

## Farm Education as a Component of Sustainable Development in Selected Countries of the European Union

### Gospodarstwa edukacyjne jako element zrównoważonego rozwoju w wybranych krajach Unii Europejskiej

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#### Abstract

Experience gained in numerous European countries indicates the need for a comprehensive approach to education for sustainable development. The goal of this paper is to demonstrate that an increasingly important role in this process is played by educational farms. Moreover, the very notion of providing such services appears to be a natural element of educational efforts in rural areas and is closely related to the undertaking by farmers of various types of non-farming activity. Analysis of many years of experience of European countries in operating educational farms, combined with the results of international surveys, shows clearly that the provision of educational services on farms is a beneficial element of practical education. Furthermore, educational farms are an innovative example of didactics in rural areas, with their focus on thematic cohesion with respect to sustainable social, economic and environmental development.

**Key words:** education, sustainable development, educational farms, agritourism

#### Streszczenie

Doświadczenia wielu krajów europejskich wskazują na konieczność kompleksowego podejścia do edukacji na rzecz zrównoważonego rozwoju. Celem artykułu jest wskazanie, że obecnie coraz większą rolę w tym procesie zaczynają odgrywać gospodarstwa edukacyjne, zaś sama idea świadczenia tego typu usług wpisuje się w działalność edukacyjną na obszarach wiejskich i pozostaje w ścisłym związku z podejmowaniem przez właścicieli gospodarstw rolnych szeroko pojętej działalności pozarolniczej. Analiza wieloletnich doświadczeń krajów europejskich w zakresie funkcjonowania gospodarstw edukacyjnych, a także wyniki badań międzynarodowych wskazują jednoznacznie, że świadczenie usług edukacyjnych w gospodarstwie rolnym to dobry kierunek w zakresie praktycznej edukacji. Ponadto zagrody edukacyjne stanowią innowacyjny przykład edukacji na obszarach wiejskich, koncentrując się na spójności tematycznej w zakresie zrównoważonego rozwoju społecznego, gospodarczego i środowiskowego.

**Słowa kluczowe:** edukacja, rozwój zrównoważony, gospodarstwa edukacyjne, agroturystyka

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#### 1. Introduction

The dynamic development that began in Europe with the Industrial Revolution in the late 18<sup>th</sup> century entailed intensive exploitation of natural resources. This upset the balance in the biosphere, causing irreversible changes to the environment. The notion of sustainable development is focused on achieving a balance between three objectives: economic, social,

and environmental (Pawłowski, 2009). The 1987 Report by the World Commission on Environment and Development thus defines sustainable development as: *development that meets the needs of the present, without compromising the abilities of future generations to meet their own needs* (WCED, 1987). Development is closely linked to the environment; hence these two issues should be addressed jointly.

Working towards changing social attitudes and the greater focus on meeting the needs of the environment call for comprehensive education (both formal and informal) of children, teenagers, and adults (Hłobił, 2012; Kaczmarek, 2012). An important role is played by various entities and their initiatives that promote connection with nature, understanding of its needs, and increased sensitivity to it, and which also highlight the need to achieve a state of symbiosis between humans and the natural environment (Hernik, 2003). These are particularly significant in the case of informal education for sustainable development. This goal is addressed by, amongst others, educational farms, which succeed in merging theory with practice – they teach and operate in accordance with the principle of sustainable development.

## 2. Education for sustainable development

The concept of sustainable development demands certain types of educational action. This issue has been addressed by, amongst others, Springett (2016). There must be a coherent and clear message at every stage of teaching. At the same time, it should be emphasised that the basic assumptions of the concept are not to be treated selectively, but should be seen as equally important. There are several issues that call for special attention in the educational process. While all of the stages leading to sustainable development are important for the entire global community, and the greater part of society seems to be aware of this fact and to understand it, it should still be underlined that not all local communities have equal awareness. Any education offered should therefore be adapted to local communities<sup>1</sup>, taking into account their cultural heritage, as this improves its likelihood of being understood. It should thus be easier to persuade communities to modify their current habits and behaviour by embracing a more rational use of all of the resources offered by our planet (where flora and fauna are just as important as mineral resources). Education may take a variety of forms; one of them is educational farms, as *some traditional farming technologies are likely to have increased biodiversity, as biodiversity protection strategies have become part of farming processes* (Wrzaszcz, 2012). If, at the same time, the assumption is adopted that awareness of sustainable development is to be cultivated in students at every level of education, it can be optimistically forecast that future generations will have a natural propensity to engage in matters affecting the global community. *Only education is able to equip people with adequate tools and instruments. However, simply providing information about environmental issues is not enough. (...) Having information is not the same as*

*having awareness and being responsible* (Mikina, 2010).

The many years of experience of countries that have been providing systematic education focused on enhancing sustainable development can provide certain guidance; moreover, it suggests the most effective models for selection and implementation in other countries. A proven, well-performing system is the Norwegian model of environmental education, based on close cooperation between schools and farms. The participation of students in the functioning of such farms is combined with a school-based curriculum. In this way, students acquire the new competences, skills, and sensitivity that are needed to develop actions towards environment development. Another participant in the process is farming associations, which organise study visits for students and provide them with opportunities for hands-on learning in the field of farming and food production. In the late 1990s, Scottish specialists developed an educational method known as *storyline*, which Cresswell (1997) described as a form of active learning based on specific examples described in the form of stories. Students were given the opportunity to demonstrate creativity by producing their own visions of the place where the story takes place (Gustafsson Marsh and Lundin, 2006). The teacher's task was to moderate the activity, ask key questions and register crucial facts to help the story evolve. The storyline method involves study visits during which students can test their ideas against the reality, share opinions, and build alternative development scenarios. The young people will then relate their experiences to their parents or other interested parties, which means that their work gains extra relevance and is treated seriously by both parties. The storyline method was verified experimentally in the course of a research project conducted by a team of Swedish researchers, involving students aged 14. The storyline was set on a farm, and its focal point was sustainable development as seen from the local perspective. The research results showed some very positive outcomes, for teachers and students alike. The storyline method proved very successful in enhancing the understanding of relations between farming and sustainable development (Lundström, Ljung, 2011).

The experience gained in many developed European countries shows the need for a comprehensive approach to education for sustainable development (ESD). The major issues in this regard can be described on the basis of the British experience. As a result of work and research by a UNESCO special committee (the Education Committee of the UK National Commission), a report was produced titled *Education for Sustainable Development in the UK in 2010* (2010). It identifies and analyses problems,

<sup>1</sup> In line with the concept of nested markets proposed by European rural sociologists (Knapik, 2014).

progress and experiences related to the achievement of objectives in the second half of the United Nations *Decade of Education for Sustainable Development (DESD) 2005-2014*. The most important aspects of the goals set are a common policy, cooperation, and partnership for comprehensive education. These efforts bring together agents representing various elements of civic society: local authorities, business organisations, entrepreneurs, trade unions, universities, NGOs, and professional groups. The key conclusions drawn from this cooperation include:

1. Education for sustainable development requires the introduction of specific solutions into local policy through its representatives – local authorities and agencies;
2. Forms of education such as *sustainable school*, *eco-friendly school*, *global education* should be supported and promoted by the local authorities and representatives of NGOs;
3. Despite the observation of increased educational efforts towards sustainable development in 16 fields of science, progress has not been symmetrical – generally speaking, teaching of adults and within local communities is still at a very early stage;
4. The level of cooperation is unsatisfactory, and this translates into unutilised potential of the synergy effect achieved through combining theoretical experience (education) with hands-on experience – that which can be learnt through the involvement of local communities and non-profit organisations.

UNESCO member states have formulated the principles of a *Global Action Programme (GAP)* with respect to education for sustainable development. The Programme is to be implemented in the first part of the subsequent decade. The principles were officially announced at a conference in Japan in 2014, in the form of five priorities:

1. Increasing the significance of education in sustainable development policies, and of sustainable development in education policies;
2. Development (but also modification) of theoretical and practical knowledge;
3. Building of the potential of teachers and coaches/instructors;
4. Mobilisation, enhancement and utilisation of young people's potential;
5. At the local level – streamlining of the introduction of certain solutions in the area of sustainable development policies (*Shaping the Future We Want*, 2014, p. 181).

### 3. Conditions affecting the functioning of educational farms

The notion of rendering pro-environmental services at farms aligns well with educational efforts made in rural areas and is closely related to the undertaking by farmers of various types of non-agricultural ac-

tivity. The main motivation for farmers' interest in such initiatives (as well as others) is the opportunity to supplement the income earned through farming. However, there is also another non-economic factor that often encourages farmers to undertake additional activity, namely the social goal related to a need to *share with others the values inherent in farming and country life* (Bogusz, Kmita-Dziasek, 2015). Bearing in mind the objectives of farms and their diversity, in conjunction with their social mission, a distinction should be made between educational farms, special farms for the disabled, care farms, and social farms.

An interesting definition of an educational farm (the so-called educational homestead) has been formulated in Poland. According to the definition approved by the Ministry of Agriculture and Rural Development, such a farm should be run in a rural area by rural residents, and it should perform at least two of the following functions: education in the field of plant and/or animal production and the processing of crops, education aimed at increasing environmental and consumer awareness, and also with respect to the material cultural heritage of rural areas: handcraft and folk art as well as traditional occupations (Samel, Jęczyk, 2012). Moreover, it is essential that such a homestead features farm animals and crops, so that these can be demonstrated to children, teenagers, and other interested persons (Kmita-Dziasek, 2016a).

Educational farms serve a number of economic and social functions. They are a crucial element of the multifunctional development of rural areas and serve as a (primary or supplementary) source of income for their owners. Moreover, the running of educational farms is, to some extent, independent of geographic conditions and natural resources. Among their social benefits, the most important is the pro-environmental education of children and teenagers provided by farm managers. Equally important elements are the creation of new social ties or strengthening of existing ones, and the instilling of positive attitudes in young people. Therefore: *Educational farms are farms which receive visitors for educational purposes, where they learn one or more specific aspects of its business operations, about the rural and natural environment around the farm and about issues regarding food, culture and the rural tradition* (Canavari et al., 2011).

Such farms are regularly visited by school children and teenagers or other groups of people who wish to gain practical knowledge in the field of agriculture and farm work. Educational farms should be run by sufficiently competent personnel and have the equipment needed to provide pro-environmental education (Open Farms..., 2016). Such an approach to educational farms is taken across the EU, with particular emphasis placed on their openness, understood in at least two ways: the provision of open access to such farms and sharing of knowledge and the

readiness to tackle new challenges in terms of methods and forms of providing education. These issues are highlighted in other definitions of the educational farm: *farms as sites of learning award the opportunity to impart knowledge related to the field of agriculture. These farms are sites on which to gather experiences with plants and animals and which illustrate the meaning of sustainable and product-oriented production of food* (Leitfaden Bundesinitiative..., 2003).

On the other hand, Haubenhofer et al. (2010), summarising other approaches to the educational farm, point to the significance of farms in helping children and teenagers to connect with nature – plants and animals – and providing them with knowledge concerning food, food production, animals, and modern agriculture. They promote pro-social behaviours, contribute to the healthy psychological development of young people, and help them develop motor skills. In Western Europe educational farms have been successfully operating for many years. In the light of this, Poland can be seen as a surprising example of a traditionally farming country where efforts to set up such entities have a relatively short history.

In Poland, there are currently over 200 educational farms registered in the Educational Farms Base, although their number is increasing every year (Educational Farm, 2016). Their basic function is didactic activity. According to the classification used by the National Network of Educational Farms, two types of such entities can be distinguished:

- farms whose activity is focused on educating school children, with the aim of *helping school children learn more about living on a farm and where food comes from, as well as helping them discover natural rural surroundings*. This seems particularly important since children, especially residents of large cities, currently have very limited contact with traditional country life, and have some very inaccurate ideas about the sources of the food that they eat;
- farms offering special activity programmes (often in the form of workshops) that supplement or facilitate therapy or the mental and physical development of children with various disabilities (Kmita-Dziasek, 2015-2).

The National Network of Educational Farms was established in 2011, its main goal being to promote folk tradition and culture and the concept of education provision on farms, and also to *boost farmers' professional prestige and share knowledge on the subject of food origins*. These goals are aligned with the special educational programme for rural areas developed by the Ministry of Education (National Network of..., 2015).

In most cases educational farms are parts of functioning agritourism farms that combine tourism with farming activity. According to Bogusz and Kmita-Dziasek (2015), almost 80% of educational farms in

Poland offer accommodation, although in most cases these are small operations (up to 20 beds).

As explained by Sammel and Jęczyk (2012), *in line with the concept of sustainable development, tourists who decide to spend their leisure time in the country also wish to learn and experience things*.

Another objective realised by educational farms is helping children and teenagers discover knowledge related to the material cultural heritage of the countryside, traditional occupations, handcraft, and folk art. For this reason, the thematic scope of educational activities covers handcraft, vanishing professions, customs and rituals, as well as traditional cooking techniques (Kielian, 2015).

Various European experiences testify to the important role of educational farms within a modern education system. People running classes for children and teenagers at educational farms are highly valuable teachers with great didactic and methodological potential. As concerns future-oriented education, the activities provided by farms as sites of learning may greatly contribute to the development of specialist, methodological and social competence (Flath, 2010).

Moreover, the educational activity of farms is aligned with the currently widely accepted importance of education for sustainable development. It is noted in the European literature that it is unlikely that the school of tomorrow will exist in isolation from practical training. It thus appears that farming and gardening may be appropriate fields for empirical studies, which are an important part of the optimum learning process (Jolly and Krogh, 2010).

In many European countries, educational farms have been operating successfully for many years. The most active in this regard are the residents of rural areas of Italy, where currently more than 2500 accredited educational farms operate with state financial support. Many of them have been inspired by the activity of the Alimos non-profit organisation, which promotes sustainable consumption. It initiated the establishment of the first network of educational farms in the Emilia-Romagna region in 1997.

The organisation offers training materials as well as all necessary information for farmers interested in establishing an educational farm. Such a facility must meet certain standards in terms of equipment, safety, and the education provided. It should also be adapted to receiving guests of all ages (Open Farms..., 2016).

The support provided by Alimos to educational farms is one of the first experiences in Italy and remains a reference point for organisations initiating their own programmes and projects aimed at diversifying their operations. Italian educational farms offer activities for both children and adults; they are sites of active teaching, providing knowledge concerning various types of farming activities, products, and landscapes (Paesi Bassi e Belgio..., 2016).

Italian educational farms do more than impart theoretical and practical knowledge of agricultural production, animal husbandry, food production and processing. They also contribute to propagating local traditions, customs and folklore; they are strongly rooted in the place where they operate – they promote it and enhance its image. Italian regions make significant efforts to have such farms. Administrative regions such as Veneto, Emilia-Romagna and Lombardy have their own logos and certificates issued to all educational farms meeting obligatory standards in terms of adequate educational services, equipment and other conditions, the most important of which relate to insurance, optimum levels of safety and hygiene, logistic amenities, and transport (Educational Tourism in..., 2016).

In Spain, the legal regulations concerning educational work carried out by farms do not apply directly to the farmers who are involved in teaching children and teenagers. The law is addressed to leaders and experts among local communities, who are properly qualified and have relevant competences in managing educational activities (Canavari M. et al., 2011).

Increasingly popular in Spain are farms which provide professional education to preschoolers and primary school students. A good example is the farm located in Talamanca de Jarama (near Madrid), which features special theme rooms as well as venues intended for teaching children about rural life – gardens, orchards, as well as farm animals. The school has a picturesque location along the banks of the Jarama River, surrounded by wooded areas, which helps create direct contact with nature. The children take care of the animals and work in gardens and orchards. The animals are kept in suitable hygienic conditions and their welfare is closely monitored. The children also take part in workshops where they learn to make cheese, bread and cakes (Farm School..., 2016).

Lopez de Abechuco Calzada (2012) emphasises the importance of such farms particularly at the pre-school and early-school stages of education, as they play a role in developing appropriate attitudes as well as developing and strengthening children's sensitivity to nature and animals, while also contributing to building pro-social mindsets. They are a source of basic knowledge, both theoretical and practical, about farm work, animal feeding and care, working in orchards and food production. The educational methods used in such schools, such as brainstorming, observation and experiments, are conducive to children's full engagement in the educational process. Direct interaction encourages cooperation with peers. Children learn to work in teams and share responsibilities with others. They also gain knowledge and skills pertinent to a healthy lifestyle.

In Romania, approximately one-third of the population resides in rural areas and derives its main income from farming. To meet the increasing require-

ments of the market and growing competition, it is necessary to take on new challenges to make more efficient use of existing resources. There is a need to support farmers and rural communities in their efforts towards the development of rural areas. For this purpose the Center for Entrepreneurship and Executive Development (CEED) launched the project Rural Economic Education and Development (REED), which was the key element of a rural area development programme, providing support to farmers, job creation and the development of human capital and entrepreneurship in rural areas. A pilot project ran from September 2012 until 2015 (Rural Economic Education..., 2016).

As concerns educational farms in Belgium, a noteworthy organisation is Fédération Belge Francophone des Fermes d'Animation (FBFFA) – an association of 15 francophone farms located in both rural and urban areas close to Brussels. Its task is to promote education aimed at various target groups, diversified in terms of age and specific needs, e.g. disability. There is a link between the diversification of educational approaches and the potential of specific farms belonging to the association (Fattorie Didattiche..., 2016).

An interesting educational project, to be implemented from 1 June to 30 September 2016, involves volunteer activity combined with the operation of an educational farm located in Stoumont, in the heart of the Ardennes. The farm can accommodate both individual guests and groups, offering farm sightseeing, educational sessions, wildlife observation trips, and thematic weekends. It also boasts a wide range of programmes and activities for school groups, disabled children, trainees, and dysfunctional families. Moreover, the farm runs training for socially and economically disadvantaged individuals and groups on social and cultural initiatives in order to support their social reintegration. In summer, educational sessions for children are organised, with classes lasting from 9 am to 4 pm. Volunteers can assist at these sessions or with farm work, selecting activities depending on their skills and preferences. The minimum period of activity to obtain project participation credits is two weeks (Support the Programmes..., 2016).

#### 4. Educational farms – results of empirical studies

To provide a more accurate description of European educational farms, the authors decided to refer to research results from two separate sources. The first is the research material included in the summary report from the FARMLAND international project. This was implemented by a consortium of six partners from five EU countries – Italy, Belgium, Spain, Romania, and Poland – led by the Agricultural Consultancy Centre in Brwinów, Krakow Branch (Poland). The research objective was to diagnose the needs and

expectations of persons who organise education at farms, as well as their development prospects, and to identify training needs in specific countries<sup>2</sup>. The following analyses are based on the *Survey Report on Analysis of Agricultural Innovative Trends and Training Needs* (Ansanelli et al., 2014).

The second source is the results of analogous original research conducted in 2015 among owners of educational farms who are members of the National Network of Educational Farms in Poland.

It is found that educational farms, as an innovative example of didactics in rural areas, exhibit thematic cohesion with respect to sustainable social, economic, and environmental development. With regard to the reasons for undertaking educational activity in rural areas in specific countries, it was found that in Italy the main arguments included diversification and acquisition of an additional income source, pursuit of a different life, and also the possibility of developing business operations using EU funding. The results were similar in Spain, where the respondents first of all pointed to diversification and generation of additional income, as well as the running of sustainable farms. In Romania, the main reason for providing educational services was the need to continue to support farms, including in terms of an additional source of income, through sustainable development, competitiveness, and diversification. In Belgium, the main driver was higher profitability, followed by diversification and stability of income, but also the running of farms compliant with the concept of sustainable development. Analysis of the reasons for launching educational services at farms in Poland shows that a frequent reason was the desire to increase environmental and cultural awareness among farm guests, but also conscious utilisation of the potential of farms, leading to an additional source of income. It can be concluded that in all of the countries under analysis, the commencement of educational activity closely adheres to the concept of sustainable development, with respect to not only economic but also environmental issues, both natural and anthropogenic.

Most owners of educational farms and persons planning to establish them in the future offer or plan to offer educational services as a supplementary activity. Only in Poland was this type of activity treated as the dominant and most important by almost 90% of farms. In Italy, Romania, and Spain crop production was put first (respectively 80%, 85% and ca. 43% of cases), while in Belgium the primary activity was livestock production (almost 73% of relevant responses). It was also relatively common, especially in Poland, Spain, and Italy, for respondents to indicate agritourism as the principal form of farm in-

come, in which case educational services were supplementary to touristic activity.

As regards the types of operations run on the farms besides educational activities, in Italy the most common are farms involved in biodiversity protection (approx. 53% of responses), followed by activity related to traditional food processing (almost 47% of responses). Also common are special farms that offer services to the disabled (approx. 47%) and carry out direct sales of their products (just over 43%). A less frequent activity at such farms is the offering of agritourism services and involvement in organic farming. In Spain, educational activity is very frequently linked to agritourism (just over 25% of cases), followed by direct sales of products (approx. 22% of farms) as well as renewable energy production (20% of farms). In Romania, in the vast majority of cases, education is linked with organic farming (over 82% of cases), processing with traditional methods (82%), as well as direct sales (65%). In Belgium, education at farms is primarily combined with direct sales of products and agritourism (approx. 60% in both cases). In summary, it should be noted that in all of the countries under analysis, education is just one of several forms of activity at the farms in question, and is therefore not the sole source of income.

Analysis of the themes of educational packages offered in specific countries shows that in Italy most pertain to promoting traditional farming and food quality, medicinal plants and organic farming, including crop and livestock production. In Spain most topics are related to organic farming, especially livestock production, direct sales of products and properties of medicinal plants. In Romania, the greatest number of educational offers pertain to organic farming and direct sales of traditional products. In Belgium, common subjects include solar and wind energy and the use of biomass to produce clean energy, as well as promotion of traditional farming and food quality, direct sales and medicinal plants. In Poland, the subjects of educational programmes mostly focus on sustainable farming, emphasising the promotion of health and organic food. The programmes often demonstrate the process of delivering a product from the field to the consumer's table. Moreover, many programmes refer to the natural, cultural, and historical heritage of a given region. The importance of environmental protection and direct sales should be emphasised, as in all of the countries these often appear in the subject matter of educational services. In the case of educational activities it is undoubtedly of great importance by whom they are run. In all partner countries, the owners of farms covered by the study often have no permanent employees except for close relatives – according to responses, this applies

<sup>2</sup> *FARMLAND – Farm Activities for Rural Model Learning And Nature Didactic*, part of the *Lifelong Learning Programme 2007-2013 Leonardo da Vinci. Innovation Transfer*.

The authors contributed to the implementation of *FARMLAND in 2014-2015* by carrying out a project assessment following the first year of its operation, and by actively participating in a symposium summing up the project.

to 80% of farmers in Belgium, Poland and Italy, 40% in Spain, and almost 58% in Romania. These values are particularly important with regard to the provision of educational services by farm owners. When farms offer many different educational activities, the staff conducting them comprises not only the farmer, but also his/her family members or an employee (especially in summer, when there is greater interest in educational activities, and field work makes it impossible for farmers to spend much time teaching). Closely related to the topics of educational packages offered by farms are their needs for consulting services. In Italy, for instance, there is particular demand for training in pro-environmental activity, food processing, catering, marketing, direct sales, and also renewable energy sources. In Spain, consulting needs are linked to processing, marketing, and direct sales; the same applies to Romania, where consulting on eco-friendly food processing and production methods was listed in most cases. In Belgium, the predominant subjects of consulting are marketing and direct sales, followed by utilisation of biomass and renewable energy sources, and environment-friendly activity.

In Poland, the most important consulting needs of educational farms include processing and marketing, especially promotion, as well as legal and OHS regulations. It is significant that farms in the early stage of offering educational services expect comprehensive training, whereas established operations prefer specialised training focused on specific topics.

### Summary

The concept of sustainable development can be applied in the social and economic sphere, in the context of promoting rural areas, and also in terms of education.

The many years of experience of educational farms in European countries such as Spain, Belgium and Italy may not only serve as a reference point for similar initiatives, new or developing, in Poland or Romania, but can also be adapted to the specific conditions of rural areas in those countries.

The establishment of educational farms in many countries is related not only to the possibility of creating an additional source of income for farms, but also results from a commitment to pass on – especially to children and teenagers – the natural, cultural, and historical heritage of rural areas, linked to a healthy lifestyle and environmental awareness.

With regard to educational farms, attention should be drawn to the aspect of innovativeness, which has recently received much emphasis in relation to the EU economy as a whole. Here, broadly defined sustainable development is promoted, along with the application of practical methods of forming pro-social and economic attitudes.

The research results presented in this study point to the fact that the rendering of educational services by

farms significantly contributes to the efficiency of other types of operations. What is more, given the broad thematic coverage of educational packages in specific countries (especially in terms of environmental protection and direct sales), along with the general demand for training for farm owners (which translates directly into the improved quality of services on offer) and the fast growing number of new farms, it may be concluded with confidence that a favourable course is being pursued in the development of practical education.

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