CORE organic

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D 4.1b: Analysis of OFF research topics in CORE Organic participating countries

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Analysis of OFF research topics in CORE Organic participating countries

Made by
Arja Nykänen, Ministry of Agriculture and Forestry of Finland
Stefano Canali, Agricultural Research Council, Italy

Contents

1. Background

This analysis of OFF research in the participating countries of CORE Organic is based on titles of projects running during the time period 2000-2007, with some variation from country to country. Lists of project titles were taken from Country Reports (DK, FR, IT, SE) or received from country representatives (AT, CH, FI, GE, NL, NO, UK). Uncertainties and sources of mistakes in the analysis may be due to the following:

1. Lists from different countries cover different time periods, which might have some influence on the comparability of the results. The time periods of different countries have been chosen on the basis of information available on the research topics as well as on the budgets of OFF research in each country, mapped in WP3. Now these two sets of data can be compared. The following Table 1. lists the time periods covered in different countries.

   Table 1. Time periods and number of projects included in the analysis in each country

Country	Years	Number of projects
AT	2000-2004	59
CH	2004-2007	196
DK	2000-2005	41
FI	2000-2005	75
FR	2001-2006	90
GE	2002-2006	360
IT	2000-2005	20
NL	2005-2006	140
NO	2000-2005	48
SE	2001-2006	129
UK	2000-2005	124

2. The number of projects varies a lot between different countries (from 20 to 360, see table above).
3. There are also substantial differences in the project size among the countries. This means that the number of projects per country merely reflects the organisation of the research and not necessarily the quantity of the effort. The same applies to different subject areas. Quite often, for example, Animal husbandry research is more expensive that Farm economic research.
4. The share of projects under different categories has been obtained only on the basis of the title and/or key words of the project. Most of the projects are under one subject area, but quite many have been classified under several subject areas. How many of the projects are classified under more than one category depends on several factors, such as how familiar the contributors to this report were with the content of each project, as well as with the system of subject areas and sub-subject areas that was used for the classification.

In Figure 0, the data of this analysis are shown as shares (%) of research topics and budgets according to different subject areas. The figures based on research topics can be compared to the money spent on research of different subject areas. Budget numbers are the means of the above- mentioned time periods.

In most cases the difference between the shares of research topics and budget is not very large. Almost all differences are within the boundaries of 10 percentage units. In some cases it seems that no money has been spent for a certain subject area (values, standards

and certification in FR, IT, NL and NO), although some research topics are apparent. This is probably because of a different categorisation of projects, made by different persons.

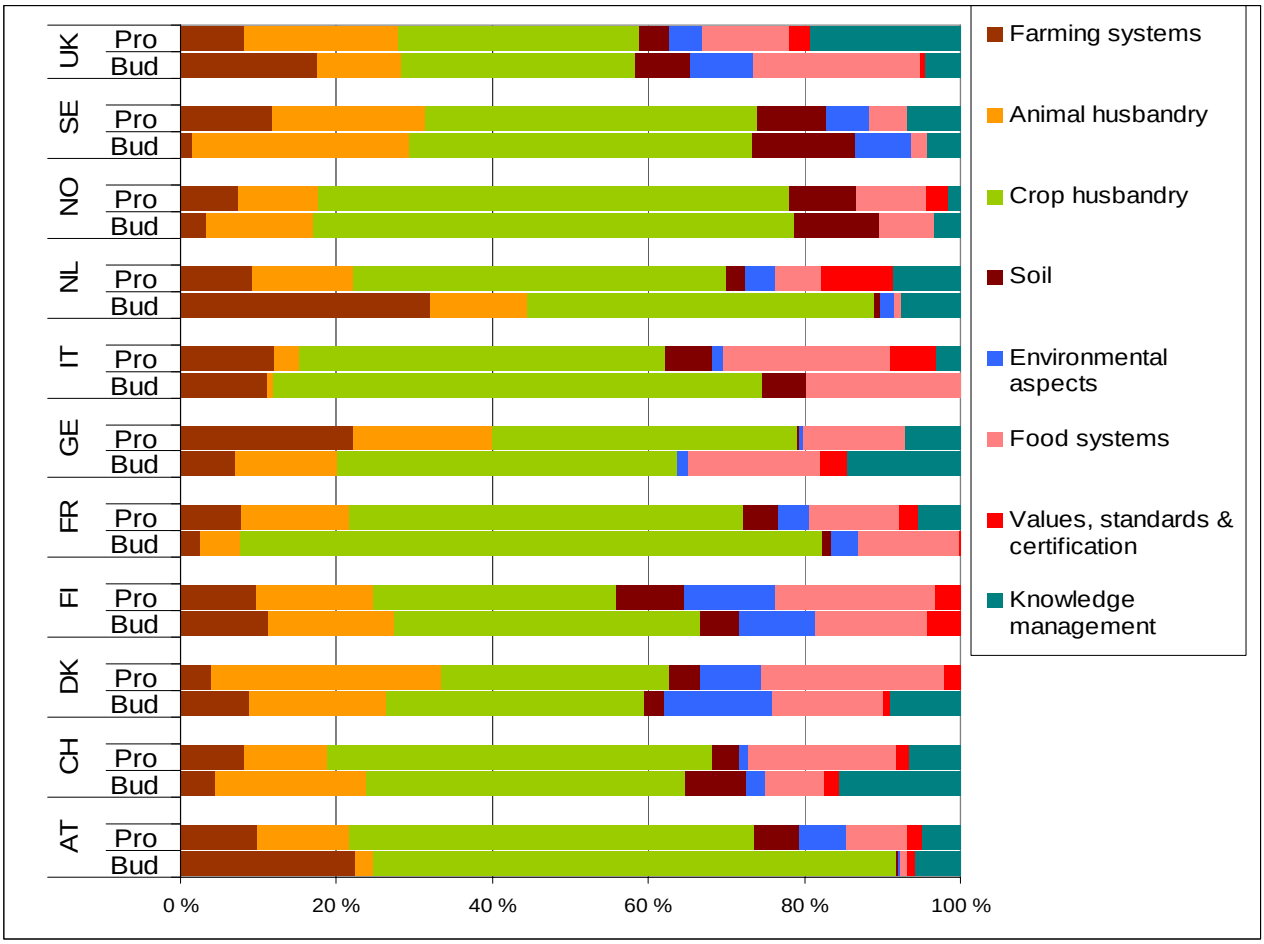


Figure 0. Relative share (%) of research projects (Pro) and relative share of total budget of OFF research (Bud) in participating countries according to subject areas as mean values of named years.

In Figures 1-8, the relative shares (%) of research topics for each country are shown based on the number of projects under the categories of subject areas found in Organic E-prints. The relative share was calculated as the number of projects in each subject area or sub-subject area divided by the total number of projects of the country concerned and multiplied by 100. These results are shown in A-figures below. This figure was further divided by 11 (the number of partner countries) and multiplied by 10 to achieve a comparable figure, ‰. These results are shown in B-figures below. The reason for calculating these relative values was that the number of projects varies so much between different countries, and we wanted to avoid, that countries with a large total number of projects put more weight to the picture than countries with a small number of projects. Each subject area is depicted by two figures, A and B. A- figures indicate how the shares of research in different subject areas are distributed for each country (%). B-figures indicate how much research has been done in each sub-subject area (‰) and which countries have done research within these areas.

These figures show clearly which subject areas were studied in only a few projects and can therefore be considered possible **gaps** in OFF research in CORE Organic participating countries. However, little research in a specific area does not necessarily indicate that further research in this area is needed, as some research areas covered in conventional production can also provide necessary knowledge for organic production.

Some research areas should be clustered according to geographical region, as they can be more important in some regions than in others.

At this point of the analysis, we cannot conclude that if many projects are carried out on a certain subject area in each country, this necessarily results in an **overlap,** because biological, social and political situations are different in different countries. Consequently, this part of the analysis needs a more thorough investigation based on the content of the projects, which cannot be done within the scope of this analysis.

Future cooperation can be identified in two ways. 1. In subject areas which have been studied in many countries and projects researchers can combine their knowledge and perhaps answer the same questions in several countries. 2. In subject areas with a few projects done in few countries, the experts of these countries can support other countries in studying these research topics. As some countries have previously conducted extensive research programmes, the previous research might influence the choice of topics in a new programme and through this influence the topics of international cooperation.

2. Results

2.1 Farming systems research

As shown in Figure 0, all countries have performed a significant amount (around 10%) of research within Farming systems. Most of the research was done on Farm economics and Farm nutrient management (Figure 1B) and these topics were studied in all countries (Figure 1A).

Less research was done on Social aspects and Buildings and machinery (Figure 1B). Buildings and machinery was studied in CH, FI, FR, GE, NL, SE and UK. Social aspects projects were carried out only in 7 countries out of 11 (AT, CH, GE, IT, NL, SE, UK). GE seems to be the strongest country in Farm economics research.

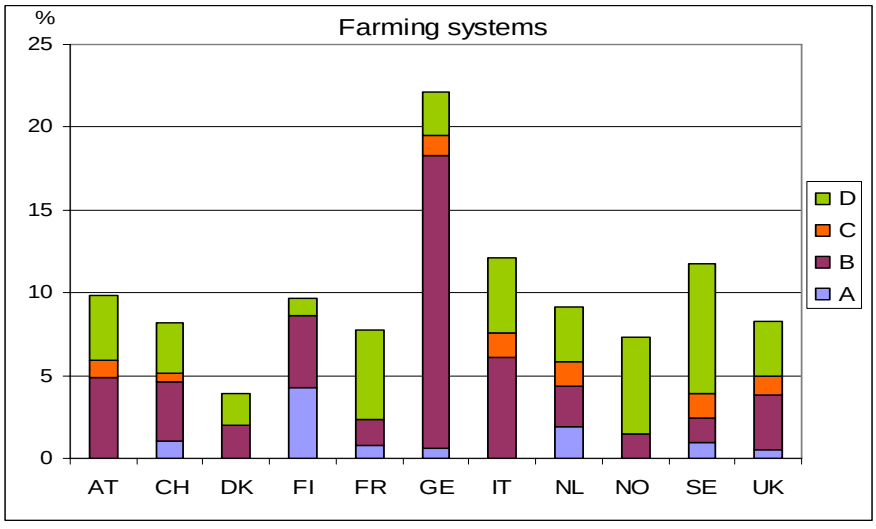


Figure 1A. Relative share of research projects (% of national projects) Farming systems in participating countries (A=Buildings and machinery, B=Farm economics, C=Social aspects, D=Farm nutrient management).

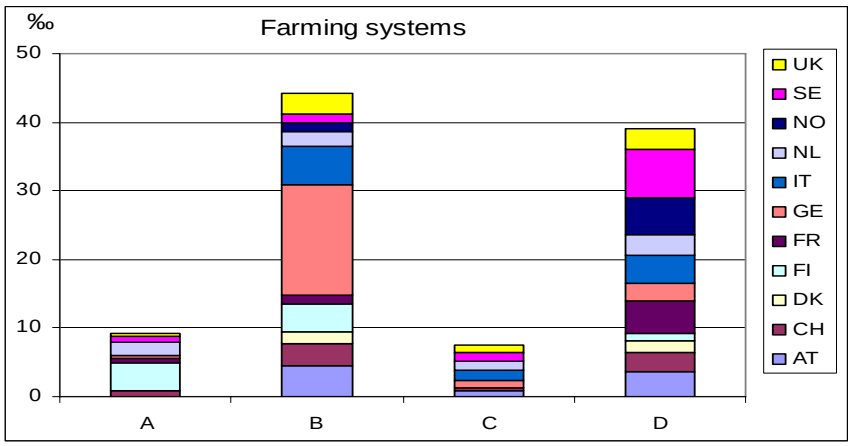


Figure 1B. Relative share of research projects (‰ of all projects) in Farming systems research according to sub-subject areas (A=Buildings and machinery, B=Farm economics, C=Social aspects, D=Farm nutrient management).

2.2 Animal husbandry research

All countries have performed research in Animal husbandry, in most cases on a level comparable to the research in Farming systems (10-15%, Figure 0). IT had the smallest fraction of Animal husbandry research, whereas DK had the largest (Figure 2A). Most of the research in Animal husbandry was done in Production systems research (Figure 2B), which has been studied in all countries (Figure 2A). Health and welfare research has been done extensively and in every country except for IT, but less research was carried out on Feeding and growth. Since research on Breeding and genetics was done only in 4 countries (CH, NL, SE and UK), this topic can be identified as a gap in Animal husbandry research (Figures 2A and 2B).

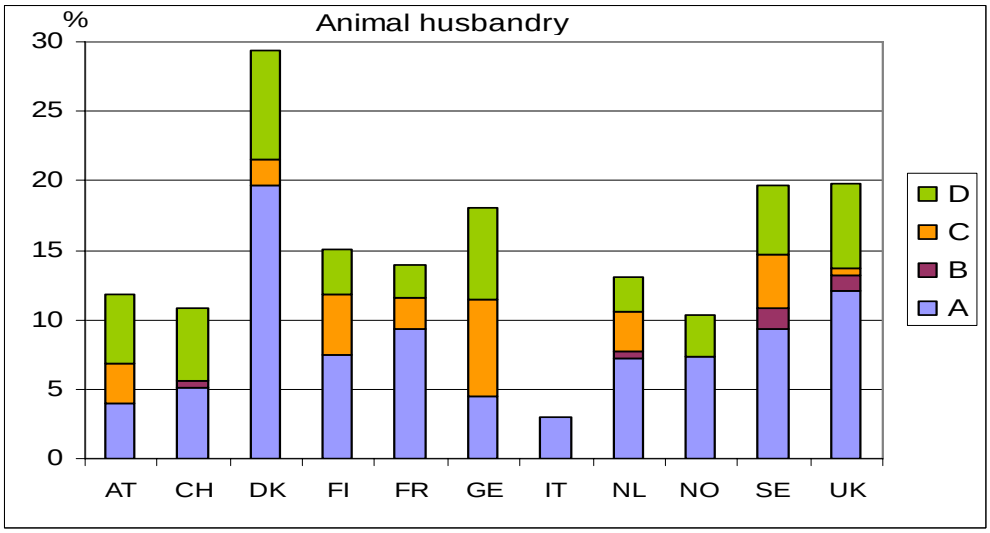


Figure 2A. Relative share of research projects (% of national projects) in Animal husbandry research in participating countries according to subject areas (A=Production systems, B=Breeding and genetics, Feeding and growth, D=Health and welfare).

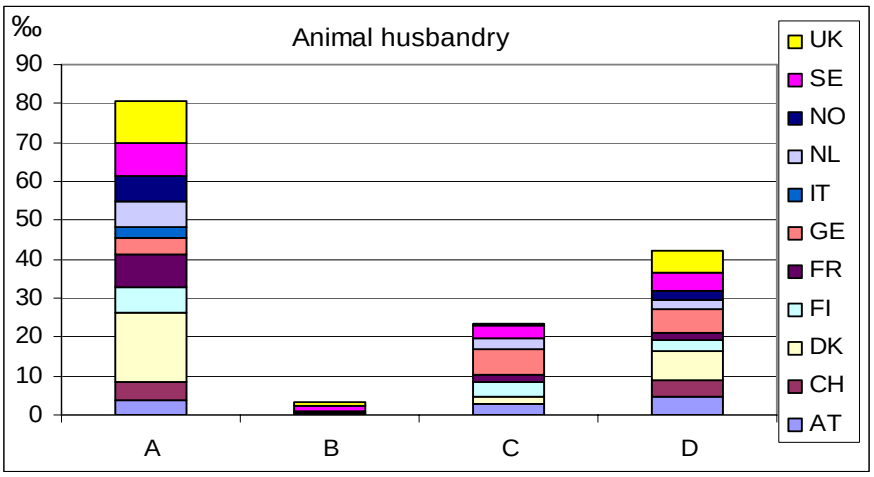


Figure 2B. Relative share of research projects (‰ of all projects) in Animal husbandry research according to sub-subject areas (A=Production systems, B=Breeding and genetics, C=Feeding and growth, D=Health and welfare).

The sub-subject area Animal husbandry production systems is divided into Production systems as shown in Figures 3A and 3B. Within this sub-subject area, most of the work has been done on Dairy production. It was done in all countries except for AT. Beef and Pork (Pigs) production research was quite dominant, too. Quite a small number of projects dealt with Sheep and goat research and only one research project concerned Aquaculture in GE (Figure 3B). Some countries have done research on almost all areas of Animal husbandry production systems (DK, FI, FR, GE, NL, SE, UK; Figure 3A).

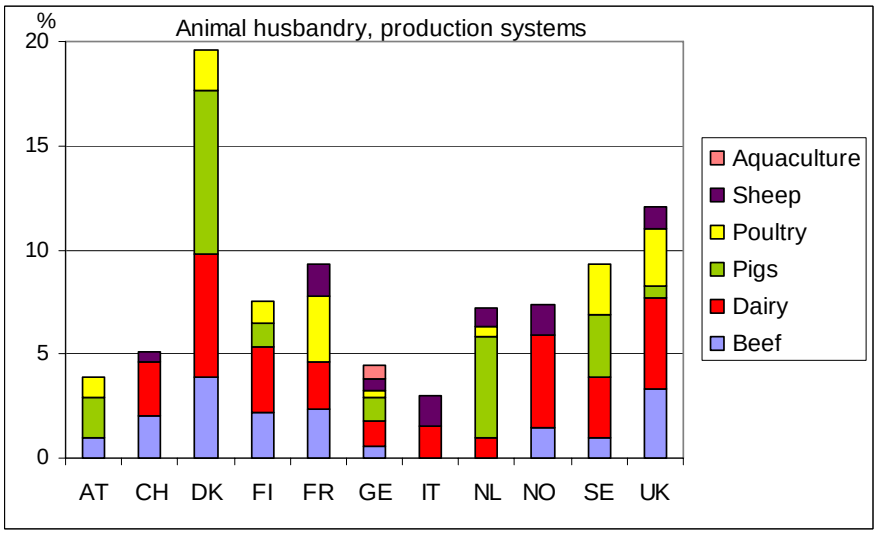


Figure 3A. Relative share of research projects (% of national projects) on Animal husbandry research in participating countries according to different production systems.

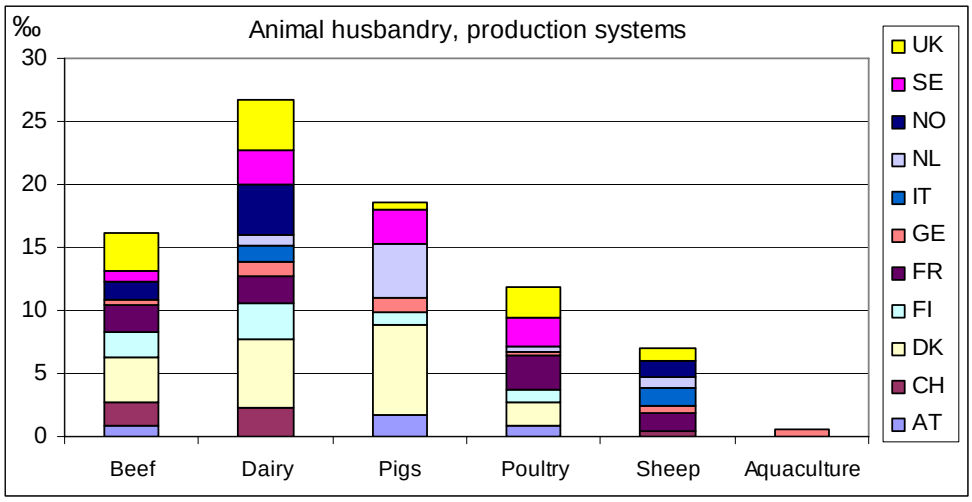


Figure 3B. Relative share of research projects (‰ of all projects) on Animal husbandry research according to different production systems.

2.3 Crop husbandry research

This subject area is definitely the topic on which most research being carried out (30-50%, Figure 0). All countries undertook research on Crop husbandry, which was the most important research topic in all countries. Most of the research was done on Production systems and on Crop health, quality and protection (Figure 4B). These subject areas have been studied in all countries (Figure 4A). Much research was done on Breeding, genetics and propagation as well as on Weed management, also done in all countries except Weed management for IT. Greenhouses and coverings research as well as Soil tillage research was carried out in only few projects, but in several (6) countries. Post harvest management and techniques research was carried out only in AT and FR. None of the countries had projects on Irrigation and drainage. Hence, these four areas can be considered gaps in Crop husbandry research. However, research results form conventional farming could be extrapolated and be of relevance for OFF depending on the wider context of the individual research problem addressed (Figures 4A and 4B).

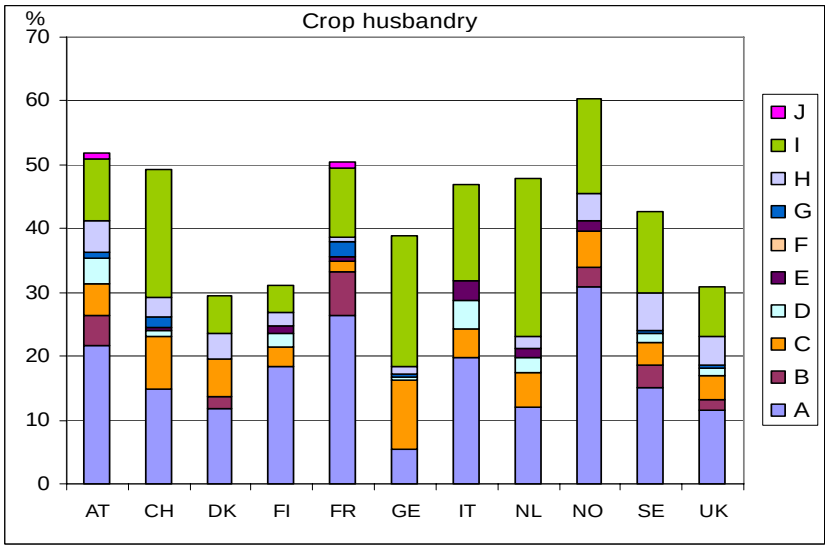


Figure 4A. Relative share of research projects (% of national projects) in Crop husbandry research in participating countries according to subject areas (A=Production systems, B=Crop combinations and interactions, C=Breeding, genetics and propagation, D=Composting and manure, E=Greenhouses and coverings, F=Irrigation and drainage, G=Soil tillage, H=Weed management, I=Crop health, quality and protection, J=Post harvest management and techniques).

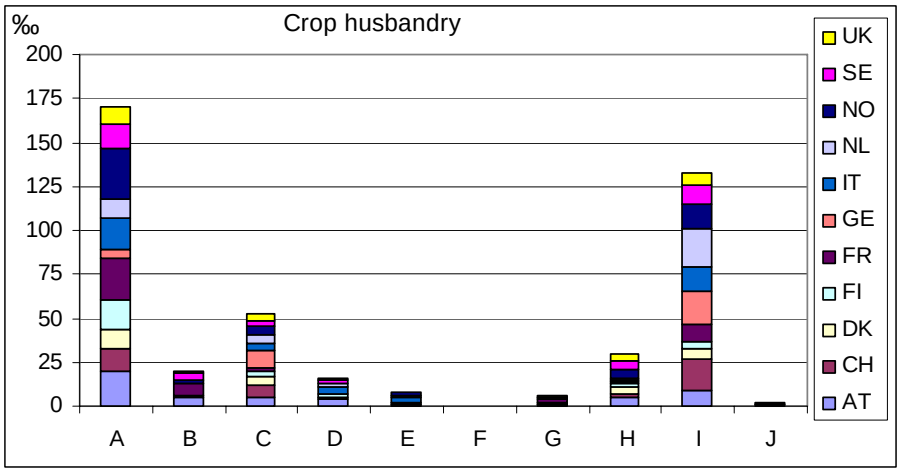


Figure 4B. Relative share of research projects (‰ of all projects) in Crop husbandry research according to sub-subject areas (A=Production systems, B=Crop combinations and interactions, C=Breeding, genetics and propagation, D=Composting and manure, E=Greenhouses and coverings, F=Irrigation and drainage, G=Soil tillage, H=Weed management, I=Crop health, quality and protection, J=Post harvest management and techniques).

The sub-subject area Crop husbandry production systems has been divided into production systems as shown in Figures 5A and 5B. Among these, least work was done on Root crops (only CH, IT, NL) and Ornamentals, Flower pulps and tree nurseries (AT, CH, FR, GE, NL, Figure 5B). The number of studies carried out on Cereals, pulses and oilseeds, Forage and pasture crops, Vegetables and Fruits and berries was high (Figure 5B). Research on these topics was carried out in all countries, except for Forage and pasture crops research, which was not done in AT and DK (Figure 5A).

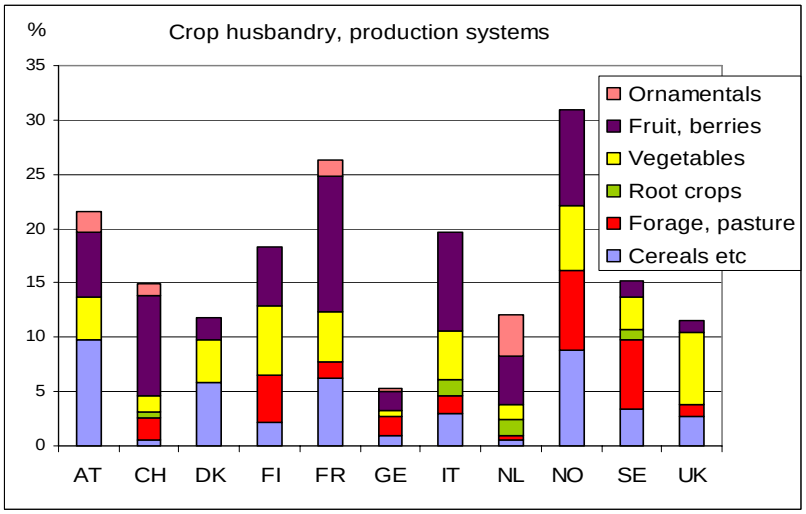


Figure 5A. Relative share of research projects (% of national projects) on Crop husbandry research in participating countries according to different production systems.

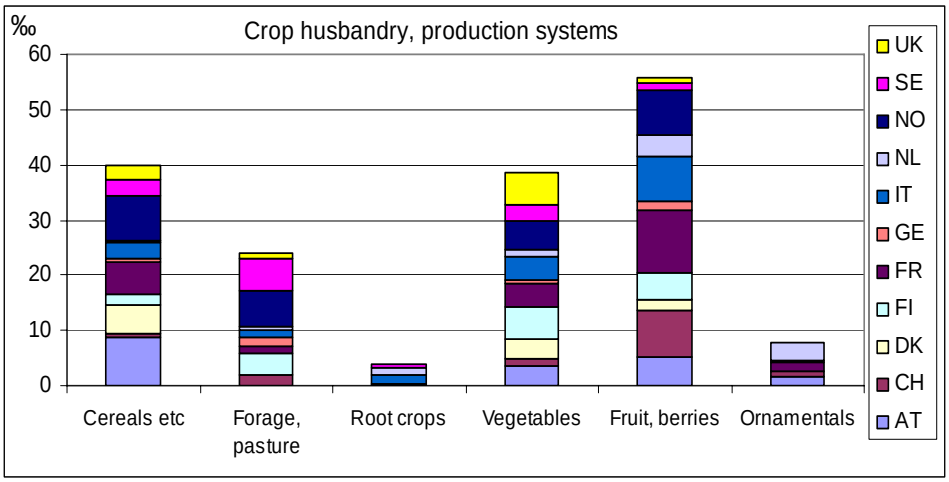


Figure 5B. Relative share of research projects (‰ of all projects) on Crop husbandry research according to different production systems.

2.4 Soil research

Soil research was carried out in all 11 countries (Figure 6A), but in all of them the amount of research done in this area (5-10%) was smaller than in areas such as Farming systems, Animal husbandry and Crop husbandry (Figure 0). The sub-subject area Soil quality research was in most countries more common than Nutrient turnover research (Figure 6B).

2.5 Environmental aspects research

All countries carried out some research within this subject area (Figure 0), but the number of projects varied considerably between the countries. AT, DK, FI and SE had the largest share of Environmental research. Most of the research was done on Air and water emissions as well as Biodiversity and ecosystem services (Figure 6B). Research within the scope of these topics was carried out in 9 countries out of 11 (Air and water emissions not in GE and NO, Biodiversity and ecosystem services not in IT and NO, Figure 6A). Landscape and recreation have been studied only in 3 countries (AT, NL and UK).

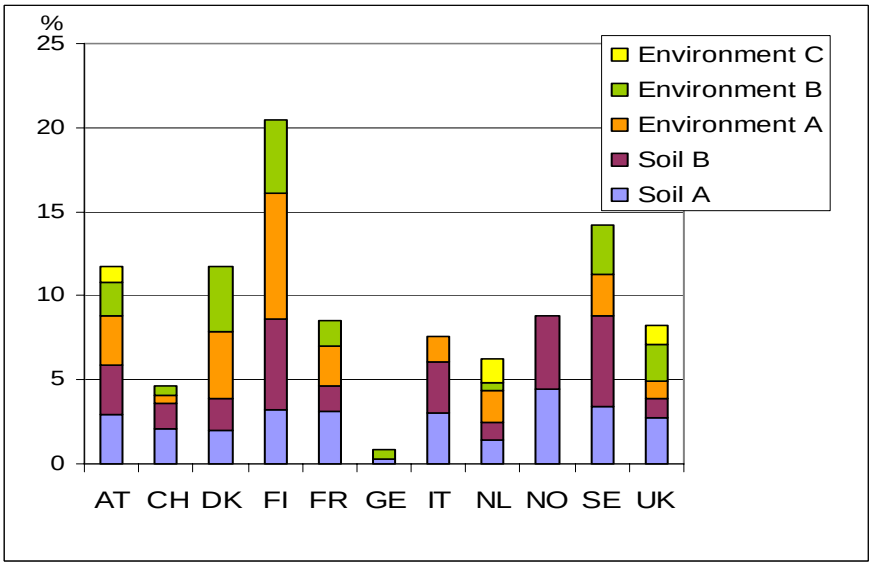


Figure 6A. Relative share of research projects (% of national projects) on Soil and Environmental research in participating countries according to subject areas (Soil: A=Soil quality, B=Nutrient turnover; Environment: A=Air and water emissions, B=Biodiversity and ecosystem services, C=Landscape and recreation).

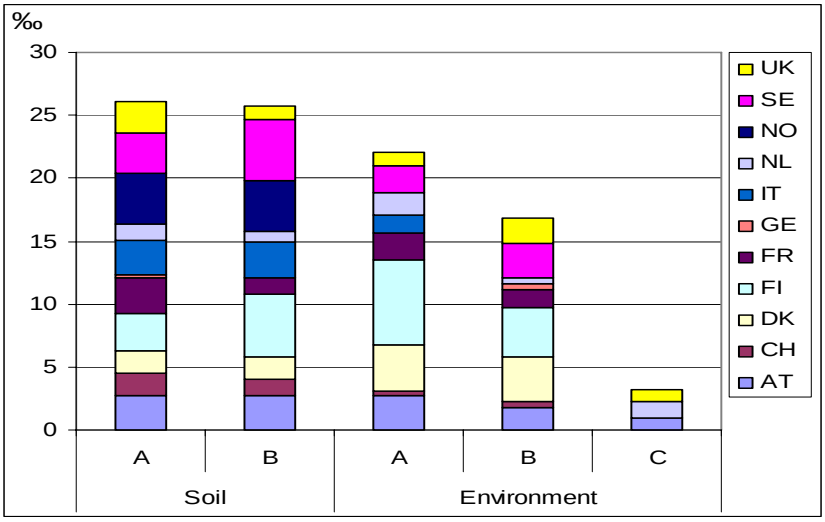


Figure 6B. Relative share of research projects (‰ of all projects) on Soil and Environmental research according to subject areas (Soil: A=Soil quality, B=Nutrient turnover; Environment: A=Air and water emissions, B=Biodiversity and ecosystem services, C=Landscape and recreation).

2.6 Food systems research

Four countries (CH, DK, FI, IT) had a significant share of research (20%) within Food systems. Most of the research was carried out on Food security, food quality and human health sub-subject area (Figure 7B), which was studied in all countries except for GE (Figure 7A). All other subject areas have been studied in fewer projects. Markets and trade, Produce chain management as well as Community development have been studied in more than half of the countries (Figure 7A).

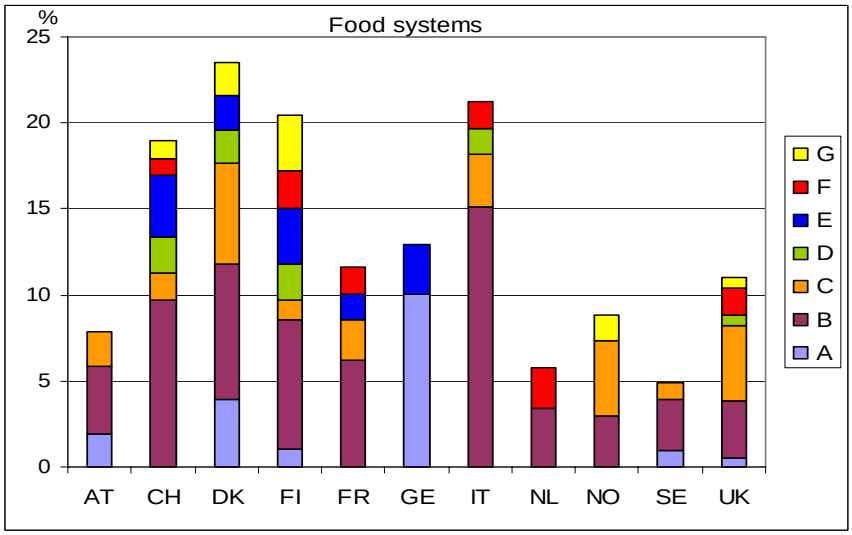


Figure 7A. Relative share of research projects (% of national projects) on Food systems research in participating countries according to subject areas (A=community development, B=Food security, food quality and human health, C=Markets and trade, D=Policy environments and social economy, E=Processing, packaging and transportation, F=Produce chain management, G=Recycling, balancing and resource management).

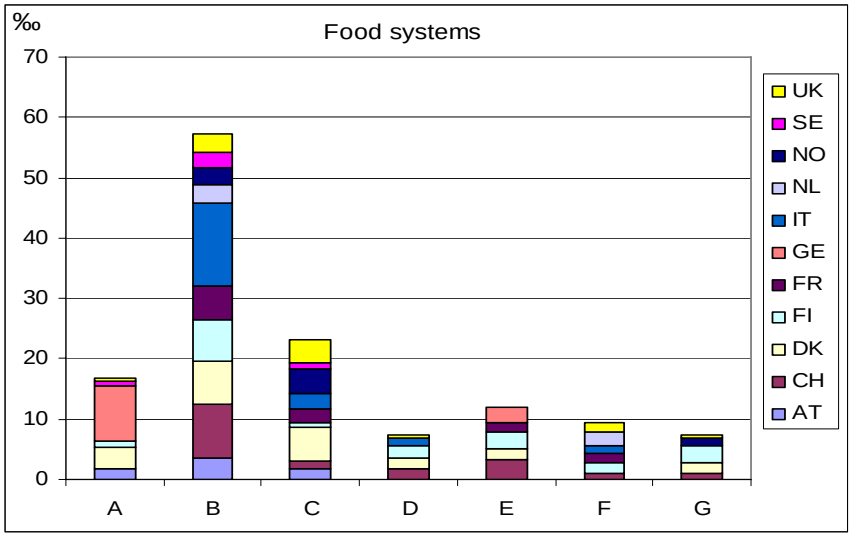


Figure 7B. Relative share of research projects (‰ of all projects) on Food systems research according to subject areas (A=Community development, B=Food security, food quality and human health, C=Markets and trade, D=Policy environments and social economy, E=Processing, packaging and transportation, F=Produce chain management, G=Recycling, balancing and resource management).

2.7 Values, standards and certification research

In general, few research projects covered this topic (Figure 0). While GE and SE had no such projects, the share was usually small in all other countries. Only NL and IT had a significant share of projects within this subject area. Most of the research was done on Consumer issues (CH, DK, FI, FR, IT, NL, NO) and some projects on Regulation (AT, CH, FR, IT, NL, UK) and Quality and evaluation of inputs (AT, IT, NL, NO; Figures 8A and 8B). Only UK had projects concerning Technology assessment (Figure 8B).

2.8 Knowledge management research

Except for DK and FI, all countries carried out research within this research area (Figures 0 and 8A). Most of the projects were listed under the sub-subject area Education, extension and communication (Figures 8A and 8B). Some projects on Research methodology and philosophy were done in 5 countries (CH, IT, NL, SE, UK; Figures 8A and 8B).

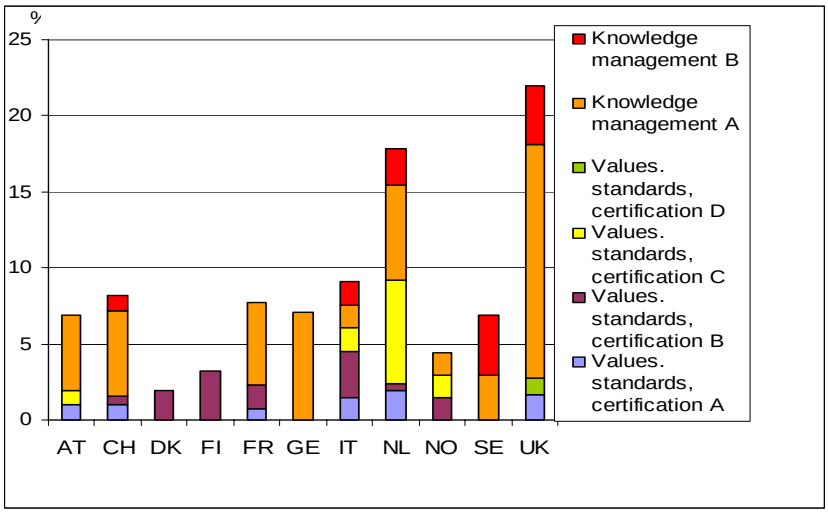


Figure 8A. Relative share of research projects (% of national projects) on Values, standards and certification as well as on Knowledge management in participating countries according to subject areas (Values, standards and certification: A=Regulation, B=Consumer issues, C=Quality and evaluation of inputs, D=Technology assessment; Knowledge management: A=Education, extension and communication, B=Research methodology and philosophy).

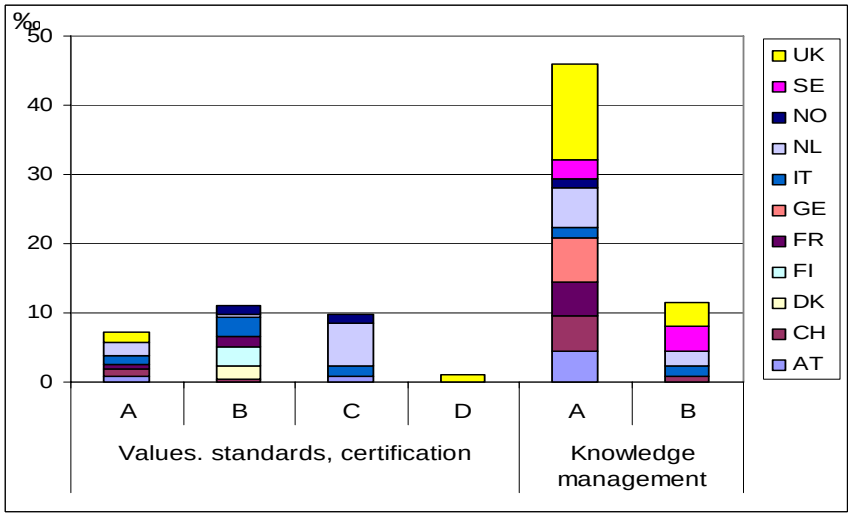


Figure 8B. **Relative share** of research projects (‰ of all projects) in Values, standards and certification as well as Knowledge management research according to subject areas (Values, standards and certification: A=Regulation, B=Consumer issues, C=Quality and evaluation of inputs, D=Technology assessment; Knowledge management: A=Education, extension and communication, B=Research methodology and philosophy).

2.9 Identification of research expertise in the CORE Organic countries (national level analysis)

In Table 1 the figures illustrate the percentage of the number of projects under each subject area in a certain country of the total number of projects in that country. For example, in the case of Finland the total number of projects was 75. Four out of these were assigned to the sub-subject area Farm economics, which results in a relative share of 4.3% as the respective number in Table1. Different colours help to identify expertise **in individual countries**.

This means that the kind of research questions, which have been important in a certain country and the resources devoted to that particular research topic has generated a certain kind of expertise. If research within a certain subject area has been done in several countries, cooperation could be beneficial. If only a few countries have conducted a certain

kind of research, they could lead research projects on this topic in international cooperation.

Farming systems research has been the main focus in GE, mainly due to its strong input in Farm economics research (18% of the total GE projects). Countries other than DK devote around 10% of their research on Farming systems. The strongest sub-subject areas under this subject were Farm economics (GE and IT strongest) and Farm nutrient management (FR, NO, SE), both of which were studied in almost every country. Only few studies were carried out concerning Social aspects and Buildings and machinery, but they were done in 8 countries.

In *Animal husbandry research,* most of the projects concerned Production systems (20% of the projects in DK and FR, and around 10% in SE and UK). Dairy and Pig production systems were the most important categories in DK. Animal health and welfare was strong in CH, DK, GE and UK. Feeding and growth studies were common in GE. Breeding and genetics was studied only in few projects in 4 countries (AT, NL, SE, UK).

In *Crop husbandry research* much research was done on Cereals, pulses and oilseeds (AT, DK, FR, NO), Forage and pasture crops (NO, SE), Vegetables (DK, FI, NO, UK) and Fruits and berries (AT, CH, FI, FR, IT, NO), whereas FR focussed strongly on Viticulture. Much research was done on Plant breeding, genetics and propagation (CH, DK, GE, NL, NO; the projects dealt with seed production, variety trials and quality) and on Crop health and protection (11-25% in CH, FR, GE, IT, NL, NO, SE), which was carried out in all countries. Greenhouses and coverings, Irrigation and drainage, Soil tillage as well as Post harvest management were not studied very much.

Soil and Environmental aspects research was done in almost all countries in a small number of projects. SE and FI focussed on Nutrient turnover research and FI on Water and air emission research. Landscape and recreation was studied only a little in AT, NL and UK.

In *Food systems research* Community development was the main topic in 10% of the GE projects, while CH, DK, FI, FR and IT focussed on Food quality and security research (6-15%). In DK the share of Markets and trade research was 6%. NL has carried out 7% of Quality and evaluation of inputs research under the subject area *Values, standards and certification*. In *Knowledge management* UK has done much research on Education, extension and communication (15%), and so have FR, GE and NL. It is possible that this classification partly indicates the dissemination of the results of the projects, not the actual research work. UK and SE devote a relatively large part of its research to Research methodology and philosophy.

Table 1. Share of projects (%) out of the total number of projects in each of the 11 CORE Organic –countries

	AT	CH	DK	FI	FR	GE	IT	NL	NO	SE	UK	**Total**
Farming systems	**9.8**	**8.2**	**4.0**	**9.7**	**7.8**	**22.1**	**12.1**	**9.2**	**7.4**	**11.8**	**8.2**	**12.0**
Buildings and machinery		1.0		4.3	0.8	0.6		1.9		1.0	0.5	**1.0**
Farm economics	4.9	3.6	2.0	4.3	1.6	17.7	6.1	2.4	1.5	1.5	3.3	**6.2**
Social aspects	1.0	0.5				1.2	1.5	1.4		1.5	1.1	**1.0**
Farm nutrient management	3.9	3.1	2.0	1.1	5.4	2.7	4.5	3.4	5.9	7.8	3.3	**3.9**
Animal husbandry												
Production systems	**3.9**	**5.1**	**19.6**	**7.5**	**9.3**	**4.4**	**3.0**	**7.2**	**7.4**	**9.3**	**12.1**	**7.0**
Beef	1.0	2.1	3.9	2.2	2.3	0.6			1.5	1.0	3.3	**1.3**
Dairy		2.6	5.9	3.2	2.3	1.2	1.5	1.0	4.4	2.9	4.4	**2.2**
Pigs	2.0		7.8	1.1		1.2		4.8		2.9	0.5	**1.8**
Poultry	1.0		2.0	1.1	3.1	0.3		0.5		2.5	2.7	**1.0**
Sheep and goats		0.5			1.6	0.6	1.5	1.0	1.5		1.1	**0.6**
Aquaculture						0.6						**0.1**
Breeding and genetics		0.5						0.5		1.5	1.1	**0.4**
Feeding and growth	2.9		2.0	4.3	2.3	7.1		2.9		3.9	0.5	**3.0**
Health and welfare	4.9	5.1	7.8	3.2	2.3	6.5		2.4	2.9	4.9	6.0	**4.5**
Crop husbandry												
Production systems	**21.6**	**14.9**	**11.8**	**18.3**	**26.4**	**5.3**	**19.7**	**12.1**	**30.9**	**15.2**	**11.5**	**14.1**
Cereals and oilseed	9.8	0.5	5.9	2.2	6.2	0.9	3.0	0.5	8.8	3.4	2.7	**2.5**
Forage and pasture		2.1		4.3	1.6	1.8	1.5	0.5	7.4	6.4	1.1	**2.3**
Root crops		0.5					1.5	1.4		1.0		**0.4**
Vegetables	3.9	1.5	3.9	6.5	4.7	0.6	4.5	1.4	5.9	2.9	6.6	**3.3**
Fruits and berries, viticulture	5.9	9.2	2.0	5.4	12.4	1.8	9.1	4.3	8.8	1.5	1.1	**4.7**
Ornamentals and nurseries	2.0	1.0			1.6	0.3		3.9				**1.0**
Crop combinations and interactions	4.9		2.0		7.0				2.9	3.4	1.6	**1.3**
Breeding, genetics and propagation	4.9	8.2	5.9	3.2	1.6	10.9	4.5	5.3	5.9	3.4	3.8	**6.2**
Composting and manure	3.9	1.0		2.2		0.6	4.5	2.4		1.5	1.1	**1.5**
Greenhouses and coverings		0.5		1.1	0.8		3.0	1.4	1.5			**0.6**
Irrigation and drainage												
Soil tillage	1.0	1.5			2.3	0.3				0.5	0.5	**0.6**
Weed management	4.9	3.1	3.9	2.2	0.8	1.2		1.9	4.4	5.9	4.4	**2.9**
Crop health, quality and protection	9.8	20.0	5.9	4.3	10.9	20.6	15.2	24.6	14.7	12.7	7.7	**15.8**
Post harvest management and techniques	1.0				0.8							**0.1**
Soil												
Soil quality	2.9	2.1	2.0	3.2	3.1	0.3	3.0	1.4	4.4	3.4	2.7	**2.2**
Nutrient turnover	2.9	1.5	2.0	5.4	1.6		3.0	1.0	4.4	5.4	1.1	**2.0**
Environmental aspects												
Air and water emissions	2.9	0.5	3.9	7.5	2.3		1.5	1.9		2.5	1.1	**1.7**
Biodiversity and ecosystem services	2.0	0.5	3.9	4.3	1.6	0.6		0.5		2.9	2.2	**1.5**
Landscape and recreation	1.0							1.4			1.1	**0.4**
Food systems												
Community development	2.0		3.9	1.1		10.0				1.0	0.5	**2.7**
Food security, food quality and human health	3.9	9.7	7.8	7.5	6.2		15.2	3.4	2.9	2.9	3.3	**4.7**
Markets and trade	2.0	1.5	5.9	1.1	2.3		3.0		4.4	1.0	4.4	**1.4**
Policy environments and social economy		2.1	2.0	2.2			1.5				0.5	**0.6**
Processing, packaging and transportation		3.6	2.0	3.2	1.6	2.9						**1.3**
Produce chain management		1.0		2.2	1.6		1.5	2.4			1.6	**0.9**
Recycling, balancing and resource management		1.0	2.0	3.2					1.5		0.5	**0.5**
Values, standards and certification												
Regulation	1.0	1.0			0.8		1.5	1.9			1.6	**0.7**
Consumer issues		0.5	2.0	3.2	1.6		3.0	0.5	1.5			**0.5**
Quality and evaluation of inputs	1.0						1.5	6.8	1.5			**1.1**
Technology assessment											1.1	**0.1**
Knowledge management												
Education, extension and communication	4.9	5.6			5.4	7.1	1.5	6.3	1.5	2.9	15.4	**6.0**
Research methodology and philosophy		1.0					1.5	2.4		3.9	3.8	**1.5**

2.10 Identification of research expertise in the CORE Countries (European level analysis)

In Table 2, the figures illustrate the share (‰) of the number of projects under each subject area in a certain country of all projects in the participating countries. For example, the total number of all projects of all countries is 1,636 (after the categorisation of parts of the projects under several sub-subject areas) and in the case of Finland the 4 projects under sub-subject area Farm economics gives a relative share of 0.25% for this subject area. This number was multiplied by 10 to increase the readability of the table, which results in unit ‰. Different colours highlight where a certain expertise can be found among **all countries**.

This kind of calculation reveals in which countries much research has been done on a certain subject area (large number of projects). Table 2 indicates which countries provide expertise on certain topics and are, therefore, probably best qualified to lead international cooperation projects dealing with these topics. This table also helps to identify the real gaps in research topics (if research is done in none of the countries), or what research questions may not be relevant in any country for this kind of research or research is done in conventional farming. Cooperation could help in this kind of questions.

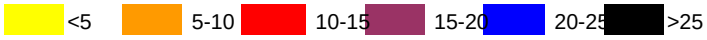
Concerning *Farming systems* research, expertise in Farm economics seems to lie in GE (16‰) and IT (5‰) and in Farm nutrient management research in NO and SE (5-7‰). Concerning *Animal production systems* research, DK (18‰) and UK (11‰) provides most expertise, but also FI, FR, NL, NO and SE (7-9‰) do research on this. DK is strong in Dairy and Pig production. Sheep and goats production as well as Aquaculture research is generally studied little. GE is a strong country in Animal feeding research. DK, GE and UK do a lot of Health and welfare research (6-7‰).

Crop husbandry research is the strongest research area in all participating countries. Strongest countries are AT, FI, FR, IT and NO (17-28‰). AT, CH, DK, NL, SE and UK are also strong (>10‰). AT, DK, FR and NO are strong in Cereals and oilseed production, NO and SE in Forage and pasture crops, FI, NO and UK in Vegetables, AT, CH, FR, IT and NO in Fruits and berries and Viticulture research. In DH, DK, GE and NO (5-10‰) a lot of research is done on Plant breeding (variety trials). SE carried out Weed management research (5‰) and FR Crop combinations research (6‰). Crop health and protection research is quite strong in several countries: CH, GE, IT, NL, NO, SE (11-22‰), AT, DK, FR, and UK (5-10‰). As there is a clear lack of research expertise in Root crop and ornamental production, Crop combinations and interactions, Composting and manuring, Greenhouses and coverings, Irrigation and drainage, Soil tillage and Post harvest management and techniques, these topics need to be screened for relevant research in conventional farming. Although *Soil* is studied in all countries, only a few projects deal with it in each country. Environmental aspects are not covered widely in any country, but there are at least some projects carried out in almost all countries, except in NO. However, FI has relatively large expertise in Air and water emissions.

Concerning *Food systems* research, expertise in Food security and quality research can be found in IT (14‰), CH, DK, FI and FR (6-9‰). Community development research expertise was found in GE (9‰) and Markets and trade research expertise in DK. Other sub-subject topics are not high in any country. *Values, standards and certification* research is not a strong area of research in any country either, except for Quality and evaluation of inputs research in NL (6‰). Under subject area *Knowledge management* topics of Education, extension and communication are strongly connected to research activities in

CH, GE, NL and UK (5-14‰). The role of Research methodology and philosophy is quite low in most countries.

Table 2. Share of projects out of the total number of projects of all countries in each of the 11 CORE Organic –countries (‰)



	AT	CH	DK	FI	FR	GE	IT	NL	NO	SE	UK	**Total**
Farming systems	**8.9**	**7.5**	**3.6**	**8.8**	**7.0**	**20.1**	**11.0**	**8.3**	**6.7**	**10.7**	**7.5**	**10.9**
Buildings and machinery		0.9		3.9	0.7	0.5		1.8		0.9	0.5	**0.9**
Farm economics	4.5	3.3	1.8	3.9	1.4	16.1	5.5	2.2	1.3	1.3	3.0	**5.6**
Social aspects	0.9	0.5				1.1	1.4	1.3		1.3	1.0	**0.9**
Farm nutrient management	3.6	2.8	1.8	1.0	4.9	2.4	4.1	3.1	5.3	7.1	3.0	**3.5**
Animal husbandry												
Production systems	**3.6**	**4.7**	**17.8**	**6.8**	**8.5**	**4.0**	**2.8**	**6.6**	**6.7**	**8.5**	**11.0**	**6.4**
Beef	0.9	1.9	3.6	2.0	2.1	0.5			1.3	0.9	3.0	**1.2**
Dairy		2.3	5.3	2.9	2.1	1.1	1.4	0.9	4.0	2.7	4.0	**2.0**
Pigs	1.8		7.1	1.0		1.1		4.4		2.7	0.5	**1.6**
Poultry	0.9		1.8	1.0	2.8	0.3		0.4		2.2	2.5	**0.9**
Sheep and goats		0.5			1.4	0.5	1.4	0.9	1.3		1.0	**0.5**
Aquaculture						0.5						**0.1**
Breeding and genetics		0.5						0.4		1.3	1.0	**0.4**
Feeding and growth	2.7		1.8	3.9	2.1	6.4		2.6		3.6	0.5	**2.7**
Health and welfare	4.5	4.7	7.1	2.9	2.1	5.9		2.2	2.7	4.5	5.5	**4.1**
Crop husbandry												
Production systems	**19.6**	**13.5**	**10.7**	**16.6**	**24.0**	**4.8**	**17.9**	**11.0**	**28.1**	**13.8**	**10.5**	**12.9**
Cereals and oilseed	8.9	0.5	5.3	2.0	5.6	0.8	2.8	0.4	8.0	3.1	2.5	**2.3**
Forage and pasture		1.9		3.9	1.4	1.6	1.4	0.4	6.7	5.8	1.0	**2.1**
Root crops		0.5					1.4	1.3		0.9		**0.4**
Vegetables	3.6	1.4	3.6	5.9	4.2	0.5	4.1	1.3	5.3	2.7	6.0	**3.0**
Fruits and berries, viticulture	5.3	8.4	1.8	4.9	11.3	1.6	8.3	4.0	8.0	1.3	1.0	**4.3**
Ornamentals and nurseries	1.8	0.9			1.4	0.3		3.5				**0.9**
Crop combinations and interactions	4.5		1.8		6.3				2.7	3.1	1.5	**1.2**
Breeding, genetics and propagation	4.5	7.5	5.3	2.9	1.4	9.9	4.1	4.8	5.3	3.1	3.5	**5.7**
Composting and manure	3.6	0.9		2.0		0.5	4.1	2.2		1.3	1.0	**1.3**
Greenhouses and coverings		0.5		1.0	0.7		2.8	1.3	1.3			**0.5**
Irrigation and drainage												
Soil tillage	0.9	1.4			2.1	0.3				0.4	0.5	**0.6**
Weed management	4.5	2.8	3.6	2.0	0.7	1.1		1.8	4.0	5.3	4.0	**2.7**
Crop health, quality and protection	8.9	18.2	5.3	3.9	9.9	18.8	13.8	22.4	13.4	11.6	7.0	**14.4**
Post harvest management and techniques	0.9				0.7							**0.1**
Soil												
Soil quality	2.7	1.9	1.8	2.9	2.8	0.3	2.8	1.3	4.0	3.1	2.5	**2.0**
Nutrient turnover	2.7	1.4	1.8	4.9	1.4		2.8	0.9	4.0	4.9	1.0	**1.9**
Environmental aspects												
Air and water emissions	2.7	0.5	3.6	6.8	2.1		1.4	1.8		2.2	1.0	**1.5**
Biodiversity and ecosystem services	1.8	0.5	3.6	3.9	1.4	0.5		0.4		2.7	2.0	**1.4**
Landscape and recreation	0.9							1.3			1.0	**0.3**
Food systems												
Community development	1.8		3.6	1.0		9.1				0.9	0.5	**2.4**
Food security, food quality and human health	3.6	8.9	7.1	6.8	5.6		13.8	3.1	2.7	2.7	3.0	**4.3**
Markets and trade	1.8	1.4	5.3	1.0	2.1		2.8		4.0	0.9	4.0	**1.3**
Policy environments and social economy		1.9	1.8	2.0			1.4				0.5	**0.5**
Processing, packaging and transportation		3.3	1.8	2.9	1.4	2.7						**1.2**
Produce chain management		0.9		2.0	1.4		1.4	2.2			1.5	**0.8**
Recycling, balancing and resource management		0.9	1.8	2.9					1.3		0.5	**0.5**
Values, standards and certification												
Regulation	0.9	0.9			0.7		1.4	1.8			1.5	**0.6**
Consumer issues		0.5	1.8	2.9	1.4		2.8	0.4	1.3			**0.5**
Quality and evaluation of inputs	0.9						1.4	6.1	1.3			**1.0**
Technology assessment											1.0	**0.1**
Knowledge management												
Education, extension and communication	4.5	5.1			4.9	6.4	1.4	5.7	1.3	2.7	14.0	**5.4**
Research methodology and philosophy		0.9					1.4	2.2		3.6	3.5	**1.3**

3. Conclusions

(according to Table 1.)

3.1 Research areas which were widely studied in all countries

(possible overlaps?)

Almost all countries gave a high priority to Animal production systems research, Crop production systems research, Crop health, quality and protection research.

3.2 Research areas which were studied little in most of the countries

(possible cooperation?)

Almost all countries have carried out at least a small number of projects on Buildings and machinery, Farm economics, Social aspects, Farm nutrient management, Beef, Dairy production, Pig, Poultry and Sheep and goat production, Animal feeding and growth, Animal health and welfare, Cereals and oilseed production, Forage and pasture production, Vegetable production, Fruits, berries and viticulture production, Crop breeding, genetics and propagation, Composting and manure, Weed management, Soil quality, Nutrient turnover, Air and water emissions, Biodiversity and ecosystem services, Food security, food quality and human health, Markets and trade, Consumer issues and Education, extension and communication.

3.3 Research areas which were studied in some leading countries

(possible cooperation?)

Some leading countries can be found in Farm economics (GE), Fruits berries and viticulture (FR), Breeding, genetics and propagation of plants (GE), Community development (GE) and Food security, food quality and human health (IT).

3.4 Research areas which were studied in few or hardly any country

(possible gaps?)

Only some countries have done research on Crop combinations and interactions, Greenhouses and coverings, Soil tillage, Community development, Policy environments and social economy, Processing, packaging and transportation, Produce chain management, Regulation and Research methodology and philosophy.

Almost none of the countries have done research on Aquaculture production, Animal breeding and genetics, Root crops production, ornamentals and nurseries, Irrigation and drainage, Post harvest management and techniques, Landscape and recreation and Technology assessment. It should be discussed whether these subject areas are less important, whether there is relevant research done in conventional farming, or whether more research is needed on these topics.

Although Table 2 gives almost the same picture of strong and weak research areas in the participating countries as Table 1, the latter provides some additional information, as it highlights subject areas where strong expertise can be found as opposed to ‘a little research is done in almost all countries (3.2)’. These research areas are Animal feeding and growth (GE), Plant breeding, genetics and propagation (GE), Food security, food quality and human health (IT) and Education, extension and communication (UK).