

BIODIVERSITY CONSERVATION AND AGRICULTURAL SYSTEM

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Abstract

We can discuss about biodiversity within agricultural system from two perspectives: philosophical perspective and from the practical viewpoint of maintaining productivity. It is important to evidence the role organic agriculture in maintaining and enhancing biodiversity. To do this, the relationship between organic agriculture, biodiversity and the rural landscape, are discussed broadly at each of the three levels at which biodiversity can be assessed - genetic, species and ecosystem level. It knows that is a positive relationship between organic production and biodiversity conservation, and organic farmers should ensure that biodiversity conservation has a place at the heart of the organic system. It is also noted, however, that these positive contributions to conservation do not necessarily guarantee the protection of individual threatened or endangered species, particularly where the agricultural policy climate stresses the economic necessity of land use intensity.

Keywords: biodiversity, sustainability, agricultural system

1. INTRODUCTION

Conversion to organic farming is the first step towards a modern system of agriculture that not only produces crops but also increases biodiversity. For that, are several steps which need to be taken.

Research needs to go further than comparing farming systems and making the links between farming systems and biodiversity losses and gains, and should instead address questions on how to maximize biodiversity within the agricultural landscape.

The organic and conservation movements need to identify and act upon a number of changes to organic farming practice, support and policy areas to ensure that the positive interactions between farming and conservation are achieved.

The key to increasing linkages between organic farming systems and biodiversity conservation can be to develop habitats - within farms and as part of the wider landscape - which more fully realize their potential for biodiversity conservation.

Thus organic farming in combination with management strategies aimed at biodiversity conservation could play an important role in a sustainable enhancement of biodiversity worldwide.

The result should be that organic farming becomes part of a system for landscape protection and improvement, contributing to agro-ecosystem conservation and to the maintenance, enhancement and management of the landscape and its related biodiversity⁽¹³⁾.

A best management practice it is an action for maintains or increase crop production while minimizing impact on the environment. In the case of many crops, this means using good management so that the crop is well-established and healthy. This allows growers to reduce treatments such as pesticides that may affect the environment.

Organic agriculture is a reaction and an alternative to some of the strategies which have been used by government and donors during the last 50 years, and which have had a damaging effect on rural society and agricultural ecosystems.

These damaging strategies include farming technologies which degrade the natural resource base and require high levels of external inputs (including toxic chemicals), and agricultural research and extension services which are based on the notion that technology should be developed by specialists and transferred to recipient farmers through messages and demonstrations. Also, it is very important the identification of economical development perspectives for tourism and agriculture actors at the local and regional level.

It knows that is a positive relationship between organic production and biodiversity conservation, and organic farmers should ensure that biodiversity conservation has a place at the heart of the organic system.

It is also noted, however, that these positive contributions to conservation do not necessarily guarantee the protection of individual threatened or endangered species, particularly where the agricultural policy climate stresses the economic necessity of land use intensity.

The result is to be competitive at the international dimension; development opportunities and threats of the types of regions that are most vulnerable to climate change; development, of the database by additional data on regional vulnerability to climate change; development of the indicators for additional information on the impact of climate change on different sectors of regional and local economies, as well as on local and regional infrastructures.

2. MATERIAL AND METHODS

The promotion of sustainable development should be a major objective of the environmental policy that will require enhanced political support. In Romania, agricultural land use is considered to be contributing to the maintenance of the area's biodiversity, as long as agricultural management is small-scale, diverse and respects the carrying capacity and the suitability of the local conditions.

The principle for setting up ecological agriculture is to match ecological technology measures (the combination of ecological and engineering measures) to local conditions. It involves using systematic management methods, grass and tree planting technology, improvement of medium and low farmland and overall use of rural energy resources in order to tackle and improve the ecological environment.

Organic farming and integrated farming also represent real opportunities on several levels, contributing to vibrant rural economies through sustainable development. Growers need to be efficient in production to stay competitive and they need to conserve and protect soil and water to be sustainable.

Some strategies include farming technologies which degrade the natural resource base and require high levels of external inputs (including toxic chemicals), and agricultural research and extension services which are based on the notion that technology, should be developed by specialists and transferred to recipient farmers through messages and demonstrations. The scientific objectives of this research are also the identification of economical development perspectives for tourism and agriculture actors at the local and regional level. The result is to be competitive at the international dimension: development opportunities and threats of the types of regions that are most vulnerable to climate change; development, of the database by additional data on regional vulnerability to climate change; development of the indicators for additional information on the impact of climate change on different sectors of regional and local economies, as well as on local and regional infrastructures.

In Romania and not only, it's vital to develop an agricultural system that is based on ecological principles and applying ecological practices to maintain soil fertility, to manage crop and animal health, and to keep soil and water in a good condition. The results of this research can be considered a best management practice for organic agriculture and will present the best action maintain or increase production while minimizing impact on the environment. ⁽³⁾

Agro-ecosystem conservation

People are concerned about the possible extinction of species because of their potential future benefits, their role in ecological balances, and simply because people place a value in their continued existence, regardless of future human benefits. Agro-ecosystem biodiversity

mean to improve the productivity, stability, resilience, improved environmental quality, and the conservation of crop genetic diversity. This can have larger societal goals -sustainable food security, reduced poverty, and improved public health. ⁽⁷⁾

Agroecosystem biodiversity can be described in several different ways:

Crop genetic diversity. A lot of factors as varietal concentration; genetic similarity among major cultivars; the conservation and pyramiding of favorable genes in breeders' varieties; the conservation and use of important genes present in old varieties, land races, and wild relatives; and opportunities for expanding crop genetic diversity through wide crosses and biotechnology.

Crop species diversity over space. Spatial species diversity may be exceedingly narrow (e.g., a monocropped rice field) or exceedingly broad (e.g., a home garden featuring simultaneous cultivation of fruit trees, and other food crops). Plots with low species diversity and high species diversity often are found within the same farming system.

Crop species diversity over time. Temporal species diversity may be narrow (e.g., one maize monocrop crop per year, every year); broad within a year (e.g., an annual sequence of multiple cropping involving cereals, legumes, and horticultural crops); or broad over several years (e.g., rice-potato-wheat patterns, broken every few years by a sugarcane crop). Crop species diversity over space and over time are not necessarily related. ⁽⁷⁾

Agroecosystem biodiversity through crop-livestock interactions. The presence of livestock in a system tends to greatly enhance the value of non-crop components (crop residues, grazing lands, forest resources) and typically features nutrient cycling between rangeland and crop land, thus fostering improved productivity and sustainability of cropping systems and a higher potential for spatial and temporal crop species.

Natural biodiversity within agroecosystems. More diverse agroecosystems -- particularly those with greater spatial diversity, and those with trees - may provide habitat for a wider array of wildlife.

Natural biodiversity as indirectly affected by agroecosystems. Highly productive agroecosystems can indirectly foster natural biodiversity by making it unnecessary to farm marginal or fragile areas, or to clear new forest areas for agriculture. System diversity may be broadened by increasing crop genetic diversity, expanding crop species diversity over space and time, fostering crop-livestock interactions, or improving productivity in favored agricultural areas to protect biologically diverse fragile, marginal, or forested areas from agriculture. ⁽⁷⁾

3. RESULTS AND DISCUSSIONS

The numbers of organic practitioners, in special in Romania and also in worldwide, are small.

Adoption of organic agriculture, a sustainable environmental friendly management system, is vitally linked to market access. Standards for organic products must allow for local equivalence and certification systems must be innovative and cost efficient enough to address smallholders' situation worldwide, particularly in developing countries.

At the present moment in Romania existed 4 million of farm holdings. Could they passed in an ecological agriculture and ecological animal husbandry through a transformation of one part from their farms and individual householders of under being which yield, almost exclusive, just for themselves.

Some part of traditional agriculture could become ecological if it accomplishes the established standards through laws. Any farm, either crop or livestock to succeed to be named ecologic must cross a period, longer or shorter, of conversion.

This aspect put in front of Romanian research the necessity for creating varieties and hybrids with a much greater efficiency, richer in vitamins, parotids and lipids, with taste and technology qualities better than those of the existent varieties. For this reason, apple varieties with genetic resistance at diseases have been created on which the number of the chemical treatments decreased with 50%.

In the world, there are 26 of such varieties and Romania, with its 6 homologated varieties, occupies one of the top-ranking positions in the international research order to achieve this objectives.

The introduction in cultivation of the resisting varieties, it is imperative to study the causes which can lead to reduction or even to the growth of the resistance at diseases of the apple trees, respectively the resistance at *Venturia inaequalis* and *Podossphaera leucotricha*.⁽³⁾

Research regarding practices used in organic farming for environmental protection was developed in Romania.

4. CONCLUSIONS

It is important to evidence the role organic agriculture in maintaining and enhancing biodiversity. To do this, the relationship between organic agriculture, biodiversity and the rural landscape, are discussed broadly at each of the three levels at which biodiversity can be assessed - genetic, species and ecosystem level.

Organic farming and integrated farming represent real opportunities on several levels, contributing to vibrant rural economies through sustainable development. Also, new employment opportunities in farming, processing and related services are already evident in the growth of the organic sector. As well as the environmental advantages, these farming systems can bring significant benefits both to the economy and the social cohesion of rural areas.

As a important conclusion, we recommend for land biological resources placed on low input (e.g. pesticides and fertilizers), and organic production systems, improvement the management of resources and novel food and feeds, and novel plants (crops and trees) with respect to their composition, resistance to stress, ecological effect, nutrient and water use efficiency, and architecture. This will be supported through research into bio safety, co-existence and traceability of novel plants systems and products, and monitoring and assessment of impact of genetically modified crops on the environment and human health as well as the possibility of their broader benefit for society.

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