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Exploring farmers' orientation towards multifunctional agriculture: Insights from northern Iran

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ABSTRACT

The multifunctional agriculture (MFA) concept, namely, the fact that agricultural activity may also have several other functions beyond its role of producing food and fiber, has emerged as a key notion in scientific and policy debates regarding the future of agriculture and rural development. However, the relationship between undertaking multifunctional activities and farmers' perceptions of farming is to a great extent unknown. A survey of 209 randomly selected farmers was conducted in Masal County of Guilan province, Iran to describe farmers' perceptions of MFA and provide a better understanding of factors shaping these perceptions. Several factors were considered in the study, including traditional farming practices of small-scale farmers in the area (e.g. manual soil tillage, use of livestock manure and by-products for soil improvement, multiple cropping, family livestock), good agricultural practices at farm level related to environmental protection (e.g. low use of synthetic fertilizers and pesticides), and also local traditions and heritage. Exploratory factor analysis was used to categorize agricultural functions based on the collected data and cluster analysis was used for sorting out farmers regarding six extracted factors. These factors were: multiple cropping, social acceptability, environmental health, stability and continuity, food security, and local traditions and heritage. About half of the respondents (48.3%) showed highly positive perceptions of MFA, putting emphasis on social acceptability and environmental health for food security, including also preservation of local traditions (named: guardians of culture and traditions). Almost a third (31.1%) showed moderately positive perceptions of MFA, with mainly a socio-environmental orientation, whereas a sizeable proportion (20.6%) was indifferent to MFA. Data offer useful insights to decision makers regarding the design and implementation of territorial planning strategies. Food production remains a key element in farming systems, but besides mainstream agriculture, the positive perceptions of MFA support that alternative farming systems could be implemented. However, the most successful farming systems adapted to specific contexts and needs should be promoted, taking into account existing facilities and sufficiency for appropriate rural management.

1. Introduction

For hundreds of years, the agricultural sector has been connected with production of essential food crops, being the main source of livelihood for many people. The fundamental role of agriculture in economic development of many countries around the world has long been recognized (Alston and Pardey, 2014). A stable agricultural sector ensures a nation of food security, preventing malnourishment that traditionally has been believed to be one of the major problems in developing countries (Shetty, 2015). In developed countries, agriculture has been often seen as a source of contributions that promote industrial growth and boost the economy. Over the last 60 years, intensive production practices of high-yielding staple food crops were promoted. In these high-input agricultural systems, the use of fertilizers and pesticides was excessive and in certain cases proved harmful for the environment (Tilman et al., 2002; Damalas and Eleftherohorinos, 2011). On the other hand, small-scale farmers in many parts of the world do not have sufficient access to state-of-the-art technologies, inputs, knowledge, and innovations that enhance productivity. Thus, increased attention has been directed towards new production approaches aiming at maintaining sustainable production and at the same time minimizing the ecological impact of agriculture practices. Although the primary role of agriculture is to produce food and fiber, many other functions, such as land conservation, maintenance of landscape structure, sustainable management of natural resources, preservation of biodiversity, and offering to the

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economic viability of rural areas are also important (Boody et al., 2005). This multifunctional role of agriculture in producing various commodities and non-commodity outputs is receiving attention lately (Daugstad et al., 2006).

Broadly speaking, multifunctional agriculture (MFA) refers to the fact that agricultural activity may also have several other functions beyond its role of producing food and fiber, such as the management of renewable natural resources, the conservation of landscape and biodiversity, and the contribution to the socio-economic growth of rural areas (Renting et al., 2009; Ragkos and Theodoridis, 2016). In brief, the 'new' concept of MFA reflects the 'ancient' capacity of agriculture to produce different kind of goods and services, covering a wide range of the society's demands (Vera-Toscano et al., 2007). Towards an alternative approach to agriculture, multi-functionalism is a trend to produce other values beyond food and fiber, including several public goods, such as sustainable resource management, biodiversity conservation, recreational opportunities, and cultural heritage (Daugstad et al., 2006; Schimmenti et al., 2016). In this direction, farmers play an important role in maintaining production, environmental, and cultural relations through the efficient use of land and of the available resources, environmental protection, maintenance of biodiversity, landscape management, and preservation of rural cultural heritage. This role of farmers then led to numerous new functions in the world agriculture. The idea of MFA was very important from 1999 to 2002, but was less used after 2002 (Daugstad et al., 2006). The public in Spain was aware of the multi-dimensional nature of agriculture as a provider of private and public goods and services, but a big fraction of the population still focused its demand on private goods production (Vera-Toscano et al., 2007). Recently, the Cypriot public was found to be in favor of a less intensive pattern of agriculture and willing to pay for mitigating adverse environmental effects of modern agriculture, preserving cultural heritage, and safe-guarding the continuation of farming trade on the island (Ragkos and Theodoridis, 2016).

According to Agriculture Organization statistics of the Guilan province, re-orientation of agriculture in this province, especially after the land reform, turned into small-scale agriculture with land ownership of approximately 0.6–0.7 ha (Guilan Governance, 2014). A great majority of farm households are traditionally based on a diversified economy both on-farm and off-farm diversification. However, this level of ownership is not economical for industrial production and soon led to significant changes in land use and lifestyles in Guilan province and particularly in Masal County of the province, including transformation of farmland and ranches to buildings, sale of land to non-native people for building country houses, and rural-urban migration. Among factors affecting these changes, lack of adequate income due to excessive subdivision of land into small plots, reduction in social acceptability of agriculture, and changes of social values and lifestyle can be noted. It is more than clear that agriculture would not work under these conditions and therefore a solution to this problem must be found. In other words, there is a need to change the approach to agriculture from the basic concept of food production to a wider concept that includes the multiple roles of agriculture (Wilson, 2007).

Experience from different countries suggests that various approaches to sustainable food production and MFA can be effective in tackling the problem of unsustainable food production using modern farming practices. In China, Brazil, and Africa small-scale farming practices were able to eliminate the food needs of the society and save production costs for farmers (Horlings and Marsden, 2011). Also, the implementation of MFA in countries such as Bulgaria, United Kingdom, Netherlands, and Norway showed that many of the problems in the agricultural sector can be reconstructed by changing the approach in agricultural concept, which has already disrupted food production and sustainability of rural culture (Romstad et al., 2000; Wilson, 2007; Marsden and Sannino, 2008; Horlings and Marsden, 2011; Todorova and Ikova, 2014; Lanfranchi et al., 2015). FAO case studies by country presented a different set of indirect socio-economic contributions by agriculture. These indirect contributions are often not well understood, seldom analyzed in an appropriate context of development, and rarely reflected in national and rural development policy formulation (FAO, 2004; Bresciani et al., 2005). Thus, to access recovery and continuity of agriculture for a long-term, farmers are required to be active.

Farmers are human beings with very different preferences, attitudes, and interests. Farmers' attitudes are formed by factors reflecting their perceptions and beliefs towards agriculture. Sociological and economic research traditionally studied agriculture as a money-making activity and as a means for farm households to improve their livelihoods. Despite the fact that such motivations remain important, several studies found that agricultural activity is also driven by non-commercial reasons, such as the maintenance of cultural patrimony, management of security threats, family considerations, and also residential and lifestyle preferences (Van der Ploeg, 2003). Understanding farmers' behavior can assist in defining the role of policies and the level of knowledge as effective factors on the transition of agriculture. Different approaches to agriculture related to agroforestry, environmental protection, biodiversity conservation, and sustaining rural culture have been examined. The input-output model showed that multiplier values differed over regions, mainly due to differences in the spectrum of multifunctional activities (Heringa et al., 2013). Farmers in France felt more connected to nature than other rural residents, but their perception that nature should be under human control, 'clean', and 'tidy' contradicted many aspects of common conservation policies (Kohler et al., 2014). In addition, some studies considered citizens' attitudes and factors influencing behavior to verify the demand for healthy and nutritional food products as well as the effective functioning of agriculture in urban life (Hyytiä and Kola, 2006). For example, Finnish people were found willing to support domestic agriculture mostly as a producer and provider of safe and high-quality food, whereas other functions of agriculture were secondary (Hyytiä and Kola, 2006). However, studies on farmers' attitudes concerning the multi-functional role of agriculture are limited.

Given that farmers are the main producers of agricultural products and the principal components of rural communities, evaluation of farmers' perceptions is essential to identify what they think about the multi-functional role of agriculture (Kohler et al., 2014; Howley et al., 2014). In developing countries like Iran, where small-scale agriculture is widely implemented, there is great diversity in farmer-based products and availability of resources to implement the multiple functions of agriculture. However, non-commodity outputs tend to be under-produced because they do not have a market price. Understanding farmers' perceptions and beliefs of MFA can be a first step to better understand the behaviors of key actors in rural communities. Thus, the aim of this study was to describe the multi-functional role of agriculture as it is perceived and expressed among small-scale farmers in Shanderman District as a part of Masal County in Guilan province of northern Iran. In particular, the research questions set in this study were the following: is there a positive or negative perception of MFA among farmers and what way is it seen as valuable and in which context?

2. Methodology

2.1. Study site

The study was carried out in the rural areas of Shanderman District of Masal County, Guilan province, northern Iran (Fig. 1).