ANALYSIS OF LOWLAND GRASSLAND FROM JEBEL LOCALITY (TIMIŞ COUNTY) – CASE STUDY

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Abstract. *Permanent grasslands were defined in the past as natural vegetation formations, but this framing was improper because in the temperate area, as is the case of our country, grassland represents mostly secondary vegetation formations. Most of the temperate grasslands appeared after the cutting of the forest and shrub-land, respectively due to the human influence and its activities. Thus the most proper term for the grasslands from the temperate area is permanent grassland. Knowledge of the permanent grassland flora and vegetation is a very important condition having in view the obtaining of the best results after the application of the maintenance and improvement works and exploitation. In the permanent grasslands are found plant species belonging to different botanical families. They are very different considering their biological features, demands for the environmental factors, economical value etc. This great diversity is determined by the different soil and climate conditions from our country, but also by the maintenance and use intensity. The species that are found in a vegetation cover doesn't represent a random agglomeration of plant species. They represent functional units for the accumulation and transformation of the solar energy, respectively grassland ecosystems. Thus, they have distinct features, but in the same time are under direct and continuous influence of the internal factors (autogenous), ecological factors (alogenous) and the maintenance and exploitation system (anthropogenous), all those factors determining the floristic composition of the grassland. One of the most important roles of the grassland was to provide the necessary feed to the herbivores. The oldest and the most economic feed is the one obtained from natural grasslands respectively by grazing, when the animal is grazing, the humans only guarding the animals and applying minimal maintenance works. Natural grasslands from our country are very important, due to their surface, productivity and biodiversity, and due to their functions for the economy and environment. The importance of the paper topic is given by the fact that grasslands represent a natural resource of feed for the domestic herbivores, being very important for the farmers. The purpose of the work was to evaluate a grassland vegetation cover from the communal pasture of the locality Jebel from Timiş County to evaluate its condition. The researches had in view the analysis of several vegetation features as it follows: floristic composition, life-form spectre, geographical elements spectre, and ecological spectres for temperature, moisture and soil pH.*

Keywords*: lowland grassland, floristic composition, life-forms, bio-geographical elements and ecological spectres.*

INTRODUCTION

Grassland is defined in many ways, but most of the definitions do not comprise all the land surfaces that can included in this category. ALLEN *ET* AL. (2011) has formulated and detailed the multiple meaning of the grassland for the European region. Thus, considering both management categories, respectively meadows and pastures, both are considered applying a time scale; respectively there have passed at least five years since the establishment of the sward.

The intervention of the humans on the biocoenosis changes its composition and structure. Thus, the grazing cattle are mobilising the greatest aerial biomass amount in the trophic chains (COSTE *et* ARSENE, 2002).

The herbaceous layer of the grasslands is dominated in its structure by perennial hemicryptophytes that provide a complex structure of the sward (ARSENE, 2002).

According with LONATI (2005) and ARGENTI *et al*. (2011), the use of indicator values for the analysis of and interpretation of the ecological ranges of the main grassland typologies is very useful and intelligible.

MATERIAL AND METHODS

The research from this work was applied on the vegetation from a pasture from the locality Jebel from Timiş in 2018. The analysed grassland plot is placed at the exit of Jebel locality to locality Liebling on the left side of the road. The main feature of the vegetation sward of the grassland from Jebel is the mesophyte appearance, that in the region characterises the best pastures as floristic composition and quality of the forage, but these quality features are influenced by the management.

The vegetation analysis method used was BRAUN-BLANQUET (1964). There was analysed the floristic composition of the grassland and some Ellenberg indicator values adapted for the Romanian grassland species (SANDA *et al*., 1983), respectively the indicator values for moisture, temperature and soil reaction. Thus there were analysed the Ellenberg life-forms and bio-geographical elements (SANDA *et al*., 1983).

The purpose of the work had in view the analysis of several grassland vegetation features for setting of the diagnosis for the proper management.

RESULTS AND DISCUSSIONS

Characterisation of the floristic composition of the grassland from Jebel

Grassland from Jebel is dominated by the species *Cynodon dactylon*. An important contribution in the vegetation cover have too the species *Luzula campestris* and *Lolium perenne*. In the vegetation sward are present in an important rate the species: *Lolium perenne, Agropyron repens, Cichorium intybus, Taraxacum officinalisI* and *Poa pratensis.*

In figure 1 is represented the vegetation structure considering the main technological groups of plants from the grassland from Jebel.

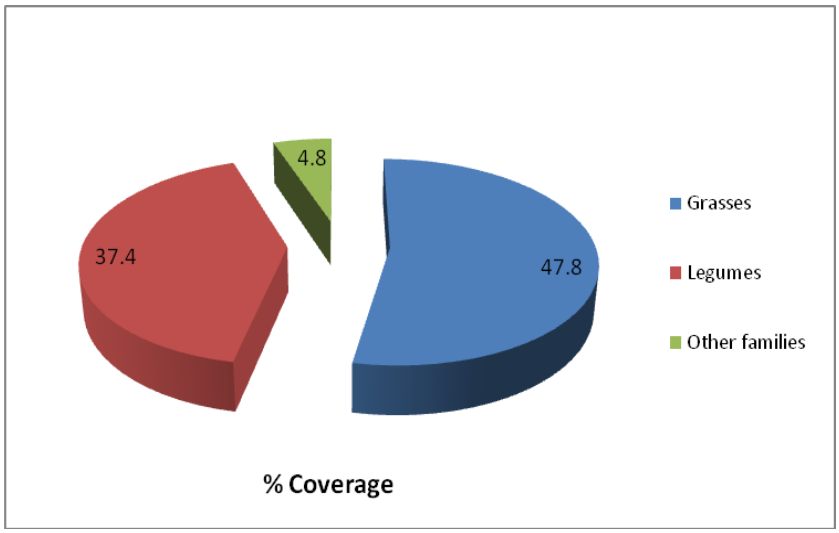

Figure 1. Vegetation structure from Jebel grassland

According with the diagram, the greatest coverage in the vegetation cover of this grassland have grasses group (47.8%), being followed by the species from other botanical families with 37.4%, the legumes species having a very low rate in the sward (4.8%)

The grassland from Jebel is very inhomogeneous, having a patchy appearance with distinct patches dominated by different species as are *Taraxacum officinale, Bellis perennis, Lamium purpureum, Veronica hederifolia, Cynodon dactylon, Vicia grandiflora, V. sativa, Bromus hordeaceus, Alopecurus pratensis* or *Cirsium arvense.*

Characterisation of the life-forms and bio-geographical elements structure of the grassland from Jebel

The life-forms and bio-geographical elements used in this paper are those elaborated by Ellenberg and adapted for the Romanian spontaneous vegetation by SANDA *et al.* (1983).

The grassland from Jebel is characterised from the point of view of the life-forms by the dominance of the hemicryptophytes (H) that have a coverage rate of 65.8%, these being followed by the geophytes (hemichryptophytes) (G(H)) with a coverage rate of 22.2%.

Therophytes-hemicryptophytes (TH-H) have a low coverage rate, respectively 2.1% (figure 2).

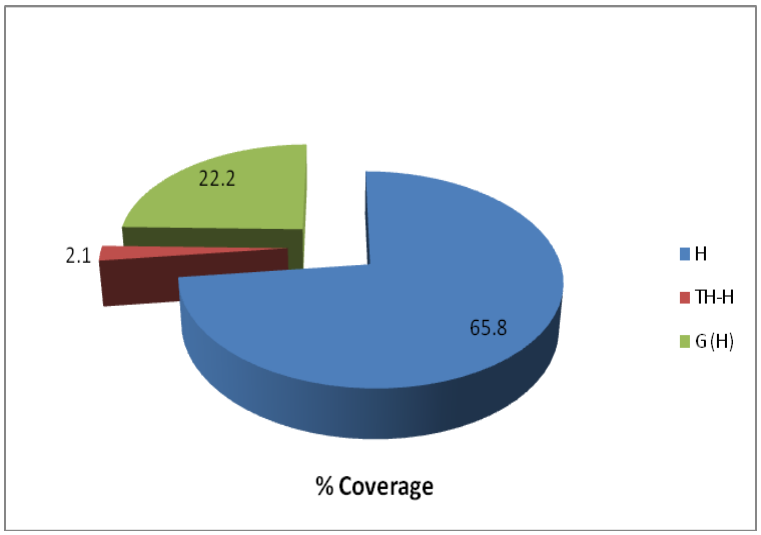

Figure 2. Life-forms structure of the grassland vegetation from Jebel

Considering the grassland vegetation structure from the point of view of the bio-geographical elements (figure 3), the greatest coverage rate have the Cosmopolite (Cosm) species, respectively 50.6%. There are present too European (Mediterranean) species (18%), Eurasian (Mediterranean) species (17.3%) and Eurasian (Mediterranean) (Cosmopolite) species (2.1%)

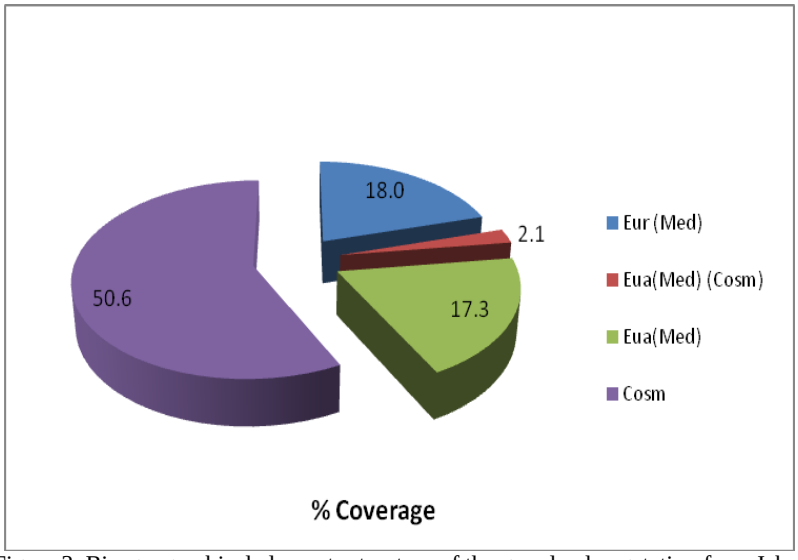

Figure 3. Bio-geographical elements structure of the grassland vegetation from Jebel

Analysis of the Ellenberg indicator values of the vegetation of Jebel grassland

The indicator values used in this section are Ellenberg indicator values adapted by SANDA *et al.* (1983) for the Romanian vegetation.

Analysing the ecological spectre regarding the soil chemical reaction indicator value (R) of the grassland from Jebel there is observed that the greatest coverage have the moderate-acid (R3), these being present in a great number as the indifferent species (R0). There are present in the sward basic soil indicator species (R5) (figure 4).

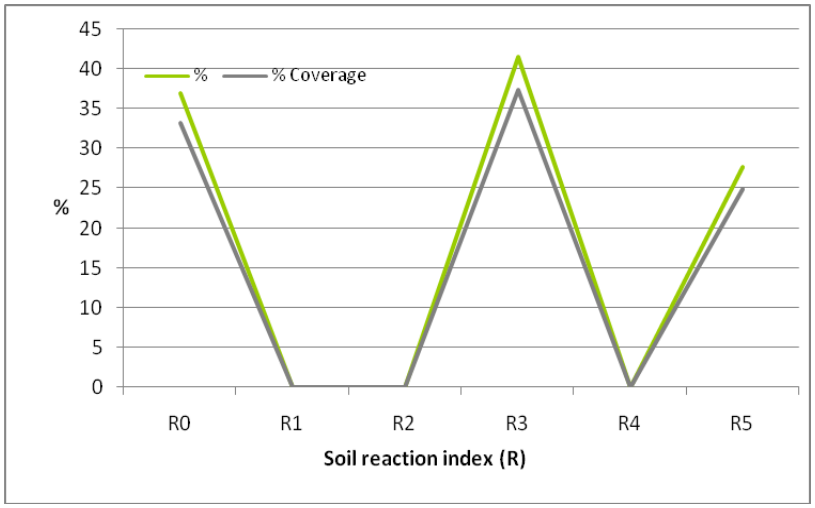

Figure 4. Ecological spectre for the soil reaction indicator values (R) from the grassland from Jebel

Considering the indicator value for temperature (T) of the grassland from Jebel (figure 5), the greatest coverage rate have the species with the centre of distribution at low altitudes in

of Central Europe (moderate thermophilic) (T4). Considering the species number, there is having the same rate the species indifferent for this ecological factor (T0) and the moderate thermophilic species (T4). An important rate have too the species with the centre of distribution in mountain areas (mesothermal) (T3) both as coverage rate and number of species found in the grassland sward.

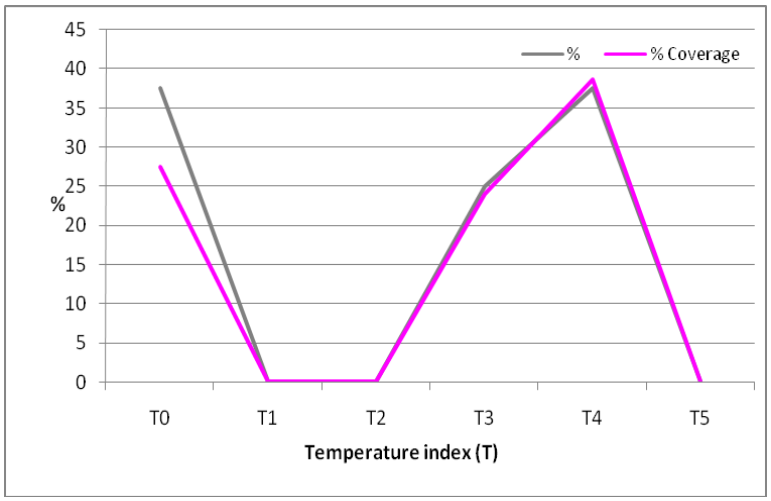

Figure 5. Ecological spectre for the temperature indicator values (T) from the grassland from Jebel

Other indicator value analysed in this work is the moisture (figure 6). The greatest coverage rate and species number have the mesophyte species (U3), these being dominant in the vegetation of the grassland. These species are followed by wet-site indicator species (U5) that have high demands for this ecological factor as are the species belonging to the rushes and sedges group. In this grassland were found mesohydrophyte species (U4), too.

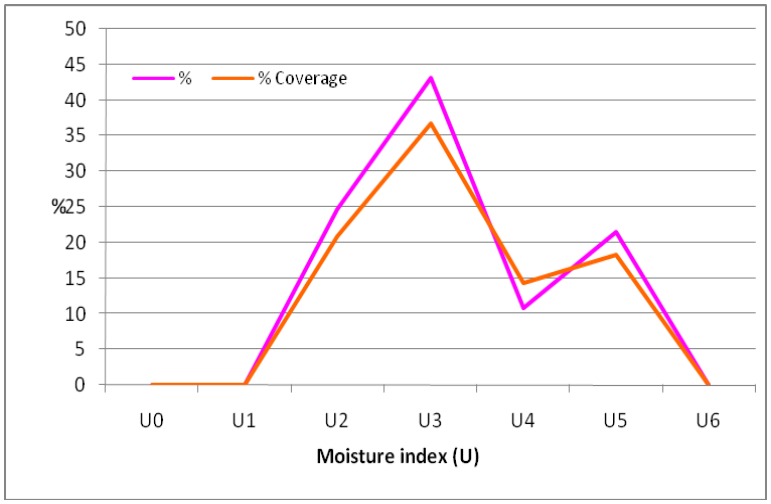

Figure 6. Ecological spectre for the moisture indicator values (U) from the grassland from Jebel

CONCLUSIONS

After the analysis of the data and results obtained in this work have been concluded the following:

- In Jebel the grassland vegetation is dominated by grasses;
- The hemicryptophytes are dominant considering the life-forms;
- The cosmopolite species are dominant considering the bio-geographical elements found in the analysed grassland sward;
- The demand for the environmental factors of the species from the analysed grassland from Jebel show that the vegetation is dominated by species indifferent to the soil reaction, moderate thermophilic and indifferent for temperature conditions, and with average demands for moisture.

There is recommended the elimination of the unconsumed plants from the pasture after grazing. Thus, there is necessary the application of the fertilization for maintenance of the sward. The application of minimal maintenance works will determinate the keeping of a stable balance of the agro-ecosystem from the analysed pasture.

There always must to be considered that any activity developed on the pasture to not modify negatively the natural balance of the agro-ecosystem and to take the proper actions in the context of the environment protection.

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