

PHYTOCENOLOGICAL STUDIES IN TREE PLANTATIONS AND VINEYARDS OF S.D.E. BANU MĂRĂCINE – DOLJ COUNTY

STUDII FITOCENOLOGICE ÎN PLANTAȚILE POMI-VITICOLE DIN S.D.E. BANU MĂRĂCINE - DOLJ

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Abstract: *This presentation will put forward the results of the researches conducted over a period of 3 years. The floral structure of the analysed area, as well as the number of individuals and seeds in the orchards of SDE Banu Mărăcine, reflects the agricultural level on these lots. In spring, on the rows of vineyards and between them there are the phytocenoses of the Lamio-Veronicetum politae and Stellarietum mediae associations whose floral composition contains numerous vernal and annual species. Instead of these phytocenosis, on parcels where the cultural methods have not been appropriately applied, grow phytocenosis which include perennial species in their floral composition, with a strong rhizomial system which allows them to withstand the enviromental conditions and the applied agrotechnical tackings. (Convolvulo-Agropyretum repentis, Aristolochio-Convolvuletum arvensis). Along these plantations, on the boundary lands between them and the surrounding weeded meadows the association Hordeo murini-Cynodontetum dactyloni – trailing grass is encountered.*

Key words: segetal associations, Banu Mărăcine.

Rezumat: *În această lucrare se prezintă rezultatele cercetărilor efectuate în decursul a 3 ani de zile. Structura floristică din terenurile analizate, precum și numărul indivizilor și al semințelor din plantațiile pomi-viticole ale SDE Banu Mărăcine, reflectă nivelul agriculturii din parcele. Primăvara, pe rândurile de vie și între acestea se află fitocenozele asociațiilor Lamio-Veronicetum politae și Stellarietum mediae, ce au în compoziția floristică numeroase specii vernale, anuale. În locul acestor fitocenoze, în parcelele care sunt slab întreținute, se instalează fitocenoze ce au în compoziția floristică specii perene, cu un sistem rizomal puternic, ce le permit să reziste la condițiile vitrege de mediu și la măsurile agrotehnice care se fac (Convolvulo-Agropyretum repentis, Aristolochio-Convolvuletum arvensis). Pe marginea acestor plantații, la limita între acestea și pajiștile înțelenite înconjurătoare se află asociația de pir gros (Hordeo murini-Cynodontetum dactyloni).*

Cuvinte cheie: asociații segetale, Banu Mărăcine.

INTRODUCTION

The Banu-Mărăcine Didactic Centre, within which the researches of the present report have been carried out, is located in the Eastern part of Craiova town, to a distance of approximately 8 km, on the right side of Craiova-Pitești-București Highway. The area of the research haul is confined by the territory of Cârcea locality in the East and by Craiova Agricultural Company in the South and

West; the area is bounded on the North by Craiova-Pitești motorway. An intense scientific research activity is being carried out within the didactic centre, performed by academic educators, doctoral candidates and students, in order to solve priority problems demanded by the agricultural practice within the respective area.

From a geomorphological point of view, the territory under research is located at the southern boundary of Getic Piedmont, crossing towards the elevated plane known as Leu-Rotunda.

The territory of Banu-Mărăcine Didactic Centre is located on an extension of the Getic Plane, revealing the features of a plateau situated at an average altitude of approximately 200 m, without any irregularities; the existing irregularities are small and of minor importance. The South-East part of this territory is represented by an extended heading of the Getic Plane, known as Câmpul Leu-Rotunda, with an absolute altitude ranging between 110 and 170 m, with slight irregularities.

The formation of a hillock-like microrelief in the area, characterized by slight irregularities, is attributed to the high and changing variations of the soil volume, determined by the high content of montmorillonite forming clay identified into parental materials. The geological drills executed in the respective area support the idea that materials encountered would belong to the Quaternary and the Levantin.

A tight relation generally arises between the soil, the climate and the vegetation; this relation is often denominated as pedo-phyto-climatic parallelism.

MATERIAL AND METHODS

For the purpose of studying the vegetation existing within the tree plantations and vineyards of Banu Mărăcine Didactic Centre, several research methods of the Central European School have been used; these methods have been elaborated by Braun-Blanquet. We adopted the vegetal association as a sintaxonomic basic unit.

The classification of associations has been accomplished according to the most recent classification systems set forth by local and international experts: Sanda (2002), Mucina (1997), Borhidi (1996). The description of associations has been effected by means of the characteristic, edifying, dominant and differential species.

RESULTS AND DISCUSSIONS

The vegetal associations identified within the tree plantations of Banu-Mărăcine Didactic Centre are further defined by the following cenotaxonomic system:

- Cl. Stellarietea mediae R.Tx., Lohm. et Preising in R. Tx. 1950
- Ord. Centauretalia cyani R.Tx., Lohm. et Preising in R. Tx. 1950
- Al. Veronico-Euphorbion Sissingh ex Passarge 1964
- 1. *Stellarietum mediae* Prodan 1939, Hadać 1969.
- 2. *Lamio - Veronicetum politae* Prodan 1939, Krusem. et Vlieg. 1939
- Ord. Atriplici-Chenopodietalia albi (R. Tx. 1937) Nordhagen 1950

Al. *Scleranthion annui* (Kruseman & Vlieger 1939) Sissingh in Westhoff. et al. 1946

3. *Digitario-Setarietum pumilae* Felföldy 1942 corr. Borhidi 1996

Ord. Sisymbrietalia R. Tx. in Lohm. et al. 1962

Al. *Sisymbrium officinalis* R. Tx., Lohm. et Prsg. in R. Tx. 1950

4. *Hordeo murini – Cynodontetum* (Felföldy 1942) Felföldy ex Borhidi 1999

Cl. Artemisietea vulgaris R. Tx. 1937

Ord. Agropyretalia repentis Oberd. et al. 1967

Al. *Convolvulo-Agropyron repentis* Görs 1966

5. *Convolvulo-Agropyretum repentis* Felföldy 1943

6. *Aristolochio – Convolvuletum arvensis* Ubrizsy 1967

1. *Stellarietum mediae* Prodan 1939, Hadač 1969. (table 1). The association found in the Transylvanian gardens has been briefly described by I. Prodan (1939). The characteristic species, a genuine vernal plant, vegetates on soils rich in decomposing organic substances where it forms an almost continuous belt. Among the accompanying species the following are mentioned: *Lamium amplexicaule*, *Capsella bursa-pastoris*, *Geranium pusillum*, *Veronica polita*, *Veronica persica* etc.

Table 1

***Stellarietum mediae* Prodan 1939, Hadač 1969**

Surveying	1	2	3	4	5
Altitude (m.s.m.)	120	100	110	110	110
Exposure	SE	SW	-	SW	SW
Gradient (°)	5	5	-	5	5
Vegetation coverage (%)	90	95	95	100	90
Surface (sqm)	20	30	50	30	40
Car. ass.					
<i>Stellaria media</i>	4	4	4	5	4
<i>Sonchus oleraceus</i>	+		+	+	+
<i>Cirsium arvense</i>	+	+		+	
Polygono-Chenopodion					
<i>Lamium purpureum</i>	+	+	+	+	+
<i>Veronica persica</i>		+	+	+	
<i>Setaria viridis</i>	+				+
Chenopodietea					
<i>Erodium cicutarium</i>	+	+		+	
<i>Chenopodium album</i>		+	+	+	
<i>Euphorbia helioscopia</i>	+		+		+
Stellarietea mediae					
<i>Cardaria draba</i>	+			+	+
<i>Convolvulus arvensis</i>		+	+		+
<i>Cynodon dactylon</i>	+			+	+
<i>Galium aparine</i>	+		+		
<i>Senecio vulgaris</i>		+		+	
<i>Urtica dioica</i>	+		+		

2. *Lamio - Veronicetum politae* Prodan 1939, Krusem. et Vlieg. 1939. (table 2). It represents a pioneer association whose floristic composition is formed of numerous vernal and annual species. The spectrum of bioforms reveals the prevalence of terrophytes largely exceeding the percentage of hemiterrophytes coming on the second place and geophytes. The hemicryptophytes are represented by a reduced percentage.

Within the vineyard plantations where the maintenance works are deficient, the phytogenesis of this association last until summer; on the contrary, the respective plants disappear towards the end of May on the parcels where pest control works are carried out appropriately, as they are smashed by cultivation works (Răduoiu D. 2008).

The respective association is ascribed to Kornas in 1952 by some people, but according to the Cenotaxonomic Nomenclature Code the priority is awarded to the association described by Prodan, Krusem. et Vlieg. in 1939.

Table 2

***Lamio - Veronicetum politae* Prodan 1939, Krusem. et Vlieg. 1939**

Surveying	1	2	3	4	5
Altitude (m.s.m.)	150	100	100	100	100
Exposure	S	E	SW	SE	SE
Gradient (°)	5	10	5	10	3
Vegetation coverage (%)	80	85	80	75	75
Surface (sqm)	40	50	30	30	40
Car. ass.					
<i>Lamium purpureum</i>	1	1	1	+	+
<i>Lamium amplexicaule</i>	+	+	+	+	+
<i>Veronica polita</i>	3	3	3	3	3
Veronico-Euphorbion & Centauretalia cyani					
<i>Veronica hederifolia</i>	+	+	+	+	+
<i>Thlaspi arvense</i>	-	-	+	+	+
<i>Thlaspi perfoliatum</i>	-	-	+	+	+
Stellarietea mediae					
<i>Cirsium arvense</i>	+	+	-	+	+
<i>Stellaria media</i>	+	-	+	-	+
<i>Capsella bursa-pastoris</i>	+	+	-	+	-
<i>Matricaria perforata</i>	+	-	+	+	-
<i>Conyza canadensis</i>	+	-	+	+	-
<i>Geranium pusillum</i>	+	-	+	+	-
<i>Senecio vernalis</i>	+	-	+	-	+
<i>Viola arvensis</i>	+	+	-	+	-
<i>Papaver dubium</i>	-	-	-	+	+
<i>Chenopodium album</i>	+	-	+	-	-
<i>Descurainia sophia</i>	-	-	+	+	-
<i>Bromus sterilis</i>	-	-	+	+	-
Molinio-Arrhenatheretea					
<i>Taraxacum officinale</i>	+	-	+	+	-
<i>Rumex crispus</i>	-	+	+	+	-
<i>Plantago lanceolata</i>	+	-	-	+	-

Variae syntaxa					
<i>Lamium amplexicaule</i>	1	+	+	-	-
<i>Polygonum aviculare</i>	-	-	+	+	+
<i>Senecio vulgaris</i>	+	+	-	-	+
<i>Calamagrostis epigejos</i>	-	+	+	+	-
<i>Aristolochia clematitidis</i>	-	+	+	+	-
<i>Erodium cicutarium</i>	+	-	+	-	+
<i>Sonchus arvensis</i>	+	-	-	-	+
<i>Hordeum murinum</i>	+	-	-	-	+

3. *Digitario-Setarietum pumilae* Felföldy 1942 corr. Borhidi 1996

The phytocenosis of this association are to be found on the intervals between the vineyard rows, in sunny places where the soil exhibits a clayey-sandy texture (Sârbu C. 2003). The floristic composition of phytocenosis comprises numerous non-perennial species. Within the spectrum of geo-elements, three categories are deemed to prevail: cosmopolite, adventive and Eurasian plants, the first being widely spreaded on the soil.

4. *Hordeo murini - Cynodontetum* (Felföldy 1942) Felföldy ex Borhidi 1999

It covers large surfaces within the plantations studied. They grow on semi-battered degraded or brown-reddish forestry chernozem soils.

It vegetates in ruderal habitats, along the margin of roads where the two species *Cynodon dactylon* and *Hordeum murinum* cover a large area (85-100%) of the land. The accompanying species, elements of *Sisymbrium* for the most part, are very few in number due to the territorial domination of *Cynodon dactylon* species.

5. *Convolvulo – Agropyretum repentis* Felföldy 1942

The following characteristics species *Elymus repens* and *Convolvulus arvensis* are perennial plants which preferably grow at the end of cultivated fields, on lands where ploughing works are carried out at larger time intervals.

The usual accompanying plants of these cenoses are: *Cardaria draba*, *Setaria pumila*, *Hibiscus trionum*, *Stachys annua*, *Cirsium arvense*, *Sinapis arvensis*, *Polygonum aviculare*; in the event the fields have been unreaclaimed for larger periods some perennial lawn elements might appear, such as: *Poa pratensis*, *Medicago sativa*, *Agrostis stolonifera*, *Festuca pratensis*.

6. *Aristolochio - Convolvuletum arvensis* Ubrizsy 1967

The association has been indentified by Gh. Vițalariu (1974) to be growing on fallows, in the stubble fields, in virgin vineyards, on sloping chernozem soils (Sanda et al. 2007). The characteristic and probative species for the association, *Aristolochia clematitidis* and *Convolvulus arvensis* are more usually accompanied by: *Fumaria schleicheri*, *Sinapis arvensis*, *Hibiscus trionum*, *Fallopia convolvulus*, *Solanum nigrum*, *Senecio vernalis*, *Sonchus arvensis*, *Stellaria media*, *Thlaspi arvense*, etc.

CONCLUSIONS

The segetal phytocenosis encountered within the tree plantations and the vineyards of the Banu Mărăcine Didactic Centre comprise various non-perennial, biennial, mesophyll or mesoxerophyll species. They prefer luminous places, meso-thermophyll up to moderate thermophyll.

The large number of adventive and cosmopolite elements, both in terms of species and specimen is therefore noticed.

On parcels where the maintenance works are not carried out or improperly executed the probative phytocenosis of the trailing grass, the couch grass, the bindweed and the bottle grass experience a luxuriant development.

Prior to the entering into vegetation of cultivated plants, the probative phytocenoses of chickweed and purple deadnettle grow fast to disappear towards the end of summer due to maintenance works carried out on plantations.

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