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THE POTENTIALS OF AN EU-CONFORM AGRICULTURAL
ENVIRONMENTAL ECONOMY IN HUNGARY

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1. Preliminaries and objectives of the research

1.1. Preliminaries

In 1992, in the frame of the reform of Common Agricultural Policy the European Union made a regulation of *“agricultural production methods compatible with the requirements of the protection of the environment and the maintenance of the countryside”* (2078/92 EEC). The regulation was one of the most important measures towards an environmentally sound agricultural practice; it provided a basis for the national agri-environmental programs which had been launched by 1996 in every member state. Later the regulation – together with the other accompanying measures of the reform in 1992, merged into the regulation of 1257/99 EC which first laid down the basis of a comprehensive and consequent rural policy and defined the framework for the communal subsidy of a sustainable rural development.

As a part of the legal harmonization the Hungarian government disposed of the development of the National Agri-environmental Program in 1999. The legal background of the program was ensured by government regulation No. 2253/99 and it was supposed to be launched in 2000. Despite this fact the program started only in 2002. The reason for the delay was named by different authors as either the insufficient financial resources or the lack of political will. After Hungary’s joining the European Union in 2004 the program was included in the National Rural Development Plan. The amounts of support increased and the communal subsidies became available besides the governmental payments (80-20%).

The dissertation examines the development and the effectiveness of the Hungarian national program comparing with the programs in other member

states and also taking into account the communal regulations. The study does not try to give a comprehensive overview about the environmental protection in economic and legal respects; it focuses only on the agricultural sector, mainly the activity and effectiveness of political decision makers. The study analyses the national program on the macroeconomic level, searching for EU-conform potentials concerning the system of communal and national support, and also the production methods which respect economic or environmental laws. The possible production methods are analyzed in the frame of a primary research confirming the results of the secondary research on a practical level. The focus of both the primary and the secondary research is on plant production, and it arises from the build-up of the national agri-environmental program.

1.2. Objectives

The most important objective of the dissertation is to investigate those possibilities which can ensure the long-run sustainability of Hungarian agricultural practices, both environmentally and economically.

To meet the goals, the following tasks will be carried out:

- Overview of the agri-environmental regulation in the European Union.
- Emphasizing those elements of environmentally friendly agricultural production in EU member states which can be applicable in Hungarian practices.
- Examination of EU-conformity of the Hungarian agri-environmental regulation, with respect to the Hungarian economic and natural resources and circumstances.

- Conducting primary research on farms continuing traditional, integral and ecological farming; evaluation of results, comparative analysis concerning the primary and secondary results.
- Making SWOT analysis of the Hungarian agri-environmental program.
- Conclusions concerning the direction of the Hungarian agriculture in the future, and recommendations on possible development plans.

2. Materials and methods

2.1. Applied methods of secondary research

The dissertation is the result of several years' research. The latest papers, articles, reports and statistics on the topic were used, including a large amount of literature written in English, mostly Commission reports and publications of those authors who have been dealing with the topic for long. To analyze the practice of different member states I received considerable help from ministries and other institutes responsible for national agri-environmental programs. In some of the cases the program of the member state was only available in the official language of the country, which I was not able to use. Thus I was only able to work with those programs which were translated to English, and also with the program of Spain, which I received in Spanish. I made a comparative analysis taking into consideration the elements of the national programs, the central regulations and also the natural conditions of the given member states.

I examined the Hungarian agricultural sector from several environmental aspects but I also took into account the multifunctional feature of the sector. For this analysis I used the reports of the Ministry of Agriculture and Rural Development and also the results of research made available by the Gödöllő Faculty of Szent István University.

During the examination of the National Rural Development Plan I brought into focus the national agri-environmental program as its measures specifically aim at the preservation and improvement of the environmental quality of natural resources. I did not introduce all of the measures in detail since the nature of the research is not technological, and because the description of the program is always fully available among the

regulations of the given year. After studying the content and requirements of measures, I made recommendations for such measures to be introduced. These measures have been highly effective in European member states. Besides the agri-environmental measures, I briefly introduced the other effective elements of the National Rural Development Plan.

During the SWOT analysis I used the results from both the secondary and primary research pointing at those economic and social contexts which require further consideration besides the evaluation of results.

2.2. Applied methods of primary research

In the frame of my primary research I examined five agricultural enterprises through personal interviews with the farmers. In the selection of the farms I focused on different agricultural methods and examined farms continuing conventional, integrated and organic farming. Another criterion in the selection was that the farm size should be above 100 hectares. In finding the farms the agricultural offices in Fejér and Somogy counties gave assistance to me. In these offices the officers are in almost daily contact with the farmers. The sample is not representative but representativeness was not my aim; I wanted to confirm the results of the secondary research by taking some practical examples. The quantitative part of the research compared the yields, production costs and incomes for different production methods. However, the emphasis was on qualitative research examining the long-run sustainability of the agri-environmental program from both economic and environmental aspects, in search for an answer which defines the potential directions of development in Hungarian agriculture.

Finally, I called attention to some differences between the results of the secondary and primary research.

3. Results and conclusions

3.1. Results of secondary research

3.1.1. Diversity of agri-environmental programs

The agri-environmental measures available in European member states can be grouped into three main categories:

- Production oriented measures with environmental benefits,
- Non-productive measures improving soil management and land management, and
- Social and economic measures.

In the national programs member states emphasize the first category in the list above, since environmental effectiveness is mostly influenced by the amount of inputs used in the cultivation and the size of agricultural areas drawn into the program. Concerning the amount of inputs we can find measures with different “depths” from basic programs through integrated production to organic farming. Out of these production methods the integrated one can be a model of sustainable agriculture: it is environmentally friendly as well as suitable for mass production. For example in Italy, 40% of the budget of the national agri-environmental program is spent on supporting integrated production methods (concentrated on producing grapes, fruits and olives). According to Italian environmental impact assessments of the concerned areas, there is some population growth among several invertebrate species; however the results do not reach figures characteristic to organic farming.

Organic farming makes possible a more effective environmental protection but we should not forget that this production is not suitable for

mass production due to the closed system. Besides its favorable environmental impacts, organic farming also plays a social and an economic role due to the high labor needs of cultivation, which can increase the employment rate in the given region. According to Danish statistics, labor input increased by 16% during conversion years on farms taking part in the measure, and by 38% on established organic farms. The main reason is the need for labor-intensive weed control.

Concerning the size of areas drawn into the program, greater environmental benefit can be observed in those countries where the measures cover most of the agricultural areas. Within two years after its joining the EU, Finland for instance reduced the use of fertilizers (30% less phosphorous and 10% less nitrogen), and also reported a reduced use of pesticides.

It is interesting to mention that in certain countries¹, measures were developed to convert intensive grasslands to extensive arable lands. These measures targeted areas where arable cultivation had declined to a large extent in favor of intensive grass with consequent negative effects on biodiversity. It is important to know that while on extensive grasslands mowed only twice a year we can find 30-60 plant species, on intensive grasslands this number is about 4-5 species, which is unfavorable for increasing or even for preserving the level of biodiversity.

In most member states we can find measures supporting the establishment of offshore buffer strips. These strips, which are at least 6 meters and at most 20 meters, are covered with grass to avoid erosion and to

¹ England, Scotland, Ireland, Spain, Portugal

decrease the leach of phosphorous and nitrogen, slowing down or stopping eutrophication in surface waters. A further advantage is that they provide biotopes for many plants and animals.

Several member states worked out measures that pertain to breeds of farm animals in danger of extinction (horses, bovines, pigs, goats, and sheep) and varieties of useful plants threatened with genetic erosion. The goal of the measures is to preserve biodiversity, but there is also a cultural role, a historical role and a population preservation role to the program.

Due to intensive farming species and hybrids with higher yields are widespread all over Europe, although local species are usually more resistible against infections and adapted better to local conditions. Some European countries (Austria for example) had introduced measures targeting the protection and breeding of animals in danger of extinction before regulation 2079/92 ECC came into force. After that most of the member states introduced this type of measures.

Thanks to the measures some species which were endangered earlier have a secure future now, which proves the effectiveness of the program. The Spanish Chamarita sheep is a good example, but it should not be forgotten that it probably got attention from the farmers because it produced more meat. Another example is the Swedish national agri-environmental program for supporting local plants. The measure ensures the continued traditional cultivation of local varieties of brown beans on the island of Öland. The cultivation is an important part of the island's cultural heritage. Furthermore, the cultivation means that local varieties of brown beans can be conserved. The traditional brown bean production is threatened because of decreasing commercial interest due to its relatively low yield and its

replacement by conventional cereal grain production, especially winter wheat (*Ministry of Agriculture, Food and Fisheries, Sweden*).

3.1.2. EU-conformity of the Hungarian agri-environmental program

After the review of the regulations in the European Union and in Hungary we can state that the measures of the Hungarian agri-environmental program meet the requirements of central regulation and also take into account the natural conditions of the country.

Inner deficiencies of the program

During its three-year operation the program has showed considerable progress. For example, initially, there was a mistake in the measure of integrated vegetable production: applying crop rotation was compulsory but the cereals which should have been applied in it were not among the financially supported plants. This mistake was corrected in the second year. Out of the current problems I would like to emphasize the following:

- There is no measure for maintenance of abandoned agricultural areas, although it is a recommendation in the EU regulation. It would be especially reasonable in Hungary considering the latest tendencies of the increasing size of area affected by ragweed infection. In the summer of 2005 this area included 20% of the country's area. As most of the parts of it are agricultural lands, it would be definitely necessary to develop a measure supporting the preventive steps to avoid infections. Besides its favorable impacts it could considerably save costs in the central budget as the treatment of allergic illnesses is far more expensive than the hectare based support would be if the measure were in operation.

- The limitation of supported plants precludes several farmers from the program, who would be willing to fulfill the requirements of the measures or perhaps whose present farming methods meet higher environmental requirements.
- The insufficiency of the system of responsible institutions sets back the effective operation of the program.

Difficulties arising from the Hungarian characteristics of the sector

- Qualification, vocational training: from 100 farmers not more than 2 or 3 have a university degree, and only 5 to 6 have a secondary qualification. This means that more than 90% of the Hungarian farmers have only practical skills. The lack of expertise impedes of the spread of up-to-date and competitive technology (for example precision pest control), and this can hold up the development of the sector that would be necessary for catching up with the European standards. Less educated farmers are less responsive to innovation: they stick to the old production methods which means further problems in the sector.
- Age of the farmers: the average age of Hungarian farmers is increasing, and the lack of interest in agriculture among the younger generations is also noticeable. The roots of the devaluation of agriculture can be found in the changing social customs, and also in the low profitability of the sector. The salaries in agriculture are about 75% of the salaries in industry.
- Insecurities in the sector: the outflow of labor from agriculture, slow restructuring and disorganized processes from production to sales make the sector insecure. The scarcity of input and the lack of viable models also contribute to the decreasing significance of the sector.

3.2. Results of primary research

During my primary research I examined three farming methods (traditional, integrated and organic). An aggregate table shows the results evaluating the agri-environmental measures in the case of organic and integrated farming. The size of all the examined farms is above 100 hectares, and they continue mainly arable farming. Common feature of the farmers that all of them applied for an agri-environmental measure, the impacts of them are either estimated or effective.

Traditional farming

Advantages		Disadvantages	
Production	Farmer	Production	Farmer
Lower costs than any of the production methods according to the agri-environmental schemes	Well known methods, no new requirements	Apart from the hectare based subsidies there is no additional support	Agriculture as way of life is not attractive anymore in Hungary
Efforts to save expenses can result in a more environmentally friendly production		Damages of environment are usually bigger than in any of the production methods in the agri-environmental schemes	Lack of sustainable way of thinking
		Loss of market opportunities due to changing consumer demands	
		Unfavorable animal welfare	

Integrated crop management scheme

Advantages		Disadvantages	
Production	Farmer	Production	Farmer
Suitable for mass production	The requirements can be more easily fulfilled than those in the organic scheme	The prices of pesticides allowed in the program are 10% higher than the average price in the market	Farmers are afraid of the high requirements
Good quality products which are free from pesticides and can even be used for producing baby food	Good market opportunities, as the products fully meet the demands of consumers	The applied technology increases the expenses (special machinery, watering, precision plant protection etc.)	Consideration of long term participation is based only on economic benefits
Environmentally sound production		The number of supported crops need expansion.	Lack of proficiency
Sustainable			
High amount of subsidies		Isolation cannot be carried out	
Reducing the use of artificial fertilizers means lower expenses in production		It can lead to a decline in yields (although this is not certain to happen)	
There is no limitation concerning the size of the land which can be drawn in the program (from 2004)		Insufficiency of institutional system responsible for the program	
It is possible to receive hectare based subsidy and subsidy for less favored areas beside the support of the scheme. Also, supplementary supports are available		Applying papilionaceas in the crop rotation is mandatory but these plants are hardly or not sellable due to the insufficient market. Many times farmers are forced to use papilionaceas as green manure	

Organic farming

Advantages	Disadvantages
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Production	Farmer	Production	Farmer
Healthy food, free from any chemicals		Isolation cannot be carried out or is hard to carry out	Farmers are afraid of the high requirements
Environmental protection		Greater risk in production due to the lack of chemical plant protection	Lack of proficiency
High prices of organic products		Decrease in yield compared with traditional farming	Consideration of long length participation is based only on economic benefits
It is possible to receive hectare based subsidy and subsidy for less favored areas beside the support of the scheme. Also supplementary supports are available		The market of organic products is limited, there is a strong competition among farmers, market protection is insufficient	
Utilization of manpower is high – increasing employment, a potential to keep the population in the rural areas		Labor cost increases expenses	
		Insufficiency of institutional system responsible for the program	
		Raising production is limited because of the lack of industrial inputs.	

Consequences

1. Subsidies in certain measures contained incentives that exceeded the expenses of farming according to the requirements. (According to

the National Rural Development Plan in the supports there were no components like this.) This amount was about 9000-10000 HUF/hectare in the case of the examined farms based on the subsidies of 2003. From 2004 on, this increase in the incentive was due to a higher amount of support. For example, in the basic stewardship crop management scheme the support was 98.04 euro/hectare, approximately 22-23% higher than in the previous year. This additional support resulted in an approximate 15-16% real increase non-inclusive of the 6.5% inflation rate.

2. From the data it emerged that average expenses were lower in the case of larger farms. Beside competitiveness it also meant that bigger farms could better contribute to the environmental protection than small farms.
3. Four farmers of five mentioned that they had difficulties with selling papilionaceae; however, it was compulsory to apply them in the crop rotation. The reason for this was the decline in stock farming in the country (it had only 40% portion in the whole agricultural production, which was much lower than the European average). Dairy farms which could become the market of papilionaceae are mostly self-sufficient, they cannot afford building upon purchases of forage due to the insecurity of the market. The small amount of forage available from crop rotation on farms participating in the agri-environmental measures, would not mean a solution for the dairy farms. Further difficulty farmers face is the long distance papilionaceae should be transferred, which means more additional costs.
4. Comparing the results of traditional, integrated, and organic farming, we can see that yields were 15-30% lower in organic production than in traditional production, but integrated farming did not mean

definitely lower yields. In addition, the more precise fertilizing based on the abilities of the soil and the precision plant protection could even result in higher production. With a stable market there is a high profit in organic production, but the competition is fierce and market opportunities are limited.

5. Independently from the production method they apply, farmers emphasize the barriers of the extension of the market of organic products. The high cost of production of these products is supposed to be compensated by the higher market prices. Only a segment of consumers are able to and willing to pay these prices, so the products of ecological production satisfy special requirements. According to the farmers asked, the amount of subsidy should be higher in this measure of the program. However, it would result in an oversupply with lower market prices which would not be able to compensate the production costs.

4. New scientific results

1. In the Hungarian literature the dissertation draws attention first to the disadvantages of the lack of compulsory participation in the agri-

environmental program. The small size of farms and divisions intensify this phenomenon.

2. In areas where natural resources are more exposed to environmental damages (e.g. surface waters, water habitats), it would be reasonable to make it compulsory to undertake the measures that meet the needs of the given region, as well as the supplementary measures for erosion control.
3. Considering the long-term impacts of the program, it would be reasonable to extend the budget and to make it available for all farmers who are willing to meet its requirements. This concerns not only the amount of support but also the number of supported plants.
4. The European agri-environmental programs, including the Hungarian one, determine the methods that participants must employ during production, but are not oriented to achieving results. This means the same amount of financial support independent of the degree of improvement in the conditions of natural resources (if any). Beside some potential oversupport, this fact provides an opportunity for misuse of support. The political decision makers should consider a result-oriented support system, which would be environmentally more effective, and would also make monitoring much easier and less expensive.
5. Hungarian agricultural producers have not yet developed an environment-conscious way of thinking. It is typical for farmers to approach sustainability in economic and not environmental terms. Therefore it is the responsibility of the government in power to develop and operate a system which gives an opportunity for

Hungarian agriculture to be sustainable both economically and environmentally.

5. Recommendations

The results of my research necessitate some recommendations, which can be summarized in the following points:

1. In environmentally sensitive areas (Natura 2000 network, water basins etc.) undertaking the agri-environmental program should be compulsory for farmers.
2. The problem of small size farms and divisions should be solved. This is necessary not only for improving the competitiveness of Hungarian agriculture but also because larger farms can better enhance environmental effectiveness. On small plots cultivation is also more difficult.
3. Concentration of land ownership and land use is important. This would result in a relief from administrative work for and would also answer the problem participants have to face: the program is for five years, and those farmers who have a shorter land rent contract cannot participate in it.
4. It is reasonable to support the development of farm co-operatives. It contributes to competitiveness and improve environmental effectiveness in one.
5. It is important to improve the qualification of Hungarian agricultural producers. The lack of expertise is one of the biggest barriers of innovation. Well-trained specialists are essential in the realization of economically and environmentally friendly production methods.
6. Early retirement and support of young farmers are also essential. The average age of Hungarian farmers is increasing; older farmers are

not open to innovations. Another problem is that their credit standing is much lower than young producers’.

7. It is necessary to develop the institutional support of the program. On the long run, it is not acceptable to announce the result of applications eight months later the application deadline.
8. By defining the amounts of support in the different measures, the political decision makers have an opportunity to help the spread of methods which are environmental friendly and suitable for mass production. As an incentive, it would be reasonable to build in the payments a special component to inspire farmers for undertaking the measures.
9. All of the farmers should have a chance to contribute to Hungary’s more effective, environmentally friendly agriculture. Neither the budget of 2002, nor the ones in 2003 and 2004 were not big enough to support every farmer who was willing to fulfill the requirements of the program. It is important to support every effort of environmental protection, and in lack of necessary financial resources modulation could provide a solution.
10. It is worth thinking over if the system based on normative support is effective enough. A result oriented support system should provide better results. Obviously, a comprehensive cost-benefit analysis would be necessary since this method means lower costs on the one hand, but a more expensive monitoring system analyzing the results on the other.

6. Publications in the subject of the dissertation

Scientific publications

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