

Trade off Between Multifunctional Agriculture, Externality and Environment

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Abstract: It is a common idea that the primary role of agriculture is to produce food for present generation. After Rio Earth Summit in 1992, new roles of agriculture such as long-term food security, cultural heritage, conservation and maintenance of land and bio-diversity started to gain importance in developed countries and discuss throughout the world. These new roles are called as multifunctional agriculture in the literature. In the context of above explanation the aim of this study is to determine and evaluate the relationship between multifunctional agriculture, externality and environment.

Key words: Multifunctional agriculture, externality, environment

INTRODUCTION

In the past, there was a dilemma between agricultural economists and ecologists. Although the former emphasise the importance of maintaining and improving farmers living standards via increasing output per unit, the latter emphasise conservation of the natural resources^[1]. However, today, the aims of both are to protect the nature and to balance the ecological unity of rural areas as parallel to increase in farmers revenue. In this context, in order to understand the subject following questions should be answered clearly and in detail. What are the effects of agriculture on environment and human beings? Is there any relationship between agricultural activity and agricultural policy? What is the place of multifunctional agriculture in sustainable development? What are the new roles or functions of agriculture? These questions and their answers constitute the main content of this study.

Agriculture is an economic activity providing multiple benefits to society. Moreover, agricultural activities can have direct impacts on environment such as nutrient cycling, soil protection, flood control and habitats for birds, insects and soil organisms. Literature review shows that some of these functions are crucial for sustainable agriculture because they influence future soil productivity. Some provide non-use benefits to society (indirect use, functional, option, existence and bequest values) in form of biodiversity and habitat protection as well as ecosystem and watershed functions. In addition,

non-environmental benefits associated with agriculture comprise food safety and food security, animal welfare, cultural and historic heritage values and rural viability via agricultural employment. Altogether, this constitutes the multifunctional character of agriculture^[2,3].

Environment: The term environment has a different meaning to a farm family living in a developing country village from its meaning to an environmentalist living in developed country. For example, for a citizen of developed country the environment is about dolphins or whales, nuclear waste, toxic waste or ozone layer, acid rain, recycled tin cans or newspapers. Instead, for a peasant family living in a developing country, it is about resources contributing directly to family livelihoods: drinking and irrigation water, forests, meadows, soil, wild and domestic animals and so on^[4].

Externality: Any situation where an action of one economic agent affects the utility or production possibilities of another in a way that is not reflected in the marketplace is called as externality^[5]. Externalities can be positive as well as negative and can occur in consumption as well as production^[4]. The amount of pollution produced by local automobiles is an example of negative consumption externality. On the other hand, a neighbour keeping a beautiful flower garden is an example of a positive production externality^[6]. The general rule is that negative externalities tend to be overproduced and positive ones tend to be under produced.

The corresponding policy prescription to achieve social efficiency is to tax negative externalities and to subsidise positive ones. Many environmental problems such as depletion of underground aquifers, increased water runoff from hillsides, degradation of pastures, scarcity of firewood, river or air pollution, involve some element of externality, generated within changing social contexts. Sometimes these externalities may be so remote from their sources, either in geographical, location (affecting people hundreds of kilometres away) or in time (affecting future generations), that they may not be identified by those affected as external effects of a definite economic activity. Others, such as discharge of an upstream textile mill curtailing the access of a downstream community to drinkable water, are more immediate and tangible^[4].

Multifunctional agriculture: There is no universally accepted definition of multifunctionality. Multifunctionality is inherently about the production of multiple outputs by agriculture^[7]. According to the OECD, ABeyond its primary function of producing food and fibre, agricultural activity can also shape the landscape, provide environmental benefits such as land conservation, the sustainable management of renewable natural resources and the preservation of biodiversity and contribute to the socio-economic viability of many rural areas. Agriculture is multifunctional when it has one or several functions in addition to its primary role of producing food and fibre^[8].

Verspecht *et al.*,^[9] stated that multifunctionality is the joint production of commodities and non-commodities. The commodity outputs are mainly food and fibre (traditional task of agriculture), but also transformed products, rural tourism and other marketable products. Non-commodity outputs are food security and safety, rural way of life, soil conservation, rural landscape, biological diversity, health and so on^[10]. Yet all forms of agriculture are intrinsically multifunctional. All production modes or systems lead to a bundle of commodity and non-commodity outputs ranging from social, environmental, economic to cultural goods and services^[11].

Agricultural policy: Agricultural policy is trade-off between the interests of producers, consumers and government and also between the two goals of equity (desirable income distribution between citizens) and economic efficiency in the production and consumption of goods and services^[12].

Links between agriculture and environment: Environment one of the most valuable assets human being cannot appreciate its value without using it. As starting 1960s, the bad effects of environmental problems on people, animals, plants and other lifeless have reached dangerous dimensions particularly in developed countries. Rapid population growth, unhealthy and unplanned urbanisation, rapid industrialisation, nuclear accidents and wastes, discharge of domestic and industrial waste to the nature, use of first class agricultural lands for unsuitable aims and wrong agricultural applications are the main causes of environmental problems^[1].

In one situation agriculture contributes to water and soil quality, in others, it generates soil erosion, pollution of soil and water and unpleasant smells. Some pollution problems are directly related to the level of agricultural production and would, therefore, be alleviated if agricultural production diminished. On the other hand, some positive environmental externalities are dependent on maintenance of some level of agricultural production on specific lands or in specific regions^[3].

Everybody accepts that there are two sides of the medallion. On the one hand, wrong agricultural applications are one of the main causes of environmental problems. On the other hand, agriculture is the victim of the severe environmental problems^[1]. Environmental problems arising from wrong agricultural production systems or agricultural practices and applications are as follows: i) soil erosion, ii) water pollution aggravated by increased use of agro-chemicals and disposal of manure from intensive livestock production, iii) water logging and salivation arising from inadequate drainage, iv) over-exploitation of fish stocks, v) deterioration of pastures as a result of over grazing and vi) deforestation as result of logging for firewood and gaining arable land.

Sustainable agriculture in the context of agro-environmental policy: There are more than twenty-four alternative definitions of sustainability. The common definition of sustainable development is development meeting the needs of the present without compromising the ability of future generations to meet their own needs^[13]. Sustainable development presumably involves the adoption of sustainable agricultural systems containing a wide range of agricultural practices, such as organic farming, integrated pest management (IPM) and low-input production systems^[14]. The concept of sustainable agriculture was proposed first in the USA in the early 1980^[15]. Sustainable agriculture is the low-input

farming system seeking to optimise the management and use of internal production inputs (i.e., on-farm resources) in ways providing acceptable levels of sustainable crop production yields and livestock production and that result in economically profitable returns. In developed countries sustainable agriculture implies many synonymous concepts including biological, biodynamic, ecological, eco-biological, low-input, low-resources, organic and regenerative agriculture^[16].

As can be understood from the above explanations, in the past, agricultural policy has taken little or no account of the environmental side effects of actions designed to raise output and productivity^[17]. There is considerable scope for improving the environmental awareness of agricultural policies. Some proposals are as follows^[4,18,19]:

- Improvement of security of tenure, including less tenant farming and more ownership,
- Reduction in the categories of land under state jurisdiction and corresponding expansion of private or common property,
- Higher and more stable output prices, leading to higher current incomes and more incentive to invest in resource conservation,
- Elimination of input subsidies, especially fertilizer and chemical subsidies which encourage substitutions away from organic fertilizer and manual soil conservation measures,
- Elimination of pesticide subsidies and the adoption by farmers of integrated pest management,
- Implementation of the Apolluter-pays principle, wherever this is feasible as a method for making private operators take account of the negative externalities of private actions.

The birth of the concept of multifunctionality reflects a major change in agricultural thinking from productivist to post-productivist model. This development means a redefinition of the relationship between agriculture, environment and society. According to the post-productivist model^[20,21], agriculture has to respond to mounting demands of consumers, tax-payers and citizens concerning environmental quality, animal rights, food security and viability of rural areas. Consequently, the productivist economic rationale behind farming becomes transformed. Farmers cannot anymore pursue farm-level profitability only by increasing physical productivity and the amount of production. They also have to take into account values of positive and negative externalities that they produce as a result of the joint production process^[22].

To sum up, the main objective of the multifunctional agriculture is to improve the overall welfare of the society in addition to supplying food and fibre for present and future generation.

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