# STUDY OF *ALNETUM INCANAE* ASSOCIATION IN THE GROVE FROM SANTĂU (BIHOR COUNTY)

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***Abstract***

*This paper is a phytocenologic study of the association Alnetum incanae Aichinger et Siegrist 1930 in the grove from Santau.*

*In the association table, some information about the species entering the floristic composition of the phytocoenoses under study, bioforms flora element, altitude, vegetation cover and surface are provided. In this study, some spectra of bioforms and floral elements for the identified phytocoenosis are shown.*

**Key words**: phytocoenosis, association, bioforms, floral elements.

## INTRODUCTION

Geomorphologically, the forest from Santau is located in Borşului Plain also called in some studies as Santaul or Bors-Parhida Plain and situated between the rivers Barcău and Crişul Repede. The average altitude of the area is 100 m, it appears as a low plain with respect to the high plains of eastern Biharia. Studied area is located on a meadow level composed of clay or sand horizon with an average thickness of 3.5 m

The main type of soil present in the area is alluvial soil that belongs to the undeveloped, cropped or battered soil class. The identified and syudied phytocoenosis are confined to a meandering surface of Crişul Mic stream.

Average annual air temperature is 10-11° C, and minimum and maximum values are recorded in January (-1° C) and July (20° C). The rainfall is characteristic to the silvo-steppe habitat, around 450-470 mm / year, but the forests in the area depend primarily on aquifer fed by the riverbed.

## MATERIAL AND METHODS

In the study of Association *Alnetum incanae* Aichinger et Siegrist 1930 in the grove from Santau, the research phytocenologic method based on the principles of the Central European Braun-Blanquet School was used (1964) which is adapted to the vegetation in our country by Borza and Boşcaiu (1965).

Botanical nomenclature used in this paper is developed for the Romanian flora by Ciocârlan (2000).

Homogeneously floral sample surfaces were chosen having their size of 400 m² (Cristea et al., 2004). In this respect, a number of 3 phytocenosis have been identified and described during 2013.

The synthetic table contains information about the species contained in the floristic composition of association phytocoenoses, bioforms, floral elements, the number of surveys, altitude, consistency, vegetation cover, surface and height of trees.

Some newer (Sanda et al., 2008; Mucina et al., 1993; Borhidi, 1996 Soó 1964 -1980) or older (Ellenberg, 1974; Tuxen, 1955) papers have been taken into account for the classification and ordering of species in the association table in superior cenotaxons, sub-alliance, alliance, order and class.

**RESULTS AND DISCUSSION**

The phytocoenosis of association Alnetum incanae Aichinger et Siegrist 1930 were identified in the meadow of Crişul Mic rivulet, at altitudes of 90-110 m, where *Alnus incana* forms pure stands.

The association grows on alluvial soils in the meadows of Crişul Mic rivulet, located at altitudes of 90-110 m. The edificator species found in the tree layer is *Alnus incana*, accompanied by *Alnus glutinosa*, *Fraxinus excelsior*, *Cerasus avium*, *Ulmus minor* (Table 1). The shrub layer is composed of shrubs, such as *Euonymus europaeus, Ligustrum vulgare*, *Crataegus monogyna, Prunus spinosa, Sambucus nigra* (Table 1).

In cenotaxonomic terms, the association falls in the sub-alliance *Alnenion glutinosae-incanae*, alliance *Alno-Ulmion*, order *Fagetalia sylvaticae*, class *Querco-Fagetea.*

Table 1

*Alnetum incanae* Aichinger et Siegrist 1930

| BIO. | E.F. | NO. OF SURVEYS | 1 | 2 | 3 |
|---|---|---|---|---|---|
| | | Altitude (m) | 90 | 110 | 100 |
| | | Consistency | 0,9 | 0,9 | 0,9 |
| | | Height of trees (m) | 18 | 18 | 18 |
| | | Grass layer cover (%) | 50 | 40 | 50 |
| | | Surface (m²) | 400 | 400 | 400 |
| *0* | *1* | *2* | *3* | *4* | *5* |
| MPh | Eua | *Alnus incana* | 5 | 5 | 5 |
| | | ***Alnenion glutinosae-incanae*** | | | |
| MPh | Eua | *Alnus glutinosa* | + | + | + |
| G | Eua | *Circaea lutetiana* | + | + | · |
| T | Eua | *Impatiens noli-tangere* | · | · | + |
| | | ***Alno-Ulmion*** | | | |
| H | E | *Lamium maculatum* | + | · | · |
| Ch | E | *Lysimachia nummularia* | · | · | 1 |
| MPh | E | *Fraxinus excelsior* | + | · | + |
| H | E | *Carex sylvatica* | + | · | · |
| | | ***Fagetalia sylvaticae*** | | | |
| nPh | E | *Rubus hirtus* | 1 | 1 | + |
| H | Ec | *Lamium galeobdolon* | 1 | · | · |
| G | E | *Allium ursinum* | 2 | 1 | 1 |
| G | E | *Corydalis solida* | + | · | · |
| Ch | E | *Euphorbia amygdaloides* | · | · | + |
| G | Eua | *Galium odoratum* | + | 1 | 1 |
| G | Ec | *Isopyrum thalictroides* | · | · | + |
| H | E | *Pulmonaria officinalis* | + | · | · |
| H | Ec | *Symphytum tuberosum* | · | 1 | 1 |
| | | ***Querco-Fagetea*** | | | |
| MPh | Eua | *Ulmus minor* | + | · | + |
| MPh | E | *Cerasus avium* | + | · | + |
| mPh | E | *Ligustrum vulgare* | · | + | + |
| T | Eua | *Alliaria petiolata* | + | · | · |
| H | Eua | *Primula veris* | · | + | + |
| H | Eua | *Ranunculus ficaria* | · | · | 1 |
| G | E | *Anemone nemorosa* | + | 1 | + |
| H | Eua | *Cruciata glabra* | · | + | 1 |
| | | **Variae Syntaxa** | | | |
| mPh | E | *Crataegus monogyna* | + | · | · |
| mPh | E | *Sambucus nigra* | · | + | + |
| nPh | E | *Rosa canina* | + | · | · |
| mPh | Eua | *Prunus spinosa* | + | + | · |
| mPh | E | *Euonymus europaeus* | · | + | + |
| H | Cp | *Caltha palustris* | + | + | 1 |
| H | Cosm | *Urtica dioica* | · | + | + |

Place and date of surveys: 1-3 Grove from Santau (Bihor county) 10/05/2013.

Where: Bio.-bioforms; Mph-mega-phanerophytes, MPH-meso-phanerophytes, NPH-nano-phanerophites, G-geophytes H-hemicriptophytes, Ch-camephytes, T-terofite, Ef-floral elements, Eua-Eurasian, European E, Ec- central-European Cosm -cosmopolite, Cp-circumpolar.

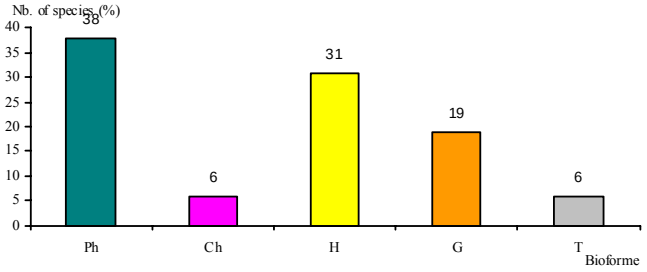


Fig. 1. Bioforms spectrum for association *Alnetum incanae* Aichinger et Siegrist 1930

Phanerophytes species (38%) dominate in the bioform spectrum (figure 1), followed by hemicriptophytes (31%), geophytes (19%), therophytes (6%) and camephytes (6%).

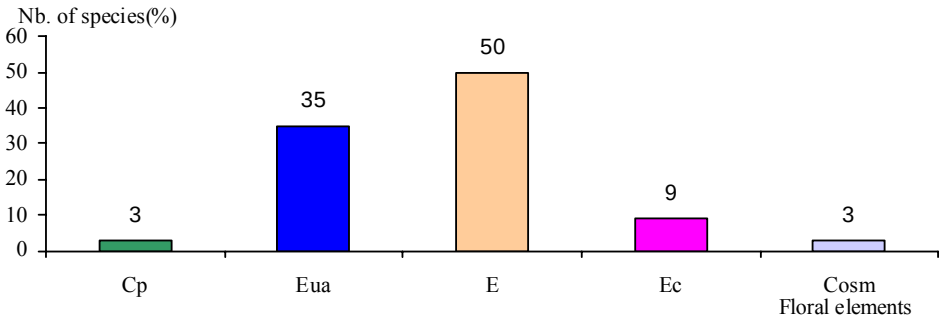


Fig. 2. Spectrum of floral elements for association *Alnetum incanae* Aichinger et Siegrist 1930

The spectrum of floral elements (Figure 2) shows the ratio of European species (50%), followed by Eurasian (35%) and Central European ones (9%).

**CONCLUSIONS**

Coenotic core of the association is composed of species characteristic to the sub-alliance *Alnenion glutinosae-incanae*, alliance *Alno-Ulmion*, order *Fagetalia sylvaticae* and class *Querco-Fagetea*, among which stand out: *Alnus glutinosa, Rubus hirtus, Allium ursinum, Galium odoratum, Symphytum tuberosum, Anemone nemorosa*.

The floristic inventory of this association sums up 32 species, of which the largest share is represented by phanerophytes (12 species). There is a zoo-anthropogenic influence in these phytocenosis due to pastoral practice and timber exploitation.

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