

THE IMPACT OF THE AGROTECHNOLOGIES ON THE RIVERS BASINS. CASE STUDY – THE IMPACT OF THE LIVESTOCK BREEDING ON THE IALOMIȚA RIVER BASIN

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Abstract

The experiments and the analysis studies of the territory, as well as the environment projects based on the ecological equilibrium observance have highlighted the concept of environmental sensibility, lately.

The method of the ecological sensibility analysis of a territory used in the present research assumed the geo-hierarchical overlapping of the territorial plans, thus getting the evaluation resultant map of the environmental components vulnerability on different pollution levels, function on the type, intensity and nature of charge. For exemplification, the potential impact in the Ialomita river basin under the dangerous action determined by the livestock breeding on the studied territory has been analyzed.

The resultant thematic map with regard to the vulnerability of the territory to the livestock breeding activity allows the choosing of the optimum designing site of such an investing objective, to which the ecological risk to be minimum.

Key words: environmental sensibility, vulnerability, thematic map

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MATERIAL AND METHOD

The working methodology comprised three important aspects (Gisotti, G., Bruschi, S., 1991):

1. choosing the agricultural terrain with different grades of sensibility;
2. impact evaluation;
3. compatibility analysis.

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The territories individualization with a certain sensibility to a given action has been done by following three procedural phases (Petrescu, N., Magdalina, I. 2009):

- the analysis of the reference territory knowledge;
- the individualization of the environment systems and the connections between them;
- the territories classification as the study object.

The choosing criterion of the reference territory was fundamented on the critical confronting principle of a standard area with different characters, function on the physico-biotics aspects or/and urban or productive existing or potential arranging on that territory.

Next, there was created a database well-informed with regard to the physico-biotics data of the studied territory and, then completed with data referring to the productive arranging existent in the area.

In order to create the database, the information were collected from different sources, such as the regional thematic cartography, statistic data, monographies, direct dialog with the population of the area, with the landowners, and

the owner of the productive companies who, in time have taken actions on the respective area.

For this purpose, thematic maps have been elaborated for each situation:

- topographic, soil usage, pedological, geolitical, surface waters, depth waters, protected areas, urban arranging, productive arranging.

The working scale was 1:25 000 and a general evaluation of the antropic action extend of the reference area was done. It was also done a population census function on the age, natural resources of the area, productive firms in the area, the economical firms classification in three categories – industrial, extractive and agricultural, the classification function on the size, productive capacity etc.

Particularly, a special attention was paid to the antropic activity selected or to the selected domain and it resulted that the ecosystem was affected by the polluting action of the livestock breeding. Such a transfer and harmonization procedure of the territorial data allowed the achievement of some thematic maps for each considered ambient component affected by the considered antropic action (Sorlini,C., Vittadini, M.R.,1989).

RESULTS AND DISCUSSIONS

The last lecture phase of the territorial reality is represented by the individualization of the reference ambient systems and their

components, function on their tolerance to the antropic activity.

The individualization of the antropic activities (livestock breeding) that can alter the environment was done on different answer levels of the territory to the antropic action (livestock breeding action).

For example, from agronomical point of view, damages caused to the agicultural territories in relation to the cations contribution (K, Na, P, N, etc.) that can modify the ph were determined. There are also some other situations when pollution can be directly produced by discharging the animals residua into the emmitent, the microorganisms, the nitrates and polluted depth waters in case of the permeable soils.

In case of high slopes territories, where livestock breeding farm are present, beside the environmental impact previously presented, there are also present soil errosion degradation phenomenon.

In other terms, there was established a convenient scales of values or of quality which is called ecological sensibility scales of the territory (low, medium, high) on which bases, each environment component was evaluated for each modification in particular. For each action (project), for the same thematic, the ecological sensibility scales of the territory were determined (*table 1*).

Table 1

The conventional scales of the qualitative evaluation of the resources relativ to the physico-byotics and built systems

High sensibility area	Park-dedicated areas of instability,waters, permeable terains, forests
Medium sensibility area	Areas with medium risk of insatbility – high, medium-permeability soils – high, trees or vinegard terraces
Low sensibility area	Stable areas with medium stability – low, soils with medium permeability – vatriable, terains with pastures and hay-fields
Bulit system	
High sensibility area	Street areas Turistic interest areas, industrial areas and urban centres
Medium sensibility area	Areas with livestock breeding companies and the respective loading given by dejections; in this areas the minimum distances required for new livestock breeding locations must be taken into account.
Low sensibility area	Empty areas

In operational terms, the synthesis maps got through the territory sensibility analysis evaluate critically the thematics of the reference unit by the geo-hierarchical overlapping of the thematic maps based on the McHarg method. The thematic maps got represent the description on bidimensional

support of all considered ambient components, as well as the qualitative classification, function on the sensibility to a given action, the representation scale being 1: 25 000 (Fig.1, Fig.2), (ESRI Arc Gis and Arc Scene 9.2).

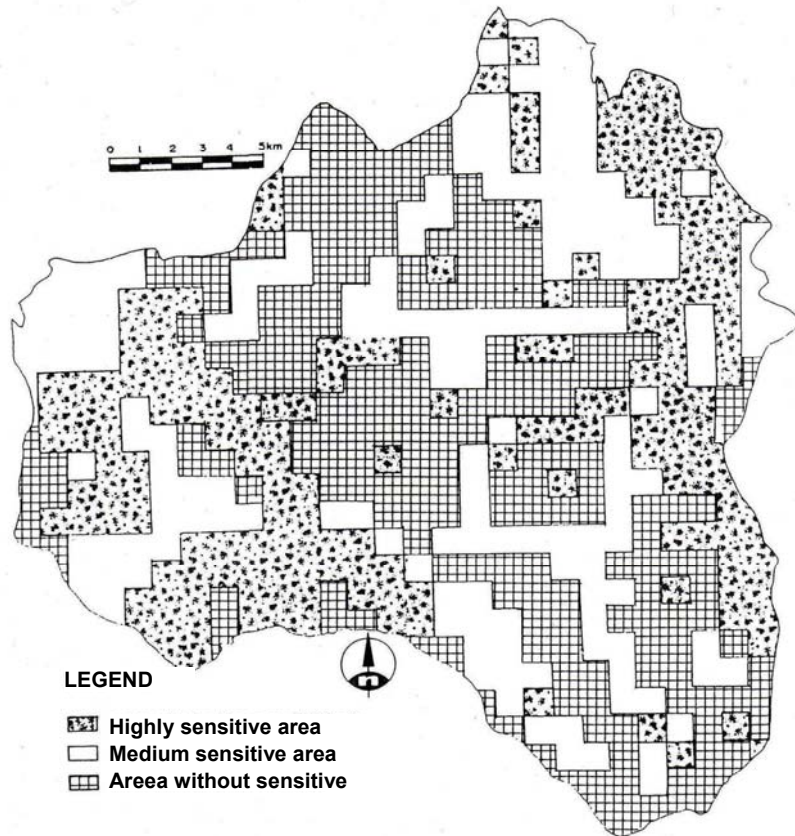


Figure 1 – Synthesis map of the built system

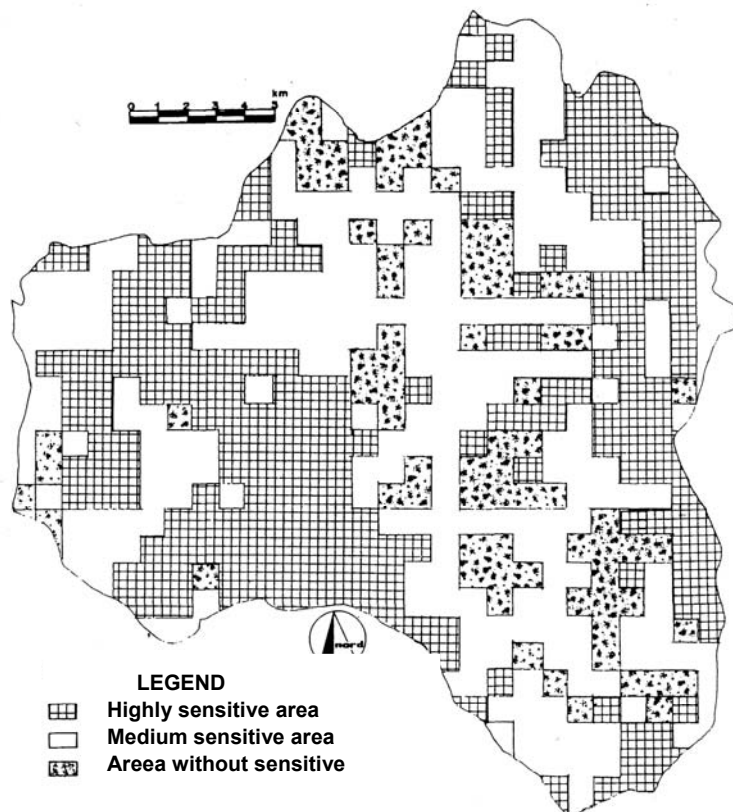


Figure 2 The final synthesis map of the phytosociological factors and of the built system

CONCLUSIONS

The study finality was that of indicating and validating a methodological proposition for the potential and actual sensibility analysis of the territory and, of preevaluating the specific interventions of reducing the impact on the territory given by the agro-technology, so that, the development of the productive activity of the agro-zootechnical companies should not be limited.

The environmental components analysis relative to the reference territory were individualized and described as main characteristics of the antropical and physical environment. The geo-hierarchical overlapping allowed to obtain some resultant maps able to represent a juridical criteria with regard to the susceptibility degree of the territory, with regard to some livestock breeding companies locating.

The synthesis map represent a complex of criteria and recommendations with regard to exigencies used in successive evaluation of compatibility between the types of livestock breeding companies and the territorial typology.

Locating a livestock breeding company within a territory can be done only if the territorial transformations do not exceed some limits from

the point of view of the natural resources that can be affected.

As a result of the research done and referred to the reference territory, it resulted that its sensibility to the antropic action (livestock breeding) presented the following percentage:

- high sensibility = 45.20 %;
- medium sensibility = 38,00 %;
- low sensibility = 16,80 %.

Meaning that, the areas which can receive a loading given by the intensive-type livestock breeding are very little. Under the present conditions, there was obtained a classification of the territory sensibility for each of its examined components, by using the geo-hierarchical overlapping of the thematic plans in their complexity.

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