Study on the Agricultural System of Băişoara Commune, Cluj County (Focused on Grasslands Status)

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Abstract. Over 30% of Romania’s surface is occupied by mountain areas. Natural and human systems are particularly vulnerable to the stresses of natural and social order. Our study aims to analyze the specific agricultural systems of Băişoara commune (focused on grasslands status) in relation with population dynamics and activities. It was found that there is a close relationship between the economic development of the commune and the level of intensification of the agricultural system. In this paper are presented data regarding the demographic evolution, the agricultural surfaces, and as well as data regarding the ratio between the number of animals from the village in a certain period of time and the directions of development of grasslands surfaces. It is known that grasslands are in a process of degradation and one of the reasons could be the miss accordance between the number of animals and grassland’s productivity, or the early spring grazing, before the installation of a stable vegetation cover, or as a result of an inadequate management.

Key-words: mountain area, agricultural system, population, animals, grasslands.

INTRODUCTION

Farming systems and rural settlements were, as is confirmed by the research in agricultural history and the history of civilization (Childe, 1951, Flannery 1965; Eliade, 1976, Toynbee, 1997), the first man-made ecosystems. From the far away period of early agriculture it was observed the close relationship between cultivated land and grassland […]. This relationship led to the genesis of the organic structures of the complex farming systems, similar to natural ecosystems (Puia and all, 2001).

The particular importance attributed to agricultural and pastoral practices in the development and transformation of the landscape is explained primarily by the fact that all human societies at last depend on agro-pastoral systems as a basis for their subsistence and the pole of other economic sectors. Secondly, the conditions more or less favorable for the development of each territory for agricultural and pastoral practices were a major factor in the establishment of human communities, during the transition period, from nomadic to sedentary life (Pedrosa si colab., 2007).

MATERIALS AND METHODS

Following the ascertaining that lately, a large area of grasslands from the Apuseni Mountains is abandoned, we decided to analyze the evolution of the ratio of natural grasslands area and the number of animals, for a certain period of time. For achieving these purpose we used data regarding demographic evolution, the number of animals, as well as data about agricultural surfaces. These were taken from the Agricultural Registers of Băisoara commune, P.U.G.-1998 and P.U.G.-2010, on which we focused our study.

Băisoara is situated in the south-west of Cluj County, 38 miles away from the county residence and 35 kilometers from the nearest town - Turda (Fig. 1). Related to the natural
environment the village is situated in the mountain area of the Apuseni Mountains, on the north-east of Muntele Mare and south of the Gilău Mountains, in the river basin of the river Iara.

The natural conditions of soil and climate are less favorable for the cultivation of agricultural plants, being a limiting factor on cultivated species and their cultivation area.

In order to realize the vegetation study, a grassland which is representative for Băişoara commune was selected, namely Găbriana meadow. The study was realized in the autumn of 2010, by using Braun–Blanquét method, method which assumes the description of a 100 m² vegetation surface. Găbriana grassland is found on the altitude of 1530 m, being situated on the area of Băişoara commune. With a 24 ha surface, the grassland is used by grazing, in the period between June and September, by the local’s animals. The degree of vegetation coverage, structure and percentage of participation of major groups of plants are made by researcher. The results obtained were used in the determination of the total area covered by vegetation and the grazing capacity. There was established, also the trend followed in the vegetation evolution.

RESULTS AND DISCUSSIONS

After 1975 the population of the commune has decreased, mostly because of humans need to ensure a safe income. Thereby most of the inhabitants have moved to the plain areas: Mihai Viteazul, Corneşti, Bogata, Petrești, Deleni and Turda, were they had a safe work place on the Agricultural Production Association (CAP) and factories, and where they received land to build their houses.

It was noticed that over the time the population of the commune as well as the attractiveness for demographic stability have declined, mostly because of the economic activities developed in this area, which doesn’t offer the necessary income of a decent living (Table 1).
The evolution of Băişoara’s population

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<tbody>
<tr>
<td>No. Inhabitants</td>
<td>3630</td>
<td>3040</td>
<td>2704</td>
<td>2311</td>
<td>2272</td>
</tr>
</tbody>
</table>

Source: Local document of Băişoara commune, Cluj County, 1990-2010; National inventory on the number of people and houses from Cluj area, 1980, Central Department of Statistic from Cluj-Napoca.

In the evolution of the villages agricultural system there is a decreasing trend of agricultural areas (Table 2). The reasons why the land is no longer worked could be, first of all the increased cost of fuel, which makes mechanized work to be profitable only in farmers associations, secondly the feral population which increased a lot in the mountains and creates real problems, and thirdly because the local population has aged, while the young people left to seek work abroad.

The natural conditions of soil and climate are less favorable for the cultivation of agricultural plants, being a limiting factor on cultivated species and their cultivation area. Therefore cereal grain is practiced only in areas located at lower altitude namely Băişoara, Săcel and Moara de Pădure. The main cereals cultivated plants are: wheat, rye and corn. Yields achieved are mediocre. In other villages of the commune, situated at higher altitudes, there are basically grown only the potatoes.

Animal husbandry is the main branch of agriculture, meadows and natural grasslands favored and still favors this occupation.

Starting with 15 of May, animals are taken to the mountains for grazing. On autumn, close to the 14 of September, all animals are brought to graze, and in order to prepare for winter sheep are guided to the green land of the village and to private property.

Over the spring season until late autumn, cattle are grazing a high quality grass that grows naturally in the forest nearby, and on the area of the mountain.

After 1989 the number of animals has decreased mostly because of the population with a high degree of aging, the absence of milk collection points, absence of slaughter for calves fattened for meat valorization and not on the last place because of the low price of animals and animal products (Table 3).

Population has refocused to other activities, and now most of the people are working in construction and tourism, fact reflected by the 900 households and the same number of holiday houses (of which 500 are in Băişoara Resort and the rest in Frăsinet and Moara de Pădure).
The evolution of Baisoara’s number of animals

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<tbody>
<tr>
<td>Cattle – at the end of the year/heads</td>
<td>1968</td>
<td>1961</td>
<td>1625</td>
<td>1114</td>
<td>600</td>
</tr>
<tr>
<td>Sheep – at the end of the year/heads</td>
<td>3625</td>
<td>3496</td>
<td>3667</td>
<td>1637</td>
<td>800</td>
</tr>
<tr>
<td>Goats – at the end of the year/heads</td>
<td>77</td>
<td>2</td>
<td>18</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Horses – at the end of the year/heads</td>
<td>193</td>
<td>209</td>
<td>258</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Pigs – at the end of the year/heads</td>
<td>1034</td>
<td>1051</td>
<td>1071</td>
<td>630</td>
<td>400</td>
</tr>
</tbody>
</table>

Source: Statistic notebook of Băişoara commune, 1975; Central department of statistics from Cluj-Napoca; Local document of Băişoara commune, Cluj County, 1990-2010.

As a result of the vegetation study 5 types of grasslands were identified. Between them the first two more representative for the entire area are Festuca rubra and Nardus stricta. Both types are included in the VIII category, category which describes a grassland with poor quality. Festuca rubra type is characterized by a floristic composition in which the predominant plants are the perennial gramineae (50%) (Table 4).

<table>
<thead>
<tr>
<th>Species</th>
<th>%</th>
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<tbody>
<tr>
<td>Festuca rubra</td>
<td>40</td>
<td>3</td>
<td>120</td>
</tr>
<tr>
<td>Agrostis capillaris</td>
<td>5</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Nardus stricta</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Carex-montana+Luzula campestris</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Brickenthalia spiculifolia</td>
<td>10</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Hypericum perforatum</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Vaccinium myrtillus</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Polytrichum commune</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

The predominant species with 40% participation is Festuca rubra. In this way is outlined a poor quality grassland (the VIII class –poor), quality given also by the load of improper animal in relation to its productivity (0.41- 0.60 UVM/ ha (Table 5), by early spring grazing, before the installation of a stable vegetation cover, and also due to a default management.

Over the time grassland situation has suffered important changes, therefore the overgrazing phenomenon characteristic for the year 1990 was replaced with a under grazing phenomenon (Table 5).

Grassland exploitation in Baisoara commune, during the years 1976-2010

<table>
<thead>
<tr>
<th>Years</th>
<th>Grazing capacity [UVM]</th>
<th>The existent number of U.V.M. [UVM]</th>
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<tbody>
<tr>
<td>1976</td>
<td>1153.6</td>
<td>2505.5</td>
</tr>
<tr>
<td>1980</td>
<td>1233.6</td>
<td>2488.4</td>
</tr>
<tr>
<td>1990</td>
<td>1228.4</td>
<td>2290</td>
</tr>
<tr>
<td>2000</td>
<td>1657.6</td>
<td>1277.8</td>
</tr>
<tr>
<td>2010</td>
<td>1656.4</td>
<td>796</td>
</tr>
</tbody>
</table>

260
CONCLUSION

• Over the years 1976-2010 in Băişoara commune were important changes in the categories of land use, livestock and number of inhabitants.

• After 1989 the number of animals decreased greatly in Băişoara mostly because of the aging population, the absence of milk collecting points, absence of slaughter for calves fattened for meat valorization and not on the last place because of the low price of animals and animal products.

• Starting with the idea that an oscillation in the number of animals has a high influence on grassland’s composition, it was established the direction in evolution of Băişoara’s grassland. So it was noticed that while between 1976-1990 the grassland was overgrazed, on 2010 the situation has changed, such that lawn is exploited not even half of its capacity.

• As a result of the aging of population and the decreased in the number of animals, the surface of Gabriana grassland, an area specific for Apuseni Mountains, is decreasing (de la 100 ha-1940, la 30 ha-2010).

• Grassland type specific for Băişoara commune is Festuca rubra, which is characterized by a fodder of poor quality, and by a small degree of coverage.

• As a result of the observation realized on the vegetation cover it was noticed the constant degradation of this. The lack of an adequate management favors the occurrence of worthless species.

REFERENCES

5. National inventory on the number of people and houses from Cluj area, 1980, Central department of statistics from Cluj-Napoca.
11. ***.http://maps.google.ro/maps