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CURRENT LAND USE IN THE LOWER BÎC PLANE, REPUBLIC OF MOLDOVA

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Abstract: In terms of identification and utilization, land categories, were adapted to the specific classification of the Moldavian cadastre as well as some classification items from the Romanian General Cadastre. Here are represented by maps for every utilization category and are given statistical data about every category. Also is made an analysis of all the land use categories and is given a general presentation of the conditions and state in which these land are kept.

Introduction

The studied area, from geomorphologic point of view, is given by the fragmentation of the relief in the forms of mixed sloping land that are oriented from northwest to southeast separated by dominant valleys.

The actual land use was realized according to the Land Cadastre of the Republic of Moldova (Land Cadastre of the Republic of Moldova, 2016), which sometimes seems to be insufficiently detailed. For this reasons we have adapted some aspects of the categories of use to the General Cadastre of Romania.

The main categories of land use in Campia Bicului Inferior are represented by agricultural lands (arable land, pasture and hayfields, vineyards and orchards); areas occupied by forest vegetation (forests, forest plantation and forest protection belts); surfaces occupied by water (lakes, water basins, reservoirs and marshes); constructions (divided into constructions and yards and industrial constructions); roads (national, local and streets) and other lands.

1.Data and methods

For the identification, mapping and analysis of the land use categories and subcategories, 0.4 m orthorectified aerial imagery were used (2007 edition), data

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available on geoportal.md (site of the Land Relations and Cadastre Agency of the Republic of Moldova) and other data available for visualization and land use. Last but not least, were made a number of field works in order to have a clear picture of the spread of land categories and subcategories and the validation of the data obtained from deciphering orthorectified aerial imagery. With the help of GIS technologies, we were able to represent thematic maps related to current land use in the field and to perform statistical analysis using data from the table of attributes of the vector layer.

2. Results and discussions

All land use categories in the plain were divided into two groups: agricultural land and non-agricultural land.

The agricultural land occupies the largest area of the total area of the plain, 82.58% (188,433.18 ha) and the non-agricultural land 17.42% (39,741.18 ha respectively) (Table).

Table. Categories and subcategories of land use in Lower Bîc Plane (2007)

Categories and subcategories	Surfaces (ha)	% from total Surface
<i>Arable</i>	145 028.80	63.56
<i>Multiannual plantings</i>	17 358.54	7.61
<i>Vineyards</i>	10 877.88	4.77
<i>Orchards</i>	6 480.66	2.84
<i>Pastures and hayfields</i>	26 045.84	11.41
TOTAL AGRICULTURAL	188 433.18	82.58
<i>Forest plantations</i>	23 408.77	10.26
<i>including protection forest belts</i>	2 879.96	1.26
<i>Marshes</i>	226.76	0.10
<i>Water lands</i>	1 750.29	0.77
<i>Roads</i>	2 728.02	1.20
<i>Land with construction</i>	11 361.68	4.98
<i>Other land</i>	265.66	0.12
TOTAL NON-AGRICULTURAL LAND	39 741.18	17.42
TOTAL ON THE PLANE	228 174.36	100.00

The largest surface of the plain is occupied by arable land, which is more than half of the total area of the plane-63.6% (145,028.80 ha). This type of use was grouped in arable land – 54.74% (124,895.1 ha) and complex arable land – 8.82% (20,133.40 ha respectively). Arable land is practically spread evenly with small

exceptions (Fig.1). The pastures and hayfields occupy about 11.41% (26,045.84 ha) of the total area of the territory, being mostly spread along the rivers and on the slopes in their immediate vicinity (Fig.2).

This category was divided into three subcategories of use, namely, genuine pastures and hay fields 24,803.36 ha (10.87%), pastures and hay fields with bushes 867.99 ha (0.38%) and degraded pastures and hay fields 374.49 ha (0.16%). Degraded pastures and hay fields have a predominant spread over the upper part of the slopes, mostly on higher slopes and altitudes. One important thing in analyzing the affection of lands by geomorphological processes is that this subcategory of use, almost always, is associated with landslides.

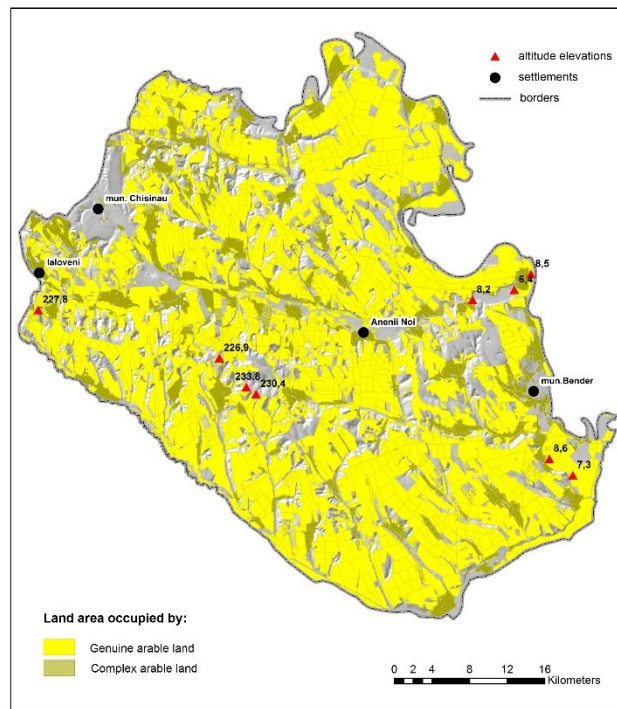


Fig. 1. Arable land

Within the territory of the Lower Bic Plane are also favorable conditions for the spreading and development of the perennial plantations, especially vineyards. These conditions are created by south-eastern slopes, the presence of the appropriate soil and the relatively dry climate (Fig.3, 4).

The vineyards occupy an area about 10,877.88 ha, which represents a share of about 4.77 % of the total area of the plain. The vineyards were divided into two subcategories: genuine vineyards and degraded vineyards. The genuine vineyard occupy an area of 6790.6 ha (2.98%) and degraded vineyards have a surface of 4,087 ha, which represents a share of 1.79% of the total plain surface. From the total vineyards plantations, the degraded vineyards occupy 37.57%. Most lands occupied by vineyards are spread in the Ialoveni and Anenii Noi districts.

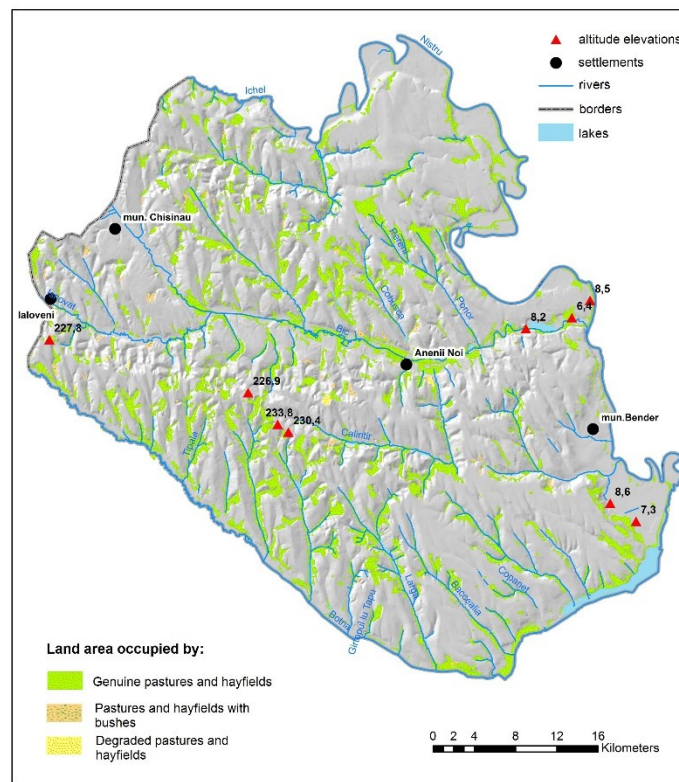


Fig. 2. Pastures and hayfields

The orchards occupy only 2.84% (6,480.66 ha) of the total area of the plain, of which the genuine orchards constitute 1.81% (4,119.25 ha), and degraded ones account for 1.03% (2,361.41 ha).

From the categories of non agricultural lands are forest plantations 10,26% (23,408.77 ha), water surfaces with 0.77% (1,750.29 ha), roads 1.20% (2,728.02

ha) followed by lands designated for construction and other lands with a share of 4.98% (11,361.68 ha) and respectively 0.12 % (256.66 ha).



Fig. 3. Vineyard plantations near the Criuleni

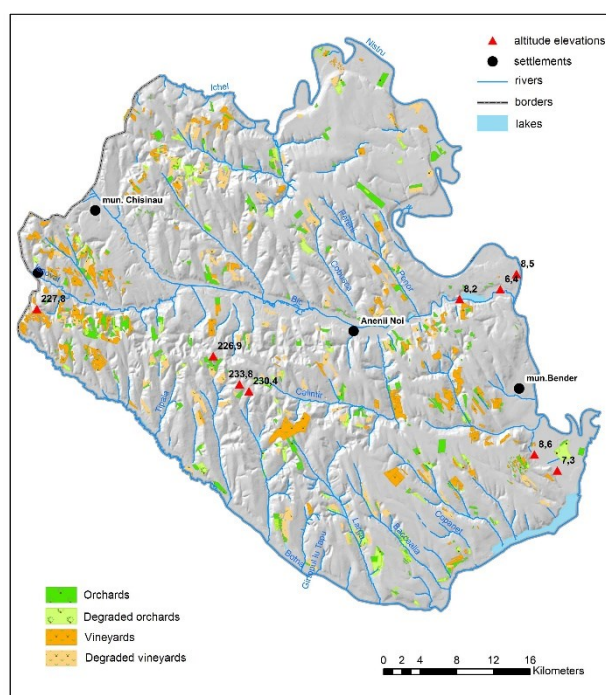


Fig. 4. Orchards and vineyards plantation

Forest plantation, including protective forest belts, account for 10.26% of the total area of the plain, which is 23,408.77 ha (Fig.5). The forest plantations cover an area of 20,528.81 ha and protective forest belts occupy a surface of 2,879.96 ha,

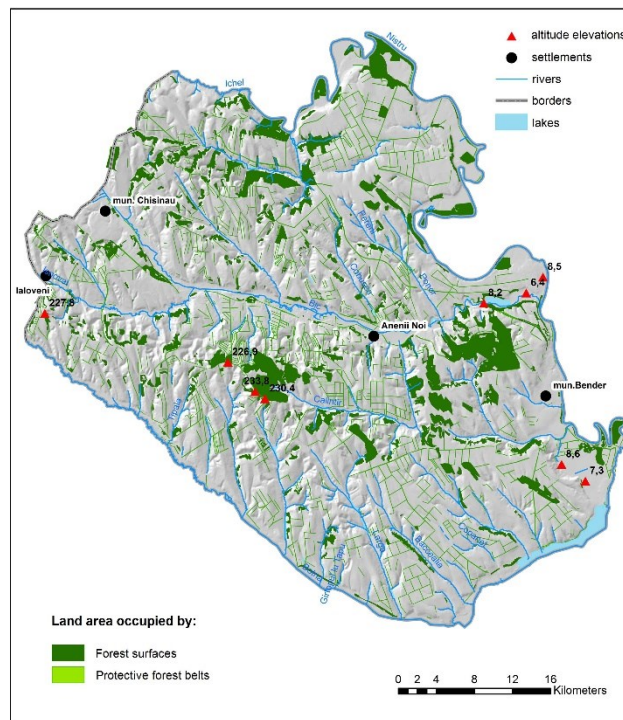


Fig. 5. Forest plantation including the protective forest belts

which represents a weight of 9.00% and 1.26% of the total area of the plain. The largest forest surfaces are spread in the north and in the central part of the territory (here is also the scientific reservation "Hirbovat")

The road network was grouped into three subcategories: national, local roads and streets (Fig.6). The streets are represented by all the roads within the localities. The share of roads is 1.20% (2,728.02 ha) of the total area of the plain. National roads represents 23.29% (2,728.02 ha) of total road surface, local roads and streets occupy 20.49% (559.04 ha) and 56.21% (1,533.52 ha) respectively. National roads intersect the plain from northwest to southwest, from north to south, from west to east, thus favoring the link between larger cities and important economic points.

They also connect with customs and cities of economic and tourist importance in the neighboring countries.

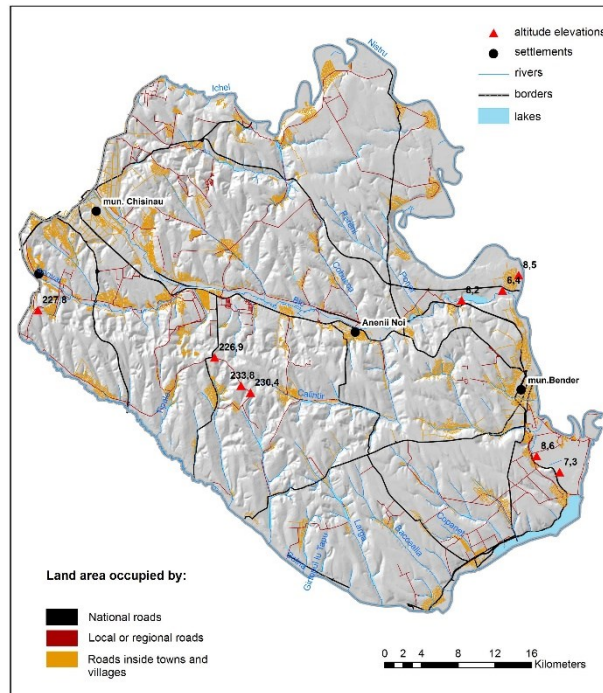


Fig. 6. The road network within the Lower Bîc Plain

The lands occupied by constructions represents a share of 4.98% (11,361.68 ha), of which 4.34% (9,892.04 ha) are represented by constructions and yards and only a small percentage of 0.64% (1,469.63 ha) are represented by industrial constructions.

The water surfaces are represented by lakes and ponds and accumulation basins, and occupy a total area of 1,750.29 ha (0.77% of the total area of the plain). Other lands are represented by quarries with no legislative regulation and the dump surfaces. This category of land occupies an area of 265.66 ha (0.12%).

Conclusions

In conclusion, we mention that the agricultural land occupy 82.58% of the total area of the researched territory, of which about 80% are arable lands, which is

above the general average in the country. This proves, once again, that the given territory is one with an agricultural economic dominance.

The forest plantations in the territory practically reach the established norm for the Republic of Moldova, leaving no less than one percent to meet the requirements, which is a positive thing.

The smallest weights have the marshes and water lands. In the case of the marshes it is a positive thing, but in the case of water lands, which do not reach even 1% of the surface of the plain, which is far below the average for Moldova, it is worrying from economically and social point of view.

Analyzing each category of land use and spreading areas, it was observed that the pastures and hayfields that are spread in the northern part of the territory are most often associated with the collapse and crumbling process, and to the center and the south of the territory this type of land use is associated with landslides. This shows that these territories have a low resistance to these processes and allow their development.

The arable land is most affected by surface erosion process. One thing no less important is that this type of use is also affected by gullies.

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