems

There is evidence for links between increased biodiversity and improved plant health but, there is still limited use of this functional biodiversity in practice. Improved understanding is needed for interactions between organic matter-based fertility management regimes and soil flora and fauna. The effects of agronomic practices on beneficial organisms associated with disease and pest prevention and the efficacy of environmental diversification measures to control important agricultural pest should be shown on farm level in different crops and climatic regions. Quantitative environmental and economic cost/benefit analyses of functional biodiversity measures will be carried out which can be used by EU and national legislators for policy development.

Proposed funding scheme**:** Large collaborative project

Expected impact**:**
Improved methods for exploiting functional biodiversity in pest and disease management. Improved adoption of environmental diversification measures by farmers due proven agronomic benefits. The project is also expected to provide scientific data for biodiversity and environmental policy development.

Justification:
With respect to the pesticide reduction policy of the EU, functional biodiversity has to be developed and exploited as an indirect pest and disease management strategy. To substantially improve functional biodiversity the funding scheme has to be a "large collaborative project" with research partners of the low-input and organic farming sector.
There is still limited quantitative data and very little work has been carried out to optimise biodiversity focussed strategies with respect to crop protection benefits. Itt will be very important to gain an improved understanding of:

- *interactions between organic matter-based fertility management regimes and soil micro- and meso-flora and fauna; the focus should be on their functions as (a) natural antagonists of soil borne diseases/pests, (b) food sources for predators/parasites of soil pests and (c) decomposers of crop litter/pathogen inocula*
- *the effect of agronomic practices (e.g. fertility and crop protection inputs, crop/non-crop botanical diversity, rotation, tillage, irrigation) on components of the micro- and meso-flora and fauna associated with disease and pest prevention*
- *the efficacy of environmental diversification measures (e.g. beetle banks, field margins) to control important agricultural pest via increased natural enemy populations/diversity*
- *the beneficial (e.g. control of invertebrate pests) and detrimental outcomes (e.g. increased annual weed pressure) of varying density,*

botanical composition, spatial arrangement and management practices of environmental diversification measures.

Interaction between the field and farm associated diversification measures and the background landscape structure/diversity (e.g. the effect of introducing woodlands or large scale energy crops production in a region) should also be considered.

This project has not only a range of different innovative research focus areas, where until now not sufficient data is available, but needs also research setting in different regions and for different crops. This is the justification why a large collaborative project is absolutely needed.

THIS THEME HAS BEEN SUBMITTED TO DG RESEARCH IN JULY 2007
Urgency: very high.

b) *Improvement of soil and plant health to mitigate and adapt to climate change in organic / low-external-input farming systems*

Research should look at the potential of good soil fertility management (via fertilisation, green-manures and high-quality composts) and cultivation techniques such as soil tillage and crop rotations in a) sequestering carbon in soils, thus leading to mitigation of and adaptation to climate change, and b) reducing plant health problems due an enhanced tolerance towards biotic and abiotic stress. The work should specifically address air- and soil-born diseases in organic and low-external-input farming systems. Novel technologies for improving the health status of plants (e.g. with soils with disease-suppressive abilities) should be investigated and tested in different climatic regions. Participatory on-farm research and specific extension & dissemination activities are essential.

Proposed funding scheme: Large collaborative project

Expected impact:
A better understanding of the interactions between soil properties, plant health parameters and improved practices to mitigate of and to adapt to the climate change impact. Development of specific strategies of soil management for different crops to improve their health status.

Justification:
Due to climate change impact, it is likely that novel pest and diseases will appear in European agriculture caused by abiotic and biotic stress. Moreover, there is a need to further reduce the pesticide input in agriculture to enhance its sustainability. The optimisation of soil management on one side can strengthen soil and plant health to better respond to the novel threats; on the other side it can mitigate the climate change impact.
THIS THEME WAS SUBMITTED TO DG RESEARCH IN NOV. 2005/ THE THEME HAS BEEN UPDATED IN SEPT. 2008
Urgency: very high

c) ***Innovation and development in the field of novel plant-protection agents suited for organic farming.***

Innovation in the field of plant protection agents for organic farming is still poor because the potential market (organic land area for different crops) is very small. There is a need to help SME's develop novel products, equipment, software and diagnostic tools, e.g. in combination with CRAFT projects. In addition, registration procedures in most EU countries represent a severe obstacle and are very inconsistent from country to country. Scientific and technical innovation has to come from a joint effort of universities, independent research groups and small bio-control enterprises, supported by the EU.

Proposed funding scheme: Large collaborative project

Expected impact:
A range of novel products and techniques can be expected, which will replace old pesticide practices in organic farming (copper, sulphur, nicotine, rotenone). Preventive management practices and the stabilizing effect of biodiversity (functional biodiversity) should be considered when developing and screening novel compounds and techniques.

Justification:
In many countries the lack of appropriate plant protection agents suited for organic farming is a major barrier for the development of organic farming. One reason is also the high costs of to get all necessary data for facilitating the registration process

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN NOV. 2005
Urgency: very high

d) ***Appropriate input use under regional conditions for organic crop and animal production***

Food production and processing often require inputs such as plant protection products, fertilizers, soil conditioners, feed additives and processing aids. Best organic practice is achieved by using inputs as little as possible. If inputs have to be used the appropriate inputs have to be chosen, taking regional regional conditions.into consideration. The range of allowed products is regulated at Community level. However, exceptions are foreseen in the new EU «Organic Regulation» (EC) 834/2007 (flexibility article no. 22, exceptional production rules). The project will elaborate proposals how to achieve the use of the «right inputs under the right conditions». It will compare promising new inputs with currently allowed inputs and analyze different approaches of regulating the conditions for use (e.g. at regional or crop level). Proposals will take into account necessity, availability of alternatives, regional differences and traditions. They will reflect the objectives and principles of organic farming, will be easily verified in organic inspection and certification and will integrate different stakeholders views. Furthermore adequate conditions for

use are a prerequisite for evaluating new inputs and comparing them with currently allowed inputs.

Proposed funding scheme: Small collaborative project

Expected impact:
With respect to inputs use, organic farming will become the «best regional farming practice» under a wide variety of conditions encountered in Europe. This meets the expectations of various stakeholders, improves consumer trust and offers additional synergies between regional and organic marketing. The results will support the EU Commission and the EU member states as well as control bodies in the implementation of the EU Regulation (EC) 834/2007.

Justification:
The new EU Regulation EC 834/2007 introduces flexibility rules, which were not present in the former Regulation EEC 2092/91. Until now there is no experience with the implementation of these flexibility rules in practice. This project will provide the scientific knowledge necessary to support the political decision making process of the EC.

THIS THEME WAS SUBMITTED TO DG RESEARCH IN JULY 2007/THE TEXT IS UPDATED RELATING THE THEME TO THE NEW EU-REGULATION (EC) 834/2007
Urgency: very high

e) *Self-regulating sustainable agro-ecosystems for future high-value horticulture and animal husbandry in Europe*

The overarching goal of this program is to provide key horticultural and animal husbandry sectors with new and enabling technologies to build the basis for sustainable, highly self regulation and high-value production. These innovative agro-eco systems will be characterized by no- or little input of external agents for plant or animal protection, highly beneficial side effects on biodiversity, soil fertility and landscape protection, but also by high quality output product and good profitability. The biggest constraint for example for organic vegetable, fruit, berry or free range beef production is that current management practices are often not convincingly sustainable because they are principally based on systems that have been developed for or within conventional or integrated production. This leads to the fact that although all inputs are natural, organic production is run on a very high intensity level in respect to e.g. the frequency of spray or anti-parasite agent applications. In integrated production the situation is rather worse than better. This development, however, does not fit, at all, the expectations of the consumers who expect organic or sustainable farming systems to be a very low or even no input production.
The project will research basic understandings to exploit by a much higher degree self-regulating mechanisms of disease and pest control in innovative agro-ecosystems that will also meet a clearly higher consumer acceptance than actual agriculture has. The program addresses model-wise high value products as vegetable, fruit, berries and free range beef production. To investigate the necessary system interactions the program seeks for an

intensive interdisciplinary approach between specialists in plant and animal production (e.g. physiology, pest and disease control), animal ethology, biologists and ecologists in the field of wild fauna, flora, soil and life cycle assessment. But also socio-economic aspects over the whole production chain including retail and consumers are investigated. Dissemination leading to a fast and direct practical application of the program's research findings to the levels of producers, retailers and consumers is highly emphasized and a central goal in this project.

Proposed funding scheme: Large collaborative project

Expected impact:
The project will increase consumer acceptance of European high-value agricultural products trough truly, clearly visible and scientifically proved self-regulating agro-ecosystems. Alongside to this, it will increase the trust in European agriculture itself and stimulate the consumption of healthy, high-value horticultural and free-range animal products produced from agro-eco systems with proven beneficial side-effects on groundwater, soil fertility, biodiversity, life-cycle assessment and landscape.

THIS PROJECT COULD ALSO BE SPLIT IN 2 PROJECTS
THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN NOV. 2005
Urgency: high

f) *Potential of organic and low-input farming systems and its utilization to improve water retention capacity in European river landscape*

Flood damages caused by flooding European rivers are in our day's one of the most relevant disasters with highly relevant economic consequence. These problems are closely related with land use of river landscape. This landscape provides greatest ecosystem services, nevertheless is the most devastated area. Resultant situation is a ground for negative effects as frequent flood events, high soil erosion, decline of water quality and water supply, loss of biodiversity, negative impact on climate and atmosphere etc. This all leads to extreme decrease of economic yield from river landscape and the estimate of economic damage is e.g. in the Czech Republic 16 milliards EUR per year and the situation in other countries is probably very similar.
With agricultural areas to be the main form of land use, the cultivation of arable land is the cause of the most described negative processes in river landscape. This project wants to investigate the potential of extensive agriculture systems as organic farming and its contribution to flood prevention through changes in land use. There is evidence that organic production techniques lead to improved water retention capacity of soils and improved water quality. However, so far no research is available which analysed the potential of an improved water retention capacity to reduce flooding risks of rivers or better water management.
This requires a multidisciplinary approach of hydrologists, agronomists, ecologists, economist and landscape planners. On the basis of hydrologic models, the impact of different farming systems and land use patterns on the water retention capacity will be analysed.

Proposed funding scheme**:** Medium to large collaborative project

Expected impact:
On the basis of the model outcomes the agronomic, the ecological as well as the economic impact will be assessed as a basis for specific recommendations for optimizing the land use of river landscapes in Europe.

Justification**:**
River landscapes presents 19% of total area of European Union and most of them are threatened by large flood events. Present experiences are based just on solving of these particular flood events caused by heavy rainstorms, however complex examination is missing. This project will provide the scientific knowledge based on the multidisciplinary approach and will investigate the potential of extensive agriculture systems as organic farming and its contribution to improve water retention capacity in European river landscape.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN JULY 2006 and was updated in September 2008.
Urgency: high

Area 1.3 Optimised animal health production and welfare

a) Organic dairy production without antibiotics

Mastitis still is the major health problem of cows in European organic dairy production. It causes severe economic losses by low yields and marketing restrictions because of residues of antibiotics. Organic milk produced under the USDA regulation is free of antibiotics mainly because dairy cows suffering from mastitis are removed and slaughtered. For a sustainable and cost-efficient dairy production, novel and holistic concepts of mastitis prevention and mastitis control have to be developed. Prevention strategies, optimising milking technology, feeding regime, housing and free range regime as well as the animal-farmer relationship, are one approach to follow; alternative medication and complementary therapies are another.

Proposed funding scheme: Large collaborative project.

Expected impact:
The project will help to find alternative strategies to reduce the use of antibiotics.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN NOV. 2005
Urgency: very high

b) ***Innovation in the field of alternative or complementary medication in organic livestock systems***

Innovation in the field of alternative or complementary medication for organic livestock is still poor because potential markets are very small. There is a need to help SME to develop novel products, equipment, software and diagnostic tools, e.g. in combination with CRAFT projects. In addition, registration procedures in most EU countries represent a severe obstacle and are very inconsistent from country to country. Scientific and technical innovation should come from a joint effort of universities, independent research groups and specialised enterprises, supported by the EU. A range of novel veterinary treatments such as phytotherapy and homeopathy can be expected which will replace (or complement) synthetic allopathic medication in organic livestock systems. The project should gather necessary toxicological data through facilitating the preparation of the registration. The efficiency of the products should be tested in combination with optimising the preventive measures. Participatory on-farm research and specific extension & dissemination activities are essential.

Proposed funding scheme: Large collaborative project.

Expected impact:
Allopathic medication will become increasingly obsolete because of the residues in meat, egg and dairy products and because of the negative impact on soil and water, via faeces and urine excretion. Alternative concepts are based on tolerant or resistant breeds and on prevention through herd management. Nevertheless, alternative medicines are needed in order to complement preventive measures. The costs of such innovative developments exceed the research funds of SME's and bigger companies are often not interested. As such veterinary drugs and techniques require appropriate registrations procedure; a Europe-wide approach is all the more justified in order to facilitate the market supply.

Justification:
The new EU "Organic Regulation" EC 834/2007 (which enters into force in 2009) emphasises the use of phytotherapeutic, homeopathic and complementary products instead of the use of chemically synthesised products to treats animal diseases. More research is necessary to deepen the knowledge about the efficiency and optimal use of these products.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN NOV. 2005
Urgency: very high

c) ***Prototyping, development and impact evaluation of organic aquaculture***

The new Council regulation for organic production (EC) 834/2007, which will replace the EU Regulation 2092/91 for organic Agriculture and EU regulation 1804/99 and will be implemented from 2009 or 2010 on, will take up rules for organic aquaculture. This mainly followed consumers request for healthy and

safe food. Fish products are considered and advised as important ingredients of a balanced and healthy diet but at the same time they have often been involved in scandals because of product contamination (mercury or other heavy metals, drugs etc.) and induced water pollution. As an innovative alternative for consumers the Organic Aquaculture - practiced on base of mostly private and some national standards – claims to produce consumer friendly and environmentally sound fulfilling issues regarding environment protection and food safety requests. Even when some European retailer already sell fish from organic aquaculture, based on these mentioned private inspection and certification systems, quite successfully, there is nearly no knowledge about the consumer segments and their motives to buy organic fish. There also are no information about the consumer expectation and association for organic aquaculture. And there are little scientifically based data and research results to orientate legislation decision and to propose economic, environmentally sound and quality oriented production systems to professionals.
The objective of this project should be the evaluation of existing standards' contents in respect of scientific justification through comprehensive scientific research in the fields of ecology, bio-geo-chemistry, animal welfare, life-cycle-analyses and others. Further objective of the project should be to identify through research activity and prototyping of a set of indicators to evaluate economic, product quality, market and consumer acceptability and the economic performance of aquaculture production systems that could become models of organic aquaculture. The partnership should include public or private research institutes, government agencies, organic sector associations and professional aquaculture unions.
Representatives from DG Fisheries, DG AGRI and from different Member States with important aquaculture production should be involved.
A multidisciplinary approach is proposed: water quality and environmental impact, animal welfare, alternative prophylaxis, appropriate species selection, product quality and typology.

Proposed funding scheme: small collaborative project

Expected impact:
Optimised prototypes and scientifically based code of conducts of organic aquaculture production for different aquaculture contexts (Mediterranean, tropical aquaculture (shrimp etc.); Northern Sea, river, and lagoon) as a basis for a Community wide development and promotion. Knowledge about consumer behaviour, attitudes and perceptions regarding organic fish. Parameters and indicators to evaluate economic, ecological as well as consumer and market acceptability performance of organic aquaculture systems. Carbon fingerprinting for different production systems.

Guidance and criteria for the further elaboration and adaptation of the implementation rules of the EU regulation for organic aquaculture. Criteria for EU, National and Regional policy support of organic aquaculture development.

THIS THEME WAS SUBMITTED TO DG RESEARCH IN JULY 2007
Urgency: very high

d) ***Organic poultry production in line with principles and the market***

The new adopted EU regulation for organic production in June 2007 has introduced principles for the production of organic food. In the area of organic poultry production there are challenges how to achieve 100 % organic feed as well as to optimize the outdoor systems with regard to animal welfare, food safety. The project should include feeding strategies, in particular to ensure an optimized protein sourcing/feeding as well as, further development of animal as well as environmentally housing and outdoor systems.
Could be small collaborative project with industry involvement.

Proposed funding scheme: Small collaborative project with industry involvement

Expected impact:
Contribution to solving bottlenecks of organic poultry production. Support in the development of the EU Commission implementation rules for organic production.

THIS THEME WAS SUBMITTED TO DG RESEARCH IN JULY 2007
Urgency: high

e) ***Comparing and optimising the livestock immune system, the stress tolerance & stress recovery and problems with zoonoses under different environments and production systems***

In organic and low-input rearing systems, the prevention of disease and parasites is the major step towards securing the health of livestock. The production system strongly influences the health status of livestock, both positively and negatively. Interactions between production system or method (e.g. intensity, housing, free range rhythm), the environment and the breeds should also occur. In an integrated project, strategies for optimising the health status should be developed which are tested in different case study regions with cattle, poultry, pigs and sheep or goats. Immune system, stress tolerance & stress recovery should be studied, as well as potential problems with major zoonoses and the microbial ecology of the organisms involved. Participatory on-farm research and specific extension and dissemination activities are essential.

Proposed funding scheme: Large collaborative project.

Expected impact:
Better understanding of the interactions related to the livestock immune system as a basis for appropriate strategies.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN NOV. 2005; *Urgency: high*

f) Alternatives to synthetic vitamins in organic animal husbandry

In EU Regulation 2092/91, the use of synthetic vitamins is restricted to non-ruminants and not allowed for ruminants. In a number of countries, farmers observe insufficient vitamin supply in cattle, sheep or goats. An analysis in different countries shall analyse if and under which conditions such problems occur and with which strategies these problems can be solved. Alternatives to the use of synthetic vitamins must be developed, for both ruminants and non-ruminants. Special emphasis should be given to reducing dependency on off-farm sources. Feeding experiments should be conducted with different regimes, preferably in an *on-farm* context. Dissemination activities to farmers, advisors and veterinarians are essential, as well as recommendations for the adaptation of the EU Regulation 2092/91.

Proposed funding scheme: Small collaborative project

Expected impact:
Better understanding of the challenges associated with vitamins in organic animal feeding as a basis for the development of alternative strategies fulfilling the requirements of the EU regulation for organic production.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN NOV. 2005
Urgency: high

Area 1.4 Socio-economic research and support to policies

a) Assessment of transition pathways to sustainable agriculture and social and technological innovation needs

European agriculture is facing new challenges in terms of social, environmental and economic sustainability. There is a need to sustain economic competitiveness in increasingly globalised and concentrated food supply chains, while simultaneously meeting societal and policy demands for providing new goods and services, and guaranteeing higher standards of food safety, quality and transparency. Against this background it is important to explore different future transition pathways for EU agriculture (e.g. organic farming, integrated farming, etc.) and possibilities for farm households in different regional contexts across Europe to adequately respond to changing market, policy and societal environments. The need for agriculture to provide multiple functions beyond the production of food and fibres implies that EU farming increasingly has to be attuned to diverse social, cultural and ecological contexts. Also, agriculture needs to be increasingly (re-) embedded in society at large, implying a growing role for producer-consumer co-operation, changing rural-urban relations and public-private partnerships. Across Europe there is a promising and well-documented range of initiatives at farm and regional level (organics, green care farming, quality food systems, green public procurement etc.), but it is insufficiently clear what are the social, institutional and technological innovation needs involved in a further scaling up and dissemination of such promising farm development

models. Also, the transition of EU farming to meeting a broad range of sustainability aims requires better insight in possible institutional arrangements, support measures and required socio-technical networks amongst actors within the farming community, policy, technology and wider society.

Proposed funding scheme: Small or large collaborative project

Expected impacts:
Insight in different possible future transition pathways for EU agriculture and their applicability and public support base (farming community, wider society) in different regions across Europe. Assessment of potential contribution of different pathways to social, environmental and economic sustainability aims. Concrete examples of ´best practices of innovative farm development models that meet a broad range of societal and policy demands (e.g. organic farming, etc.). Insight in social, institutional and technological innovation needs required in the scaling up and dissemination of promising farm transition pathways, as well as arrangements and support measures that may contribute to resolving these. Science-society dialogue. Involvement and participation of SME's and relevant societal actors at different levels.

THIS THEME WAS SUBMITTED TO DG RESEARCH IN JULY 2007
Urgency: high

b) Analysis of the CAP reform and Rural Development programme on organic farming

Both pillars of CAP Reform of Single Payment and the RD programme are supposed to create new opportunities for organic farming in the EU. Research would analyse their impact on economic performance of organic farming, the organic market, rates of conversion and some non-commodity outputs, using economic models with different scenarios of distribution of payments between the first and the second pillar. It should consider the role of organic farming in European agriculture in 2020 including the economic impacts of a potentially significantly larger sector (>20%) and what policy framework for 2014-2020 would be needed to achieve this.
Case studies in old as well as new member states and candidate countries would evaluate how the organic agriculture sector in different regions can benefit from CAP measures, including the 4th RD axes. Recommendation on the role of organic farming in future CAP will be developed.

Proposed funding scheme: Small collaborative project

Expected impact:
Better understanding of the interactions related to the livestock immune system as a basis for appropriate strategies. The EU would benefit in terms of input into the review of the Single Payment Scheme and on recommendations on how organic farming could become a major element in future Common Agricultural Policy after 2014.

Justification:
Organic farming is considered to enhance the sustainability of the agricultural sector in Europe and to contribute to the European rural development. To ensure the efficacy and efficiency of the CAP reform and the Rural Development Programme, it is necessary to analyse the impacts of CAP and Rural Development Programme measures on the organic farming sector. In turn, it is crucial to understand the impact a larger organic farming sector would have on the economic and social development of the European rural areas. Strong European rural areas would considerably increase the competitiveness of European economy.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN JULY 2006
Urgency: very high

c) Organic farming and requirements of the Green Box (WTO)

Organic farming offers an excellent opportunity to combine multi-functionality with agricultural production. Literature studies show that organic farming can provide public goods and services to a greater extent compared to other farming systems. However, these have to be scientifically quantified and qualified under the extreme variation of site and climate conditions throughout Europe. Emphasis should be given to different farm types (low input, high input organic farming, specialised units versus mixed farms etc.). The social benefits of different farming systems should be evaluated as well, including animal welfare aspects. External costs of non-organic agriculture need to be taken into account. To allow for policy recommendations the effectiveness and the efficiency of organic farming's systemic approach to contribute to a multifunctional EU agriculture should be assessed in-depth against the background of the WTO requirements. This requires including the quantitative assessment of the externalities of organic and non-organic agriculture. An ecosystem service monitoring system/tool with an application for various organic farming systems should be developed.

Proposed funding scheme: small collaborative project

Expected impact:
The European Commission recognises in the published EU Action Plan for organic food and farming the dual societal role of organic agriculture providing. In deed, in this respect, provision of public goods and services and infant market responding to consumer concern are in full compliance with WTO requirements. However, policy makers do not yet perceive organic farming as a crucial instrument of the common agricultural policy. It is therefore important to explore organic farming's potential to contribute to the Common Agricultural Policy and thus the effectiveness and efficiency of organic farming as a policy instrument to achieve the policy objectives of the Common Agricultural Policy under the framework of the WTO

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN NOV. 2005
Urgency: high

Activity 2: Fork to farm: Food, health and well being

Area 2 .1 Consumers

a) Psychological and sociological barriers of consumers and market actors along the supply chain in dealing with organic food

Several consumer studies confirm a positive attitude of consumers and traders towards buying organic food. However, the real consumption is much lower than what could be expected from these surveys. Recent market tests indicate that consumers – when having a choice between identical products at the same price, one labelled organic and the other one not labelled – significantly prefer the not labelled one, because organic labels are prejudiced as being very expensive. Other studies indicate that consumers are more interested in single claims (like animal welfare, bird or wildlife conservation, faire trade, no additives in processing etc.) than in the holistic claim "organic" although organic includes all these claims.
Barriers for successful organic strategies can also be found within processing companies and big retailers. Contradictory opinions between decision makers (in marketing, sales, purchase departments) or the matrix organisation structure in companies (category managers versus organic product manager) can lead to suboptimal or even unsuccessful marketing initiatives.
Good examples show that organic food could be a very successful and economically interesting marketing strategy. Therefore, obstacles for a wider-spread integration of organic food in conventional food retailers should be analysed in an integral way addressing economic, sociological and psychological facts and attitudes. Experimental preference tests and qualitative survey techniques on the consumer side and surveys which base on the 'principal-agent-theory' on the market actor side would be adequate research methods in order to develop constringent recommendations for successful market initiatives.

Proposed funding scheme: Small collaborative project

Expected impact:
The EU Action Plan on organic farming intends to increase the organically managed land area within the EU. Such action plans have also been implemented on national level in most members states recently. As organic farming delivers spectacular societal benefits (ecological goods and services, safe and premium quality foods, ethical benefits like animal welfare etc.) it is crucial to overcome market constraints.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN OCT. 2006
Urgency: high

Area 2.2 Nutrition

a) Food quality – actual dietary behaviour – health – public health costs.

In almost all countries, public health costs are rising. The relation between actual dietary behaviour and public costs is often difficult to establish. Furthermore, it would be interesting to know what role high quality food, such as those from organic farming and low-input farming systems, combined with sustainable consumption modes, can play in reducing public health costs. There is still a concern that substances used in intensive agriculture and their combinations may have as yet unidentified negative effects on health, especially their possible roles in the increasing incidence of allergies, behavioural disorders and reproductive problems. It is therefore still urgently necessary to analyse interactions between different food or feed qualities and health parameters, using all possible approaches such as in vitro models, animal models (e.g. pigs) or dietary intervention studies and cohort epidemiological studies. A special focus should be on the impact of organic and conventional food diets on improving the human immune system. Interactions between eating patterns, food quality and obesity should also be addressed, because there is some evidence that especially tasty and authentic food can reduce obesity. And finally, there is a huge trend in food quality research to using complementary methods in order to gain additional information on food quality, such as picture-developing methods, bio-photons and electro-chemical methods. These methods should be evaluated in relation to analytical methods and in relation to possible health impacts. Recommendations for policy makers and market actors should be developed. In the project, an interdisciplinary focus will be crucial, involving medicine, economics, nutritional science and social sciences (especially psychology).

Proposed funding scheme: Large collaborative project

Expected impact:
Public health costs have been permanently rising; part of these excess costs being linked to shifting dietary behaviour, but some of them might also be caused by deteriorating quality of food due to considerable industrialisation of agricultural production methods. The latter effect can be both qualified and quantified by approaches comparing the impact of conventional and organic food on different model organisms, either cell culture, animal models or human populations. It is also very valuable to use organic food in such studies, because health claims are very common with this kind of food and because organic food is especially suited to communicating about health problems caused by inappropriate eating behaviour and industrialised food quality.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN JULY 2006
Urgency: high

b) ***Enhancing health promoting properties of organic food and optimising its organoleptic quality parameters.***

In the premium price food sector, the consumer expects the products to have an excellent taste, best intrinsic and extrinsic qualities and health benefits. An increasing number of functional or designer foods are being introduced into this market sector and compete with organic produce. Other than functional foods, organic food gains its quality (both on the health and taste side) by interaction between management technique, soil properties, feed-stuff quality, climate, varieties, breeds and human knowledge. This approach to improving the taste of food and health promoting compounds in food is a very powerful but also a very demanding one. In the effort to produce a constantly high quality, not enough is known of the effect of individual factors and their combination on taste and quality.

Proposed funding scheme: Large collaborative project

Expected impact:
Research and dissemination of knowledge in this field should help to let organic food participate in the fast-growing market for premium and health foods.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN OCT. 2006
Urgency: high

c) ***Impact of consumption styles with organic food to health related nutritional needs***

National consumption and nutrition reports demonstrate clearly deficiencies in the diet of the European consumers. The increase of nutrition-related diseases in the civilised world reflects problems in the established food system. Different hypotheses explaining possible causes have been formed, mainly an inadequate diet composition, but also a possible decline in food quality. The consumption rate of organically produced foods in Europe is growing. Several studies indicate that eating organic food for example reduces the intake of pesticide residues at the same time has the potential to enhance the uptake of health promoting substances. But a simple switch from conventional to organic foods without a change in diets and lifestyle is not likely to make a crucial difference for nutrition related health issues. Possible nutritional health effects are dominated by the consumption style of the single consumer connected with the product profiles of the selected foods and the composition of the whole diet. Studies focussing on the interaction between organic food choice in connection with eating habits and possible effects on nutrition related health diseases thereof do not exist.
The overall target of the project is to generate specific data on the eating habits of "organic" consumers, which have a significant high portion of organic food. These results will be examined and evaluated as to their impact in regard to a healthy diet composition as it is defined by modern nutritional sciences.

Proposed funding scheme: Small collaborative project

Expected impact:
The results will contribute to alimentary advice and will be an interesting source for product development and communication in the food sector.

THIS THEME WAS SUBMITTED TO DG RESEARCH IN JULY 2007
Urgency: high

d) Impact of a natural diet with organic food on the well being of obese children

During the last decades a major increase in the prevalence of juvenile obesity in Europe (WHO) has been observed which is often associated with the incidence of chronic diseases. Besides several inpatient treatment programmes, permanent lifestyle changes lead to successful reduction of weight and body fat. Research is needed to investigate the effects, mechanisms and benefits of natural diets such as organically grown foods for a successful weight management therapy.
The objective is to study the impact of a natural diet and its specific food components (i.e. antioxidants, additives, residues) on the body composition, weight management, behaviour and subjective well being of obese children in different European countries, respecting the typical cuisine and lifestyle of the different cultures.
The research should include a double blinded randomized intervention study design, analysis of different health indicators as well as quality analysis of foodstuff used for the organic and conventional diets.

Funding scheme: medium-scale collaborative project

Expected impact:
Innovation of new integral methods for weight management of obese children, scientific assessment on the impact of different product qualities in therapy methods for obese children resulting in an improved weight management. Food quality parameters of different diets are analyzed, i.e. pesticide residues, additives, antioxidants, etc. and their effect on children's physical conditions (fitness, pesticide in urine, anti-oxidative capacity in blood, etc.) and mental and cognitive capacities (satiety, subjective well being, behaviour, quality of life etc.). Formation of an interdisciplinary network of excellence (physicians, nutritionists, psychologists, agronomists and food SME's)

Justification:
Studies comparing quality parameters of organic and conventional food showed significant differences in several health related nutrient contents, such as antioxidants, CLA, vitamins etc. Furthermore, organic products contain significantly lower quantities of pesticide residues, processing aids and additives. Their impact on health and weight management is being intensively discussed and studies showed that the pesticide residue content in urine drops significantly when consuming organic diets.

THIS THEME WAS SUBMITTED IN JULY 2007 TO DG RESEARCH /THE TEXT HAS BEEN UPDATED IN SEPTEMBER 2008
Urgency: very high

Area 2.3 Food processing

a) Adaptation of processing methods to the principles of organic production and for maximising the authenticity

The new adapted regulation for organic production of June 2007 defined for the first time principles for the processing of organic food. This demands to adapt organic processing methods including industrial once to these principles. More and more processors are developing concepts for establishing careful, authentic and environmental friendly processed food product placed on the market in sustainable food chains. This could include social responsible concepts on regional, national and trans-national level.
There is a need to translate these approaches in technological concept in collaboration with SME's. The consumer perception towards processing of organic food should explored by the means of qualitative methods. Existing processing technologies for organic food will be assed via matrix analyses in order to identify technologies not fully in line with principles in the EU regulation for organic production and consumer expectations. Based on this assessment processing some technologies will be selected as examples. The examples could focus on industrial processes (e.g. sweeteners, starch, and milk).
In participative processes with relevant SME's technological concepts and management tools will be adapted or new innovative concepts (e.g. food ingredients with technological functions instead of additives, reduction of heat impact) for the selected examples will be developed. A manual for food processors will be elaborated.

Proposed funding scheme: Small collaborative project (collaboration of SME's)

Expected impact:
Recommendations to the EU Commission for the implementation of the new EU regulations and guidelines for the processors will be developed in order to enforce the production and placement on the market of careful, authentic and environmental friendly processed food in sustainable food chains and the competitiveness of the European food sector.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN JULY 2006, BUT THE TEXT HAS BEEN REFORMULATED.
Urgency: very high

Area 2.4 Food quality and safety

a) Harmonisation of contamination residue evaluation and development of a risk-based monitoring approach in organic food and farming

Organic agriculture claims not to use synthetic pesticides but makes no claims concerning environmental background contamination or persistent compounds in soils that were applied twenty to thirty years ago. The occurrence of pesticide residues on organic foods has become a special concern, not as a human threat but in terms of consumer expectations. When residues are present, they are of lower incidence and lower levels than residues in and on non-organically produced food. Efforts to prevent carrying off of pesticides or insufficient separation of organic and non-organic material are enormous and are standard procedure in organic farming and processing systems. Certain levels of synthetic pesticides as well as other contaminants can, therefore, be expected in organic foods and must be accepted. In addition, there are little data on background contaminations with synthetic pesticides. However there are a few private and/or national governmental initiatives starting with residue-monitoring projects. At this moment, there is no common EU approach towards residue contaminations in organic products.

Proposed funding scheme: Small collaborative project

Expected impact:
Elaboration of a harmonization strategy in terms of assessment of residues and other relevant contaminants in organic foods. Development of different tools and action procedures for the organic sector in the EU to diminish and prevent residue contamination in organic products: an international database on pesticide residues on organic foods, strategically sample planning on selected types of organic food chains, a monitoring system for organic foods. Cooperation between a great number of organic stakeholders such as agriculture, processing, trading, certifying, controlling and food control authorities) from many different EU countries.

Justification:
A common approach for residue evaluation will overcome the great uncertainty in the organic market in terms of handling residue cases and will provide clear quality assurance procedures and tools for all stakeholders involved such as producers, processors, traders and certifiers.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN JULY 2006 /THE TEXT WAS UPDATED IN SEPT. 2008
Urgency: very high

Area 2.5 Environmental impacts and total food chain

a) Combining "regionality", food-origin and organic farming in European agriculture

In many European countries, some consumers associate organic farming with "regionality". The local origin of food is an important buying motive. There are two issues to be explored: a) the ecological and economic impacts of short regional food chains (food miles, efficiency) and b) organic farming's potential for contributing to rural development policy aims. Particularly, the linkage of "regionality" and organic farming has interesting potential to be explored. Besides creating more trust for the consumers, the stronger integration of regionality into Organic Agriculture has the potential to link rural development objectives with sustainability objectives, in particular in regions where the number of organic farmers is relatively high. The socio-economic benefits of integrative concepts of regionality and Organic Agriculture for rural development, e.g. with the "Bioregions" approach, where new partnerships between organic farmers, local processors, traders, gastronomy, tourism and local communities are built up, have to be analysed. The contribution of such initiatives to maintaining the rural population and to the regional economy has to be explored. The institutional framework for promoting such approaches has to be outlined.

Proposed funding scheme: Small collaborative project.

Expected impact:
Recommendations to the EU Commission how the legal framework could be further developed in order to facilitate the developments of integrative concept of regionality and organic farming.

THIS THEME WAS SUBMITTED BY IFOAM EU GROUP TO DG RESEARCH IN JULY 2006
Urgency: high

b) Assessment of the compatibility new technologies with the principles of organic food and farming

Several new technologies might have applications in farming and food processing. As an example, nanotechnology can be used for the manufacture of plant protection products, veterinary medicines, food and feed additives, packaging and food processing materials, and many other areas. Other examples are related to new specific techniques used in breeding. Whether or not upcoming technologies are compatible with organic farming is not evident from the "Organic Regulation" EC 834/2007, but has to be determined in a political process. The project will establish an overview of new technologies with potential applications in organic farming or food processing, collect technical/scientific information on these technologies, carry out an evaluation in the light of the principles of organic farming, layed down in the new Council Regulation (EC) 834/2007 and provide a discussion forum for different stakeholders.

Proposed funding scheme: Small collaborative project

Expected impact:
The project will facilitate rapid decision-making and a broad consensus concerning the acceptance or rejection of upcoming technologies in organic farming. This will strengthen consumer trust and is a basis for further developments by the industry. In the case of accepted technologies, it will also ensure rapid progress of EU organic farming and food processing. In the case of the rejected technologies, it will ensure consistency with organic farming principles and consumer trust.

Justification:
New technologies have a great potential for the further development of organic farming, but some of them also could threat the integrity of organic farming principles. The aim is to authorise only those technologies which allow harmonious development of EU organic farming in line with the principles of organic farming. The project will provide the basis for decision making on the use of new technologies in organic farming and food processing.

THIS THEME WAS SUBMITTED TO DG RESEARCH IN JULY 2007 /THE DESCRIPTION HAS BEEN UPDATED.
Urgency: very high

Ends