CONTRIBUTIONS TO KNOWING THE MEZZO-HYDROPHILIC LAWNS FROM CÂMPIA IERULUI

Czirjak Robert Levente*

**University of Oradea, Faculty of Environmental Protection, 26 Gen. Magheru St., 410048 Oradea; Romania, e-mail: czirjak_robert@yahoo.com*

Abstract

Association Agrostetum stoloniferae (Újvárosi 1941) Burduja et al. 1956, is distributed to in river floodplains, the water meadows end around permanent water basins in Câmpia Ierului. This study aims to analyze the phytoeoenoses of the Agrostetum stoloniferae (Class *Molinio-Arrhenatheretea* R. Tüxen 1937*) from phytocoenologic, floristic and economic points of view. Phytocoenoses association analysis present a scientific importance, with a total of 45 species, which is a very high biodiversity, some species are rare, vulnerable, endemic and need to be protected. Meadows with Agrostis stolonifera is important forage for both livestock grazing and harvesting land-mass hay. Meadows give this association a great phytomass production, but with high economic value. Because of human high biodiversity, flora and vegetation of these meadows have a natural character. Grassland maintains stable equilibrium and the ungreased bush tend to phytocoenoses progress.*

Keywords: association, phytocenoses, floristic study, life form, ecological indexis.

INTRODUCTION

Ierului Field is located in the North – West of Romania, on the administrative territory of Satu Mare and Bihor counties, being one of the lowest sections of the Western Plain. In the East and North-East it neighbours Crasnei Plain and in the North-West Careiului Plain, in the West Nirului Plain, in the East the Santăului Plain and the Sălacea – Săcueni Hillocks, but the great morphological and morphometrical resemblance with the neighbouting units makes it difficult its net geografical delimitation.

The altitude level of Ierului Plain varies between 125 m and 159 m in the North and North-East, decreasing to 100 m in the South, according to the flowing direction of Ier. The highest point it reaches is on the Cetăţii Hill from Otomani (159 m), and the lowest (100 m) on the actual valley at the border with Hungary. The annual average temperature distribution varies between 9, 7 °C in Carei, 10,3°C in Săcuieni and 10,2°C in Oradea. Analyzing the distribution of the annual average precipitation quantities, we find that they increase with altitude from 580,6 mm registered in Săcueni, to 589,3 mm in Carei, reaching 620,1 mm the quantity registered in Oradea, the highest station from the studied area.

The *Agrostetum stoloniferae* Association (Újvárosi 1941) Burduja et al. 1956 appears in the areas with excess of humidity in Ierului Field, being the most spread type of grass-land on the investigated territory. It constitutes a vegetation rich in species, that may be found everywhere with excess of humidity, where here and there water stagnates temporarily.

MATERIAL AND METHODS

To realize this study, there were performed a total of 4 local incursions, and about 8 phytocoenologic sampling on natural grasslands. The sample surfaces, homogeneous in floristic and physiognomic terms, were chosen from the studied natural grasslands. Their size varies between 2-100 m^2. The process used was phytocoenologic survey method drawn up by Braun-Blanquet.

Along with species recording, abundance and dominance (AD) were subscribed in relevées after Braun-Blanquet scale subsequently developed by Tüxen (1955) and Ellenberg (1974).

The association's synthetic table was structured after the methodology proposed by Braun-Blanquet (1964) and developed by Ellenberg (1974); therefore, in the column header of the table for the association analyzed the following have been entered: the serial number of land surveys, altitude (m.s.m.), slope, surface (m^2), coverage (%).

The following have been considered in the structure of the phytocoenologic table: illustrating or dominant species, characteristic species of the association, species for the récognition or differentiation of the sub- alliance, alliance, order, class and environmental significance [21],

Synthetic phytocoenologic indices of constancy (K) whose classes are included between I-V values, that expresses the degree of coenotic fidelity compared to phytocoenoses environment of the association has been entered and calculate don the right of the table.

After Braun-Blanquet & Pavillard (1928), the medium abundance and dominance (mAD) shows perceptually the average coverage realized in the association's phytocoenoses by the phytoindividuals of each recorded species.

Differential species allowed us to set limits in the association for the taxons that are hierarchically superior to the alliance, order and class. The association's phytocoenoses are analyzed and characterized physiognomically, coenologically and ecologically.

In this respect particular attention has been given to the analysis of life forms, floristic elements and ecologic indices (UTR) through their graphical representation.

RESULTS AND DISCUSSION

The *Agrostetum stoloniferae* Association (Újvárosi 1941) Burduja et al. 1956 (Tab. 1) were identified in the following localities: Galoşpetreu, Sălacea, Mihai Bravu, Ghileşti, Piru Nou, Galoşpetreu entry from Tarcea. It composes mezzo-hydrophilic lawns distributed on very fertile alluvial soils.

The relief on which these soils formed is plain, humid. The soil specific for this phytocenosis are Albic Luvisols present everywhere in the Ierului Valley.

The *Agrostetum stoloniferae* Association constitutes one of the very widespread types of grass lands. It populates stations with excess of humidity, where the water stagnates temporarily here and there and in the summer months the soil bleeds or even completely runs dry.

The phytocenoses of the association reunites a number of 79 species which indicates a low biodiversity. The small number of species is due to the extreme life conditions, respectively to the large quantities of salts by penetration of the exchangeable sodium in the adsorptive complex. At the surface of the lands, they may appear as a whitey crust which the plants cannot absorb.

The characteristics species of the *Agrostetum stoloniferae* Association (Újvárosi 1941) Burduja et al. 1956 is *Agrostis stolonifera* has a maximum constancy and a large abundance and dominance (81,25%).

The *Agrostetum stoloniferae* alliance (Újvárosi 1941) Burduja et al. 1956 reunites a number of 11 species among which: *Gratiola officinalis, Ranunculus repens, Festuca pratensis, Alopecurus pratensis, Trifolium repens.*

The *Molinietalia caeruleae* Order comprises a more reduced number of species: *Juncus conglomerates, Juncus effuses, Angelica sylvestris.*

From the *Phragmitetea* class limitrophe with phytocenosis of the *Agrostetum stoloniferae* association penetrates a number of about 15 species among which: *Galium palustre, Polygonum persicaria, Eleocharis palustris, Senecio aquaticus ssp. Barbarcifolius.*

Agrostis stolonifera fit very well in these stations, being able to cope with the seasonal occurrence of water, temporary floods but also to pressure. The grass of the field dominates generally solitary the analyzed phytocenosis.

The spectrum bioforms (Fig. 1) points out the preponderance in the association of hemicryptophytes (56,41%), followed by helohydatophyte (14,10%). Among the flower elements (Fig. 2) the eurasiatic species are emphasized (66,67%) and more less cosmopolite (14,10%) and circumpolar (10,26%).

The specific ecological conditions (Fig.3) impregnate to the association a mezzo-hydrophilic character (33.33 %), less mozzophile (25,64%) and xeromephile (15,39%), which reflects also in the floristic structure. Depending on the temperature, the species from the association are micro-mezzo-thermal (60,26%). As concerns the chemical reaction of the soil in association, the dominance is disputed by the euriionic species (43,59%) almost equally with those low acid-neutrophil (39,74%).

In the cariologic spectrum (Fig. 4), the polyploidy (53,85%), diploid (38,46%), diplo- polyploidy species (7,69%) are present.

These grass lands have a high quality hay production, being mowed regularly, several times a year. The average quantity of production of these types of grassland is evaluated at about 2.5 – 3 tones of hay per hectare, but occasionally it may be obtained even 5 tones / hectare.

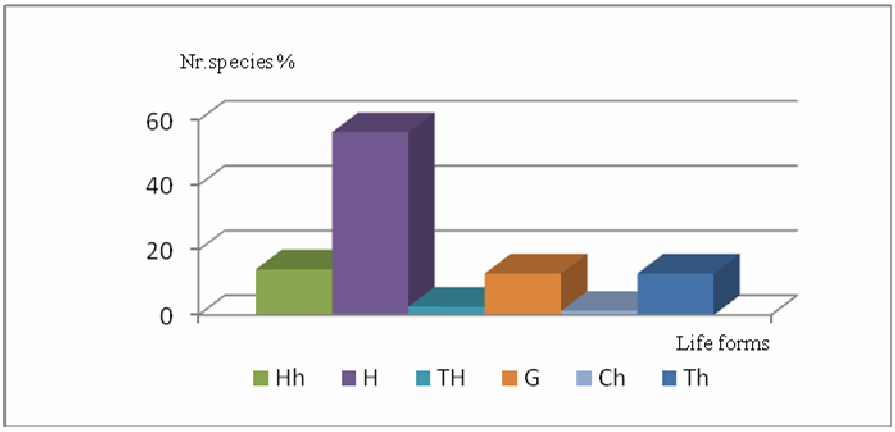

Fig. 1. The life forms of association *Agrostetum stoloniferae* in Câmpia Ierului: Hh- Helohydatophytes; H-Hemicryptophytes; TH- Hemiterophytes; G-Geophytes; Ch-Chamaephytes; Th-Euterophytes;

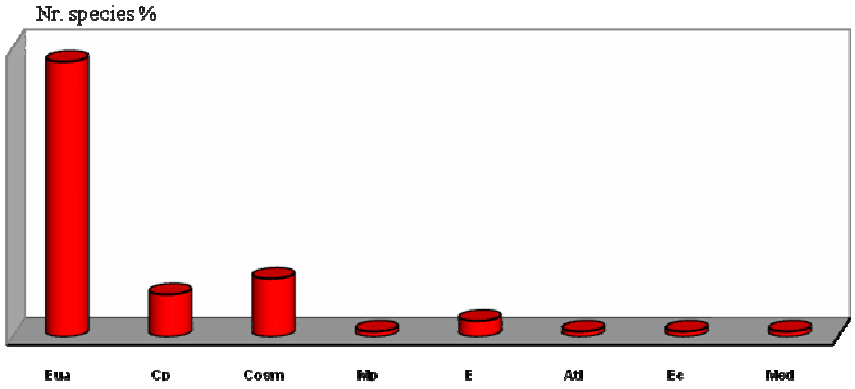

Fig. 2. The spectrum of floristic elements of association *Agrostetum stoloniferae* in Câmpia Ierului: Eua-Eurasian; Cp-Circumpolar; Cosm-Cosmopolitan; Mp-Mediterranian-Pontic;
E- European; Atl-Atlantic; Ec-Ecvatorial; Med- Mediterranian

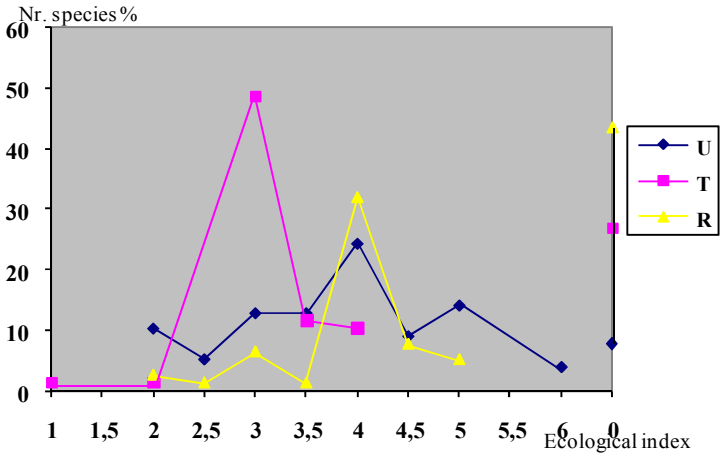

Fig. 3. The diagram of ecologic indices of associacion *Agrostetum stoloniferae* in Câmpia Ierului where: U-humidity, T-temperature, R-the chimical reaction of the soil

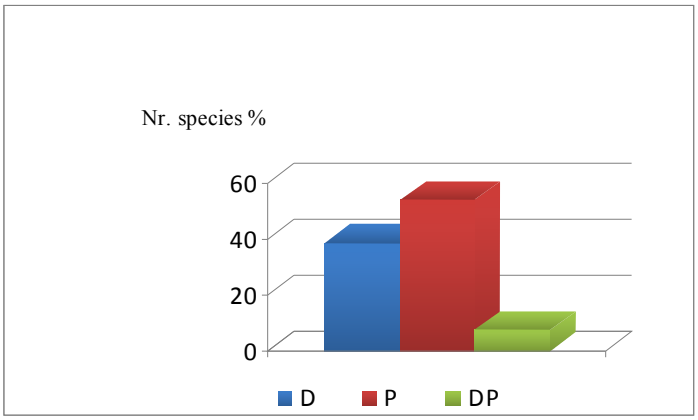

Fig. 4. Cariology spectrum of associacion *Agrostetum stoloniferae* in Câmpia Ierului: D-Diploid, P-Poliploid, DP-Diplo-poliploid

Table 1.

Agrostetum stoloniferae (Újvárosi 1941) Burduja et al. 1956
(Natural grassland from Câmpia Ierului, Bihor and Satu-Mare County)

L. f..	F. e.	U.	T.	R.	2 n	Nr. Land Surveys	1	2	3	4	5	6	7	8	K	ADm
						Slope	1	1	1	1	1	1	1	1		
						Altitude (m.s.m.)	125	125	160	162	163	157	160	130		
						Surface (m^2)	16	20	30	25	15	25	40	15		
						Coverage (%)	90	100	100	90	100	100	100	100		
G-Hh	Cosm	5	0	4	P	As. Agrostis stolonifera	5	4	4	5	5	5	5	5	V	81.25
						Agrostion stoloniferae										
H	Eua	4.5	3	4	P	Gratiola officinalis	.	.	1	+	+	+	+	.	IV	0.88
H	Eua(M)	4	0	0	P	Ranunculus repens	.	+	.	+	+	+	+	+	IV	0.75
H	Eua	3.5	0	0	D	Festuca pratensis	.	.	.	+	+	.	1	.	II	0.75
H	Eua	4	1	2	P	Alopecurus pratensis	+	.	.	+	+	+	.	.	III	0.5
H	Eua	3.5	0	0	P	Trifolium repens	.	.	.	+	+	+	.	.	II	0.19
H	Cp	3	0	0	P	Poa pratensis	.	+	.	.	.	.	.	.	I	0.063
H	Cosm	3.5	0	4	P	Potentilla reptans	.	.	.	+	.	+	.	1	I	0.13
H	Eur	3	0	0	D	Trifolium pratense	.	.	.	.	.	.	+	.	I	0.063
H	Eua	4	3	4	P	Festuca arundinacea	+	.	.	.	.	.	.	.	I	0.063
H-G	E	4	3	4	P	Rorippa sylvestris	.	.	.	.	.	+	.	.	I	0.063
H	Eua	2.5	0	0	P	Lotus corniculatus	.	+	.	.	.	.	.	.	I	0.063
						Molinietalia caeruleae										
G	Eua	4.5	3	3	P	Juncus conglomeratus	.	.	2	+	+	+	.	.	III	2.38
H	Cosm	4.5	3	3	D	Juncus effusus	+	.	.	+	+	+	.	.	III	0.5
H	Eua	4	3	3	D	Angelica sylvestris	.	.	.	.	.	.	+	.	I	0.063
H	Eua	4	3	0	P	Symphytum officinale	.	.	.	.	.	.	+	.	I	0.063
G	Eua(M)	4	3	0	D	Orchis laxiflora	.	.	.	.	.	.	+	.	I	0.063
						Molinio-Arrhenatheretea										
H	Eua	3	3	0	P	Inula britanica	.	.	+	.	.	.	.	.	I	0.063

G	Eua	0	0	0	P	Agropyron repens	.	.	.	+	.	.	.	.	I	0.063
H	Eua(M)	3,5	0	0	D	Ranunculus acris	.	.	.	.	.	.	+	.	I	0.063
H	Eur	4	3	4	P	Carex distans	.	.	.	.	.	.	+	.	I	0.063
G	E(M)	0	3	0	P	Carex hirta	.	.	.	.	.	.	+	+	II	0.13
G	Eua(M)	3	3	0	P	Carex tomentosum	.	.	.	.	.	.	.	+	I	0.063
H-TH	Eua	2.5	3.5	4.5	D	Cichorium intybus	.	+	.	.	.	.	.	.	I	0.063
H	Eua	3	0	0	DP	Centaurea jacea	.	.	.	.	.	.	.	+	I	0.063
H(G)	Eua(M)	4.5	3	0	P	Mentha longifolia	.	+	.	.	.	.	.	.	I	0.063
H	Eua(M)	3.5	0	0	P	Phleum pratense	.	+	.	.	.	.	.	+	II	0.13
H-G	Cosm	0	0	0	P	Convolvulus arvensis	.	.	.	+	+	.	.	.	II	0.13
H	Eua(M)	3.5	3	4	D	Lotus tenuis	+	.	.	.	.	.	.	.	I	0.063
H	Eua(M)	2.5	4	4.5	D	Lolium perenne	.	1	.	.	.	.	.	.	I	0.63
H	Eua	3	0	0	P	Achillea millefolium	.	+	.	.	.	.	.	.	I	0.063
H	Eua(M)	4	4	4	D	Juncus inflexus	+	+	.	.	.	.	.	.	II	0.13
G	Cp	4,5	3	5	P	Juncus gerardi Loisel	+	+	.	.	.	.	.	.	II	0.13
H	Cp	5	2	0	P	Juncus articulatus	.	.	.	.	.	+	.	.	I	0.063
H	Eua	4	3	0	P	Rumex crispus	.	.	+	.	.	.	.	.	I	0.063
H	Cosm	4	3	4	P	Potentilla anserina	.	.	.	.	.	.	+	.	I	0.063
H-Hh	Cosm	4	3	0	P	Lythrum salicaria	.	.	+	.	.	.	.	.	I	0.063
G	Eua(M)	0	0	0	D	Cirsium arvense	.	.	+	.	.	.	.	.	I	0.063
H	Eua	3	0	0	D	Plantago major	.	.	.	+	+	.	.	.	II	0.13
Th-TH	Eur	3	3	0	D	Trifolium campestre	+	.	.	.	+	.	.	+	II	0.19
H	E(M)	3.5	3	4	D	Trifolium hybridum	.	.	.	.	+	.	.	.	I	0.063
Th	Eur	0	3	0	P	Bromus commutatus	.	1	.	+	.	.	.	.	II	0.69
H	Eua(C)	5	3	4	P	Euphorbia lucida	.	.	.	.	.	.	+	.	I	0.063
Ch	Eua	4	3	0	P	Lysimachia nummularia	.	.	.	.	.	.	+	.	I	0.063
H	Ec	4	3.5	0	D	Cirsium rivulare	.	.	.	.	.	.	+	.	I	0.063
H	Cp	5	0	4.5	P	Lathyrus palustris	.	.	.	.	.	.	+	.	I	0.063
						Phragmitetalia, Phragmitetea										
Hh	Eua	5	3	0	D	Lycopus europaeus	.	.	+	.	.	.	.	.	I	0.063
H	Cp	5	3	0	DP	Galium palustre	+	.	.	.	.	.	+	+	II	0.19
Hh-H	Cp	5	3	0	P	Phalaris arundinacea	.	.	.	.	.	.	.	+	I	0.063
G-Hh	Cosm	5	0	4	DP	Eleocharis palustris	+	.	.	+	+	.	.	.	II	0.19
Hh-G	Cosm	6	3	4	P	Schoenoplectus lacustris	.	.	.	.	.	.	+	.	I	0.063
G-Hh	Cosm	6	3	0	P	Polygonum amphibium f. Terr	.	.	+	.	.	.	.	.	I	0.063
Th	Eua	2	3.5	4.5	P	Polygonum persicaria	.	.	.	+	+	+	.	.	II	0.19
Hh	Eua	6	0	4	D	Alisma lanciolatum	.	.	+	.	.	.	.	.	I	0.063
H	Cp	4	3	4	P	Scutellaria galericulata	+	.	.	.	.	.	.	.	I	0.063
Hh-H	Eua	5	3	0	P	Mentha aquatica	.	.	.	+	+	.	+	.	II	0.19
H-Hh	Eua	5	0	0	P	Lysimachia vulgaris	.	.	.	.	.	.	+	.	I	0.063
H-HH	Eur	4,5	3,5	4,5	D	Euphorbia palustris	.	.	.	.	.	.	+	.	I	0.063
H	Eua(C)	3.5	0	5	P	Puccinelia distans	.	+	.	.	.	.	.	.	I	0.063
Th	Eua	2	4	5	D	Hordeum hystrix	.	+	.	.	.	.	.	.	I	0.063
Th	Atl(M)	2	3.5	3	D	Lathyrus nissolia	.	.	.	+	.	+	.	.	II	0.13
						Koelerio-Corynephoretea										
G(H)	Cosm	2	3.5	0	DP	Cynodon dactylon	.	.	+	.	.	.	.	.	I	0.063
Th-TH	Eua	0	3	3.5	DP	Matricharia inodora	.	.	.	+	+	.	.	.	II	0.13
Th	Eua(M)	2	4	3	P	Hordeum murinum	.	.	.	.	+	+	.	.	II	0.13
						Onopordetalia-Artemisietea										
TH	Eua(M)	2	3	0	D	Carduus acanthoides	.	+	.	.	.	.	.	.	I	0.063
TH	Eua(C)	4	3.5	4	D	Dipsacus laciniatus	.	.	.	.	.	.	.	+	I	0.063
						Variaesyntaxa										
H	Eur	3	3	2.5	D	Hypochoeris radicata	.	+	.	.	.	.	.	.	I	0.063

Th-H	Cosm	3	3	4	D	Verbena officinalis	.	+	.	.	.	.	.	.	I	0.063
Th	Med	2.5	4	4	D	Anthriscus trichosperma	.	+	.	.	.	.	.	.	I	0.063

Localitatea: 1. Galoşpetreu; 2. Sălacea; 3. Mihai Bravu; 4-6. Ghileşti; 7. Piru Nou; 8. Galoşpetreu intrarea dinspre Tarcea;

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