15 years of research in organic food systems in Denmark – effect on the sector and society

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Abstract

The Danish government has funded research in organic agriculture and food systematically since the establishment in 1996 of the Danish Research Centre for Organic Farming (DARCOF, now ICROFS, International Centre for Research in Organic Food Systems). A recent analysis of the effects of the first 3 organic research programs (DARCOF I-III, 1996-2000) (Halberg et al. 2012) was carried out with the objective to determine not only the impact of the research on the sector from farmers and advisors to industry and retail but also on society from government and regulation to NGO's. The analysis showed that it has had a high impact on the development of the sector. Our results underpin and exemplify the general recommendations in recent international discussions on the need to improve the relationships between research, extension and agricultural production from a linear to a more complex knowledge interaction.

Introduction

It is generally thought to be quite difficult to evaluate a research program's effect on a sector of society, especially distinguishing the contribution from research from those of other development forces. There are many important factors behind the positive development of the organic sector in Denmark, including public support for market and product development, the regulatory framework from public and private sectors and the establishment of strong institutions in organic farming. A large group of entrepreneurs and pioneers in the organic farming, processing and retailing sectors have also shouldered a good deal of the burden. The results of research need to be channelled through these agents to be used for innovations. Farmers need new knowledge about nutrient balancing, weed control and animal husbandry to ensure an effective and economically viable production which is also robust and adheres to the organic principles and regulations but they are indifferent to whether new methods are the result of research or not, and many learn new methods from colleagues or consultants. The generally good connection in Denmark between research and development, the advisory service and farmers means that the people delivering the new knowledge to farmers tend to be the consultants, often as a result of discussions with scientists, who in turn are affected and inspired in their design of solutions to problems via this process. Results of research and development (R&D) do not always have farming as the primary target. Other users of the research results are businesses, organisations and the political system where knowledge of the effects of organic farming on, for example, animal welfare, climate and biodiversity form part of decision-making and political processes.

An analysis of the effect of 15 years of research in organic food systems in Denmark showed that it has had a high impact on the development of the sector. There are three main reasons: the content of research programs and the funded projects have been closely aligned with the needs of the industry as expressed by farmers, advisors and organizations. Many of the projects have had close contact to advisors and farmers securing continuous dissemination resulting in rapid application of results. Due to the close contact between researchers and users the research design has been adapted to ensure that treatments to be tested are as relevant and practical as possible, without compromising the scientific standards. Besides the practical applications the number of scientific products has been above average. Our results underpin and exemplify the general recommendations in recent international discussions on the need to improve the relationships between research, extension and agricultural production from a linear to a more complex knowledge interaction.

Material and methods

ICROFS (International Centre for Research in Organic Food Systems) has produced an analysis of the effects of organic research in the period 1996-2010 on the organic sector and on society in general. In the 15 years from 1996 and until 2010 there have been four research programmes in organic food and farming in Denmark financed via special government grants that amounted to just over 500 million DKK equal to roughly 67 million €. The allocation of funds between thematics areas can be seen in figure 1.

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The analysis itself was carried out as a collation of information from three viewpoints that each has been independently documented: 1) Interviews with (representatives of) end-users of R&D results and their assessment of the challenges for the sector in the period 1996-2010. 2) Assessment of the R&D endeavours in different thematic areas (Dairy/milk, Pigs, Crops, etc.) as they related to expected end-users. 3) Documentation of the dissemination of R&D results in relation to themes and challenges in the sector.

The recommendations in action plans for organic agriculture have furthermore been compared with the challenges in the sector identified by the end-users and with the corresponding R&D projects addressing these. Please see the more thorough description in Halberg et al. (2011).

An evaluation of the research results based on the general point scoring method used to evaluate other research programs (Pedersen et al. 2011) was also carried out. The results of this evaluation can be seen for two programmes in figure 2.

Results

The analysis shows that the research under the DARCOF programmes and CORE Organic overall has been very applied and directed at the barriers in the sector in order to support the general market and growth conditions for the organic sector. Having in this way laid a solid foundation, the private sector has been able to grasp the commercial opportunities when demand grew while adhering to the policy objectives of a market-driven growth in the organic sector.

The analysis documents and highlights three important reasons for a high impact on the development of the sector: First of all, the thematic focus of research programs and the funded projects have been closely aligned with the needs of the industry as expressed

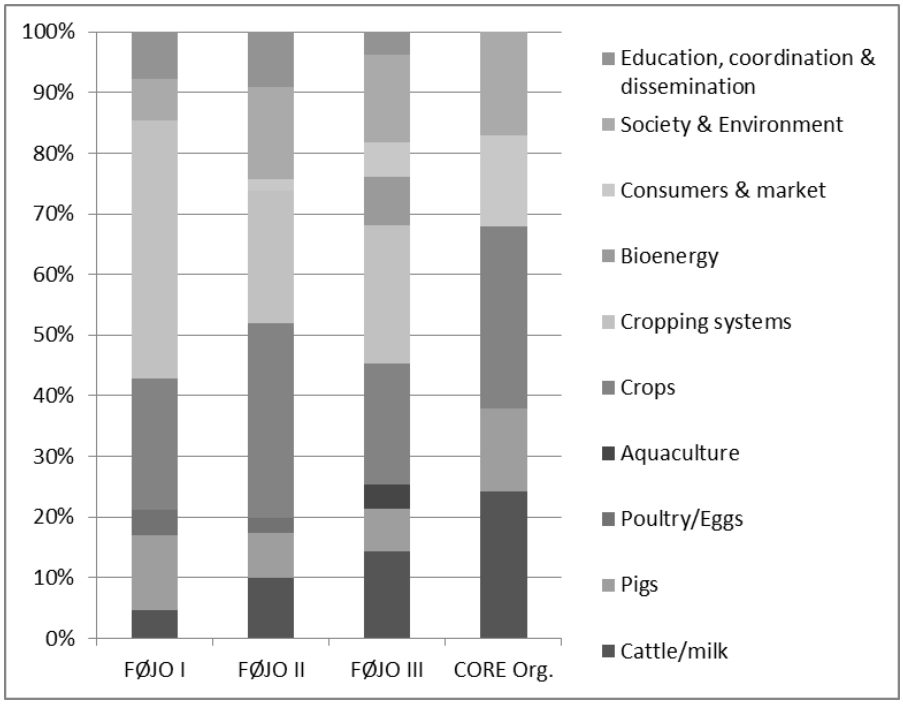

Figure 1. Allocation of funds between thematic areas in each of the four research programmes. From Halberg *et al.* (2011)

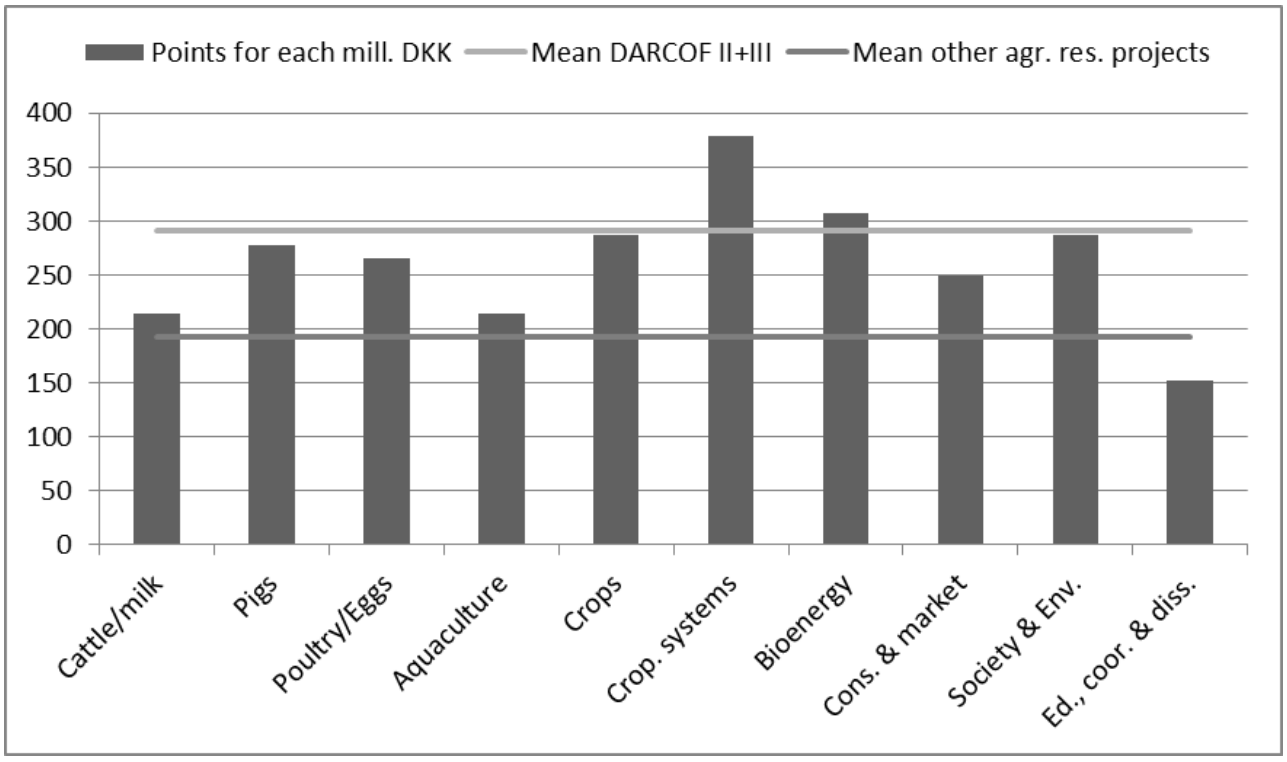

Figure 2. Points awarded for output calculated on the basis of Pedersen et.al. (2011) for each million Danish Crowns (DKK) funding for the thematic areas of the programs DARCOF II and III. From Halberg et al. (2011)

by farmers, advisors and organisations through various stakeholder committees and action plans. Second, many of the projects have had close contact to advisors and farmers securing continuous dissemination resulting in rapid application of results. Third, due to the close contact between researchers and users the research design has been adapted to ensure that treatments to be tested are as relevant and practical as possible, without compromising the scientific standards. Thus, the dialogues between the scientists and the users within projects improve the understanding of how research and the results can be adapted to the specific practical situations. This is a two-way process, and not just a question of improving dissemination of scientific results. There is a more complex interaction between research, development and the application of knowledge in agriculture than the traditional linear communication of scientific results via consultants to producers (EU SCAR, 2012).

There are clear indications that the project structure and organisation in DARCOF has supported this complexity in knowledge generation and exchange which is a prerequisite for high impact on research in terms of overcoming the farmers' main barriers. This underpins the general recommendations in recent international discussions on the need to improve the relationships between research, extension and agricultural production. In the "International Assessment of Agricultural Knowledge, Science and Technology for Development" (IAASTD 2008), the conclusions stress that it is necessary with a clean break with the linear relationship of research – extension – uptake. There is a need for the farmers' situation to have a stronger voice when prioritizing and designing research projects and to integrate their local knowledge and experience.

Measured on the number of research publications and other output, the output of the programs was satisfactory. However, this method alone does not give a satisfactory picture of the effect of the research in terms of the practical application of project results. This is because the point scoring method principally analyses research results (output) and only to a lesser degree research application (outcome).

Discussion

The result shows good correspondence between the perception of the challenges in the sector by the end-users, the R&D initiated in the four research programmes, and the publication of research results and other forms of knowledge transfer. The analysis documents direct effects of the research initiatives directed at the challenges in the sector in this period. This applies to higher yields, weed and pest control, animal health and

welfare, the potential for phasing out the use of antibiotics in Danish dairy herds as well as to the use of fungicidal seed treatment in primary production. In contrast, the analysis shows that the effects of the research in the processing industry are of a more indirect character. Research has helped stabilise the supply and quality of raw materials at a time of growing demand and sales. For the governmental and non-governmental organisations involved in policy development, the response also indicated a more indirect effect.

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