



# Converting to organic agriculture - Danish farmers' views and motivations

Bärbel Tress

## Abstract

*Expanded organic food production has been an issue of public debate in Denmark since its promotion by two government-sponsored plans. Yet the number of organic farms, constituting 5 % of all Danish farms, is still small. Farmers' attitudes and motivations around converting their farms to organic agriculture were surveyed in the counties of Ribe and Vestsjælland in order to assess the feasibility of expansion. New organic farmers come either from the ranks of conventional farmers or from 'beginners' who initiate organic agriculture from the start. Only 7 % of conventional farmers plan to convert their farms by the year 2003, but beginners will have increasing importance and augment the number. Farmers most frequently mentioned consideration for the environment as a reason for conversion. A considerable expansion of organic agriculture will be difficult, due to an insufficient number of farmers interested in organic agriculture. A high number of less productive hobby or spare-time farmers among*

*new organic farmers also hinders expanded organic food production. Organic agriculture shows parallels to conventional agriculture, with a surplus of very small and very large farms, regional specialisation, and on-farm specialisation.*

## Keywords

*Organic agriculture, organic food production, motivations for conversion to organic farming, specialisation: Denmark*

*Bärbel Tress, Department of Landscape & Spatial Planning, Alterra Green World Research, NL - 6700 AA Wageningen, The Netherlands, e-mail: baerbel@tress.cc, <http://www.tress.cc>*

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## Organic agriculture – definition and development

In the 1920s Rudolf Steiner introduced biodynamic agriculture as an anthroposophical doctrine, which was first followed by a few farmers in Switzerland and then in Germany, Denmark, and other countries. It can be regarded as a kind of reaction to the introduction of chemical fertilisers by the agrochemical industries in the beginning of the 20<sup>th</sup> century. A major upswing in organic agriculture did not begin until the 1980s, again as a kind of reaction against the increasing industrialisation of agriculture and as an answer to the growing environmental awareness in society at large. Since then, organic agriculture has grown in popularity.

Recognising the different definitions in the field, organic agriculture is referred to in this context as the official production method defined in the national regulations for organic agriculture in Denmark (MFLF, 1994). To get financial subsidies from official programmes, organic farmers must satisfy Danish national regulations, as follows. They may not use chemical fertilisers and pesticides. They have to maintain or improve fertility and biological activity of soils by crop rotations that include pulse crops or

green manure, by ploughing under organic matter, and by applying livestock manure. Animals have to be kept in a manner appropriate to their physiological and behavioural needs. Stables have to offer enough space for movement, enough litter, fresh air and daylight, and animals may not be fixed. In summer season (at least 150 days/year) all animals must have access to pastures. Financial subsidies for farmers in Denmark amount to 140 ECU/ha/year for conversion and 115 ECU/ha/year for maintaining organic agriculture (Lampkin & Weinschenk, 1996).

Danish national regulations divide 'organic agriculture' into two important branches, biodynamic and organic-biological farming. The main difference between them is the anthroposophical philosophy upon which biodynamic agriculture is based and the lack of such a philosophical superstructure for organic-biological agriculture. When the term 'organic agriculture' is used in this article, both types are meant. Compared to the Danish national regulations, those provided by organic farmers' associations (LØJ, 1998; Demeter) are a little more comprehensive and ideological, founded on the principle that farming should be in accord-

ance with nature. This attitude means that farmers are obliged to promote natural cycles and biofeedback mechanisms by treating the farm as a self-contained unit. Farms should unite crop and animal farming. The farmer as well as the farm's animals and plants are considered as a whole, as a kind of organism (Østergaard, 1991; AID, 1996).

As early as 1987, the first law on organic food production was passed by the Danish parliament. Since then, there has been financial and political support for organic agriculture, which found expression in the following activities. In 1995, the Danish Council on Organic Agriculture proposed an initial 'Plan of Action for the Advancement of Organic Food Production in Denmark,' which made recommendations as to how to make conversion more attractive and how to guarantee an increased demand for organic food (MFLF, 1995). A second plan called 'Developments in Organic Farming' followed in 1999, the main goal of which was to make Denmark a pioneer in the development, production, and marketing of organic food (MFLF, 1999). For the implementation of this goal the plan proposes, among others, the following initiatives: a considerable expansion of primary production of organic food; strengthening of sales on the domestic market; development of export to the neighbouring markets; on-going research activities in organic food production; and promotion of organic agriculture as an instrument in environmental policy. Until recently, export of organic products has not been possible due to strong demand from the domestic market. Organic milk is the product that reached both the highest production rates and had the highest demand. Organic vegetables have also gained considerable market shares, whereas organic meat still commands a small share (MFLF, 1999; FDB, 2000). In 1999, organic dairy production reached a level that would make export possible (MFLF, 1999). However, in the second plan of action, no clear goals were articulated as to which products export should focus on. The Danish Council on Organic Agriculture proposed an overall budget for promoting organic food production in the period 1999-2004 that amounts to about 300 million Euro, including farmers' subsidies, funding of research programmes, product development, public awareness campaigns, consulting, and other activities. Another governmental initiative was the 'Bichel Committee,' established by the Ministry of Environment and Energy in 1997. It had the overall goal of evaluating the consequences of phasing out pesticides in Danish agriculture. Part of the work investigated the consequences of a total conversion of Danish agriculture to organic agriculture. In its main report (Bichel-Udvalget, 1999), the committee agreed with the strategies of the sec-

ond action plan and recommended all possible support for conversion to organic agriculture as a means of implementing environmentally friendly agricultural policies.

All over Europe, the percentage of organically managed farms has increased over the past two decades. In Denmark, there were between 40 and 80 organic farms, mostly biodynamic farms, at the beginning of the 80s (Dubgaard & Sørensen, 1996). Their number increased to 3,279 by 1999 (see Figure 1), which means that approximately 5 % of all Danish farms, coinciding with about 5 % of the total agricultural area, are managed organically. The number of biodynamic farms has decreased to approximately 40, as many old farmers left the organisation and younger farmers mostly opted for organic-biological farming instead.

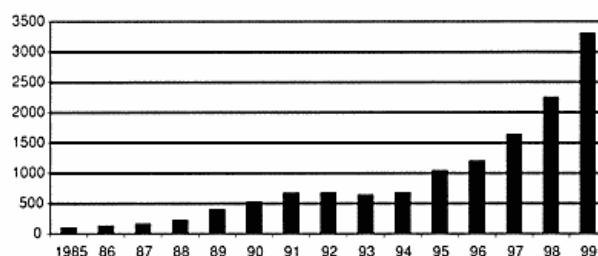


Figure 1: Growth in number of organic farms in Denmark.

Among European countries, Denmark is fourth behind Austria, Switzerland, and Finland with regard to the percentage of organically managed agricultural areas (SÖL, 1999). Since 1995, the number of organic farms in Denmark has increased annually by about 38 % on average. This development has been strongly tied to agricultural policy and marketing conditions for organic food. But ultimately, it is the individual farmer's decision as to whether or not to convert his or her farm. Therefore, the investigation focussed on farmers and their attitudes towards organic agriculture.

### Problem statement

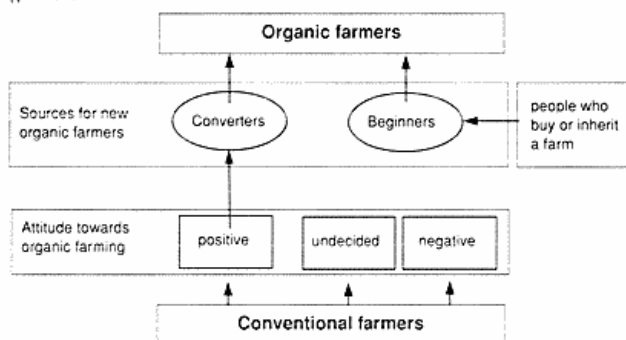
Expansion of organic food production is a main goal of the second plan of action (MFLF, 1999) and organic agriculture as a viable alternative for the entire agricultural sector was evaluated by the Bichel-committee (Bichel-Udvalget, 1999). But the number of farmers who manage their farms organically is still small. Thus the question arises whether political plans and public expectations match farmers' willingness to adopt organic agriculture. To find out how many farmers are interested in conversion to organic agriculture was thus one goal of the investigation.

An isolated quantification of farmers who plan to start farming organically would give information neither about the characteristic features of future organic farmers, i.e. their ages and educations, nor about the structures of their farms in terms of type, size and production. These data are relevant since future organic farming in Denmark will be heavily influenced by these factors. Characteristics like age or education can help to profile the farmers who will farm organically in the future. The farming structure is of interest because it determines the amount of organic food and kind of products on the market. So the second aim was to gather information about the characteristics of farmers and the structure of their farms. Lastly, farmers' motives to commence organic agriculture were investigated to gain deeper insight into their priorities.

The study assessed the future growth of organic agriculture over the five years from 1998 to 2003 (see Tress, 2000). As it focussed on farmers' attitudes, the influence of shifting market conditions, societal changes and different policy strategies on organic agriculture were not factored into the investigation. So the results did not make it possible to see for example how much an increase in subsidies would influence the number of farmers' willing to convert.

There are two main sources from which new organic farmers can be recruited (see Figure 2). Most run conventional farms before converting to organic farming. But frequently, farm managers start farming organically when they first acquire their agricultural properties – whether bought, inherited, or otherwise acquired. To distinguish between the two groups, the former are called converters, while the latter are called beginners in the study. Converters are those farmers who initially manage a conventional farm and transform this farm to organic production. Beginners, however, are farmers who manage their farms organically from the start. In contrast to the converters, they did not manage their farm before conversion.

**Figure 2:** Organic farmers and their origins as converters and beginners.



The two groups have to be distinguished because the way in which data about them can be acquired is quite different. Data about converters can easily be gathered from conventional farmers who want to convert. But most beginners are not active farmers before they commence organic agriculture. They are, for instance, people from urban areas who move to the countryside to manage a farm. They can also be young farmers who take over their parents' farms. As future beginners are not active farmers yet, this group could not be surveyed. The only way to gather data about beginners was to survey the beginners among existing organic farmers. The study compares data from converters and beginners to get complete information about future organic farmers. This was done with an awareness of the difficulties of comparing an ante- (as far as converters are concerned) and a post-version (as far as beginners are concerned) with each other. Data about converters involve the uncertainty of events that will take place in the future, while data about beginners have the certainty of accomplished events. When data about beginners were projected on to the future, it was always done based on the premise that the composition of the group remains constant.

## Research areas and methods

Two Danish counties, Ribe and Vestsjælland, served as research areas (see Figure 3). They were chosen based on differences in natural conditions and agricultural structures, but are comparable in terms of the total agricultural area and the total number of farms. By choosing these counties, the breadth of regional differences within Denmark could be brought to the fore. In terms of livestock density and types of production, Ribe County is typical for the western parts of Denmark (Jutland and Fyn), whereas Vestsjælland County is comparable to the more urbanised eastern parts of the country (Danmarks Statistik, 1998; De Danske Landboforeninger, 1999). The county of Ribe is situated in western Jutland in the old moraine areas of the Saale glaciation, with mainly sandy and podsolized soils and a sea-climate. Big livestock farms with large pastures characterize Ribe County, which has the highest density of cattle in Denmark. Almost 62 % of the county's area is used for farming (Danmarks Statistik, 1998). In spring 1998, when the investigation was carried out, there were approximately 4,600 farms, including 91 organically managed farms.

The county of Vestsjælland is situated on the western part of the island of Zealand in the moraine areas stemming from the Weichsel glaciation. Livestock density is very

low and the loamy, fertile soils and less maritime climate make the region suitable for crop farming as well as for fruit and vegetable production. Approximately 65% of the area is cultivated by 5,200 farms, of which 98 were organic farms in 1998.

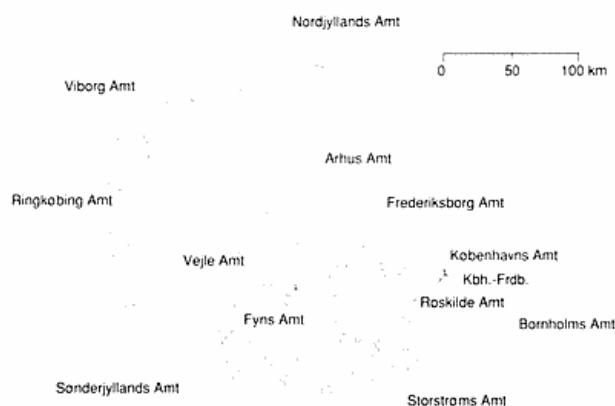


Figure 3: Denmark: the counties Ribe and Vestsjælland.

The study surveyed organic and conventional farmers in both counties, using mail-distributed questionnaires. Survey topics for both groups included farm structure (full-, part- or spare-time farm, type of production, farm size); personal data (age, sex, educational background); and attitudes towards and motivations for conversion. Most of the questions were closed alternative or multiple-choice questions but where appropriate, farmers could write in additional answers. Thus the data gathered were highly standardised and ready for statistical analysis. This method also allowed for direct comparison of organic and conventional farmers and demanded minimal time of the respondents, which improved the probability of reply. The opportunity to elaborate on an answer could compensate to some extent for the disadvantages of pre-formulated answers, which are necessarily restricted to well-known facts.

For ordinal-scaled questions, five equally large answer categories were given, with an extreme position on either

side of the scale and one middle category for those who were undecided. Five categories were preferred to three categories because they allow for more precise answers. But for individual questions the number of answers in one class can be too small to analyse and then it can be necessary and useful to merge them together into three classes.

As there was only a small number of organic farmers, this group was completely surveyed. From the group of conventional farmers, a regionally stratified random sample was taken from all farms listed in the agricultural central register (Landbrugets EDB-Center) for the two counties. The study did not define a minimum threshold value for farm size as is done for official agricultural statistics, which only include farms larger than 5 ha (see Danmarks Statistik, 1998). In contrast, organic farms are registered even if smaller than 5 ha (Plantedirektorat, 1998b).

A return rate of 78 % for the organic farmers and 62 % for the conventional farmers was achieved. The difference in the reply rate can be related to the higher interest among organic farmers in the subject of the investigation. In all, 514 questionnaires were analysed, comprising 369 from conventional farmers and 145 from organic farmers.

### Conventional farmers' views towards organic agriculture

To assess conventional farmers' views towards conversion, they were asked whether they plan to change to organic agriculture within the next five years. No specific premise like 'under the given political and financial circumstances' was stated, as this would complicate it to give answers. The response categories were 'yes, very sure,' 'yes, quite sure,' 'maybe,' 'no, probably not,' and 'no, absolutely not.' A total of 1.4 % answered 'very sure,' and almost 5.8 % were 'quite sure' (see Table 1).

As the category 'yes, very sure,' with only five respondents was too small for further analysis, the five classes of answers from conventional farmers were merged into three: 'yes, very sure' and 'yes, quite sure' were grouped together

views: 5 categories	answers in %	views: 3 categories	answers in %
yes, very sure	1.4 %	positive	7.2 %
yes, quite sure	5.8 %	undecided	17.8 %
maybe	17.8 %	negative	75.0 %
no, probably not	47.5 %		
no, absolutely not	27.5 %		
total	100.0 %	total	100.0 %

Table 1: Conventional farmers' views towards conversion (n = 362).

in the category 'positive attitude.' This group is considered to be converters (see Figure 2). 'No, probably not' and 'no, absolutely not' were put together in the category 'negative attitude'; the 'maybe' category remained the same. Approximately 7 % of conventional farmers maintain a positive view on organic agriculture, but 75 % have a negative attitude, and 18 % are undecided. The percentage of farmers with a positive attitude towards organic agriculture was about the same in both counties, but in the county of Ribe more farmers were undecided and fewer held a negative view than in the county of Vestsjælland.

The number of farmers who are sure or quite sure they will convert their farms is relatively high (7 %) given the fact that the national conversion rate in the five-year-period from 1994 to 1998 was less than 3 %. But it is low given the percentage of organic farms relative to the total number of Danish farms. Assuming that the 7 %-rate of the two counties would be representative of the entire country, together with the 5 % of all Danish farmers who are already managing organically, still no more than 12 % of all Danish farmers would run organic farms by the year 2003. In spite of the fast growth of the organic farming sector, only a small number of farms are converted every year relative to the total number of Danish farms. On the basis of the results presented, it can be assumed that the number of organic farms will rise continuously in the near future. But the data also indicate that a conversion of a majority of the conventional farmers is highly unlikely.

There are several reasons for the negative attitude of the majority of farmers. For many farmers, the higher workload in organic agriculture and the fact that their farms in their present configurations are difficult to convert are important reasons for a rejection. Also the danger of pest infestation, problems with the marketing of organic products, and the financial burden connected with a conversion, are influential factors. Some farmers lack the professional knowledge necessary for conversion or are simply not interested in organic farming (see Tress, 2000).

### Beginners' contribution to organic agriculture

Besides converters, new organic farmers will also come from outside agriculture, from those new to the industry. To

	until 1969	1970-1979	1980-1989	1990-1998	all years
Converters	83.4 %	85.7 %	76.2 %	48.0 %	67.9 %
Beginners	16.6 %	14.3 %	23.8 %	52.0 %	32.1 %
all organic farmers	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

**Table 3:** Development of converters and beginners among organic farmers ( $n = 141$ ; Spearman-Rho significant on 99 pct. level).

assess their contribution, the percentage of beginners among organic farmers was analysed. Of the organic farmers questioned, one-third were beginners, defined as farm managers who began organic production when they took over their farms. In the county of Vestsjælland, however, the percentage of beginners among the organic farmers was more than twice the percentage of the county of Ribe (see Table 2). But in both counties the basic tendency was the same: the percentage of beginners has increased distinctively since the 70s, with 52 % of the organic farms established by beginners in the 90s (see Table 3). The higher rate of beginners in the county of Vestsjælland can possibly be related to the influence of the nearby metropolitan area of Copenhagen, with a considerable number of urbanites who start organic agriculture when moving to the countryside.

The results indicate that beginners constitute an important proportion of the total number of organic farmers and that their importance has been steadily increasing. In addition to the 7 % of conventional farmers who are willing to

	Ribe	Vestsjælland	both counties
Converters	79.2 %	56.9 %	67.4 %
Beginners	20.8 %	43.1 %	32.6 %
all organic farmers	100.0 %	100.0 %	100.0 %

**Table 2:** Percentages of converters and beginners among organic farmers ( $n = 141$ ; Spearman-Rho significant on 99 pct. level).

convert their farms a considerable number of beginners will start with organic agriculture. If the percentage of beginners should continue to increase in the next decade, beginners will become even more important than converters to the future of organic farming.

On the basis of the results presented, continuous growth in the number of organic farms can be expected in the future. But there can be no question of a conversion of a large percentage of the total agricultural sector given the present political and financial circumstances. However, the development of organic farming does not depend solely on quantitative growth in the numbers of farms. As mentioned earlier, the composition of converters and beginners and the structures of their farms are important factors too.

**Table 4:** Percentages of converters by age relative to all conventional farmers ( $n = 364$ ; Spearman-Rho significant on 99 pct. level).

age		until 30	31-40	41-50	51-60	older 60	all ages
Ribe	converters	16.7 %	10.5 %	4.5 %	4.3 %	6.5 %	6.7 %
	not converters	83.3 %	89.5 %	95.5 %	95.7 %	93.5 %	93.3 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
Vest-sjælland	converters	0.0 %	6.4 %	12.5 %	5.5 %	5.9 %	7.5 %
	not converters	100.0 %	93.6 %	87.5 %	94.5 %	94.1 %	92.5 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
Both counties	converters	6.7 %	8.2 %	9.0 %	5.0 %	6.3 %	7.1 %
	not converters	93.3 %	91.8 %	91.0 %	95.0 %	93.7 %	92.9 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

### Characteristic features of converters

#### Age

In the county of Ribe the percentage of farmers with a positive attitude towards conversion was highest among farmers less than 40 years old (see Table 4). By contrast, farmers between the ages of 41 and 50 were most likely to change their farms in the county of Vestsjælland. In both counties the percentage of converters was smallest for farmers older than 50. The difference between the two counties can probably be explained by the fact that many farmers in Vestsjælland are educated in a profession other than agriculture. They begin farming later in their lives as a second career or for spare-time pleasure.

#### Education

Of all conventional farmers in the two counties, almost one-third lacked a professional education in agriculture, but were educated in another profession. About 90 % of them managed farms of less than 30 ha agricultural areas. In the county of Vestsjælland, farmers with non-agricultural educations had the most positive attitude towards conversion, whereas in Ribe County only a slight difference in attitudes was found between farmers with or without agricul-

tural educations (see Table 5, category 'other education'). In general, farmers with non-agricultural educations more frequently hold a positive attitude to organic agriculture.

#### Farmtype

Considering the second action plan for organic agriculture, the relative percentages of full-, part-, and spare-time farmers are very important to the development of organic agriculture. Full-time farmers in the investigation were defined as those who derive their total income from agriculture; part-time farmers get their main income from agriculture, but have other sources of income; spare-time farmers' main income comes from non-agricultural employment. The categories were explained on the questionnaire and farmers could mark the one appropriate to them. The applied definition is different to others, which only distinguish between full-time farmers (more than 1,665 standard-working-hours per year) and part-time farmers (less than 1,665 standard-working-hours per year). This is for instance the practice of the Danish Institute of Agricultural and Fisheries Economics. It was however an important aspect of the study to describe the features of future farmers and thus appropriate to use a more detailed definition. Out of all the conventional farmers surveyed, 42 % manage full-time farms, 10

education		agricultural	other	agricultural and other	no professional	all types
Ribe	converters	7.4 %	6.7 %	8.3 %	5.3 %	7.1 %
	not converters	92.6 %	93.3 %	91.7 %	94.7 %	92.9 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
Vest-sjælland	converters	4.4 %	13.6 %	0.0 %	8.7 %	7.8 %
	not converters	95.6 %	86.4 %	100.0 %	91.3 %	92.2 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
Both counties	converters	6.0 %	11.5 %	4.0 %	7.1 %	7.5 %
	not converters	94.0 %	88.5 %	96.0 %	92.9 %	92.5 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %

**Table 5:** Percentages of converters by education relative to all conventional farmers ( $n = 347$ ).

% manage part-time farms and 48 % manage spare-time farms. This should be seen in light of the fact that it is primarily the full-time farms that are the most productive and that supply the food market for organic food. The importance of spare-time farming has increased since the 60s. Whereas only 15 % of farms acquired during the 60s are today spare-time farms, nearly 70 % of those acquired in the 90s (1990-1998) are managed by spare-time farmers. In spite of the high number of farms, the area cultivated by spare-time farmers is rather small. In the county of Ribe, about 13 % of the agricultural area is managed by spare-time farmers, while in the county of Vestsjælland the Figure reaches almost 20 %.

Regarding conventional farmers' attitudes towards conversion, the results from the two Danish counties show that full-time farmers in particular are hesitant to make the switch. Only 4.6 % of full-time farmers had a positive attitude towards conversion (see Table 6). Among spare-time farmers, there were 9.5 % with a positive attitude – a distinctly higher percentage. But there were big regional differences. In Vestsjælland County, not a single full-time farmer had a positive attitude towards conversion, whereas in Ribe County 8 % of full-time farmers were 'quite sure' or 'very sure' that they would convert their farms within the next five years. In Vestsjælland, it was predominantly spare-time farmers who planned to convert their farms in the near future. This may again be attributed to the high percentage of farmers with non-agricultural educations, who commence farming at a higher age in Vestsjælland, whereas it is the younger farmers with professional agricultural educations who are attracted to conversion in Ribe.

#### Farm size

As spare-time farmers on average have smaller farm estates than full-time farmers, the two features of farm type and farm size coincide. More farmers with small farms (<20 ha) had a positive attitude than do managers of medium sized

(20-49 ha) and larger farms (50-99 ha). The bigger the farm, the smaller the percentage of managers with a positive attitude. Only when production area exceeds 100 hectares does the trend turn. Here, the percentage of farmers with a positive attitude was higher than among farmers with 20- to 99-hectare farms. In both counties a surplus of very small farms will be converted. But this general tendency differed in the two counties: only in the county of Ribe will farms with more than 40 ha be managed organically. In Vestsjælland, no large-scale farms will be converted at all. Thus, the area converted to organic agriculture will likely be considerably larger in Ribe County than in Vestsjælland.

Compared to all Danish farms, the organic farms include more small farms but also more farms larger than 100 ha (Plantedirektorat, 1998b; De Danske Landboforeninger, 1999). Among conventional farms there is a similar surplus of small and very big farms, but not to the same degree as among the organic farms. The results for the two counties indicate that polarisation, with a surplus of very small and very large farms, will continue in the future but with strong regional differences. Based on the development of the last decades, it can be assumed that the percentage of spare-time farms will also increase. In this regard, organic agriculture is similar to conventional agriculture, where this overall trend in the structural development of the agricultural sector has also come to the fore (MFLF, 1998).

#### Type of production

At present, Danish agriculture is highly specialised; a large number of farms specialise in cattle farming, pig farming, or crop farming (see MFLF, 1998; De Danske Landboforeninger, 1999). Until the 1950s, mixed farms dominated. But since then, structural developments in agriculture have resulted in specialisation in a single type of production, which has resulted in concentrated cattle farming on the poorer soils in the western part of Jutland and crop farming on the better soils of the Danish Islands. By contrast, the or-

farm types		full time	part time	spare time	all types
Ribe	converters	8.0 %	0.0 %	6.3 %	6.7 %
	not converters	92.0 %	100.0 %	93.7 %	93.3 %
	all	100.0 %	100.0 %	100.0 %	100.0 %
Vest-sjælland	converters	0.0 %	9.4 %	11.3 %	7.5 %
	not converters	100.0 %	90.6 %	88.7 %	92.5 %
	all	100.0 %	100.0 %	100.0 %	100.0 %
Both counties	converters	4.6 %	6.8 %	9.5 %	7.1 %
	not converters	95.4 %	93.2 %	90.5 %	92.9 %
	all	100.0 %	100.0 %	100.0 %	100.0 %

**Table 6:** Percentages of converters by farm types relative to all conventional farms (n = 364; Spearman-Rho significant on 99 pct. level).

ganic method as interpreted by the farmers' associations aims to have more varied farms mixing both animal farming and plant production (IFOAM, 1997; LØJ, 1998; Demeter). However, one-third of organic farms in Denmark specialise in milk production (De Danske Landboforeninger, 1999). This is due to the fact that cattle farms can be managed very well according to the organic methods and organic milk was quite easily sold until recently (Økologisk Landscenter 1999; FDB, 2000). By contrast, specialisation in crop farming is underrepresented among organic farms, as this production type is more difficult to manage according to organic rules. Also this investigation indicates that in general, conventional farms with crop farming and those with market gardening have the smallest percentage of farm managers with an interest in conversion (see Table 7). The study used the same categories of production as the official agricultural statistics (Danmarks Statistik, 1998), however with the difference that distribution to the different categories was made with reference to farmers' information on type of production, animal husbandry and agricultural land use and not according to standard gross margins. The category 'crop farming' subsumes farms which produce mainly cereals, pulse crops, potatoes, sugar beets or seeds. Cattle farming includes farms with dairy and beef cattle and a few farms with sheep farming as the main type of production. Mixed plant production includes all farms with crop farming and market gardening as the main type of production, whereas mixed animal farming includes all farms with pig/poultry and cattle farming.

In Ribe County, a particularly high number of cattle farms will convert, whereas it is farms with mixed animal farming and with mixed plant production or both plant production and animal farming that will convert in the county of Vestsjælland. Full-time farmers manage most of the cat-

tle farms in Ribe County, while spare-time farmers typically run the mixed farms in Vestsjælland County. All full-time farms slated for conversion are situated in Ribe County, and nearly all of them are cattle farms with milk production.

### Characteristic features of beginners

As beginners contribute increasingly to the number of organic farmers, their characteristics and those of their farms are as important as those of the converters for the future development of organic farming. Data presented in the following paragraphs are based on beginners among organic farmers.

#### Age

In both counties most of the beginners (46.7 %) were between the ages of 41 and 50. In Ribe County a high percentage of younger farmers was also found (40.0 % between 31 and 40), and only a small percentage of older farmers (6.7 % between 51 and 60). In the County of Vestsjælland, the percentage of younger farmers (26.7 % between 31 and 40) was much smaller and the percentage of older ones (20.0 % between 51 and 60) much larger than in Ribe County.

#### Education

In the county of Ribe, far more beginners lack professional agricultural educations, but have been educated in other professions than in Vestsjælland County (see Table 8). In the study, farmers with non-agricultural educations were divided according to their level of education into three classes: elementary education (simple professions with short training), mid-level (professions with more advanced

**Table 7:** Percentages of converters by types of production relative to all conventional farmers ( $n = 364$ ).

types of production		crop farming	cattle farming	pig/poultry farming	mixed plant production	mixed animal farming	plant prod. and animal farming	market gardening	all types
Ribe	converters	2.7 %	10.6 %	9.1 %	0.0 %	0.0 %	5.6 %	0.0 %	6.7 %
	not converters	97.3 %	89.4 %	90.9 %	100.0 %	100.0 %	94.4 %	100.0 %	93.3 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
Vest-sjælland	converters	4.4 %	6.5 %	6.7 %	11.1 %	22.2 %	12.2 %	0.0 %	7.5 %
	not converters	95.6 %	93.5 %	93.3 %	88.9 %	77.8 %	87.8 %	100.0 %	92.5 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %
Both counties	converters	3.9 %	9.3 %	7.7 %	10.0 %	11.8 %	9.1 %	0.0 %	7.1 %
	not converters	96.1 %	90.7 %	92.3 %	90.0 %	88.2 %	90.9 %	100.0 %	92.9 %
	all	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %	100.0 %



	Ribe	Vestsjælland	both counties
agricultural education	26.7 %	51.5 %	44.4 %
other education	53.3 %	32.3 %	37.8 %
agricultural and other education	20.0 %	9.7 %	13.3 %
no professional education	0.0 %	6.5 %	4.4 %
all types of educations	100.0 %	100.0 %	100.0 %

**Table 8:** Percentages of beginners in relation to education ( $n = 45$ ; Spearman-Rho significant on 95 pct. level).

and longer training), and higher education (academic educations and equivalents with long and very long training). In the group of farmers from Ribe County with non-agricultural educations, most of the beginners (62.5 %) have mid-level educations, 12.5 % have elementary educations, and 25.0 % have higher educations. In the county of Vestsjælland, however, farmers with higher (academic) educations predominate, totalling 80.0 % of the beginners. The high percentage of academics among non-agriculturally educated farmers in Vestsjælland does not relate to the population's average education in the two counties. The percentage of people with academic and equivalent education is 10.2 % in Ribe County and 10.0 % in Vestsjælland County (of the total population aged 15-69, see Danmarks Statistik 1999), in other words, equally low. To summarise, beginners in Ribe County with non-agricultural educations mostly have mid-level educations, whereas those in the county of Vestsjælland mainly have academic educations. Life in the countryside with the option to manage an organic farm seems to have a special attraction for academically educated people in Vestsjælland County. Also this fact can probably be related to the influence of the metropolitan area of Copenhagen.

#### *Farm type*

The general tendency is for beginners to take over spare-time farms rather than full-time or part-time farms: 57.8 % of farms started by beginners were spare-time farms (see Table 9). However, in Vestsjælland County more beginners started full-time farms than in Ribe County, where there is a higher number of spare-time farmers instead. Beginners who do not want to be spare-time farmers in Vestsjælland County seem to be more likely to start a full-time farm whereas part-time farming seems to be a more attractive option for beginners in Ribe County.

**Table 9:** Percentages of beginners in relation to farm types ( $n = 45$ ; Spearman-Rho significant on 95 pct. level).

	Ribe	Vestsjælland	both counties
full time farms	13.3 %	36.7 %	28.9 %
part time farms	26.7 %	6.6 %	13.3 %
spare time farms	60.0 %	56.7 %	57.8 %
all farm types	100.0 %	100.0 %	100.0 %

#### *Farm size*

The same tendency as among farm types is manifested in farm size. Beginners prefer to start small farms: 66.6 % of all farms started by beginners were less than 20 ha. However, in the county of Vestsjælland the proportion of beginners who started medium sized farms (20 to 49 ha) was 20.0 %, a little higher than in Ribe County with only 13.3 %.

#### *Type of production*

In Ribe County beginners preferred to start cattle farms (33.3 %) or farms with crop production (33.3 %), whereas the beginners in Vestsjælland County preferred mixed farms with livestock farming and plant production (33.3 %), followed by cattle farms (16.7 %) and farms with crop production (16.7 %) or market gardening (16.7 %). Only one of the organic cattle farms in Ribe County was a full-time farm, while half of the mixed farms in Vestsjælland County were full-time farms. This correlates with the fact that there are more full-time farms started by beginners in Vestsjælland County and it is in contrast to the situation among converters, where all full-time farms – most of them are dairy farms – are situated in Ribe County.

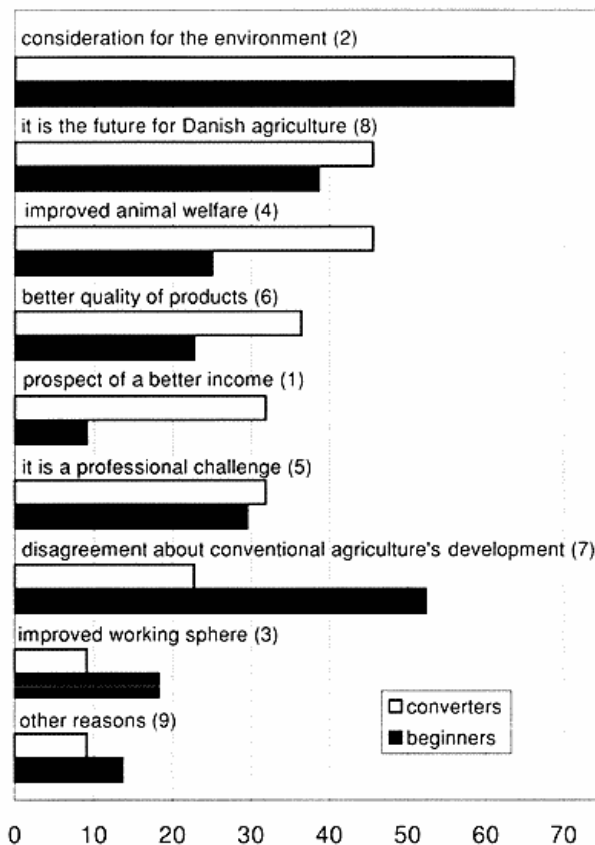
#### **Converters' and beginners' motivations for conversion**

To assess motivations for conversion, the study presented the farmers with a list of potential explanations for a conversion, developed by Jensen (1992) and used subsequently by Michelsen (1997). For both converters and beginners the same list was used, so it was possible to compare future converters' answers about the factors that would motivate them to convert with the reasons organic beginners once had for conversion. Farmers could choose between eight reasons but they also had the opportunity to formulate others. It was possible to check off multiple reasons, where appropriate.

The farmers who were 'very sure' or 'quite sure' that they will shift to organic practices base their decisions on several factors. Societal changes influence this decision as well as the structures of the farms, their financial situations, and personal reasons. 'Consideration for the environment'

was with 63.3 % of answers the most frequently cited motive for converters to shift to organic agriculture (see Figure 4). The second most common motive was the belief that 'organic agriculture is the future of Danish agriculture' (45.5 %). Other considerations included 'improved animal welfare' (45.5 %), 'higher quality of organic products' (36.4 %), and the 'prospect of a better income' (31.8 %).

Among beginners, 'consideration for the environment' was also the most powerful argument for conversion (63.3



**Figure 4:** Motives for conversion to organic agriculture (% of converters/beginners). Numbers in brackets indicate the order in which the items were presented. The assumption that the order in which items were presented biases outcome has been refuted.

% of answers). But the next most popular motive was 'disagreement with developments in conventional agriculture' (52.3 %), which was far less important to converters. It is noteworthy that beginners, some of whom are recruited from outside the field of agriculture, much more frequently disagreed 'about conventional agriculture's development' than converters. One explanation might be that although converters plan to implement organic agriculture, they are

still part of the conventional sector and thus may hesitate to criticise it. Critiques of conventional agriculture seem to be typical for those who come from outside the agricultural sector. Organic agriculture has been part of a protest movement and this may explain why it is precisely the beginners who see distancing themselves from the establishment as a motivation to undertake organic agriculture.

Another difference between converters and beginners is the importance of the 'prospect of a better economy,' in other words, enhanced personal income. While the argument is ranked on fifth among converters' motives (31.8 %), it is the least important factor for the beginners (9.1 %). This difference can possibly be explained by the particularly high percentage of spare-time farmers among the beginners to whom the farm economy might not be of primary importance. Another possible explanation is the fact that the beginners include a high percentage of idealistic urbanites with an academic background. They do not commence organic agriculture in order to improve their economic situation. By contrast, converters are primarily conventional farmers who have their roots in the countryside and who, until recently, derived income, or a supplement to income, from agriculture. The prospect of higher income is a welcome advantage of organic farming. It allows them to continue in agriculture. This attitude also explains why converters believe that 'organic agriculture is the future of Danish agriculture.'

Significantly, the 'prospect of a better economy' is a rather new motive for conversion. In the survey, none of the farmers who converted to organic agriculture before 1980 named it as a motive and only a few who converted during the 80s. It was only during the 90s that 'the prospect of a better economy' became an important argument for farmers. This does not necessarily mean that newer organic farmers are more economically oriented than the pioneers had been. Public subsidies were first introduced in the 90s, making it possible for farmers to earn a relatively stable income with organic farming. As a result, improvement of one's financial situation could become a motive, when this had not been the case before.

## Discussion and Conclusion

Organic agriculture is a very quickly developing sector. The number of farms is still small and hence sensitive to fluctuations. Therefore, the present study's results should be seen in the context of the situation for organic agriculture as it was in 1998.

It can be projected that 7 % of conventional farmers will convert their farms to organic agriculture in the near future and that beginners augment this Figure. But there is no basis for a conversion of the majority or all conventional farms. Although the results are only representative for the two research areas, this basic tendency would probably be the same in other counties. It is obvious that most Danish farmers currently do not want to convert. Thus the goals stated in the second action plan (MFLF, 1999) or in the report of the Bichel Committee (Bichel-udvalg, 1999), which advocated a considerable widening of organic agriculture, deserve re-consideration. Political strategies for an expansion of organic agriculture should be linked to farmers' attitudes towards a conversion, as the farmers are still the crucial element in each expansion strategy. If more farmers are to be motivated to farm organically, then the circumstances of farming will have to change. As the results illustrate converters among conventional farmers were especially attracted by an improvement in personal income, and other conventional farmers would probably be swayed by this motive too.

Another point of discussion lies in the features of converters and beginners and the structures of their farms. The investigation showed that organic agriculture attracts a highly diverse farmer population in terms of age, education, farm sizes, farm types and types of production. However, there are some important common characteristics. First of all, a decreasing percentage of farms are converted. Organic farms are increasingly established by beginners. If organic agriculture is to be expanded, then strategies must target not only the traditional group of conventional farmers but also beginners.

The group of converters is characterised by a high number of younger farmers, about half of them without agricultural educations, who typically manage smaller mixed spare-time farms. If full-time farms are converted, they will mostly be dairy farms, all of which are situated in Ribe County.

Also, beginners are most likely younger farmers, almost half of who lack agricultural educations but frequently have academic educations instead, especially in the County of Vestsjælland. Beginners prefer to commence smaller part- or spare-time farms, especially mixed farms with animal farming and plant production, but also cattle farms or those with crop production. Most of the full-time farms commenced by beginners were situated in the county of Vestsjælland, in contrast to the trend among converters.

An evaluation of the described structural dispositions of organic farming in the two counties depends on the specific

goals that should be followed by organic agriculture in the future. According to the second plan of action (MFLF, 1999) and the Bichel Report (Bichel-udvalg, 1999), such goals are the expansion of organic primary production as well as the use of organic agriculture as a strategy in environmental policy. Considering the possibilities for an expansion of organic food production, the relative percentages of full-, part-, and spare-time farms become extremely important. Spare-time farms are not oriented towards production to the same degree as full-time farms are. Their contribution to organic food production will be quite limited. In the two research areas, there was only a small number of full-time farms that will be converted and of full-time farms commenced by beginners. If this tendency should hold true in other Danish counties, it limits the expansion of organic food production.

Most of the full-time farms slated for conversion were dairy farms, and so were about a quarter of the full-time farms managed by beginners. This tendency is not specific to the two counties investigated; it is rather typical for Denmark as a whole, as one-third of all organic farms in Denmark specialise in dairy production (De Danske Landboforeninger, 1999). The one-sided concentration on dairy production among organic full-time farms will match an expansion of the organic dairy sector, but an expansion of primary production to other products will be problematic.

The characteristics of the organic farms surveyed showed some parallels to the conventional agricultural sector in the two counties and to the country as a whole concerning farm sizes, regional specialisation, and specialisation of the individual farms

Generally, organic farms in both counties tended to polarise with a huge number of very small farms and a surplus of very large farms with more than 100 ha. This tendency can also be found among conventional farms, though it is less extreme than among organic farms. Another parallel is the regional specialisation. Ribe County is one of the counties in Jutland with a high number of farms specialised in cattle-farming (De Danske Landboforeninger, 1999). Interest in conversion in Ribe County was highest among cattle-farmers, and additionally one-third of the beginners were specialised in cattle farming. In the county of Vestsjælland, which is typical of the counties in eastern Denmark, conventional farms traditionally specialise in crop production – a type of production that is difficult to realise in organic agriculture. Here, converters and beginners most frequently manage farms with mixed production. Basically, the regional differences in production structure among farms in Denmark will remain the same within or-

ganic agriculture, especially if the specialisation is cattle farming.

Closely related to the regional specialisation is specialisation of individual farms. The results in the two counties indicate a higher specialisation among converted full-time farms and a more varied production among converted part- and spare-time farms. In contrast, beginners who start full-time farms prefer mixed farm types. Part- and spare-time farms specialise in crop- or cattle-farming. However, a large number of organic farms are specialised. The aim of varied production on individual farms, combining livestock farming and crop farming, is stressed by some of the organic farmers' associations (IFOAM 1997; Demeter), whereas Danish national rules do not express this goal. Hence it should be further discussed if the insistence on more varied production on organic farms - rooted in the holistic approach and ecological considerations of biodynamic farming - is reasonable and whether or not it influences the organic farms' competitive abilities. As far as motivation for conversion is concerned, 'consideration for the environment,' was the most important motive to practice organic agriculture for converters as well as beginners. This may reflect the public's and the farmers' increased awareness and knowledge about environmental concerns. Conversion to organic agriculture can be a personal way for the farmers to respond to the environmental debate in society. If it is the main message of the article that farmers' attitudes towards conversion and public conversion plans in Denmark do not always agree with each other, the point can be made that there is at least agreement about organic agriculture as one instrument to improve environmental quality in agriculture.

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