

## **Czech organic farmers' perception of landscape elements**

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### **Summary**

This paper aims to identify the main aspects of farmers' motivation to farm organically and their activities relating to changes in landscape composition. Organic farmers' perceptions of landscape elements were observed through questionnaires completed by 87 farmers in the Czech Republic. The majority of farmers (88.5%) stated that environment-friendly farming practices were the main reason to enter the organic farming system. A large number of farmers (69%) stated that they have problems with some constraining conditions and rules in agri-environmental measures. Regarding the size of farms, small farms were more willing to devote part of their farmland to landscape elements. Respondents who farmed in LFA areas and landscape protected areas mentioned more types of landscape elements than farmers from intensive production areas. At the moment, organic certification is concerned only with monitoring and limiting external inputs in the organic farming system. Therefore, it is necessary to start work on a new certification system which will evaluate particular organic farm achievements with regard to impact on landscape, biodiversity, and the environment. Nearly 82% of respondents in our survey were aware of room for improvement regarding these issues.

**Key words:** Farmers' motivation, landscape management, agri-environmental measures

### **Introduction**

One of the aims of organic agriculture is to establish environmentally friendly farming practices that are favourable to wild flora and fauna. However, a direct relationship between organic farming and landscape composition, especially the development of landscape elements, has not been demonstrated unambiguously (Levin, 2006). Several studies from different European countries point to the conclusion that more important factors than just the type of farm management have an influence on landscape composition, e.g., farm size, topography, or other biophysical conditions such as soil type, etc. A complete review of existing studies focusing on the impact of organic farming on landscape composition was compiled by Levin (2004). In particular, several studies in different European regions (van Mansvelt *et al.*, 1998; Kuiper, 2000; Hendriks *et al.*, 2000; Clemetsen & van Laar, 2000) confirmed the positive impact of organic farming on landscape composition and found a higher density of natural and semi-natural landscape elements on organic farms. Other studies (Lindkvist, 2002; Ackermann, 2003; Levin, 2006) point to a rather weak relationship between organic farming and the quantity of natural and semi-natural landscape elements. This second group of studies used different approaches – stratified random sampling, a larger number of farms, and the use of a temporal scale. These studies, which also incorporated some variation of other parameters such as socio-economic and biophysical conditions, showed

that landscape composition was more related to these parameters than to whether the farm was under organic or conventional farm management (Levin, 2006). For that reason, this study attempts to elucidate the relationship between organic farming and landscape composition in the Czech Republic, or more precisely the interest of organic farmers in these landscape elements and in agri-environmental measures (AEM).

This paper aims to identify the main aspects of farmers' motivation to farm organically and their activities relating to changes in landscape composition, and to construct statistical models in order to test hypotheses, verify the information gathered, and explain tendencies observed through the questionnaires.

## **Material and Methods**

The survey was based on quantitative research through a structured questionnaire, which was designed for the target group of organic farmers and contained seven sections (farm characteristics, farmer/manager characteristics, structure of agriculture land, landscape elements, subsidies, farm management plans, availability of information) and 40 questions.

A stratified random sampling method was chosen as the best strategy for selecting respondents. From the Ministry of Agriculture's database, where all organic farmers are registered, the farms were divided into two types of legal status: farmers who farm privately, and farming companies. This division into two types of legal status was chosen as the primary basis for stratification, being considered highly relevant for specific aspects of the research. Sixty enterprises were selected from each type, so in total 120 enterprises were approached. The rate of return of questionnaires was 60%. The resulting sample was considered representative of the real division of organic enterprises in the Czech Republic according to their legal status. The selected enterprises represented a wide spectrum of farms considering their size, location and structure (proportion of arable land and permanent grassland).

In total, 87 questionnaires were processed in several steps. Firstly, the compiled data were checked for error of logic, the correctness and readability of questionnaires was assessed and they were put in systematic order. Secondly, coding of the questions and answers was performed in Microsoft Office Excel software. Thirdly, statistical analysis and evaluation was carried out using STATISTICA CZ software, version 8.0.

## **Results**

The results relating to landscape elements are emphasised; however some other relevant data from the survey are also presented.

The total area of all farms involved in the survey was 39,855 ha, which represents 11.7% of all organically farmed land in the Czech Republic. Of a total number of 87 organic farms surveyed, 37.9% of farms were managed by farmers who farmed privately and 62.1% were registered as legal entities. Regarding size categories, two groups had the highest representation, each comprising of 26.4% of the sample: farms of 10–50 ha and farms of 100–500 ha. This corresponds with the size structure of organic enterprises at a national level. The majority of farms (77.2%) have converted to organic farming since 1998, when the subsidy system was renewed, and since then the farmers have received state support on a yearly basis.

Considering production characteristics, 77% of the surveyed farms specialized in animal production and 64.4% in plant production, indicating quite a high number of farms with mixed production. The high share (72.4%) of farms which focused on maintaining permanent grassland corresponds with the predominant type of farming in the Czech Republic, i.e. permanent grassland in highland and upland areas focusing on landscape preservation and raising beef cattle, which

currently accounts for 82.4% of the total organically managed land area. Most of the farms in the survey were situated in less-favoured areas (LFA) (79.3%) and only a minority (12.6%) were in intensive production areas. Quite a high proportion of the farms (43.7%) were situated within landscape protected areas and Natura 2000 sites (18.4%).

Among the respondents, 88.5% were men and 11.5% were women, however the national statistics have not yet been processed, so we cannot compare this trend with data at a national level. It was also found that more than 50% of farmers were under 49 years of age, which is higher than in agriculture generally, where the trend of an aging population is seriously affecting the sector. In addition, the survey results indicated high levels of education among respondents: nearly 50% of farmers surveyed had a university qualification and over 74% of farmers had studied agricultural subjects. More than 86% of respondents worked on the farm full-time and more than 60% had grown-up in rural areas.

When the respondents were asked about the motivation behind their decision to enter the organic farming system, most of them (88.5%) stated that environment-friendly farming practices were the main reason. The second most frequent reason given (70.1%) was the possibility of obtaining subsidies and sustaining the farm economy. The other reasons were the production of healthy, high quality organic food (55.2%), improvement of animal welfare (51.7%), a change to a more ecological life-style (42.5%), greater satisfaction from farming (39.1%), and also the possibility of self-sufficiency in organic food for their families (36.8%).

Part of the questionnaire focused on the presence of landscape elements on surveyed farms and farmers' awareness of the functions and benefits of landscape elements. Fig. 1 shows which types of landscape elements were present on the respondents' farmland.

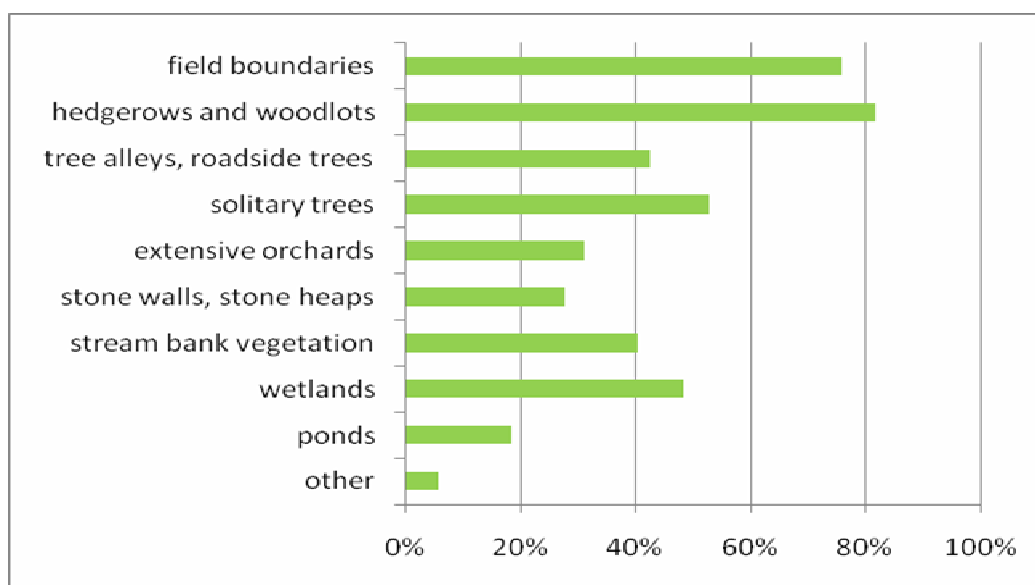


Fig. 1. Overview of landscape elements present on respondents' farms

The next question aimed to find out what types of functions and impacts farmers associated with landscape elements in addition to their accompanying advantages and disadvantages for farming (see Fig. 2).

Regarding subsidies, only 18% of farmers applied just for the organic farming scheme; the rest were involved in a range of additional AEM. Looking at Fig. 3, it is clear that around 60% of farms were engaged in grassland maintenance, via basic management for meadows or pasture. A quarter of the farms also engage in special management on arable land such as growing catch crops (25%) or permanent conversion of arable land to grassland (23%). Further special management on grassland includes, for example, maintaining species-rich pasture (25%), maintaining mesophilic

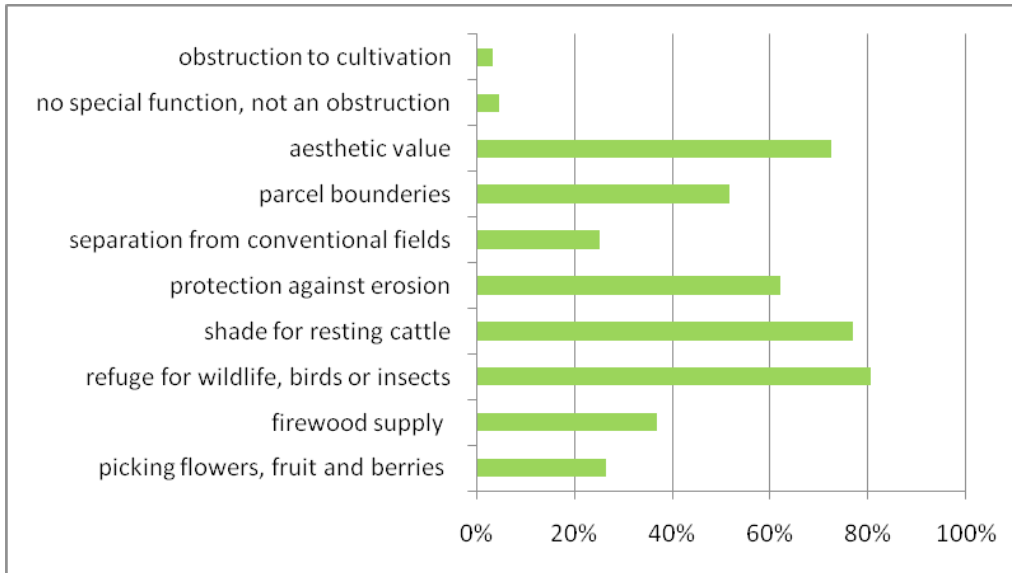


Fig. 2. Overview of the impacts and benefits that farmers associate with landscape elements

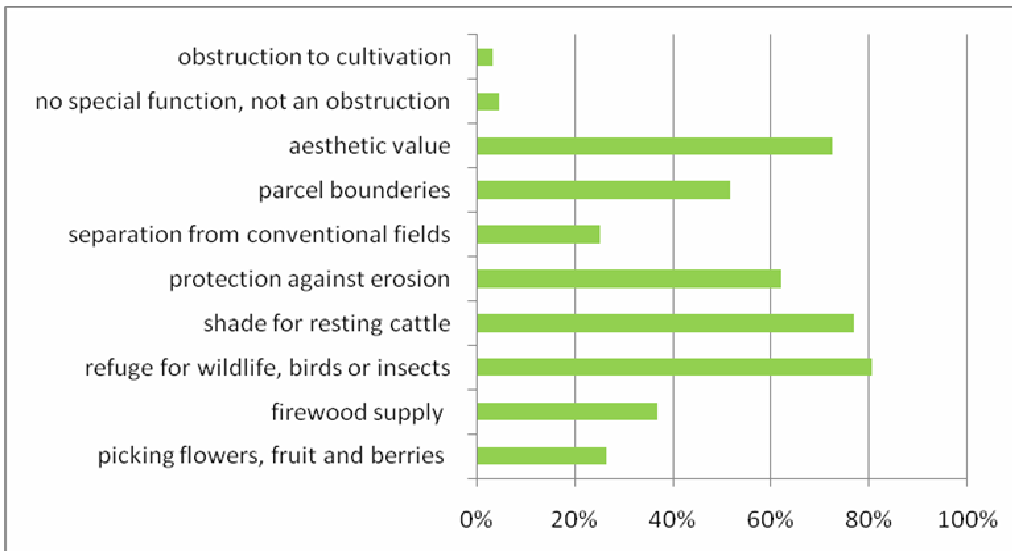


Fig. 3. Overview of agro-environmental measures and their utilization on surveyed farms

and hygrophilic meadows (26%), or maintaining corncrake nesting sites (21%). A remarkable number of farmers (69%) stated that they have problems with some constraining conditions and rules in AEM. The most frequently mentioned obstacles were unsuitable limits on the intensity of herbivorous livestock production on pasture, deadlines for mowing, problems with cut biomass that has to be removed from the land, or the obligation to cut ungrazed areas at the end of the season.

A rather low number of farmers (15%) had had experience of applying for additional subsidies to cover their expenses with other landscape maintenance activities, such as planting trees in the agricultural landscape, hand-cutting species-rich wetland, or creating individual anti-erosion measures.

## Discussion and Conclusion

One of the outcomes from the survey was that private farmers have more diversified production goals (special plant production as herbs or vegetable, diversified animal production, on-farm food

processing or agro-tourism) for their enterprises than farms which are legal entities. However, changes in landscape structure (such as planting linear non-forest vegetation, conversion of arable land to grassland, establishing divisions between field, afforestation etc.) did not differ from legal entities. Regarding the size of farms, small farms were more willing to devote part of their farmland to landscape elements.

Respondents who farmed in LFA areas and landscape protected areas mentioned more types of landscape elements than farmers from intensive production areas. Farmers specializing in animal production more often valued landscape elements as a place with shade for resting cattle (85%). Enterprises focusing on special plant production (such as herbs, vegetables or fruits), or on farm-scale processing of organic products were more often (50–64%) aware of the benefit that some landscape elements perform in separating organic land from conventional fields and production. When the correlation with place of birth was tested, farmers who were born in towns and were not born into farming families more often perceived (61%) the practical use of non-productive areas as being a supply of firewood and a place for picking flowers, fruit and berries.

The incorporation of landscape and species diversity into organic certification systems will be an important issue for the whole organic agriculture sector in the near future. In addition to the mitigation of climate change impacts, soil protection and other environmental issues have become crucial for the development of sustainable agriculture systems. At the moment, organic certification is concerned only with monitoring and limiting external inputs in the organic farming system. Therefore, it is necessary to start work on a new certification system which will evaluate particular organic farm achievements with regard to impact on landscape, biodiversity, and the environment. Nearly 82% of respondents in our survey were aware of room for improvement and pointed to necessary improvement in organic practices regarding these issues. Existing evidence that this tendency has already been incorporated in organic rules is visible in the development of private standards and regulations in various European countries. Several organic farmers' associations have already formulated simple rules relating to landscape and wildlife habitat protection (e.g. Bioland, Naturland, Soil Association, Demeter, Bio Suisse etc.) as part of their own certification system.

With regard to the wider implementation of agri-environmental measures in the agricultural landscape, the conspicuous gap in communication between farmers and public planning and regulatory bodies is an explicit barrier (Wilson & Hart, 2001). Therefore, greater cooperation with farmers at the individual level is recommended. AEM should be acknowledged as successful if they contribute to long-term changes in the farmer's way of thinking on environmental issues and if they encourage the uptake of environment-friendly farming practices (Wilson & Hart, 2001). However, van Elsen (2005) argues that more advice should be available for the farmers on nature conservation topics; it is apparent that there is a need for a participatory landscape development concept. The idea of farmers as a homogeneous group with the same set of values could be subsequently changed and, thus, a better understanding of the driving forces behind farmers' decisions could lead to more efficient planning schemes.

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