

# SUSTAINABLE AGRICULTURE: ECONOMIC ASPECTS

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*Sustainable agriculture synthesizes a variety of concepts associated with agricultural practices and their socio-economic impacts. In this article, some requirements for the development of sustainable agriculture in Lithuania are analysed within the ecological economics framework. First, sustainable agriculture is discussed within the context of environmental economics. After this more theoretical part, the Common Agricultural Policy reforms, trends of sustainable agriculture in EU and requirements for the development of sustainable agriculture in Lithuania are elaborated.*

## Introduction

**The Problem.** Agriculture, as the bedrock of the food system, is a unique, most important activity in terms of its impact on landscape. However, it would be not correct to consider agriculture in isolation from socio-economic conditions and changes in the society (Ulcak, Pall, 1999). The process of change is under way in the field of agricultural production in which a transition towards sustainable agriculture implies improving food production, particularly for the poor, as well as protection of the environment. *Sustainable agriculture* is the 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 of *sustainable development*. So, solutions that are environmentally and socio-economically desirable should be developed, not just in the present

or in the immediate future, but also in the long run. During the last decades the term "sustainable agriculture" has become increasingly frequent in scientific communications (Altieri, 1989; Brklacich et al., 1991; Webster J. P. G., 1997) and in policy documents (OECD, 1995, 1997; Marsh, 1997). However, in order to incorporate sustainable development issues into the agricultural development, *a new approach to economic theory is needed, which could allow to review the standard technique of economics, as ecological, social and institutional factors have not acquired an adequate expression in modern economic development.*

**The Research Objects.** Attention in the paper is focused on the analysis of sustainable agriculture.

**The Objectives.** *The content of ecological agriculture, including the problems from the perspective of economic development sustainability, is critically investigated* in the article.

**The Tasks.** In order to attain these objectives, the following research tasks had to be accomplished:

- to analyse the potential of the market economy and institutions for creating sustainable agriculture;
- to present the basic elements of the Common Agricultural Policy (CAP) reform;
- to review the socio-economic performance of organic farming in Europe;
- to review the socio-economic performance of organic farming in Lithuania.

**The Methods of the research.** In the article were used *logic abstraction*, which encompasses generalisations on economic theories and thoughts, and theoretical analysis of the problems of sustainable agriculture according to the conclusions and reasoning of scientists from other countries. The main scientific works related to the problem in question have been reviewed and thoroughly analysed.

### **The Market Economy, Institutions and Sustainable Agriculture**

The idea of sustainable agriculture is an alternative to intensive agriculture, still subsidized by the EU according to the rules of production efficiency. However, such intensive agricultural production leads to a deterioration of natural resources and at the same time to production of food containing significant levels of technical contaminants hazardous to human health. Approximately 1/3 of our planet's surface is degraded due to man's activities, agricultural activities being responsible for half of the damage.

Instead, the technologies of sustainable agriculture activate the natural mechanisms of agricultural production through using natural means of production, ensure permanent ferti-

lity of soil and the security of plants and animals. Sustainable agriculture, therefore, strives for the integrated use of a wide range of pest, nutrient, soil, and water management technologies. It aims at an increased diversity of enterprises within farms related by increased linkages and flows among them. By-products or wastes from one component or enterprise become inputs to another. As natural processes increasingly replace external inputs, so the impact on the environment is reduced. So, ecological agriculture is an important factor contributing to the protection of rural landscape, natural resources (both renewable and exhaustible), protection of the natural environment in the countryside and preservation of rural cultural heritage.

Sustainable agriculture integrates three main goals: environmental stewardship, farm profitability, and prosperous farming communities. These goals have been defined by a variety of philosophies, policies and practices, from the vision of farmers and consumers.

Tradition can be a strong point in introducing a more sustainable agriculture by way of a more ecological agriculture. It is making use of the way in which farmers are used to produce the so-called "backwardness", together with the introduction of quality control. Maybe the most important is the creation of local markets because of the low development of logistic solutions. An interesting idea in this respect is the creation of "ecological sites" (Platje and Veislsand, 2003). Besides a change in the way of farming, there are also opportunities to change packaging, storage and transportation patterns of agricultural products. With the introduction of logistic systems, which vary from very simple solutions like farmers organizing common storage and transport, up to highly sophisticated solutions for more specialized producers, this idea may lead to ad-

vantages in the field of packaging (e.g., less material used, less use of plastic), storage, transport costs (and the connected externalities), etc.

As mentioned by J. Platje (2003), the transformation of the agricultural sector and challenges of the development towards sustainable agriculture can result from studies within an *institutional framework* too. Also, the institution factor is very important, because, as stressed by J. B. Tschirley (1997), “human and institutional capacity to manage the development process through participatory and transparent approaches is fundamental to sustainable agriculture”. D. C. North (1990, 3) defines institutions as the rules of the game in the 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 been mainly applied to the transformation of the economic system from plan to market and the economic consequences of privatization, some attempts have been made to apply it on processes of achieving sustainable agriculture (e.g., Gatzweiler et al., 2002). An especially important tool in analyzing challenges for sustainable agriculture is *property rights economics*. But, as mentioned by J. Platje (2003), in East European countries can arise one big problem for the effectiveness of “institutional governance”: it is the low level of trust. This may cause problems in developing sustainable agriculture, as the introduction and enforcement of new institutions needed for sustainable agriculture become more difficult.

On the other side, institutional change in agriculture is accompanied by uncertainty. As

mentioned by J. Platje (2003), when institutions like laws and regulations (e.g., the system of subsidizing) change very often, this increases uncertainty in the economy and makes it almost impossible to keep up with all the changes. As a consequence, economic subjects have less reliable information, which in turn negatively influences economic activity. This may be a threat in the process of adapting the agricultural systems of the Central and Eastern European countries to EU requirements. It must be taken into account, too, that when Central and Eastern countries would follow the “industrial” agricultural model, this should lead to a more capital-intensive agriculture and lower demand for labour. Thus, agricultural policy should go together with infrastructure policy, which should stimulate multifunctional rural development where jobs are created for people who leave agriculture.

According to property rights economics, markets, freedom of contract and private property provide stronger incentives for economic efficiency and lead to lower transaction costs compared to the other co-ordination mechanisms. When markets function properly, they lead to an increase in social welfare. However, it is mainly the profit motive that provides incentives for economic activity. A proper institutional framework is indispensable for stimulating sustainable activities. The costs of activities where the environment is involved should be included in market prices (internalised). But a problem is that the market rather focuses on short-term profits. Without a proper institutional framework, the profit motive may lead to unsustainable cost savings, soil degradation, landscape change, reduction of biodiversity (where once were natural habitats, now lie huge areas of man’s monocultures) and depopulation of the countryside.

This puts sustainable agriculture within the concept of rural development. Infrastructure is needed in order to prevent depopulation of the countryside by way of stimulating agriculturally related as well as non-agricultural economic activity that helps to increase farmer's income, so that unsustainable intensification or extension of scale is not necessary.

We must take into account that although the market may be one of the best (or least worst) allocation systems, in agriculture it leads to many difficulties. As mentioned by J. Platje (2003), an agricultural market based on family farming may lead to stronger incentives and lower transaction costs compared to other systems. However, markets create price and income instability for farmers, and do not take inter-generational aspects into consideration. Furthermore, the market tends to lead to enlargement of scale, leading to landscape change and depopulation of the countryside.

Thus, the question is whether a market can stimulate the development of sustainable agriculture. A condition is that institutions should be developed, and the mechanisms exist that stimulate the internalisation of externalities and the inclusion of long-term and inter-generational costs and benefits into the decision-making process. In order to achieve sustainability, co-operation between different stakeholders and the introduction of logistic solutions are needed. However, it is very unlikely that agriculture will become sustainable without the aid and regulation from governments, as governments *may be able* to use a longer time-horizon in policy and decision-making (Platje, 2003).

It is possible to say that a change towards a more sustainable agriculture is in fact a process of institutional change, creation of the rules of the game, hardware and enforcement mechanisms that stimulate sustainable agricul-

ture activities, and a step-by-step *evolution of institutions* (endogenous change) may be most sustainable. However, in some cases a revolutionary institutional change may be preferred. This requires "*institutional engineering*" (exogenous change). An advantage of evolutionary institutional change is that formal rules often are supported by informal rules. With "institutional engineering" there is a greater danger of institutional disequilibrium, which may increase control costs.

An implication of the factors hampering the introduction of efficient institutions is that transformation towards sustainable agriculture is cumbersome, while there are many threats of entering a wrong path towards maybe even more inefficient institutions.

### **The Cap Reform and Organic Farming in the European Union**

Farming was the first sector in which the European Community developed a common policy. The fact that almost 40% of all legal acts, regulations, etc. in the EU concern agriculture and 48.8% of the EU budget is spent on the Common Agricultural Policy (CAP) shows the importance of agricultural policy in the EU. The agricultural sector has an annual production of about 220 billion Euros and provides 7.5 million full-time jobs. The EU agricultural policy had to take into consideration the interest of more than 10 million farms in 15 member countries (now in 25 member countries).

The CAP has been evolving since its creation. In most cases, changes were limited to adjustments in the instruments used, which were needed because of the negative effects of the functioning of the CAP. Only with the MacSharry reform of 1992 (direct payments could be obtained by leaving land fallow, which com-

compensated for the reduction in price support), and in a particular Agenda 2000 (a continuation of previous reforms accepted in the EU Berlin Summit in March 2000), a more holistic approach was chosen. An important element in the evolution of CAP was the Buckwell Report from 1997, which clearly advised a change from the sector-based approach of CAP to a territorial approach and a shift of budget resources to activities stabilizing agricultural markets, direct payments for land management aimed at supporting public environmental services, a more sustainable rural development.

Now the basic paradigm for agriculture is changing. As shown by I. Kelly (2003), some key aspects of this change are:

- agricultural support takes up around half of the EU budget, but it has a low GDP contribution (only 3% of GDP and 5% of employment), it has a declining employment, it has to bear the costs of a complex subsidy regime and the associated bureaucracy, the global competitiveness is declining;
- a major reform of the CAP responding to the challenges of enlargement and WTO;
- agriculture and food are becoming fully entangled in the political, social, economic and cultural dynamics of society.

In Agenda 2000 the new European agricultural model was expressed. The main elements of this model are (<http://europa.eu.int/>):

- competitive agriculture, being able to make use of the opportunities existing in the world market, ensuring a proper standard of living for farmers without excessive subsidizing;
- diversified agriculture, continuing the European tradition in the field of food production;

- supply of high-quality products by applying natural, environmentally sound methods for agricultural production;
- support of economically active rural areas where new employment may be generated;
- a more understandable agricultural policy, where common decisions on the EU level are clearly distinguished from decisions of member countries.

As B. Fiedor (2004) mentioned, the transformation of agricultural policy currently observed in the European Union is mainly based on a transition from the traditional policy orientated at a direct support of agricultural production and farmers towards a policy aimed at an integrated development of rural areas and agriculture. Under the first type of policy, ecological objectives related to agriculture were mostly considered separately from production or social targets of agricultural development. The presently introduced second pillar of CAP makes funds available for rural development and is a supplement to the first pillar, which is the common organization of agricultural markets.

In June 2003 the EU Farm Ministers adopted a fundamental reform of the CAP. The reform will completely change the way the EU supports the farm sector. The new CAP will be geared towards consumers and taxpayers, while giving EU farmers the freedom to produce what the market wants. In the future the vast majority of subsidies will be paid independently of the volume of production. To avoid the abandonment of production, Member States can choose to maintain a limited link between subsidy and production under well-defined conditions and within clear limits. The new "single farm payments" that are the basis of the new scheme will be linked to the respect of

environmental, food safety and animal welfare standards. Severing the link between subsidies and production will make EU farmers more competitive and market-orientated while providing the necessary income stability, and more money will be available to farmers for environmental, quality or animal welfare programmes by reducing direct payments for bigger farms.

As summarized by I. Kelly (2003), the key elements of the new reformed CAP system are:

- a single farm payment for EU farmers, independent of production with some limited coupled elements retained to avoid abandonment of production;
- this payment will be linked to the respect of environmental, food safety, animal and plant health and animal welfare standards, as well as the requirement to keep all farmland in good agricultural and environmental condition (known as cross compliance);
- a strengthened rural development policy with more EU money, new measures to promote the environment, quality and animal welfare to help farmers to meet EU production standards starting in 2005;
- a reduction in direct payments (modulation) for bigger farms to finance the new rural development policy;
- a mechanism for financial discipline to ensure that the farm budget fixed until 2013 is not overshoot;
- a specific price change within the market policy of CAP.

The food sustainable production and processing is based on general conceptions defined primarily by IFOAM (International federation of Organic Agricultural Movements) (Norms, 2004). The general conception of IFOAM referring to the sustainable agriculture and food processing become reflected in

legal regulations in the EU: the Regulation 2092/91/ECC with amendments relating to the rules of organic farming and the methods of processing and labeling the foodstuffs from organic farms and the Regulation 1535/92/ECC referring to the animal sector.

According to Ordinance 2092/91 of the EEC Council of June 24, 1991 (effective since January 1, 1993 in all the member states), the following conditions are to be fulfilled in order to classify agricultural activity as ecological agriculture:

- exclusion of chemical means from foodstuff production and processing;
- introduction of monitoring of farms by investigating their conformity with ecological production criteria;
- strict observation of conditions required for agricultural and food products introduced into the market to obtain an eco-label.

Detailed rules are contained in Regulations 2092/91 of the EEC Council. This document refers to the organization of agricultural production, foodstuff labeling, food processing, the system of inspection of agricultural production and sanctions for violating these regulations.

### **Socio-Economic Performance of Organic Farming in Europe**

The leader in the share of EU countries in organic farming according to the number of farms in the end of 2001 was Italy with its 39.65%. Other countries such as Austria, Spain and Germany each provide only from 10 to 13% of organic farms in the EU. Italy also dominates according to the number of hectares in the EU (123,000 ha of organic farmland). Next to Italy comes U.K. (679,631 ha) and Germany (632,165 ha). The importance of ecologi-

cal farming differs per country. For example, in Austria in 2001 organic farms made up 9.3% of all farms, covering 11.3% of the total farming area. The numbers were respectively 5.58% and 6.51% for Denmark (with its greatest consumption of organic food per capita in Europe), 3.28% and 3.7% for Germany (but this country has the largest market for ecological food products with about 50% of total EU consumption) and 2.37% and 5.09% for the Czech Republic (Organic Farming in Europe, 2001).

The experience of European countries show that the development of organic agriculture is largely dependent on:

- governmental policies, stimulating the development of pro-ecological methods in agriculture, nature and water conservation;
- the local market induced by the growth of people's interests in high quality food, health development, and the like;
- the development of the supermarket network and food industry.

These three aspects had a positive influence on the development of organic agriculture in Scandinavian countries, Germany, the Netherlands, Austria and Switzerland. A well-developed supermarket network is available in France (almost a half of organic food is sold by supermarket chains, however, the range of organic food is relatively limited) and in Austria (over two thirds of organic food is sold by supermarket chains) (Kociszewska, Nowak, 2004).

### *Resources and production structure*

In most EU countries, organic farms are on average larger than conventional ('non-organic') farms due to their more extensive way of production. Labour use is higher than on comparable conventional farms, but the extent of the higher labour requirements is strongly de-

pendent on the farm type. The majority of reviewed studies report an increase of labour needs in the range of 10–20%. The structure of production in organic farms differs significantly from that in conventional ones; quite generally the area of cereals, oilseeds and maize for silage is reduced. On the other hand, the area of leys, fodder crops, vegetables, potatoes and pulses is relatively larger. Stocking rates are on average lower, at 60–80% of the respective rate on comparable conventional farms.

### *Yields, prices and costs*

Yield levels are an important determinant of the relative competitiveness of farming systems. Yields in organic crop production are in general significantly lower than under conventional management. (Organic yields in developing countries are often reported to be higher than those from conventional farming systems (Planck, 1998)). However, these yield differences vary between crops. Cereal yields make typically 60–70% of those under conventional management (e.g., Padel and Lamkin, 1994), vegetable yields often being just as high as under conventional management. While no study-based explanation can be offered, one argument might be that vegetables are cared for with an especially high input of labour and organic fertilizers. In livestock production, performances per head are quite similar to those in conventional farming. But, due to the lower stocking rates in organic farms, performances per hectare are lower.

An important aspect of the profitability of organic farms is the opportunity of receiving higher prices for organically produced goods than for conventionally produced ones. The realized average organic price depends on the level of the different marketing channel prices and on the quantities marketed via the res-

pective sales channels. However, currently the premium prices are very high for most crop products. In contrast, the average premium prices realizable for livestock products are generally significantly lower. We should take into the account the fact that both the transition period and the initial period of thoroughly ecological production (5–7 years) are characterized by a lower productivity and profitability compared to conventional farms (particularly in plant production).

In most EU countries, total costs of organic farms are on average slightly lower than on comparable conventional farms (80–100%).

### *Profits and impact of the CAP reform*

An analysis of the economic situation of organic farms in Europe shows that on average their profits are similar to those of comparable conventional farms, with nearly all observations lying in the range of  $\pm 20\%$  of the profits of the respective conventional reference groups. However, in this case we must take into account the design of the general Common Agricultural Policy (CAP) measures (set-aside schemes, compensatory arable payments). (The latest reform of the CAP was integrated into the Agenda 2000 package adopted in 1999. In short, the Agenda 2000 entails a reformed CAP, accentuating the efforts to reduce support prices and apply environmentally friendly production methods. In the light of further liberalisation of the world food market and the envisaged enlargement of the Union, support prices are further reduced (15% for cereals and 20% for beef) to align with world market prices, and environmental protection requirements to agricultural production are further strengthened. The problem, however, is that Lithuanian farmers possess little information on the EU and the functioning of the CAP).

The introduction of support payments under the EC Regulation 2078/92 has improved the profitability of organic farming (Economic Performance, 2000).

For the evaluation of the socio-economic performance of organic farming, non-agricultural activities such as off-farm work need to be included in the analysis, while activities that prove to be 'linked' to organic farming (direct marketing (Dabbert, 1990) or agro-tourism) are important for such evaluation.

Recent studies carried out in Central European countries show a clear link between soil quality and natural conditions and the distribution of organic farms. On average, natural conditions are worse and soil quality in organic farms is lower than the national average (e.g., in Germany), and relatively more organic farms are located in less favored areas (e.g., in Austria, Switzerland) (Economic Performance, 2000).

Labour requirements on organic farms are subject to discussion. According to L. Schulz Pals (1994), increased labour requirements in organic farms may be expected due to:

- more labour-intensive production activities, especially for arable crops (mechanical weed control);
- a higher share of more labour-intensive crops (vegetables, potatoes);
- more marketing and on-farm processing activities;
- an increase in information requirements.

On the other hand, reduced stocking rates will have a labour-saving effect.

Due to technical progress which has made many operations less labour-intensive, and to economic circumstances, the agricultural workforce in EU has been continuously and drastically reduced over the last decades (on the other side, a decrease in the proportion of the



population employed in agriculture has been one of the most striking trends in the 20th century throughout Europe and in most other parts of the world). Generally, it is to be expected that these developments will affect organic farms in a similar way. For example, reduced labour requirements may be due to the development and spread of labour-saving technologies in organic farming (e.g., flame weeders) (Economic Performance, 2000).

*Unemployment* is high in many rural regions in Lithuania, and therefore the impact of organic farming on rural employment is of special interest. As most commonly, labour use is on average 10–20% higher on organic farms (as shown above), consequently, organic farming will potentially create new jobs in rural areas.

However, as mentioned in Economic Performance (2000), an increased demand for labour will not necessarily result in creation of sustainable full-time employment.

- In some of the farms, the increased demand for labour is covered by the existing family workforce. Where the increased labour demand is met from within a family, some members suffer from an excessive workload.
- In many farms, the increased demand for labour is to a large extent covered by seasonal workers. In some countries and regions within the EU, these come from non-member states such as Eastern European countries or North Africa.

In an overall assessment of the effects on employment, one also has to consider a number of *indirect impacts on labour demand* (Economic Performance, 2000). As more agricultural enterprises move into processing and direct marketing, this development increasingly

affects agro-industrial processing and marketing enterprises.

An expansion of organic farming will result in a marked decrease in the demand for inputs such as *chemical-synthetic fertilizers or pesticides* and in a reduced demand for *feed concentrate*.

The conversion period is legally defined by the EC Regulation 2092/91 and lasts two years. The process of conversion, defined as the transitional phase from a conventional to a “steady” organic system, usually takes longer.

### **Ecological Farming as a Factor Stimulating Sustainable Agriculture in Lithuania**

Ecological agriculture can be a factor in the creation of sustainable agriculture. Lithuania’s integration into the EU, forcing and accelerating the general modernization of the country’s agriculture, implies a challenge to produce only competitive goods, i.e. competitive agricultural products. (Although Lithuanian agricultural and food products are ecological and healthy because of the use of less additives and due to the sometimes “primitive” methods of production (in fact many small farms used to be or still are closed ecological systems), they do not meet strict quality, hygiene, veterinarian and phytosanitation requirements of the EU. On the other hand, the current processes in agriculture lead to a higher intensification and output, while quality is deteriorating). There is also a necessity to apply cost-effective farming methods, environmentally friendly and socially acceptable arrangements. Nevertheless, ecological farming in Lithuania, as in other Central and Eastern European countries, might prove to be of enormous economic significance. The increasing awareness in Western

and Northern Europe of the dangers of 'industrial farming' and the lower quality of many products provide opportunities for export of ecological products from Central and Eastern Europe to the West (the experience of Western Europe and the United States shows that the quality of food has become one of the basic factors determining its chances of being sold on international market), while the increasing consumer's consciousness also may create a domestic market. However, this also requires a change in the life-style. Consumers should become aware of the importance of healthy food and nutrition. An opportunity in this respect is the low trust in "industrially" produced agricultural products and the fact that Lithuanian people prefer locally produced food.

Lithuanian agriculture is characterized by small farms, an unfavorable spatial structure, a traditional way of production and a low level of efficiency, low income, hidden unemployment (in Lithuania the agricultural sector remains an important employer; agricultural employment in Lithuania still represents about 20% of total employer, the same level as in the European Community in 1950), the lack of investment capital, of diversification and the underdeveloped infrastructure. There is a need for creating an economic base for income enlargement and income stability as a fundamental element of sustainable agriculture. Within this context, a *multifunctional development* of the countryside is required. (Multifunctional development implies that farmers and other inhabitants of rural areas should have a larger role in, inter alia, food processing, storage, agricultural markets and trades, agritourism as well as production and trade services (Gatzweiler, Hagedorn, 2002)). This gives a task to solve economic, ecological as well as social problems in a complex way.

In this regard, one of the best management systems is *organic farming*, which was introduced in the 1920s and have been developed in three key directions: *bio-dynamic* (Germany, Rudolf Steiner: he refers to cosmic energy, which means the use of the phases of the moon when sowing, cultivating and cropping plants; these phases affect people, plants, animals and agriculture as a whole), *organic farming* (England, Albert Howard) and *biological agriculture* (Switzerland, Hans-Peter Rusch and Hans Muller: he does not advise the use of cosmic rhythms, but assumes that soil will be fertile as a result of the use of green manure and proper crop rotation). All methods show many similarities and they significantly differ from conventional agriculture. Really in Western Europe organic farming appeared in agricultural practice at the end of 1960s and the beginning of the 1970s.

Organic farming is based on natural biological processes and materials in order to ensure sustainable farming and production of high quality products and in general focuses on the following ten top principles: keep the soil which grows our food productive by keeping it healthy and fertile; encourage the use of natural rather than chemical methods to control pests and fertilise the land; more extensive farming, in order to have more space for animals which are fed with ecological products; encourage farmers to use natural methods for curing sick animals while using drugs only when necessary; no use of genetically modified material, avoid environmental pollution and protect and regenerate wildlife on the farm, more than 95% of inputs must be produced organically; only a limited number of additives is used in food production; all ingredients can be traced back to the farm where they are grown, the origin of all inputs for food production is

known; certification and inspection of strict standards (Agriculture in Lithuania 2000, 2001; Agricultural Situation in the European Union, 2000).

Ecologisation of agriculture is very important, because on the choice of future agricultural development depends not only the country's wealth, but also, to a great extent, the ecological situation in Lithuania. The rightly chosen ecological farming methods could keep the harmony in nature and preserve the environment. Lithuania's integration to the EU highlights the importance of the issues of modernization and ecologisation. In turn, stimulating 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 Lithuania and Western Europe. Ecological agriculture is part of sustainable development and has a good potential for future as a factor in the creation of sustainable agriculture (Zemėckis, Rutkoviėnė, 2000). But, as mentioned by J. Platje (2003), what is sometimes missing is the awareness that ecological is not backward, and that combining modern and traditional ways of farming can lead to good results.

The strengthening, enhancement and expansion of ecological farming in Lithuania should be regarded as a long-term goal for the country, especially in the period of economic, political and systemic transition – a transition that would be inadequate to describe as occurring solely “within” these countries themselves, since it is occurring rather within the larger context of EU expansion and economic globalisation.

Ecological farming should play an important role in the National Strategy for Agricultural Development of Lithuania, too. Organic

agriculture development is valuable to Lithuania as it creates the preconditions necessary for strengthening the domestic market, increasing the country's export potential and solving other social problems (e.g., unemployment) (Rutkoviėnė, 2003).

The movement of ecological farming, which involves holistic production management systems (for crops and livestock), emphasizing the use of management practices in preference to the use of off-farm inputs, in Lithuania was initiated in 1990 when the Lithuanian Association of Ecological Agriculture, GAJA, was established. The control Committee of GAJA started inspection and certification of ecological farms in 1993.

The Law No I-734 on the State Regulations of Economic Relations in Agriculture, adopted on 22 December 1994, legitimates organic agriculture. According to the Council Regulation (EEC) No 2092/91/EEC on organic production of agricultural products and indications referring thereto on agricultural products and foodstuffs Lithuanian Organic Agriculture Regulations were adopted in 1997 by the Board of the public organic farming certification organisation “Ekoagros” founded by Ministries of Agriculture and Health Care. In 1999 the Board of “Ekoagros” approved the Organic Agriculture regulations, in which organic livestock farming and the other amendments related to changes in the EU Regulation 2092/91 are included. These new regulations have come into force from the 1 March 2000. In 2000 “Ekoagros” provided the necessary documentation to the EU Commission and applied for insertion into the EU third country register.

Thus, all the necessary preconditions for the production of ecological products exist in Lithuania: *a favorable ecological situation* (good

natural conditions and the unpolluted environment, favorable climatic and soil conditions), *state support* (Ecological Farming Support Programme was approved by the order of the Minister of Agriculture), *a large and cheap labour force, the expanding local and foreign market of ecological products* (a growth of consumer interest in healthier food and market demand in EU countries), *close contacts of farmers with local markets, national and international recognition of the certification enterprise "Ekoagros"*, which has been IFOAM-accredited since 2000; all these preconditions favour the export of ecological products. (The international IFOAM accreditation programme is one of the major and most widely recognized accreditation programmes in the world, applied to certification institutions operating in the area of organic agriculture. Lithuania is one of the 25 countries that have received IFOAM accreditation, and now a comparatively small institution of organic agricultural certification, Ekoagros, is standing next to such giants as Soil Association (Great Britain), KRAV (Sweden), Naturland (Germany), NASSA (Australia), etc.).

Really, the concept of organic farming reached Lithuania after the country had gained its independence, when co-operation with foreign countries became possible. At the time Lithuania's first organic agriculture organizations were launched, the organic movement in other European countries was already well advanced. Now the number of ecological farms in Lithuania is constantly increasing (Table 1). In 1993 the first 9 ecological farmers were certified. In 2000, 230 ecological farms with more than 4700

ha that amounted to 0.13% of the total farming land, 8 processing and 11 trade enterprises were certified.

In 2002, 419 organic operators were certified: these were 393 farms with 8780 ha; 13 processing companies; 5 wild production collectors; 7 companies supplying inputs to organic farms; and one company handling organic products (Rutkoviene, 2003), while in 2003, 700 farms were certified and the certified area totaled to 23, 289 ha. So, in comparison with the year 2002, the "leap" of the certified area is tremendous – it increased 2.65 times. The number of certified organic processing companies in 2003 grew to 18. The range of processed organic products has been expanding as well, encompassing certified food, grain and vegetable processing companies. In 2003 certificates were issued to 9 gatherers of wild production, 6 companies supplying inputs manufacturing materials permitted to be used on organic farms, and one more organic production handling company.

In 2001 organic farms were established in every Lithuanian region, but most of them are in the regions with a lower soil quality and worse natural conditions. These areas traditionally had extensive agriculture due to natural conditions and, therefore, their conversion to ecological farming is relatively easy.

The area of certified ecological farms in 2003 was 23,289 ha, which is 0.75% of the total area of agricultural land in Lithuania. This relative area of land under organic production is smaller than in the EU countries or even

*Table 1. Development of bio-organic farming in Lithuania, 1993–2000*

<i>Year</i>	<i>1993</i>	<i>1994</i>	<i>1995</i>	<i>1996</i>	<i>1997</i>	<i>1998</i>	<i>1999</i>	<i>2000</i>
Number of farms	9	14	36	65	106	144	171	230
Area, ha	148	267	582	1118	1568	4006	3995	4709

Source: Data provided by "Ekoagros" 1993–2000.

than in other Baltic states. Fully organic farms in 2002 constituted 36% of the organic land area; the remainder is accounted for by farms in their conversion period. (The conversion period is legally defined by the EC Regulation 2092/91 and lasts 2 years. The process of conversion, defined as a transitional phase from the conventional to a “steady” organic system, usually takes longer). The average size of organic farms in Lithuania has been increasing every year, from 22 ha in 2002 to 33 ha in 2003. This tendency shows how farmers are becoming more oriented toward organic production, although organic production is rarely pursued in the whole farm, but only in part of it. In Lithuania, as in most EU countries, organic farms are on average larger than conventional (‘non-organic’) farms (their average size is 12 ha).

The major part (50%) of certified lands is currently occupied by pastures and animal feeding crops (meadows), 35.6% by grain crops, 8.7% of the area is used for vegetables, leguminous plants, potatoes (in comparison to previous years, the relative area used for growing these crops increased by 3.1%), and the remaining 5.7% is occupied by berries and orchards. The structure of crop area on ecological and chemised farms is very similar; the difference lies in the fact that more vegetables, leguminous plants and potatoes are produced on ecological farms.

As a rule, ecological farms are mixed, i.e. they produce different products: grain, potatoes, livestock products, etc. Only a few farms are specialized in producing vegetables, fruit, berries, mushrooms, herbs or honey products. Grains make up the major part of ecological crop products (40%). Of the grain crops, organic rye and wheat are predominant, though barley, oats and buckwheat are also grown. Rye, which is grown by 86% of the Lithuanian organic farms, is popular, because rye bread is

a very old Lithuanian tradition. 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 are usually sold as ordinary products (e.g., large dairies do not pack and market ecological milk separately), without an ecological label – even when a farm is certified and has the right to use the label (Agriculture in Lithuania 2000, 2001).

In any case, the production line “from the field to the table” has already been formed: there are certified mills, bakeries and other processing companies. A wide range of organic processed products can be found in Lithuania. In total, there are 117 different processed organic products in production, including grain mixtures for children, five-grain porridges, pasta and flakes.

In the near future organic fish and a greater variety of organic dairy products are expected. In 2003, Organic Fish Farming Regulations were approved by the order of the Minister of Agriculture and certifications were issued to the first 13 organic aquaculture farms which breed organic fish in the area of almost 3000 ha.

In Lithuania, the state through the Rural Support Fund supports the sector of organic farms, too. Product certification, purchase, processing and the development of market infrastructure are financed from the funds of the programme. Direct payments per ha of certified cropland are applied to the owners of ecological farms. Such farms have been supported since 1997. This process has induced the growth of ecological production (Agriculture in Lithuania 2000, 2001). Additional support to organic farming is considered in SAPARD to be the mitigation of the possible negative environmental impact caused by intensive agricultural activities.

An important aspect of the profitability of organic farms is the possibility of receiving high

her prices for organically produced goods than for conventionally produced ones. The realized average organic price depends on the level of the different marketing channels and on the quantities marketed via the respective sales channels. Ecological products are in greater demand in Lithuania now (if the situation will be favourable, before 2010 the ecological products can take 7% of the total amount of food products consumed), however, the network of distribution channels of ecological products has not been developed yet. A survey results show that only 45% of certified ecological products were sold as ecological ones with a 20–40% surcharge. There are attempts to export ecological products (berries, honey). However, the assortment of ecologically grown production in Lithuania is not sufficiently market-oriented. Its small amounts as well as its irregular supply to the customers create considerable inconveniences to sellers and growers.

The marketing of ecological products is rather poorly developed. The most common marketing channels are direct sales from farms. On the domestic market, 21% of ecological products are sold directly on the farms, 40% in fairs and market-places, 14% in shops. It is probable that selling ecological products in supermarkets will stimulate the market of these products (Agriculture in Lithuania 2000, 2001). An increasing number of organic products is sold in supermarkets, where they are located separately and additionally advertised. (How this is important is shown by the example of Austria and France, where large food chains support organic farming by intensive advertising through the media).

As was shown in Table 1, the number of ecological farms increases by 20–30% annually. Lithuanian organic agriculture is considered as the most dynamic sector in the country's agricultural industry. If the certification of land follows

the same pattern as forecasts in 2002 approved by the Government in the Action Plan for Development of Organic Agriculture, in 2006 this area will comprise 0.5% of the total agricultural land. This implies that it probably will not be the main direction in agriculture but an alternative for individual farmers. On the other hand, the goal is to have 1% of the total agricultural land area turned into ecological farms before 2006. Therefore, increasing the number of ecological farms annually is of prime importance. To achieve this goal, several problems will have to be addressed. These include the development of organic seed growing, supplying farms with plant protection material, solving issues related to product quality, and forming a market structure. In addition, more attention will be paid to implementation of research and operating trading (Rutkoviene, 2003). The lack of education of farmers, the lack of access to capital among farmers, the lack of organizations in the field of processing and trading ecological food products, the low level of co-operation among farmers engaged in ecological farming, the low diversity of ecological food products available, the low number of shops selling ecological food, the low domestic market share of ecological food products must be stressed. Co-operation with other countries, as well as an opportunity to learn from their experiences would significantly hasten the advance of organic farms.

However, 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 lead to the protection of agricultural products and foodstuffs from contamination and to the maintenance of environmental 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 the techniques of running farms that 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. However we

should assume that the ecologisation of agriculture is a very long process demanding the methods of farming that do not disturb the balance of ecosystems.

## Conclusions

1. Despite the potential for a more sustainable agriculture in which farmers, rural communities, environments, and national economies could all benefit, there are still many obstacles and hazards.
2. An important aspect of the profitability of organic farms is the possibility of receiving higher prices for organically produced goods than for conventionally produced ones. The average organic price depends on the level of the different marketing channel prices and on the quantities marketed via the respective sales channels.
3. The following aspects are of crucial importance in developing ecological farming: environmentally-sound agricultural policy supporting ecological farming, an appropriate legislation, the provision of financial incentives, the development of a market for ecological food products, an efficient domestic and export distribution network, improvement of the system of inspection and certification of ecological food products, promotion of ecological farming among farmers.
4. All the necessary preconditions for the production of ecological products exist in Lithuania which is characterized by a favorable ecological situation, state support, the expanding local and foreign market of ecological products, the national and international recognition of the certification enterprise "Ekoagros"; all these factors favour the export of ecological products.

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## DARNUS ŽEMĖS ŪKIS: EKONOMINIAI ASPEKTAI

Remigijus Čiegis

Santrauka

Pagal nuosavybės teisių ekonomikos teoriją, rinkos, sutarčių laisvė ir privati nuosavybė turi stiprų poveikį ekonominiam efektyvumui ir skatina mažesnių sandorių kaštus, palyginti su kitais koordinavimo mechanizmais. Tinkamai funkcionuojančios rinkos skatina socialinės gerovės augimą. Bet šiuo atveju tik pelno motyvas skatina ekonominę veiklą. Tinkamesnė institucinė sąranga yra būtina skatinti darnią veiklą. Veiklos, turinčios įtakos aplinkai, kaštai turi būti įtraukti į rinkos kainas. Problema yra ta, kad rinka orientuo-

jasi į trumpalaikį pelną. Be tinkamos institucinės sąrangos pelno motyvas gali skatinti nedarnų išlaidų taupymą, kraštovaizdžio keitimą, biologinės įvairovės mažėjimą ir gyventojų mažėjimą kaimuose.

Taigi, ar rinka gali skatinti darnaus žemės ūkio plėtrą? Esminė sąlyga – turi būti institucijos ir mechanizmai, kurie skatintų išorės veiksnį pavertimą vidiniais bei ilgalaikių ir tarp skirtingų kartų atsirandančių kaštų ir naudos įtraukimą į sprendimų priėmimo procesą. Todėl galima sakyti, kad judėjimas



darnesnio žemės ūkio link faktiškai yra institucinių pokyčių procesas, žaidimo taisyklių ir įgyvendinimo mechanizmų, kurie skatintų darnaus žemės ūkio veiklą, sukūrimas. Laipsniška *institucijų evoliucija* (endogeniniai pokyčiai) galėtų būti darniausias sprendimas. Bet kai kuriais atvejais pirmenybė gali būti teikiama revoliuciniams pokyčiams. To reikalauja „*institucinės inžinerijos*“ (egzogeninių pokyčių). Evoliucinių institucinių pokyčių pranašumas tas, kad formalios taisyklės dažnai yra paremiamos neformalių taisyklių. O „institucinės inžinerijos“ atveju yra didesnis pavojus išbalansuoti institucijas, o tai padidintų kontrolės kaštus.

2003 m. ES pradėta fundamentali Bendrosios žemės ūkio politikos (BŽP) reforma, kuri iš esmės pakeis žemės ūkio sektoriaus paramos sistemą. Naujoji BŽP bus skirta vartotojams ir mokesčių mokėtojams, varomajai jėgai, o ES ūkininkai galės gaminti tai, ko reikia rinkai. Ateityje dauguma subsidijų bus mokama nepriklausomai nuo gamybos apimčių. Naujieji „vienai mokėjimai ūkiui“, kurie yra naujosios schemos pagrindas, bus susieti su aplinkos, maisto saugumo ir gyvulių gerovės standartais.

Kalbant apie ekologines žemdirbystės raidos Europoje tendencijas, pažymėtina, kad:

- 1) daugumoje ES šalių ekologiniai ūkiai vidutiniškai yra didesni už tradicinius ūkius, o darbo sąnaudos yra 10–20% didesnės negu įprastuose ūkiuose, o tai potencialiai leidžia sukurti naujas darbo vietas kaime, bet to, laipsnis labai priklauso nuo ūkio tipo;
- 2) plėtojant organinę žemdirbystę derliai bendru atveju yra mažesni, negu ūkininkaujant tradiciniu būdu, bet derliaus skirtumas labai priklauso nuo žemės ūkio kultūrų;
- 3) svarbus ekologinių ūkių pelningumo aspektas; yra galimybė gauti didesnes ekologiškai pagamintų produktų kainas palyginti su tradiciniu būdu pagamintais produktais.

Lietuvos integracija į ES sukelia būtinumą gaminti tik konkurencingas prekes, t. y. konkurencingus žemės ūkio produktus. Taip pat būtina taikyti išlaidų požiūriu efektyvius ūkininkavimo metodus, aplinkai tinkamą ir socialiai priimtina įrangą. Tai kelia uždavinį spręsti ekonomines, ekologines ir socialines problemas kompleksškai. Šiuo požiūriu viena iš geriausių vadybos sistemų yra *ekologinis žemės ūkis*.

Ekologinis ūkininkavimas turi tapti svarbus ir Lietuvos žemės ūkio plėtos nacionalinėje strategijoje. Organinės žemdirbystės plėtra yra svarbi Lietuvoje, nes ji sukuria reikalingas sąlygas stiprinti vietos rin-

ką, didinti šalies eksporto potencialą ir spręsti socialines problemas (pvz., nedarbo).

Yra visos prielaidos ekologinių produktų gamybai Lietuvoje: palanki ekologinė situacija, valstybės parama, besiplečianti vietos ir užsienio rinka ekologiniams produktams, tarptautinį pripažinimą turinti ekologinių ūkių sertifikavimo įstaiga „Ekoagros“. 1993 m. sertifikuoti pirmieji ekologiniai ūkiai, o 2000 m. jau veikė 230 ekologinių ūkių ir 8 perdirbimo bei 11 prekybos įmonių. 2002 m. buvo 393 ekologiniai ūkiai, užėmę apie 9000 ha žemės ūkio naudmenų, ir jie buvo įkurti visuose Lietuvos regionuose. Tikrai ekologiniai buvo 36% ūkių, o kiti ūkiai yra pereinamojo laikotarpio.

Vidutinis ekologinis ūkis 2002 m. buvo 22 ha ir buvo didesnis; tradiciškai ūkininkaujančio ūkio dydis buvo apie 12 ha. Ekologiniai ūkiai yra mišrūs, t. y. jie auginą skirtingus produktus: grūdus, bulves, gyvulininkystės produktus. Tik keletas ūkių yra specializuoti auginti daržoves, vaisius, uogas, vaistažoles ar medaus produktus.

Galima teigti, kad Lietuvoje jau susiformavo gamybos grandinė „iš lauko ant stalo“: yra sertifikuotų mašinų, duonos kepyklų ir kitų gamybos įmonių. Gamina apie 120 skirtingų organinių produktų.

Svarbus ekologinių ūkių pelningumo aspektas – galimybė gauti didesnes kainas nei organinius produktus, palyginti su pagamintais tradiciniu būdu. Gaunamos organinių produktų vidutinės kainos priklauso nuo skirtingų marketingo kanalų kainų lygio ir prekių realizacijos per šiuos pardavimo kanalus. Tyrimai parodė, kad tik 45% sertifikuotų ekologiškų produktų buvo parduoti kaip ekologiški ir gautas 20–40% priedas prie kainos. Bet kol kas ekologiškų produktų marketingas yra silpnai išvystytas, o labiausiai paplitęs pardavimo kanalas yra tiesioginiai ūkininkų pardavimai ar produktų realizavimas turguose.

Vis dėlto reikia pabrėžti, kad Lietuvos ekologinis žemės ūkis yra dinamiškiausias šalies žemės ūkio sektorius ir 2006 m. turėtų užimti apie 0,5% visų žemės ūkio naudmenų.

Darnus žemės ūkis aprėpia daugelį koncepcijų, susijusių su žemės ūkio praktika ir jos socialiniu-ekonominiu poveikiu. Šiame straipsnyje yra nagrinėjami ekologinės ekonomikos teorijos požiūriu reikalavimai darnaus žemės ūkio plėtrai Lietuvoje. Pirmiausia darnus žemės ūkis apibūdintas aplinkos ekonomikos kontekstu. Po to aptarta Bendroji žemės ūkio politika, ekologinės žemdirbystės tendencijos Europos Sąjungoje ir darnaus žemės ūkio plėtos Lietuvoje reikalavimai.