



Possibilities of Development of the Rural Space in the Giurgeu Depression, Especially with Regard to the Integration of Ecological Aspects in the Agricultural Property Planning

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Introduction

In the last decade the economic and social shock caused by the lack of an extensive and real rural space strategy as well as a proper legal background, have brought the rural regions – especially that of the Giurgeu depression, to a critical regional state.

The persistence of the socio-economic situation may have as a result that the collapse of the already formed structures – even on a long term – be, a difficult or almost impossible task to deal with.

As we all know, the rural area is a region which can be geographically delimited, where the number of inhabitants is considerably lower and where the most part of the region is used for agriculture, forest economy, preservation of nature and leisure activities. The functions are tightly joined, so the development can only begin and be carried out on the basis of an extensive strategy.

The conclusive report of the committee on Agriculture and Rural Planning of the European Parliament at the General Meeting, has the title: "The Transformation Process of the Agricultural Rural Planning Sector in the Middle and Eastern European Countries and in the New Independent Countries (Burbiene, 1997). Dealing with structural transformation the report emphasizes the estate re-allocation; the transformation of giant economy into an ecology-based economy; the solving of different economic, social, technical, ecological, technological measurement problems of farmsteads – mainly that of family farmstead; assistance in the planning and organizing of maintainable economic entities and offering assistance in their work.

From an ecological point of view, the balanced, profitable, long-term, functional properties can be developed only if those properties emerge from the planning of natural and agro-ecological site conditions, from the local traditions (the given resources, that is), and these are properly used, according to the long term interests and market possibilities. On this basis it is possible to fulfil the aims of production and of ecological leasehold, the planning of necessary public utilities, infrastructure and buildings. The unification of these points of view in planning needs new solutions. In the European documents they are one of the most important means to put into practice a functional agriculture and an environmental economy.

The Giurgeu depression would justify a multifunctional ecological agriculture which pays attention to the already formed unstable ecological balance and facilitates the proper exploitation of the natural and touristic potential of the region and its relaxation functions.

Brief Evaluation of the Present State of Agricultural Productivity and its Possibilities

The Giurgeu depression, situated in the Oriental Carpathians, is about 71 km long 30 km wide. Owing to its severe climate, it belongs to one of the typical Middle-East European microregions.

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Its territory is a little more than 1600 km² and it has an average height of 700 m above the sea level. The brooks running from the surrounding mountains flow into the Mureş river which springs from the south-east border of the depression and leaves it at the inflow of Călimănel brook. The depression has 82,000 inhabitants (January 1, 2000) and the settlements (2 towns and 10 villages) are situated not far away from the Mureş river or in its neighbourhood, on the low alluvial cones.

One of the defining agricultural natural conditions is the climatic condition which determines and leaves a mark on the structural construction as well as on the production process itself.

The basic air current caused by the general air motion undergoes a strong modifying effect which comes from the complexity of local geography and relief configuration and it is manifest in the frequent long-lasting periods of temperature inversion. In such instances the temperature values remain low for a long period of time and numerous inversion – accompanying phenomena come into being (abundant dew in summer, frequent frost in early autumn or late spring).

From the point of view of agricultural activity planning and its application, from among the climatic elements, the evolution of temperature can be treated as a risk factor. The daily, monthly and seasoned formation of air and soil temperature, as well as the approximate time of appearance of first and last frost, determine the normal or abnormal evolution of the productivity cycles.

Table 1. The monthly average air temperature (1961-2000).

Station	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Annual	Amplitude
Joseni	-8,0	-5,6	-0,5	6,0	11,3	14,5	15,8	15,1	11,1	5,6	0,0	-5,0	5,0	23,8
Toplița	-7,2	-4,9	0,0	6,1	11,6	14,7	16,1	15,4	11,3	6,0	0,4	-4,5	5,4	23,3

Table 2. The monthly average soil temperature (1961-2000).

Station	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Annual	Amplitude
Joseni	-8,3	-6,4	-0,5	6,8	13,7	17,6	19,0	18,0	13,0	6,3	-0,4	-5,3	6,1	27,3
Toplița	-7,9	-5,6	0,3	8,4	15,3	19,1	20,8	19,8	14,6	7,6	0,8	-4,8	7,4	28,7

Table 3. The approximate time of appearance of the first and the last frosts.

Station	The first frosts			The last frosts		
	Average	Earliest date	The latest date	Average	Earliest date	The latest date
Joseni	15.09	14.08.1975	18.10.2000	14.05	21.04.1996	17.06.1973
Toplița	21.09	27.08.1980	14.10.1984	10.05	22.04.1968	17.06.1973

As presented in the charts above, the daily oscillation of temperature, which can reach 25° C in the summer months, has an unfavourable impact especially in the plant cultivation sector.

Because of this it is impossible to introduce and acclimatise certain temperature-sensitive cultures.

The quantity of precipitation, its monthly and seasonal distribution, as well as soil humidity, do not interfere with agricultural production. Even in the most droughty months the soil contains enough humidity. This is also due to the fact that because the soils are generally light and favourably watered, the humidity contained by the lower soil layers can easily reach the root level.

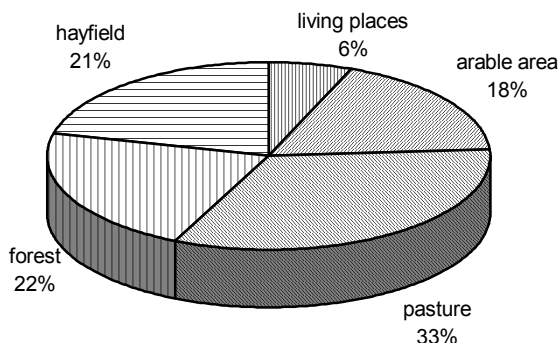
With property planning, in choosing the place for different plant cultivations, it is important to take into account the advantage of favourably sun-exposed dips (S, SV, SE). After the liquidation of

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large-scale farming and with the appearance of small holdings there are possibilities to make a good use of these advantages.

Within the last few years, with the reduction of forest the pasture lands have increased by 10 %.

Figure 1. Territory use in the Giurgeu depression (2000).



The most part of historically developed agricultural terraces are not cultivated in spite of their more favourable temperature and water balance than that of most arable areas at the bottom of the depression.

The basis of agricultural productivity being plant cultivation the percentage of animal husbandry in agricultural productivity is about 45%, although the folder reserve in the depression and in the surrounding mountains could make a higher rate of animal raising possible.

At present moment more than one third of the pastures and hayfields are exposed to Southeast and Southwest. Being mildly inclined, they can easily be changed into arable areas, by strictly observing the agrotechnical rules.

It is well-known that the basic cultivated plant is the potato, and on much smaller territories, the rye, barley, oat or wheat.

The crops per hectare are low. In our opinion this happens because in most of the cases the territories to be cultivated are badly chosen. The market for agricultural products is very limited, incomes are minimal or inexistent, the development of agricultural infrastructure at present and in the next few years has little chance if the present agro-structure is maintained.

About 44 % of the active inhabitants of the depression are farmers. (landowners). If we also include those who work in other economic branches and perform agricultural activities to obtain a supplementary income, than this percent raises up to 70 %. In the Giurgeu depression there is an aged landowner population, involved in agricultural activities. Younger generations are either not interested in farming or do not have the required agricultural knowledge. To give a new impetus to agriculture in this reason, the newest scientific knowledge and agricultural methods must be applied.

The Present Requirements of Property Planning in the Giurgeu Depression

In the introductory chapter we presented the main points of view of an ecology-based property planning which corresponds to the requirements of the European integration. Then we pointed out that the introduction of a multifunctional environment-oriented agriculture in the Giurgeu depression is the only possible way to include the ecological aspect and the recreation possibilities. In what follows we wish to mention those important phases which are indispensable for the improvement of small farm activities, phases which have appeared in the last few years.

The first step of property planning is to build up a planned program which has to be carried out considering the following:

- a) Potentialities: where and who wants to run a farm
 - Territories, settlement and natural potentiality, dwelling place
 - The landowners' educational abilities and performance
 - The existing buildings, machines, financial possibilities
- b) Intentions: what one wants/ what one can do
 - Production and agricultural profile

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- The planned period of activity
 - If one wants to work in agriculture as a full time occupation or as a supplementary activity
- c) Market possibilities: the profit one can obtain
- Selling possibilities
 - Cooperation possibilities
 - Competitions, sponsorship possibilities

If possible, the place must be chosen according to envisaged agricultural aim. If the place is a given one, its properties (natural values, ecological sensitivity, agro-ecology, technical and settlement structure) must be evaluated.

The agro-ecological properties decide on the plants to be cultivated, the attainable yields, the branch rates, the animal-raising possibilities and, in the last resort, the profit capacities.

The inventory of natural values and the environment sensitivity of the territory indicate land claim of a defensive nature.

The most important element of permanent efficient and environment-sparing agriculture is the cultivation and nature conservation aimed land usage plan, the formation of such plant species, types and structures which best satisfy the habitat potential and environmental requirements. On this, one can build up the animal husbandry capacities, the probably yield qualities and so on. The most important points of this examination process are: configuration structure, plant structure, property measurement, soil fertility estimation and balance of labour force.

Configuration (Ecological Infrastructure)

The first thing to do in the land usage plan is to mark out the undisturbed places and the cultivated territories, to separate and to include them into a network. During the formation of the biotope network system one must perform the evaluation of the already existing living places, the foundation of new biotopes and their organization into a network, in such a way that their territory – even in the regions with the best potential – could reach up to 7–12 % of the entire land. As a result of the biotope network system, an area structure will come into being that gives the permanent efficiency of agricultural conditions, the achievement of its ecological infrastructure. Only after all this has been done, can we enter into the cultivation area and determine the accommodating plant structure, the economic system and cultivation technology.

The Plant Structure

The plant structure must accommodate to the potentiality of the habitat. On the basis of habitat suitability and cultivation traditions we can determine main, supplementary and hypothetical plant species. This means how favourable to the cultivation of different plant species the habitat characteristics of a given agro-ecological sector and of cultivation traditions are. From both an economic and an environmental point of view a good solution is if we so put together the plant structures that in the property area there will be main and supplementary, maybe hypothetical cultivated plant species. Modern property planning totally excludes the absolute character of tradition and this has a bad influence on the agricultural development in the Giurgeu depression.

Property Measurement

Property dimension depends upon many factors, the most important being: the available labour force, the fertility of soils, the rate of area usefulness, the rate of plant cultivation, animal husbandry, and so on. If animal husbandry is based on own fodder reserve the dimension of the

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property has to be larger. In this case, a more or less closed cycle of farming is done and 50 % of the land is cultivated with fodder and 50 % with the other plants.

Another possible way is to base animal husbandry on purchased fodder. In this case, at property measurement one must consider very strictly the manure-reception capacity of the field, because it is not sure that one can put a large amount of manure safely in fields used for plant cultivation – as opposed to those areas where fodder plants grow. In this case a long-term collaboration between a plant-cultivating farmer and the predominantly animal breeder becomes justified.

In property planning one must take into account the fertility of the soils and the available labour force (both in a physical and professional sense).

To conclude, the starting point in modern environment-oriented property planning must be the ecological, natural condition system. The forming of the ecological infrastructure (a proper space structure) and the building up of a biotope network system mean land withdrawal, while their sustenance means work and capital investment.

That is why a genuine assistance system has to be worked out, to properly remunerate this occupation and to compensate lack of income.

References

Ángyán et all. (1999), *A természetvédelmi, ökológiai szempontok üzemi szintű integrálása a mezőgazdasági birtoktervezésben*, MTA Földrajztudományi Kutatóintézet, Budapest.

Berényi, I. (1995), *A falusi térség átalakulásának új jelenségei*, Pro Geographia Humana, ELTE, Budapest.

Roșu, A., Ungureanu, I. (1977), *Geografia mediului înconjurător*, Editura didactică și pedagogică, București.

Seer, M. (2001), *Diagnoza spațiului geografic al depresiunii Giurgeului*, referat 2, Cluj Napoca (manuscris).

Surd, V. (1993), *Introducere în geografia rurală*, Editura Interferențe, Cluj Napoca.

******* (1999), *Metode agricole de producție proiectate să protejeze mediul și să mențină peisajul rural.*