

## Exploring the multifunctional role of farming systems

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### Abstract

Public expectations of farming practices are changing from a demand for environmentally “sustainable farming practices” to farming making an “enhanced contribution to the development of the rural areas”, the so-called multifunctionality. Based on our research model of including farmers in the development of eco-friendly farming systems, we propose that the achievement of these changed expectations could be facilitated through an appropriate research and development initiative in several European regions. Key elements in such a project should include: (i) the establishment of platforms for dialogue and development of relevant indicators of multifunctional effects (ii) documentation of results obtained from a number of farms and (iii) analysis of development opportunities in the light of the changes “requested”. Participants in the regional platform for communication will include farmers, regional policy makers and administrators, grassroots movements and research staff. It is expected that such a coordinated research initiative can revitalize the contribution of farming to rural development and yield important insight to be used by the individual farmer in coping with future challenges.

**Keywords:** Indicators, platform for dialogue, farm performance, systems research

### Introduction

Like any other business, farming is constantly challenged by the changing demands and expectations of the surroundings. The development of sustainable farming systems has until now mainly focussed on how to farm without unacceptable environmental impacts. Research and development efforts include decision support tools for farm management in relation to environmental impact (c.f. Halberg et al., 2005), and the interaction between land use, landscape and ecological services (c.f. Gibon, 2005).

The public expectations of farming are now moving from a demand for “environmentally sustainable farming practices” to an expectation that farming should be able to contribute significantly (more) to the development of rural areas. This can be translated into an expectation of multifunctionality of farming. At the same time, European food production in its present state is under heavy competition from food production in other parts of the world. Therefore, it is also in the interest of many farmers to look for other ways of generating income. So, for several reasons it will be important for many farmers to adapt to such expectations and opportunities. This calls for a better understanding of the development opportunities of farms in relation to multifunctionality and to explore the possible role of different farming practises in relation to rural development.

The purpose of this paper is to present our experiences in researching farmers’ options and motivations for adapting to more environmentally sustainable systems and

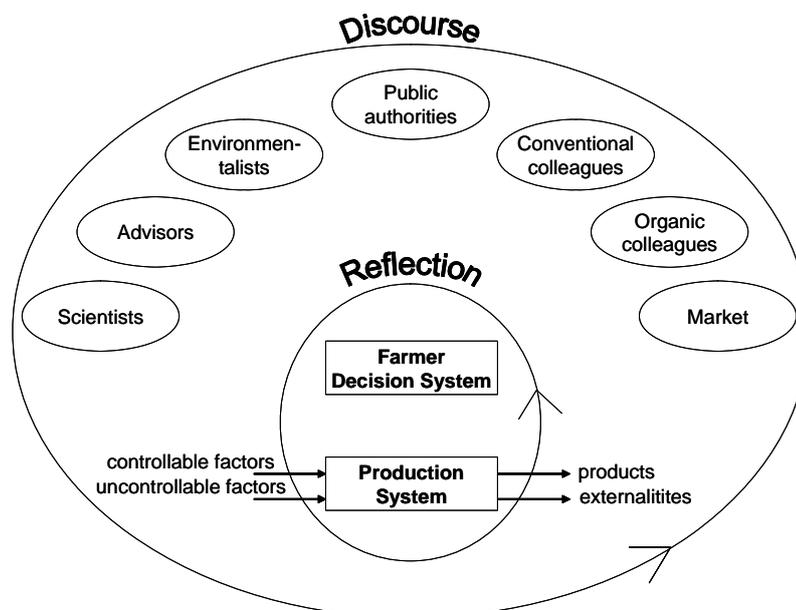
– based on these experiences – to suggest how an intensified effort in researching multifunctional farming systems could appropriately take place.

### Theoretical approach

It is well accepted that the term sustainability has a major normative component and that sustainable development includes ecological, economic and social issues. A group of European scientists engaged in livestock systems research jointly developed a model based on systems theory and systems thinking (Gibon et al., 1999). This model is explicit in terms of the normative dimension. It represents the duality of the farming system seen as a human activity system as well as a production process.

While the view of a farm as a production process is appropriate to operationalize parameters for production and farm economy, it is less suited to operationalize externalities that have a major normative component. In considering the farm as a human activity system, the farmer (family) is having his goals fulfilled through farming activities. The farmer uses information from the surroundings as well as from the production system to adapt the activities to the family's goals and to respond to the pressure from the surroundings. Therefore, this model gives a good framework for describing and analysing social values in terms of sustainable development as well as the communication between the farmer and the surroundings related to the adaptation and development of the farm.

The research model in Figure 1 exemplifies the use in studying organic farming. It illustrates, that the farmer probably does not develop his norms and agricultural practice in isolation from others. No doubt, the individual farmer may put very different emphasis on to what degree other actors impact on his views and norms. However, the farmer will be influenced by the dominating views in his environment in an effort to ensure the survival of the farm in the longer term.



**Figure 1. A model of the farmer's reflection on farm sustainability in light of the value systems and discourses in society. (from Kristensen & Halberg, 1997).**

## **Farmer's possibilities and motivation for adapting to a more environmentally sustainable production**

During a number of years our research group has investigated how farmers could include environmental issues in their management practices with the aim of fulfilling, on the one hand, their own goals and, on the other, the social expectations regarding environmental impact. The work was based on the aforementioned duality model. A major project was named "Ethical accounting in livestock farming". The idea was to investigate means of decision support for farmers in order to respond to the increasing public criticism of animal welfare and environmental impact.

The project, which was carried out over a 3-year period in cooperation with 20 farmers, included the development of environmental indicators based on the actual farm performance. The indicators included aspects of ground water pollution, use of limited resources including fossil energy, and impact on wild flora (Halberg, 1999). The indicators were all intended to be scientifically sound, to reflect a concern shared by the community, to make sense to the farmer, and to be adaptable. After finishing the project an independent analysis of farmers' perception of the ideas in the project was performed (Michelsen and Al-Seadi, 1998).

The overall experience was that the majority of the farmers found the information presented to them in the form of indicators valuable and felt motivated to include these aspects in their farm management, and also did so to varying degrees. A drawback mentioned was the lack of reference information for benchmarking at that time, which made it difficult for the individual farmer to assess their own performance and communicate the results.

The project illustrated clearly, that farmers basically do have an interest in how the farm performs in aspects beyond direct regulation and that are of interest to others, and that it is possible to develop indicators to address such issues. Research also shows that farmers and others may meet in dialogue on issues such as landscape changes and aesthetics if the 'right' platform for dialogue is established (Noe and Halberg, 2002; Højring et al., 2005).

## **Researching multifunctional farming**

The term "Multifunctional agriculture" is not a well-defined term with a well-accepted meaning among different groups in society. OECD (2005) focuses on the added value potential in an economic sense of improved or diversified production processes, whereas FAO (2005) views the term in particular from a biodiversity perspective. Among many researchers landscape quality is a core element in multifunctional agriculture (Brandt and Vejre, 2004). Without discriminating among the meanings mentioned, we suggest that multifunctional agriculture is the attribute of (the degree of) how different important local aspects of ecological, economic, and societal character are been included in the actual farming management practices. The multifunctionality in that sense is then a matter of the relation between the farm (farmer family) and other interest groups and stakeholders in the local environment.

In the reflection by farmers on the development of the farm under stimuli from the surroundings it was shown earlier that indicators for environmental issues could be developed whereby such reflection was supported and operationalized. It is reasonable to expect that locally important impacts of the production system will have an

even greater influence on direct management initiatives. This underpins the concept of supporting the farmer's opportunities to understand and reflect on the impact of the production on the local/regional scale i.e. the performance in relation to the site-specific rural development.

If we consider farming to have a potential for (improved) contribution to rural development, significant research and development efforts will be needed to meet the challenges in this area. The analytical model described earlier can form a good starting point for such an effort. However, based on our experience a number of challenges still remain.

First of all, the issues that need to be addressed in such a context include a wide variety of research disciplines. Secondly, the indicators that are relevant in a local context are probably of a less universal character, why it may be difficult to communicate and transfer research results. In order to determine relevant research methods for such complex aspects and also create knowledge about the potential of different farming practices for rural development, we suggest that research and development initiatives should include:

- (i) The establishment of local platforms for dialogue and development of relevant indicators of multifunctional performance adapted to the local environment. The expectations of and opportunities for farming to contribute to local development are defined among a range of stakeholders (regional policy makers and authorities, professional associations and councils, farmers, agricultural advisors, grassroots movements and researchers of different backgrounds). Through dialogue, the most promising areas are identified and research staff proposes relevant indicators for farm performance.
- (ii) Documentation of results obtained from a number of farms. The indicators of farm "performance" will be evaluated at farm meetings to examine the farmer's affiliation to the indicators and the farmer's views on possibilities and constraints to improve farm performance. These analyses will form new inputs to the platform for dialogue.
- (iii) Analysis of development possibilities in the light of changes "requested". Using agricultural advisors and researchers, a range of options can be considered for use on-farm and for policy-making at regional or central level.

We conclude that there is a need for co-ordinated, multidisciplinary initiatives in researching the multifunctional role of farming. Although the proposed plan is seen from the local perspective, it is obvious that the establishment of a number of coordinated local projects in different countries represents a particular perspective in creating knowledge; not only on methodology, but also - through knowledge and knowledge transfer - on new development opportunities for the individual farmer. The contribution of farming to rural development can thus be revitalized.

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