THE REHABILITATION OF THE AGRICULTURAL LANDS IN FĂGET HILLS FOR PASTURE AND HAYFIELD USAGE

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Abstract: *The land assessment represents a complex operation of establishment and naturalistic characterization of the lands, respectively of the whole environmental conditions and factors which are expressed on a certain terrestrial surface, through a system of technical indices and soil potential rating notes and the determination of the land yield capacity for different usages and plant cultures, for a specific technology, with the purpose of its qualitative and valuable characterization (Ianoş Gh., Puşcă I.,1998; Florea N., Munteanu I., 2000). The Făget Hills are located in the eastern side of the Timiş County, at 65 km of Timişoara city and at approximately 15 km by Lugoj city. This relief unit, lithological and geomorphological distinct, is located between the following geographical coordinates: eastern longitude: $22^0 23' - 22^0 25'$; northern latitude: $45^0 43' - 45^0 46'$. The researched perimeter is enclosed within a moderate continental temperate climate with oceanic and subtropical influences, with not too hot summers and soft winters. The capability classes are established depending on the presence and intensity of the restrictions which condition the usage way, depending on the prevention measures of soil degradation, arrangement requirements, and also depending on the economic requirements. The enclosing within classes was realized considering the strongest intensity of one or many natural or anthropic existing factors. The diversity of the natural conditions in Făget Hills, the numerous restrictive factors that acted and still act, create a large variety of the agricultural land yield capacity for different usage categories or of these lands for various culture plants, for fruit-wine species or for spontaneous flora. With the goal to realize an overview of the land capability for different agricultural usage categories, there was elaborated a ranking consisting of 10 capability classes. Each class comprises a range interval by 10 points, from the most favorable class – class I (91-100 points) to class X – the least favorable (0-10 points). The land grouping thus conceived was related to the whole research agricultural surface by 37942,4 ha and it consisted of summa of all soil unit surfaces, on usage categories. The potential rating notes of the soil units were enclosed within one or another range interval described by the 10 capability classes. For the usage model "pasture", the agricultural lands of Făget Hills are classified within superior capability classes comparing to those destined to arable usage. This is due to the grassland species affinity for moderate humidity excess, to the high declivity tolerance, to the increased debasification etc. Considering these, the agricultural land capability for the pasture usage is extended, especially for the classes IV (18319,1 ha 49,58%) and VI (11864,2 ha 32,11%). Unlike other usage categories, the pasture is enclosed within superior classes of capability: I (3022,5 ha) and II (2767,4 ha 7,49%) and moderate IV (18319,2 ha 49,58%). The extended surface of the sloped lands, the accentuated declivity and the excess of humidity during the aestival periods make that on these relief forms the hayfields have inferior capability comparing to the pastures (class III- 5789,8 ha 15,67%), V (16907,6 ha 45,76%) and VI (12089,5 ha 32,72%). A few surfaces are enclosed within inferior classes of capability (VII- 1186,3 ha 3,21%, VIII- 860,9 ha 2,33%, IX-114,5 ha 0,31%).*

INTRODUCTION

The actual assessment of the soil cover from the Făget Hills under quantitative aspect is not a finished realization and neither a perfect one. The methods referring to the qualitative assessment of the agricultural lands can stand changes, sometimes substantial, either as a result of certain national scientific initiatives or under the influence of some political and economical

conceptions. Also, it can not be considered as definitive the inventorying of the natural and anthropic factors which conditioned the formation, evolution and the present state of the soil cover. The changes that could be occurred in the hilly areas as a result of declivity processes (erosion, landslides), in the terrace zones (processes of stagnant hydromorphie) or in the meadow zones (because of the frequent overflowing of the Bega River and its affluents), make that these operations require to be reopened after certain time periods, depending on the intensity and manifestation way of the factors involved by the process.

MATERIAL AND METHODS

Soil sampling was made in natural position according to the methodology of pedological study elaboration, vol. I, II, III – ICPA Bucharest-1987. The preparation for analysis was made within the Office of pedological and agrochemical studies Timişoara. The analysis methods were according to the required STAS.

RESULTS AND DISCUSSION

The Făget Hills are located in the eastern side of the Timiş County, at 65 km of Timişoara city and at approximately 15 km by Lugoj city.

This relief unit, lithological and geomorphological distinct, is located between the following geographical coordinates: eastern longitude: $22^0 23' - 22^0 25'$; northern latitude: $45^0 43' - 45^0 46'$.

The Făget Hills had been individualized by accumulating thick sedimentary deposits with different granular composition, brought and deposed by the rivers descending from the mountains. By their position outlying the mountain zone, by the deposit structures and by altitude (200-400 m), these hills constitute geomorphological units well individualized through which is made the transition toward the plain domain in west and to the mountain domain in south and south-west. To the east, the Făget Hills follow the northern border of the Mountains Poiana Ruscă, at altitudes by 200-350 m.

The researched perimeter is enclosed within a moderate continental temperate climate with oceanic and subtropical influences, with not too hot summers and soft winters.

The mean annual temperatures and precipitations satisfy the necessities of growth and development required by the plants cultivated within this zone, but due to the non-uniform repartition of the precipitation, in certain periods there is recorded a deficit of humidity which must be completed with a supplementary water supply and in other periods there is registered an water excess that must be removed.

The atmospheric precipitations oscillate between 436,1 mm (1942-1943) and 915 mm (1953-1954). These quantities of precipitations could assure optimal conditions for the crop development (for wheat, maize and sun-flower the optimal amount is 600 mm, and for fruit trees the optimal amount is 700 mm).

The natural pasture is one of those ecosystems with maximal productivity. As the level of knowledge regarding the quality and quantity of the grasslands and pastures increased – concomitantly with the agriculture development in general, the humans intervened with a series of works which brought energy supplements, that makes their productivity to increase (agroecosystems), able to produce up to 1500 Gj/ha/an (Moisuc and Dukic 2002). The principle of this circuit is based on the fact that chemical substances are taken from soil or air by plants and enclosed in their own substance. From here, by consumption, they are taken by the superior trophic levels and as effect of the decomposers activity they will be re-transformed in mineral substances.

The soil, as supporting medium for vegetation existence, has a special important role because it provides nutritive elements like water and air for plants. In fact, the soil is a resultant

of the interaction between parent rock, climatic factors and the installed vegetation. Each species is developing only in certain limits of pH. Under the aspect of nutrient richness, in the fertile soils grows eutrophic plants (*Lolium perenne, Dactylis glomerata, Trifolium repens, Trifolium pratense*), in those with middle fertility - mesotrophic plants (*Agrostis tenuis, Festuca rubra, Lotus corniculatus*), and in the unproductive soils – oligotrophic species (*Nardus stricta, Anthoxanthum odoratum*).

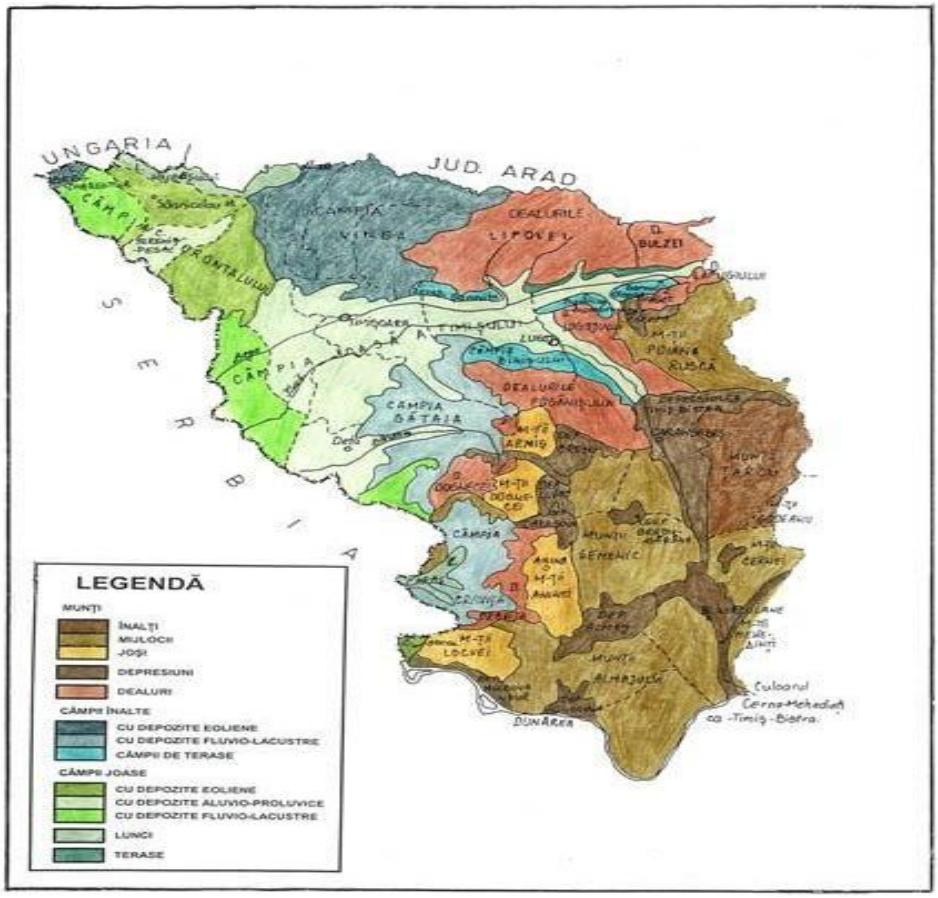
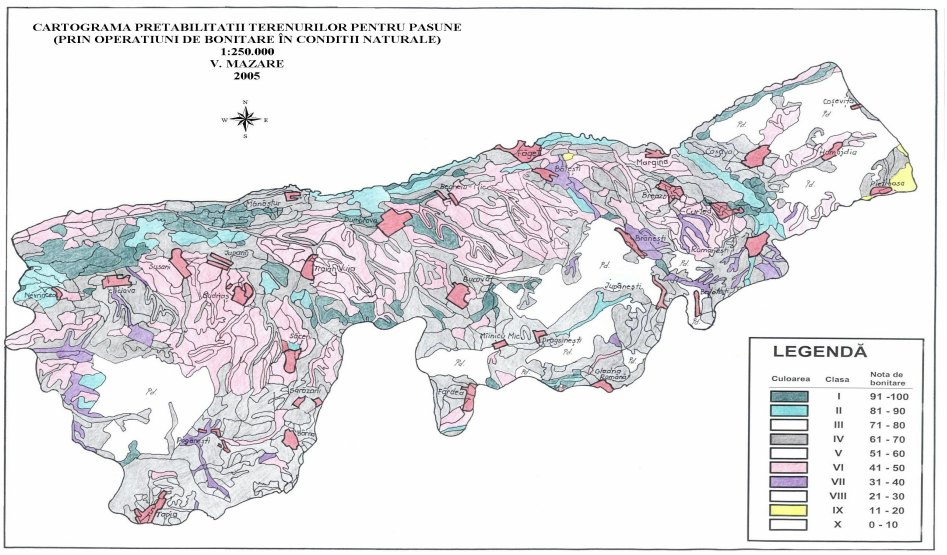


Figure 1. Geographical placement of Faget Hills within ethno-historical area of Banat

All these characteristics of the environment in general and of the soil in particular, determined a particularization of each ecological unit with reference to the pasture capability state. What must be noticed is the ranging of the pastures on the whole scale consisting of 10 quality classes, with predominance of the classes IV and VI (map 1).

Because the natural pastures and the hayfields need enhanced water amounts all over the year, it becomes normal that the most capable lands (classes I-II) be grouped within the meadow area of the Bega River and in the valleys of its main left affluents.



Map 1. Land capability for pasture within Făget Hills

Moderate to well capable for pasture are the lands placed on the versants with shadowed exposition in the north-western side of the Mountains Poiana Ruscă, around the localities Tapia, Pogăneşti, Bucovaţ (north), depression area of Fârdea-Gladna-Zolt and the eastern zone of Făget Hills: Homojdia-Curtea-Coşevița.

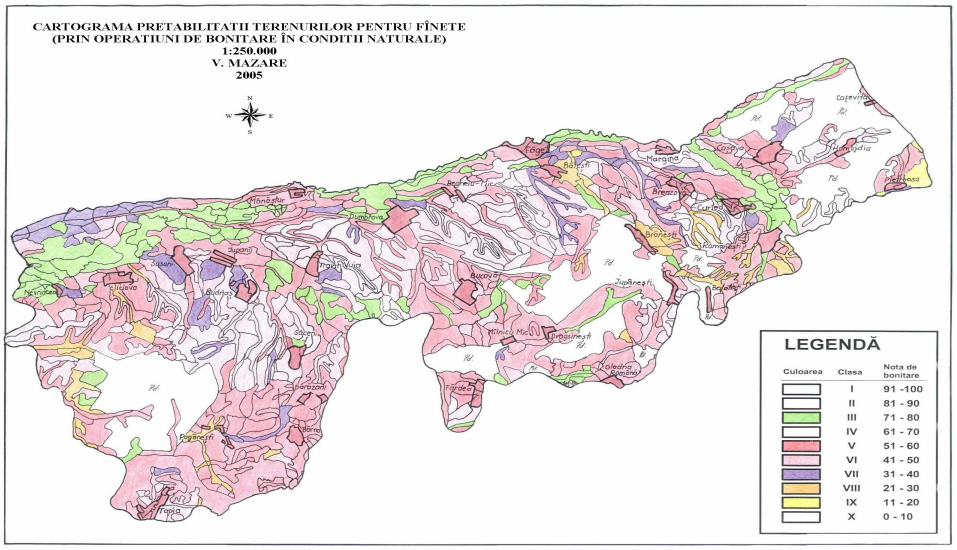
Moderate to low capable for pasture are the lands with rain humidity excess in the zone of terrace platforms from the interfluves Soceni-Sudiaş, Traian Vuia-Bucovăţ, Begheiu Mic (north) and Marginea - Româneşti.

The lowest capable (classes IX-a and a X-a) are the lands with very large slopes, intensely eroded, with reduced edaphic volume, located at the contact with the mountain, in the zone of Pietroasa and at north of Fârdea.

Hayfield is a usage category intensely exploitable by multiple actions of annual harvesting. It involves, primary, optimal climatic conditions, namely a plus of humidity and a plus of temperature grades, of course next to edaphic, physical and chemical features of the soil.

Thus, such conditions must be sought in different ecological contexts which are conditioned by the meso- and microrelief forms. First, the orographic and geographic conditions encourage the usage of Făget Hills for this purpose. The sum of the multi-annual mean precipitations values, by approximately 800 mm, is sufficient to a rapid and quality regeneration. However, there are some restrictive factors like slight lower values of temperature and land declivity which substantially reduce the amount of pluvial water stocked into the soil, the reduced available edaphic volume of some soils at the contact zone with the north/western border of the Mountains Poiana Ruscă, and also some physical features of the soil generated by their advanced stadium of evolution: increased acidity, larger amount of mobile aluminium, high nutrient leaching, as well as inappropriate physical and physical-mechanical characteristics caused by the accentuated non-permeability of the iluvial soil horizons within the terraces of the Bega River and of its affluents.

In these conditions the usage category "hayfield" is majority ranging within the interval of four quality classes (class III – class VII) (map 2), especially within the classes V and VI where are grouped approximately 70% of terrains. They occupy wet lands on the terrace platforms and on the shady (northern) versants of the hilly areas Pogăneşti, Bârna, Mâtnicu Mic, Fârdea, Romăneşti.



Map 2. Land capability for hayfields within Făget Hills

The rest of 30% of surface represents lands with high capability, located in the wet meadow of the Bega River and lands with very low capability located on the southern versants, very inclined and high drained, with water deficit in the aestival season.

CONCLUSIONS

For the usage model "pasture", the agricultural lands of Făget Hills are classified within superior capability classes comparing to those destined to arable usage. This is due to the grassland species affinity for moderate humidity excess, to the high declivity tolerance, to the increased base loss etc. Considering these, the agricultural land capability for the pasture usage is extended, especially for the classes IV (18319,1 ha 49,58%) and VI (11864,2 ha 32,11%). Unlike other usage categories, the pasture is enclosed within superior classes of capability: I (3022,5 ha) and II (2767,4 ha 7,49%) and moderate IV (18319,2 ha 49,58%).

The extended surface of the sloped lands, the accentuated declivity and the excess of humidity during the aestival periods make that on these relief forms the hayfields have inferior capability comparing to the pastures (class III- 5789,8 ha 15,67%), V (16907,6 ha 45,76%) and VI (12089,5 ha 32,72%). A few surfaces are enclosed within inferior classes of capability (VII-1186,3 ha 3,21%, VIII- 860,9 ha 2,33%, IX-114,5 ha 0,31%).

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