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PERSPECTIVES OF ECOLOGICAL AGRICULTURE IN LITHUANIA AS A FACTOR FOR SUSTAINABLE DEVELOPMENT

1. Introduction

Sustainable agriculture synthesizes a variety of concepts associated with agricultural practices and their socio-economic impact. In general, it can be argued that sustainable agriculture must be ecologically sound, economically viable, and socially responsible [Ikerd, 1994]. In this article some aspects of the development of sustainable agriculture in Lithuania are analysed within the framework of ecological economics. First, an outline of the problem is presented. Then the concept of sustainable development is shortly discussed. Finally, sustainable agriculture is discussed within the context of environmental economics and requirements for the development of sustainable agriculture in Lithuania are elaborated.

2. An outline of the problem

The Problem. Agriculture, as the bedrock of the food system, is the single most important activity in terms of its impact on landscape. But it is impossible to consider the relationship between agriculture and the landscape without taking into account socio-economic conditions and changes in society [Ulcak and Pall, 1999]. Changes are constantly occurring in the field of agricultural production, in which a transition towards sustainable agriculture is improving food production, particularly for the poor, as well as protecting the environment. *Sustainable agriculture* is economic and social development that meets the needs of the present without compromising the ability of future generations to meet their

own needs, an idea summed up in the term *sustainable development*. Thus, solutions that are environmentally and socio-economically desirable should be developed, not just at present or in the immediate future, but also in the long-run. During the last few decades the term "sustainable agriculture" has become increasingly frequent in scientific communication [Altieri, 1989; Brklacich *et al*, 1991; Webster, 1997; Allen, *et al*, 1991; Lockeretz, 1988; Smit and Smithers, 1993] and in policy documents [OECD, 1995, 1997; Marsh, 1997]. But in order to incorporate sustainable development issues into agricultural development, a *new approach to economic theory is needed, which would allow us to review the standard technique of economics, as ecological, social and institutional factors have not acquired an adequate expression in modern economic development*.

The Subject of the Research. The article is devoted to an analysis of sustainable agriculture.

The Objectives. The content and problems of ecological agriculture are critically analysed in the article from the perspective of the sustainability of economic development.

The Tasks. The research tasks are to analyse the concept of sustainable development from the perspective of capital and to review the socio-economic performance of organic farming in Lithuania.

The Methods of the research. Both *Logic abstraction*, which encompasses generalisations on economic theories and thoughts, and theoretical systems analysing the problems of sustainable development and sustainable agriculture were used, based on the conclusions and reasoning of scientists from other countries.

3. The essence of the concept of sustainable development

The philosophy of sustainable development, based upon harmonising the relationships between people, society and nature, agrees that priority should be given to the growth of real income. But it also emphasises that such growth might be unsustainable, if it is achieved at the cost of serious environmental damage. By giving considerable attention to the environment, *the concept of sustainable development – an approach, enabling on-going improvements in the quality of life, achieved by utilising natural resources with less intensity, and preserving the store of resources or even increasing them for future generations*, we may more fully comprehend natural and artificially created functions (with regard to people and all living-forms on Earth).

It should be noted that sustainable ecological development requires a *qualitatively new* approach to economics, *acknowledging the processes and limitations of biosphere evolution and preserving the balance of economic and ecological systems*. It is obvious that *unlimited growth is impossible in a limited system, i.e. economic growth beyond the limits of biosphere capacity would inevitably cause environmental collapse, as there is no feedback mechanism guaranteeing that an unregulated market economy never exceeds the ecological capacity of the environment* [Daly, 1991]. But as economic activities grew in their scope, the *negative impact on the environment grew* as well. During the 1990s Gross World Product increased by 4.5 trillion US dollars, *i.e. the global economy grew at higher rates during this short period than over a period of 10,000 years*. [Folke et al, 1993].

It has to be noted that the definition of *sustainable development* used in the report "Our Common Future" [1987] as "*the kind of development, which satisfies present-day needs without undermining the opportunities of future generations to satisfy their needs. The concept of sustainable development determines boundaries – not absolute limits, but restraints, applied to resources of the existing technological and social organisational environment and capabilities of absorbing the effects of human activity*" was, in fact, a *specific turning point* from the previously dominating attitude of "*growth or the environment*" towards the possibility of *economic growth and environment complementing each other*, which is the essential contribution of *Brundtland Commission* report.

Thus, the concept of *sustainable development* merges two urgent goals: a) *to ensure security and high quality of life for all people* - this is the goal of **development**, and b) *to live and labour in accordance with the bio-physical limits of the environment* – this is the goal of **sustainability**. These goals might seem contradictory but, despite that, they have to be achieved in unison.

As mentioned by Ciegis [2002], it is possible to distinguish three **approaches** to sustainable development: a) *economic*, b) *ecological*, c) *social*. Using these three approaches to understand sustainable is not a simple task, since they all have to be given equal weight.

1) **The economic** approach to *sustainability* is based upon Solow's [1974, 1986] amplified *theory on capital substitutability* and Hicks-Lindahl *concept of maximum income, which can be acquired by saving essential wealth (capital) resources for the benefit of future generations*, implementing the principle of fair distribution among generations. This approach is very apparent in the literature, analysing the *sustainable utilisation of renewable natural resources*, in fact, this is the basic theory of optimality and economic effectiveness, applied to utilisation of scarce

resources [Munasinghe, 1993]. But here we face some issues, related to *capital*, which should be preserved, *identification* of types of wealth and its *substitutability*, as well as problems of an *evaluation* of the level of these *types of wealth*, including ecological resources. It should be mentioned, that *economic sustainability* depends on *an analysis of costs and benefits* and is easily measurable, because it can be expressed in monetary terms [Pearce, 1993a, 1995, MacGillivray and Zadek 1995].

2) *Environmental (ecological) sustainability* can be characterized with relatively less effort [Van Pelt et al., 1995]. **The ecological** approach to *sustainable development* pays most attention to the *stability of biological and physical systems* and refers to Holling's [1973] scientific works. According to this approach, *the primary task of economic development is to determine the limits of natural systems with respect to various economic activities*. In this case, the vitality of sub-systems becomes essential in a critical view of the global stability of the total ecosystem. Thus, the significance of *preserving biological diversity* is emphasized here, in order to secure a balance in nature. Referring to biological diversity, it is worth noting that it cannot be replaced by anything else. This fact gives us a strong argument *against the application of a discount in determining the value of biological diversity*.

3) Sustainability forces limitations upon society's ability to interact with the surrounding natural systems and upon society's structure as well. **Social sustainability** *reflects the relationship between development and valid social norms and is achieved only by systematic community participation and strong civil society*. Activity is socially sustainable if it complies with these norms, both written and non-written, or does not violate them more than a society is willing to tolerate. It is a question of laws, traditions, ethics and morals, human rights, and democracy as such, representing "moral capital" [Goodland, 1995]. The concept of people-orientated *social-cultural sustainability* *reflects the interface between development and dominating social norms and strives to maintain the stability of social systems, treating different generations equally and ensuring the survival of cultural variety, as well as avoiding possibly destructive conflicts*. For those who pursued social justice, sustainable development was a manifestation of the long-hoped alternative to the doctrine of economic orthodoxy and neo-liberalism.

Sustainable development, as elaborated in Agenda 21, has three explicit dimensions, the *social*, the *economic* and the *environmental*, and implicitly a fourth, the **institutional** dimension. As mentioned by Platje [2003], the transformation of the agricultural sector and challenges of developing towards sustainable agriculture can also be studied within an *institutional framework*. The institutional factor, as stressed by

Tschirley [1997], is very important because "human and institutional capacity to manage the development process through participatory and transparent approaches is fundamental to sustainable agriculture". North [1990, 3] defined institutions as the rules of the game in society. According to him, the most important role of institutions is to reduce uncertainty by establishing a stable (not necessarily efficient) structure for human interaction. A stable legal framework that protects property and enhances contract enforcement is likely to stimulate entrepreneurship and economic activity. Although New Institutional Economics has mainly been applied to the transformation of an economic system from plan to market and the economic consequences of privatisation, some attempts have been made to apply it to processes of achieving sustainable agriculture [e.g. Gatzweiler et al., 2002]. *Property rights economics* is an especially important tool in analysing challenges to sustainable agriculture. But, as mentioned by Platje [2003], the low level of trust in East European countries might constitute a big problem for effective "institutional governance" (e.g. the judiciary). It may cause problems for developing sustainable agriculture, since the introduction and empowerment of new institutions needed for sustainable agriculture become more difficult.

It is worth noting that a steady state economy can *develop qualitatively*, but *cannot grow quantitatively*. In the case of sustainable development, the economy can improve from the standpoint of knowledge, organization, technical effectiveness and wisdom. ***Development without growth is what we call sustainable development.***

Society confronts such a huge variety of short-term needs and long-term objectives on a global scale that it seems impossible to propose a "unique" *universally feasible* way of sustainable development or to anticipate that a plan of sustainable economic behaviour could be set out. Besides, the transition to sustainability might follow different trajectories in wealthy and poor countries. Sustainability cannot be obtained once and for all, it is not something fixed or a destination to be reached. It is a *mobile goal*, changing in accordance with knowledge, skills, individual and social values and given priorities. Every society will shape its sustainability according to its own scenario in time and space, but none of them would guarantee absolute sustainability. On the other hand, sustainability cannot be guaranteed in the long term, because many factors remain unknown or can only be forecasted with difficulty. For practical use it is therefore necessary to search for and to support activities which are likely to be sustainable and to repress activities which are evidently unsustainable [Ulcaj and Pall, 1999].

4. Organic farming as a factor stimulating sustainable agriculture in Lithuania

Lithuania's integration into the EU, forcing and accelerating the general modernization of the country's agriculture, implies a challenge to produce only competitive agricultural products. It is necessary to apply cost effective farming methods, as well as environmentally friendly and socially acceptable arrangements. Ecological farming in Lithuania, as in other Central and Eastern European countries, might prove to be of enormous economic significance. Increasing awareness in Western and Northern Europe of the dangers of "industrial farming" and the lower quality of many products create opportunities for the export of ecological products from Central and Eastern Europe to the West. Moreover, increasing consumer consciousness may also create a domestic market.

Lithuanian agriculture is characterized by small farms, an unfavourable spatial structure, traditional means of production and a low level of efficiency, low income, lack of investment capital and lack of diversification, as well as an underdeveloped infrastructure and hidden unemployment. There is a need for creating an economic base for increasing incomes and income stability as a fundamental element of sustainable agriculture. Within this context *multifunctional development* of the countryside is required and multifunctional development implies that farmers and other inhabitants of rural areas should have a more important role in, inter alia, food processing, storage, agricultural markets and trades, agro-tourism, as well as production and trade services [Gatzweiler and Hagedorn, 2002]. Thus, there exists a problem of solving economic, ecological, as well as social problems, in a holistic way.

In order to ensure sustainable farming and production of high quality products, organic farming based on natural biological processes and materials focuses on the following principles: keep the soil productive, healthy and fertile; use natural rather than chemical methods to control pests and fertilise the land; extensive farming, in order to have more space for animals, which are fed with ecological products; use natural methods for curing sick animals using drugs only when necessary; refuse to use genetically modified materials; protect and regenerate wildlife on the farm and avoid environmental pollution; more than 95% of subsidiary materials used must be produced organically; it must be possible to trace all ingredients back to the farm where they are grown; the origin of all the inputs of food production must be known; certification and inspection of strict standards is carried out [Agriculture in Lithuania 2000, 2001; Agricultural situation in the European Union, 2000].

The ecologisation of agriculture is very important, because not only the country's wealth, but also the ecological situation in Lithuania depends on the choice of a programme of future agricultural development. Ecological farming methods could preserve the environment and harmony in nature. Lithuania's integration into the EU highlights the importance of issues of modernisation and ecologisation. Stimulation of improvements in farming techniques and financial support from the EU could facilitate ecological land use and the production of ecological foods in Lithuania, which is in the interest of the public in both Lithuania and Western Europe. Ecological agriculture is a part of sustainable development and has great potential to be a factor in the creation of sustainable agriculture [Zemeckis and Rutkoviene, 2000]. But, as Platje [2003] mentioned, sometimes it is not understood that ecological does not mean a step backward, and that combining modern and traditional ways of farming could lead to good results.

But the strengthening, enhancement and expansion of ecological farming in Lithuania should be seen as a long-term goal for the country, especially in a period of economic, political and systemic change. Development of organic agriculture is important to Lithuania as it creates the preconditions for strengthening the domestic market and increasing the country's export potential, as well as solving social problems (e.g. unemployment) [Rutkoviene, 2003].

A movement promoting ecological farming, which involves holistic production management systems (for crops and livestock), was initiated in Lithuania in 1990 after the Lithuanian Association of Organic Farming GAJA was established. In 1993 the Control Committee of GAJA started inspection and certification of ecological farms.

The Law on the State Regulations of Economic Relations in Agriculture, adopted in 1994 placed organic agriculture in a legal framework. On the basis of Council Regulation No 2092/91/EEC on the production of organic agricultural products, regulations on organic agriculture were adopted in 1997 by the Board of "Ekoagros", the public organisation carrying out certification of organic farming founded by the Ministries of Agriculture and Health Care. New Regulations on Organic Agriculture with amendments regarding the organic farming of livestock came into force on 1st March, 2000. Thus, all the necessary preconditions for the development of ecological production exist in Lithuania: a *favourable ecological situation* (good natural, climatic, and soil conditions, as well as an unpolluted environment); *state support* (the Ecological Farming Support Programme approved by the Minister of Agriculture); a *large and cheap labour force, expanding local and foreign market for ecological products* (growth of consumer interest in healthier food and market de-

mand in EU countries); *close contacts of farmers with local markets*, as well as *national and international recognition of the "Ekoagros" certificate, accredited by IFOAM in December 1999*.

The concept of organic farming reached Lithuania after the country gained independence and when co-operation with foreign countries became possible. At the time when Lithuania's first organic agriculture organizations were established, the organic movement in other European countries was already well advanced. Since then the number of ecological farms in Lithuania has constantly increased (see Table 1). In 2001 organic farms had already been established in every Lithuanian region. Most of the organic farms are in regions with low soil quality and poor natural conditions. These areas traditionally had extensive agriculture due to natural conditions and, therefore, the conversion to ecological farming is relatively easy.

Table 1. Development of organic farming in Lithuania in 1993–2004

Year	1993	1994	1995	1996	1997	1998
Number of farms	9	14	36	65	106	144
Area, ha	148	267	582	1118	1568	4006
Year	1999	2000	2001	2002	2003	2004
Number of farms	171	230	290	393	700	1164
Area, ha	3995	4709	6400	8800	23289	43000

Source: Data provided by "Ekoagra" 1993–2004.

In 1993 the first 9 ecological farms with 148 ha of farming land were certified while by 2003 the number of organic farms had reached 700 with 23,289 ha of land. Compared with the year 2002, when 393 farms were certified with an area of 8,800 ha, the expansion of the certified area is tremendous – it increased by a factor of 2.65. Presently organic farms make up 1% of all farms. In 2003 certificates were also issued to 9 gatherers of natural products, 6 companies supplying subsidiary materials for organic processing, permitted for use on organic farms, and 1 organic production and retail company. The amount of certified organic processing companies increased from 13 in 2002 to 18 in 2003.

The area of certified ecological farms land in 2003 was 23,289 ha, which is 0.75% of the total area of agricultural land in Lithuania. The average size of an organic farm in Lithuania is increasing: in 2002 the average size of an ecological farm was 22 ha, and in 2003 – 33 ha. This indicates the tendency that farmers are becoming more orientated towards organic production, though organic production in many cases is

not pursued on the whole farm (67% of organic farms), but on part of it (33% of organic farms). In Lithuania, as in most EU countries, organic farms are on average larger than conventional ("non-organic") farms. In 2003 the average size of a Lithuanian non-organic farm was 10.5 ha [Lithuanian agriculture, 2003].

Half of certified land (50%) is currently occupied by pastures and meadows, 35.6% – by grain crops, 8.7% of the area is used for vegetables, legume crops, potatoes and the remaining 5.7% is occupied by berries and orchards. As a rule, ecological farms are mixed as they produce different products (grain, potatoes, livestock products, etc.) and only a few farms specialize in producing vegetables, fruit, berries, mushrooms, herbs or honey. Grain crops make up the largest proportion of ecological crops (40%). Among grain crops, organic rye, wheat, and barley prevails, oats and buckwheat are also cultivated. Rye is grown on 86% of Lithuanian organic farms, potatoes rank next (25%), followed by vegetables (12%). As for livestock production, the major ecological product is milk (90%). However, milk, as well as beef and poultry, is usually sold as an ordinary product without any ecological label. For example, several enterprises such as "Rokiskio suris", "Utenos pienas", "Ukmerges pienine" are large certified dairies, but they do not pack ecological milk separately because of the small quantity of ecological milk produced on farms. [Agriculture in Lithuania 2000, 2001].

A production line "from the field to the table" has already been formed as ecological food processing companies are established and certified (mills, bakeries and others). A wide range of organic processed products can be found in Lithuania. In 2003 there were 117 different processed organic products including grain, vegetables, milk products, etc. (Table 2).

Table 2. Processed organic products

Group of Products	No. of products	Examples
Grain	64	Cereals, bread, pasta mixtures for children, five grain porridges, pasta
Vegetables, fruit, berries	5	Juice, conserves
Milk	12	Milk, cheese, butter, goat milk and cheese, etc.
Herbs and spices	46	Herb tea, dried herbs
Forest berries and mushrooms	3	Frozen berries and mushrooms

Source: Agriculture in Lithuania, 2003.

Growth of organic production is expected in the near future, including fish and dairy products. In 2003 the Minister of Agriculture approved Regulations on Organic Fishery and the first 13 organic fishery farms were certified covering an area of almost 3000 ha.

State support for organic farming through The Rural Support Fund has induced a growth in ecological production. These funds finance product certification, purchase, processing and the development of market infrastructure. Since 1997 direct payments per ha are applied to the owners of ecological farms. [Agriculture in Lithuania, 2000, 2001].

An important aspect of the profitability of organic farms is the opportunity of obtaining higher prices for organically produced goods in comparison to conventionally produced ones. The average price of organic products depends on the level of prices of different marketing channels and on the quantities marketed via the respective sales channels. At present in Lithuania the demand for ecological products is considerably increasing and it is estimated that by 2010 ecological products could make up 7% of the total amount of food products consumed. However, the marketing and distribution channels of ecological products are rather poorly developed. A survey results showed that only 45% of certified ecological products were sold as ecological products with a 20–40% surcharge. The most common marketing channels are direct sales from farms. On the domestic market 21% of ecological products are sold directly on farms, 40% – at fairs and markets, 14% – in shops, 25% – in other places (part is consumed by the growers themselves). Recently, more organic products have been sold in supermarkets, where the products are located separately and additionally advertised. However, the low level of production, together with irregular supply create considerable inconveniences to sellers and growers. It is highly probable that selling ecological products in supermarkets will stimulate the development of the market for these products [Agriculture in Lithuania 2000, 2001, 2003].

As shown in Table 1, the number of ecological farms has been increasing by 20–30% annually. If the development of the organic farming follows such a pattern, in 2006 the area of certificated land could make up 5% of total agricultural land, as was planned in the Action Plan for the Development of Organic Agriculture approved by the Government in 2002. In order to increase the number of ecological farms, several problems have to be solved including the development of organic seed growing, supplying farms with plant protection materials, solving issues related to product quality, and forming market structures. In addition, more attention has to be paid to the implementation of research and trading [Rutkoviene, 2003]. The insufficient level of education of farm-

ers, lack of access to capital among farmers, lack of organisations in the field of processing and trading ecological food products, low level of co-operation between farmers engaged in ecological farming, lack of diversity of ecological food products available, small number of shops selling ecological food, low domestic market share of ecological food products are problems that have to be addressed. Mutual co-operation with other countries, as well as an opportunity to learn from their experience, would significantly induce the advance of organic farms.

But with respect to the limited scope of ecological agriculture in Lithuania, even in the long-term perspective, the *ecologisation of conventional agriculture* is of utmost significance in reducing the ecological arduousness of this sector. Generally, this implies improvements and changes in agricultural production, which leads to the protection of agricultural products and foodstuffs from contamination and to the maintenance of the assimilation capacities of ecosystems subject to the harmful effects of such production. This is related to protection of the environment and consumer health and the use of such techniques of running farms, which do not degrade soil or water and produce healthy food. The notion of ecologisation of conventional agriculture has been normatively expressed in EU legislation, and in Ordinance 2078/92/EEC in particular. But we may assume that the ecologisation of agriculture is a very long process, leading to such methods of farming that do not disturb the balance of ecosystems.

5. Conclusions

1. Despite their declarative character the social, economic and environmental aspects of sustainability can be identified.

2. If the existing concepts of sustainable development were enriched by new principles, new methodological presumptions, it would be easier to comprehend the essence of sustainability and to accommodate a new definition of sustainable development. Three major approaches to sustainable development can be interpreted and identified, which allows sustainable development to be analysed as the interface of *ecological*, *economic* and *social* systems.

3. Sustainable development, as elaborated in Agenda 21, has three explicit dimensions, the *social*, the *economic* and the *environmental*, and implicitly a fourth dimension, the *institutional* one.

4. Despite the potential for more sustainable agriculture, in which farmers, rural communities, environments and national economies could all benefit, there are still many obstacles and threats.

5. The following aspects are of crucial importance in the developing of ecological farming: the development of an environmentally-sound agricultural policy supporting ecological farming; the development of appropriate legislation; the provision of financial incentives; the development of a market for ecological food products; the development of an efficient domestic and export distribution network; the improvement of the system of inspection and certification of ecological food products; promotion of ecological farming among farmers.

6. All the necessary preconditions for the production of ecological products exist in Lithuania: a favourable ecological situation; state support; expanding local and foreign market for ecological products; national and international recognition of the "Ekoagros" certificate. All this results in possibilities for exporting ecological products.

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