RESEARCH ON THE BIOLOGY, ECOLOGY, SPREAD AND ECONOMIC ROLE OF THE SPECIES *CASTANEA SATIVA* IN THE MID-NORTH-EAST OF (TIMIS DEPARTMENT)

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Abstract. *In this paper we approach an issue of importance in ecological caracteristics related to the dynamics of plant species Castanea sativa in the Gladna Română, Tomeşti, Coşteiul de Sus şi Sinteşti area (Timis County). The area under study covers 225 km^2 if we take into account all the 4 stage by species Castanea sativa. In the study of the flora we used the two steps – field and lab – and phyto-coenologic research in the area are based on the principles of the Central-European floristic school with broad application in the study of the vegetal cover in Europe and applied for the first time in Romania by Borza (1984). As a result of the study on the sampling areas we managed to inventory the superior plant species on the areas and the characteristics of the flora and vegetation (number of families, number of species, height of the vegetal cover, stratification, and mosaic-like configuration), and phyto-geographical, biological, ecological, and economic indices. In this paper we also refer to the evolving trends of the phyto-coenoses, the changes it undergoes, its dynamics, and man-made activities*

Key words: *Valorising fallows in the Gladna Română, Tomeşti, Coşteiul de Sus şi Sinteşti, specific biodiversity, the ecology restauration, flora and vegetation.*

INTRODUCTION

The research on flora and vegetation seen from all points of view as well as the fight and the floristic transformations, with the research of the causal links n the surface taken under observation in this work was done in direct accordance with the measurement of physical - chemical -anthropogenic factors and others factors as well.

All the results obtained from the observations made regarding the species *Castanea sativa* and its ecology taken from the surfaces as evidence have been unified with the physical-chemical data, tend to restore exactly the changes of the vegetation and status of the species given in the area.

The observations made on the species *Castanea sativa* in the same place for a long time gives clear indications on the power of a plant communion, the social hierarchy of vegetation and the life and capacity for adaptation or environmental sensitivity on the social status of each species in phytocoenosis.In the case of *Castanea sativa* species has been installed in this biotope slightly different from its preferences as a species that originates in the Mediterranean basin is particularly interesting and more important the strategy for survival and adaptability that this species knows and induce at a local level to other species in it`s **i**mmediate proximity.

In Banat this species makes its presence felt since the reign of Queen Maria Theresa when it seems that it was attempted to make plantations of this species, for its fruit and more. It seems that in the past the area occupied by the species *Castanea sativa* was higher but due to natural changes that occur in each of the phytocoenosis and anthropogenic this species has suffered a slight decline, which makes us wonder if we still want this species in

ourphytocoenosis and forest ecosystems (with all its benefits).

GEOGRAPHICAL LOCATION AND NATURAL ENVIROMENT

The area studied is situated in the hilly area of Banat, in the North-Eastern of Timis department, close to the border of Hunedoara an Arad departments. This area is located between two villages: Gladna Română, Tomeşti, Coşteiul de Sus şi Sinteşti. The land that was studied has 225 km^2, delimited by the Faget Hills on North-West and by the Poiana Rusca Mountains on the South-East. The area is a depression surrounded by natural barriers of various sizes with altitudes between 500 and 800 m.

Geographical coordinates of this area are the 22° "Eastern meridian" and 45°50' "Northern parallel". The relief of this area is various with an average altitude of about 190-300 m compared to the Adriatic Sea, with mostly flat and hilly areas that ensure the passage to the mountainous relief. The area looks like a plain slightly bent to the South-West on the Bega river with river beds of the Bega Luncanilor and the Bega Poienilor rivers that join and form the Bega river.

From an ecological point of view, the area includes numerous meadows recently formed, each water course with particular aspects and characteristics related to the dynamics of its changes, climatic variations and tectonic movements, mainly the subsistence ones. In order to determine the genetic types of soils, we made 81 major profiles out of which about 53 were used as samples and analysed in the laboratory.

Considering these analyses and research, we identified seven genetic types of soils. 73% of soils belong to *argiluvosoils* group, where 57% are *luvosoils* (pseudoglazed), followed by *preluvosoils* with 16% and *cambisoils* with 26, most of them are *eutricambosoils*.

All soils have an acid reaction with a pH between 4.0 and 6.5. The accumulation indicators of the humus varies between low and moderate humus, mobile phosphates and changing potassium appear in reduced concentrations in all profiles and horizons Ao, Am, Bv, El, Bt. Parental materials of the soils generally have a medium fine granule-metric composition alternating with rough deposits. To the North and South limits of the plain, there are materials transported from the hills by a network of secondary rivers of torrential origin and deposited like dejection cones unified or superposed on several generations.

The temperature regime in the area presents mild winters with temperature that rarely reach -20°C, the general temperature average in January is -2°C. Springs are short and summers are very hot; the annual frequency of the days with very high temperature, over 30°C is low, 20 to 25 days, and there are 126-134 days per year with temperature over 15°C. The regime of precipitations in the area presents annual means of potential evapo-transpiration situated at the limit o 690 mm.

There is 700-800 mm/year average precipitation quantities, and only in rainy years this value is higher than 900-1000 mm/year and grows directly proportional with the altitude with about 100 mm to every 200 m. There are about 125-130 rainy days per year. Abundant spring rains cause significant floods and damages. The hydrographical network of the area is well represented by the Bega river and its affluents. The bed of the Bega river is 10-15 m and its deposit meadow is 10-40 m wide with high flow fluctuations. The average multi-annual flow is 4.53 m^3. The maximum flows are registered during spring and the minimum flows in summer and early autumn.

MATERIALS AND METHODS

We established sampling areas in the field in the studied area. We started by recording fallows with the help of environmental points, then we recorded the fallows depending on the north-east geographical coordinates through GIS. Then, until plants started vegetation, we tried

to find out from the locals the last year the lands were cultivated, the pre-emergent crops, and the years to go on as fallows.

Last but not least we inquired about the management of the lands (haymaking, grazing) of the areas.

After we got these data we systematically sampled the area on plots of 100 m^2 (10 m x 10 m) which we synthesised in our tables.

In each of the tables we recorded:

- the location – in relation to the neighbouring localities and to geographical coordinates;
- the altitude – in relation to the Adriatic Sea;
- the general covering – estimated in percentage;
- average height of the vegetation – measured in cm;
- period of fallowing – measured in years;
- the sampling area – measured in m^2;
- the time the study was carried out.

The distribution in the studied area of the sampling areas was meant to be as even as possible and to cover the entire area, without focussing on several sampling areas detrimental to other sampling areas.

The distribution of the fallows in the studied area is not even; we could notice that most fallows are concentrated towards the extremities of the localities, because of the long distance from the locality (implying more time, more transportation, more care, etc.) which made villagers prefer to work closer agricultural lands.

In order to edit our paper, we studied the biological material. Research concerning the flora had two steps:

- the field stage;
- the lab stage.

In the field stage we visited the area several times to find species in different development stages. We determined the plants and we made up the phyto-coenologic tables. In the field we used the "Flora mica ilustrata a Romaniei" de (CIOCÎRLAN 2000). In the processing of data we guided ourselves after the "Flora Romaniei" (vol I-XII).

After determining the species we developed the inventory of the vascular flora. In each species we mentioned indices referring to the phyto-geographic element and to the bioform of the species. We used the following terms in assessing the plant distribution over the area we studied.

The analysis of the flora was done from several points of view:

- Phyto-geographically (geographic spreading);
- Biologically (types of bioforms);
- Ecologically, as we took into account the behaviour of the species to the main ecological factors: moisture, temperature, and soil reaction (SANDA et al., 1983). Ecological categories are as follows: moisture indices (U), temperature indices (T), soil reaction indices (R).
- Economically, the share of the species relevant for the different sectors of socio-economic activity or for the plant parts we use. We have in mind the following economically relevant plant categories: food, feed, honey-making, medicinal, industrial, toxic, and decorative.

Phyto-coenological research in the studied area (the Faget Hills) are based on the floristic phyto-coenologic school principles, with broad application in the study of the vegetal cover in Europe, and applied for the first time in Romania by BORZA (1934).

This research school is based on the postulate according to which the floristic

composition of a phyto-coenosis reflects the whole ensemble of ecological factors in the biota it covers and, therefore, it is this composition that we need to study. For this school, the basic unit in the study of the vegetal cover is the vegetal association.

Field studies were done by choosing samples (land areas) from the fallows with different years of fallowing and in different development stages within the vegetal cover with similar physiognomy and ecological conditions.

The areas of the samples was around 100-200 m^2. We present below a list of the species from the sampling areas with notes on their abundance and dominance and local frequency. The abundance and dominance is a quantitative phyto-coenologic index that shows the abundance of a species, i.e. the number of individuals and their dominance representing the covering degree of the area by those individuals.

Local frequency is another quantitative index used by the Romanian school of geobotany (BORZA & BOŞCAIU, 1965) supplying information on the frequency of individuals on a sampling area. In order to assess this index the sampling area must be divided into smaller units then they are granted degrees according to the 5 step scale.

RESULTS AND DISCUSSIONS

Results of the research on the structure of vegetal cover. Vegetation cover structure includes information on the specifically biodiversity, plant height, horizontal and vertical structure and plant species representative, frequent and abundant. In all the surveys of rises that I`ve done, I identified an extensive list of plant species including 279 species belonging to 23 families. The morphology of the vegetation cover is presented in an extremely complex form due to the waist plant species that compose these associations and performs the horizontal structure. Average vegetation height is 20-25 m with large plant species (trees) in the midsize plant species (shrubs) ranges from 2-3 m height, followed by the small species (grasses) or the first layer of vegetation they have an average height of 20-25cm. The species fund is very diverse, so that we can find species that have different characteristics, meanings and traits. Of the total of 212 plant species, 109 species have medicinal and pharmaceutical value, 11 species have tinctorial characteristics and 44 species have melliferous potential.

Summary of elder species

Acer campestre L., MM. Eua; U2,5, T3, R3.
Acer platanoides L., MM. Eua; U3, T3, R3.
Acer pseudoplatanus L., MM. Eua; U3,5, T3, R3.
Acer tataricum L., MM, Eua; U2,5, T3,5, R3.
Achillea nobilis L., H, Eua; U2, T3,5, R4,5.
Aegopodium podagraria L., H, (G), Eua.
Agrostis tenuis L., H, Circ (bor), U0, T0, R0.
Allium ursinum L., G, Eur, U3,5, T3,5, R4.
Alnus glutinosa (L), Gaertner; MM-M. Eua; U5, T3, R3.
Anemone nemorosa L., G, Eur; U3,5, T4, R0
Anemone ranunculoides L., G, Eur; U3,5, T3, R4.
Aposeris foetida (L), Less; H, Eur; U3, T2,5 *glabra*
Aristolochia pallida Willd H, Med; U3, T4, R5.
Asarum europaeum L., H-G, Euc (Med); U3,5, T3, R4.
Asparagus officinalis L., G, EUA; U1,5 T4,5 R3.
Asparagus tenuifolius Lam, G, Pont-Med; U2, T5, R3,5.
Astragalus glycyphyllos H,Eua; U3, T3, R4.
Berberis vulgaris L., M, Eur; U2, T3, R4.
Betula pendula MM-M, Eua; U3, T2, R2.
Brachypodium pinnatum (L), Beauv, H, Eua (Med); U2,5, T4, R4.
Brachypodium sylvaticum Beauv, H, Eua (Med); U3, T3, R4.
Calamagrostis arundinacea (L); Roth, H, (G), Eua; U2,5, T3, R2.
Calluna vulgaris (L), Hull, Ch (N), Atl-Euc; U0, T0, R1.
Campanula ranunculoides L, H, Eua, (Med); U3, T2, R0.
Campanula rapunculus L., TH, Eur (Med); U2, T4, R3.
Campanula sphaerotrix (Griseb), Hayeck, H, Balc; U2, T4, R3.
Cardamine bulbifera L., G, Euc; U3, T3, R4.
Cardamine impatiens L., Th- TH, Eua (Med); U4, T3, R3.
Carex brizoides L., H-G, Euc; U3,5, T3, R2.
Carex michelii Host, H, Euc-Pont; U2, T3, R4.
Carex palescens L., H, Circ(bor); U3,5 T3, R3.
Carex pilulifera L., H, Eua (bor); U3, T2,5, R2,
Carex sylvatica Hudson, H, Alt-Euc; U3,5, R3, R4.
Carex tomentosa Hudson, H, Eur; U3, T3, R0.
Carlina intermedia L., TH-H, Eua (Med); U2, T3, R3.
Carpinus betulus L., MM-M, Eur; U3, T3, R3.
Carpinus orientalis Miller, MM, Eua (Med); U3, T4, R4,5.
Castanea sativa Miller, MM, Med; U2, T4,5, R2.
Celtis australis L., MM-M, MED; U2, T4,5, R4.
Cerasius avium L., Monch, M-MM, Eur;U3, T3, R3.
Chamaecytisus albus (Hacq), Ch-N, Pont-Pan-Balc; U1,5, T4, R3.
Chamaecytisus austriacus L., Link, Ch-N, Pont-Pan-Balc; U2, T3,5, R4.
Chelidonium majus L., H, Eua; U3, T3, R4.
Chrysanthemum corymbosum L., H, Eua (Med); U2,5, T2,5, R3.
Cirsium oleraceum (L)., Scop, h, Eua; U4, T3, R1.
Clematis vitalba L., H, Euc-Med; U3, T3, R3.
Colutea arborescens L., M, Euc-med;U2, T4,5, R4,5.
Convallaria majalis L.,G, Eur; U2,5, T3, R3.

Corilus avellana L., M, Eur; U3, T3, R3.
Cornus mas L., M, Pont- Med- Euc; U2, T3,5, R4.
Cornus sanguinea L., M, Euc; U3, T3, R4.
Coronilla emerus L., N, Med, Euc; U2, T3,5, R4, 5.
Coronilla scorpionides (L)., Koch, Th, Med; U1,5, T4,5, R4.
Corydalis solida L., Swartz; U3, T3, R0.
Corylus avellana L., M, Eur; U3, T3, R3.
Cotoneaster tomentosa M., Euc-Med; U2, T3, R5.
Crataegus monogyna M, Eur; U2,5, T3, R3.
Crataegus oyacantha auct, M, Euc; U3, T3, R3.
Crepis nicaeensis Balbis, Th, Med; U2, T0, R4.
Crocus banaticus Gay, G, Dac-Balc; U3, T3, R0.
Crucianella angustifolia l., Th, Med; U1,T5, R4,5.
Cruciata glabra L., H, Eua; U3, T2, R2.
Cruciata laevipes H, Eua; U2,5, T3, R3.
Dactylis glomerata L., H, Eua(M ed); U3, T0, R4.
Dactylis polygama H-G, Euc; U2,5, T3, R3.
Daphne mezereum L., N, Eua; U3,5, T3, R3.
Deschampsia flexuosa L., H, Circ (arc-alp); U2, T0, R1.
Digitalis grandiflora Miller, H, Eur, U3, T3, 3.
Digitalis lanata TH, Balc-Pan; U1,5, T4, R4,5.
Dryopteris filix-mas L., Schott, H, Cosm; U4, T3, R0.
Euonimus verucosa Scop, M, Eur, U2,5 T3, R4.
Euonymus europaeus L., M, Eur; U3, T3, R3.
Euphorbia amygdaloides L, Ch, Eur (Med); U3, T3,5 R4.
Euphorbia cypariassias H, (G), Eua; U2, T3, R4.
Fagus sylvatica L., MM-M, Eur; U3, T3, R0.
Fagus taurica Popl, MM-M, Balc-Anat-Taur, U3, T3, R3.
Festuca gigantea L., H, Eua; U4, T3, R2,5.
Festuca heterophyla Lam, H, Eur (Med);U2,5, T3, R3.
Festuca valesiaca H, Eua (cont); U1,5, T4, R4.
Fraxinus angustifolia Vahl, MM, Pont-Pan; U4,5, T4, R4,5.
Fraxinus excelsir L., MM, Eur; U3, T3, R4.
Fraxinus ornus L., M-MM, Med; U1,5, T3,5, R5.
Fritillaria tenelle G, Balc-Cauc; U3, T3, R4.
Galium kitaibelianum H, Carp-Balc; U3, T3, R3.
Galium odoratum L., G, Eua; U3, T3, R3.
Galium pseudoaristatum H, Carp-Balc;2,5 t3, r3.
Galium schultesii Vest, g, Euc;U2,5, T3, R3.
Genista tinctoria L., Ch-N, Eua; U2,5, T3, R2.
Geranium robertianum L., Th, Cosm; U3, T3, R4.
Geum urbanum L., H, Eua(Med); U3, T3, R0.
Glechoma hirsuta L., Ch-H, Eua; U3,5, T3, R0.
Hedera helix L., N-E, Alt- Med; U3, T3, R.3.
Helleborus odorus Waldst et. Kit, H, Balc; U2,5 T3,5, R4.
Helleborus purpurascens Waldst et Kit, H, Carp-Balc- Pan; U2,5, T3, R4.
Hieracium maculatum Sm, H, Eur; U2, T3, R2.
Hieracium murorum L., H, Eua; U3, T0, R3.
Hieracium rotundatum Kit, H, Balc-Carp; U3, T0, R0.
Himantoglossum hircium L., G, AH-Med; u2,5. t3,5, r4.
Humulus lupulus L., H, Eua; U3,5, T3, R4.
Hyeracium umbelatum L., H, Circ (bor); U2,5, T3, E2,5.
Hypericum hirsutumL., J, Eua; U3, T3, R3.
Iris graminea L., G, Pont-Med; U2, T3,5, R4.
Juglans regia L., MM, Carp-Balc-Anat- Cauc, U3, T4, R4.
Lactuca quercina L., TH, Euc; U2,5, T3,5, R4.
Lamiastrum luteum Hudson, H, Ch, Euc; U3, T0, R4.
Lamium maculatum L., H, (Ch), Eur; U3,5, T0, R4.
Lathyrus hallersteinii H, Dac- Balc; U3, T3, R4.
Lathyrus inermis L., H, Balc; U3, T3, R4.
Lathyrus niger H, Euc; U2,5, T3, R3.
Lathyrus sylvestris L., H, Eur(Med); 2,5, T3, R4.
Lathyrus vernus L., Bernh, H, Eua; U3, T3, R.
Lembotropis nigricans L., J, Holub, N, Euc; U2,5, T3, R0.
Ligustrum vulgare L., M, Eur (Med); U2,5, T3, R3.
Lithospermum purpureochaeroleum L., I, M, H, G, Euc; U2,5 T4, R4,5.
Luzula luzuloides Lam, H, Eur; U2,5, T2,5, R2.
Lychnis coronaria L., Desr, H, Med; U2,5, T4, R3.
Lychnis flos-cuculi L., H, Eua; U3,5, T2,5, R0.
Lygustrum vulgare L., M, Eur (Med) ; U2,5, T3, R3.
Lysimachia numularia L., Ch, Eur; U4, T3, R0.
Lysimachia, punctata L., H, Pont-Med; U3,5, T3,5 R3.
Malus sylvestris Miller, M, Eur; U3,5, T3, R4.
Melampyrum bihariense Th, Dac-Balc; U2,5, T3, R3.
Melica uniflora Retz, H, Eur; U2,5, T3, R4.
Mercurialis ovata H, (Ch), Alp-Balc-Taur; U0, T3, R4.
Mycelis muralis L., H, EUR; U3, T3, R0.
Myosotis sylvatica Hoffm, H, Eua; U3,5, T3, R3.
Ononis pusilla L., N, Med; U2,5, T4,5, R0.
Orchis purpurea Hudson, G, Euc, U2,5, T4, R4,5.
Oxalis acetosella L., H-G, Circ (bor); U4, T3, R3.
Peucedanum cervaria L., H, Eur (Med); U2, T3,5, R4,5
Peucedanum oreoselinum L., H, Euc-Med; U2,5, T3, R0.
Pinus nigra MM, Carp (end); U1,5, T4, R4,5.
Platanthera bifolia L., C, M, G, Eua; (Med); U3,5, T0, R3.
Poa angustifolia L., H, EuaM U2, T3, R0.
Poa nemoralis L., H, Eua; U3, T3, R0.
Polygala vulgaris L., H, (Ch); U3, T3, R3.
Polygonatum latifolium G, Pont-Pan-Balc; U3, T3,5, R4.
Polygonatum multiflorum L., All, G, Eur (bor); U 3, T3, R.3.
Populus alba L., H, Eur(cont); U3,5, T3, R3.
Populus nigra L., MM, Eua; U4, T3, R4.
Populus tremula L., MM-M, Eua; U3, T2, R2.
Potentilla erecta L., H, Eua; U1,5, T3,5, R4.
Potentilla alba L., H, Eua, Med; U0, T0, R0.
Potentilla micrantha H, Med-Euc; U2,5, T3,5, R3,5.
Primula elaţior L., Hill, H, Eua; U3, T3, R4.
Prunus avium L., M-MM, Eur ; U3, T3, R3.
Prunus spinosa M, Eua; U2, T3, R3.
Prunus tenella L., M, Eua (cont);U2, T3, R4,5.
Pteridium aquilinium L., G, Cosm:U3, T3, R0.
Pulmonaria officinalis L., H, EUR; u3,5, t3, r3.
Pulmonaria rubra H, Carp-Balc; U3,5, T2, R3.
Pyrus elaeagrifolia M, Pont-Med; U2, T5, R4.
Pyrus pyraster M-MM, Eur; U2, T3, R4.
Quercus cerris L., MM-M, Med; U2, T3, R3.
Quercus farnetto Ten, MM, Balc; U2, T4, R3.
Quercus pedunculiflora MM, Pont (vest) Anat; U2, T4, R4.
Quercus petraea Liebl, mm-m, Eur; U2,5, T3, R0.
Quercus pubescens Willd, MM, Med; U1,5, T4, R5.
Quercus robur L., MM, Eur ; U3,5, T3, R0.
Quercus virgiliana (Ten), MM, Med; U2, T4, R4.
Ranunculus auricomus L., H, Eua; U3,5, T3, R3.
Ranunculus ficaria L., H-G, Eua; (Med); U3,5, T3, R3.
Rhamnus frangula L., Eua; U2, T3, R4.
Rosa canina L., N, Eur; U2, T3, R3.
Rosa gallica L., N, Med, ; U2, T4, R4.
Rosa pimpinelliofila L., N, Eua; U2, T3, R4.
Rubus hirtus N, Eur; U3, T2,5, R3.
Rubus idaeus L., N, Circ (bor); U3, T3, R,.
Ruscus aculeatus L., G, Ch, Alt-Med; U2,5, T4, R2.
Salix caprea L., M, Eua; U3, T3, R3.
Salvia glutinosa L., H, Eua; U3,5, T3, R4.
Salvia nemorosa L., H, Euc; U2,5, T4, R3.
Sanguisorba minor Scop, H, Eua;U2, T3, R4.
Saponaria glutinosa Bieb, H, Balc,U2, T4, R4.
Saxifraga rotundifolia L., Ch, Eur (mont); U3,5,T0, R4,5.
Scilla bifolia L., G, Eur;U3,5, T3, R4.
Scrophularia nodosa L., H, Eua; U3,5, T3, R0.
Scutallaria altissima L., H, Pont-Med;U2,5, T3,5, R4.
Selinum carvifolia L., H, Eua;U3,5, T3, R3.
Silene heuffelii Soo, Th-TH, Carp-Balc;U3,5, T2, R0.
Silene italica L., H, Eua (Med);U3, T0, R3.
Silene viridiflora L., H, MedM U2, T3,5, R3.
Solanum dulcamara L., Ch(N), Eua (Med);U4,5, T3, R4.
Sorbus aucuparia L., MM-M, Eur;U3, T2,5, R2.
Stachys officinalis L., H, Eua (Med);U3, T3, R0.
Stachys sylvatica L., H, Eua; U3,5, T0, R0.

Staphylea pinnata L., M, Eur (Med est);U2,5, T3,5, R4.
Stellaria holosteia L., H-Ch, Eua;U3, T3, R0.
Stellaria media L., Th-TH, Cosm;U3, T0, R0.
Symphytum cordatum Waldst et Kit, H-G,Carp-Balc;U3, T2, R3.
Teucrium chamaedrys L., Ch, Med-Euc; U2, T3,5, R4.
Tilia cordata Miller, MM, Eur; U3, T3, R3.
Tilia tomentosa MM, Balc;U2,5, T3,5, 3.
Trifolium medium L., H, Eua; U3, T3, R0.
Ulmus laevis MM-M, Eur;U4, T3, R3.
Ulmus minor Miller, MM, Eua;U3, T3, R4.
Urtica dioica H-G, Cosm; U3, T3, R4
Vaccinium myrtillus L., N, (Ch), Circ (bor);U0, T2, R1.
Verbascum nigrum L., TH-H, Eua;U2, T3, R4.
Veronica chamaedrys L., H, -Ch, Eua;U3, T0, R0.
Veronica officinalis L., Ch, Eua,U2, T2, R2.
Viburnum opulus L., M, Circ(bor); U4, T3, R4.
Vicia dalmatica Kerner, H, Pont-Med;U3, T0, R3.
Vicia grandiflora Th-TH, Balc-Pont-Cauc;U3, T3, R0.
Vicia sylvatica L., H, Eua; U3,5, T2, R0.
Vincetoxicum hirundinaria L., H, Eur (Med);U2, T4, R4.
Viola hirta L., H, Eua;U2, T3, R4.
Viola odorata L., H, Alt-Med; U2,5, T3,5, R4.
Viola reichenbachiana H, Eua;U3, T3, R3,5.
Vitis sylvestris M-E, Pont-Med;U3,5, T4,5, R4,5.
Ziziphus jujuba Miller, M, Med (est, adv);U1, T5, R5.

Research on vegetation descriptions are grouped as follows, in the first part of subchapter I grouped the epitome of coenotaxon that describes plant groups, resulting in all sample areas, I described below in table form the reports and textual characterization of plant associations, on the surfaces on which we can find Castanea sativa. The last part of this subchapter, groupes the reports and the description of plant associations, existing on the areas with sweet chestnut-tree that I divide in 4 different parts ,following the activity plan developed on 4 directions : the Gladna Romana area, Tomesti, Costeiul de Sus and Sintesti.

Conspectul unităţilor de vegetaţie (by V. SANDA et. al. 1985)

Cl. QUERCO – FAGETEA Br. – Bl. et Vlieger 1937
Ord. FAGETALIA SYLVATICAE Pawl.1928
Al. Symphyto – Fagion Vida 1959
Subalianţa Lathyro – Hallersteinii Carpinenion Boşcaiu al. 19—
As.1. Carpino-Fagetum Paucă 1941
(Tomeşti şi Gladna Română)
As.2. Querco petraea-Carpinetum Soo. et. Pocs. 1957
(Sinteşti şi Coşteiul de Sus)
As.3. Querco robori-Carpinetum Soo. et. Pocs. (1931) 1957
(Tomeşti şi Gladna Română)
Al. Alno - Ulmion Br.-Bl. et Tx. 1943 em. Muller et. Gors 1958
Subalianţa Ulmion Oberd. 1953
As.4. Fraxino-Ulmetum (Tx. 1952) Oberd. 1953 (Sinteşti)

Cl. QUERCETEA ROBORI-PETRAEA Br.-Bl. et. Tx. 1943
Ord. PINO-CUERCETALIA Soo. 1962
Al. Castaneo - Quercion Soo.1962
As.5. ***Castaneo-Quercetum*** I. Horvat 1938, M. Wraber. 1954.
(Coşteiul de Sus şi Gladna Română)

Cl. QUERCETEA PUBESCENTI – PETREAE (Oberd. 1948,1957) Jakucs 1960
Ord. QERCETALIA PUBESCENTIS Br.-Bl. 1931 em. Soo. 1964
Al. Quercion pubescenti – Petraea Br.-Bl. 1931 emed. Tx.1931
As.6. Quercetum petraea-cerris Soo.1957, 1969 (Coşteiul de Sus)
Ord. ORNO-COTINETALIA Jakus 1960
Al. Quercion farneto Horvat 1954 corr. Soo. 1960
As.7. Quercetum cerris Grigorescu 1941.
(Coşteiul de Sus şi Gladna Română)
As.8. Quercetum farnetto-cerris Georgescu 1945, Rudski 1949.
(Coşteiul de Sus şi Gladna Română)
Ord. PRUNETALIA Tx. 1952
Al. Berberidion Br.-Bl. 1950, 1953
As.9. Pruno spinosae – Crataegetum (Soo 1927) Hueck 1931.

(Tomeşti)

As.10. Eunonymo-prunetum spinosae (Hueck 1931) Tx. 1952 em. Pass. et. Hofm 1968. (Sinteşti)

General characterization of the surfaces on wich I took surveys in the area of distribution of the species *Castanea sativa*, located near Gladna Romana.

Areas occupied by the Castanea sativa specie, are at the exit of Gladna Romanian, to Zolt, more precisely between the two villages on the climb to the top Padeş peaks. As the Coşteiul de Sus surfaces are characterized by a compact appearance of mature and young chestnut trees, over 90% of them are bearing fruit. The area that are spread specimens of chestnut tree is as clean as in other areas because residents are taking care of the "plantation" that is the most productive off all areas taken under observation. Chestnut tree specimens easily reach 30m, some of them have impressive crown as in the case of those found in Coşteiul de Sus are frequented by wild-boar as well as species of rodents.

The average altitude where I have done surveys, is about 298m, rising in the higher areas up to 340m, and in the lower areas up to 250m. The number of species specifically for the surveys from such areas is around 30, with maximum of 38 species and minimum 28 species. The cover of herbaceous plants is represented with sections where they are almost absent, but also well represented sections of this point of view. In this area is observed that there is a trend of expansion of the species *Castanea sativa*, because the surfaces that delineates the area of this species is observed numerous juvenile specimens, this is probably because the rodent species 'squirrel' hide the fruits of this tree.

General characterization of the surfaces on wich I took surveys in the area of distribution of the species *Castanea sativa*, located near Tomesti.

I mention that in this part of the studied teritory, *Castanea sativa* is not evenly spread but in the form of islands, 5-10 specimens of chestnut tree, separated from other plant species such as *Quercus cerris*, *Fagus silvatica*, *Corillus avellana*, *Robinia pseudacacia*, including many species of fruit trees because the area is an intensive farming, particularly orchards and meadows. The forest is slightly unkempt appearance with numerous shrub species: *Rossa canina*, *Crataegus monogyna*, *Rubus caesius*. It is worth mentioning that the area in which *Castanea sativa* is crossed by numerous country roads and paths, it`s clear that the area is always attended.

The herbaceous layer is average represented as old stands with impressive crown where light does not penetrate easily and have northern exposure, herbaceous layer barely make their presence felt, with only herbaceous plant species of shade. And in areas where *Castanea sativa* and others cohabital species are smaller and possibly with southern exposure and limited by a pasture, hay, or a road, we can notice several herbaceous plant species as well as numerous species of lower plants (mosses, lichens and mushrooms).

The average altitude areas with *Castanea sativa* are about 350m, above sea level, with a maximum of 389m, the highest point where I took surveys, and in lower areas until 317m, on the west of the studied area. General coverage of vegetation is kept to an average of 70% to a maximum of 80%, but there are areas with a minimum coverage up to 50%. Referring to thevegetation height we can observe a natural setting so that mature specimens of *Castanea sativa* and others easy reach a height of over 30m.

In the next floor of young chestnut tree but in fruit the height reach 10-15m as well as shrub layer up to 3-5m, but not in fruit. On the last layer of surface vegetation we cand find herbaceous plant species cohabit with species of fungi and moss up to 30cm. The number of plant species that builds up these areas is averaging 21 species, but there are bigger numbers of plant species surveys (30 species) and from place to place mostly in areas with mature stands, the number of species drops below 20. Outside the access roads in the area, the surface of good

chestnut tree doesn`t show trace of anthropological intervention just a special phenomen, maybe accidental wich i observed were the remains of a fire, but who did not affected, for now, the population of chestnut trees.

General characterization of the surfaces on wich I took surveys in the area of distribution of the species *Castanea sativa*, located near Coşteiul de Sus.

The territory taken under observation is situated at the outlet of the village Coşteiul de Sus, near the former quarries, spread of *Castanea sativa* in this part of the territory is uniform, which proves the existence of a good chestnut distant in time , probably established and correlated with the population of Baia Mare, but is much less than this, with only two hectares, and believed that has been established during the Queen Maria Theresa. It is noted that 90% is a stand made of chestnut, but probably it regenerate itself, being sprinkled with many young specimens. The two hectares are situated atop a hill, chestnut specimens heights up to 30m and a diameter of 1 to 1.2 m, because they developed massive tree crown is at the top and the block is longilin.

Be emphasized that the biocenotic appearance is different from the one of Tomeşti because the number of herbaceous plant species is much smaller, but as there are many shrub species encountered. Because the surface with good chestnut is near a large forest,we can note a large number of traces of a wild-boar known that he prefers his regime also chestnuts. The average altitude of this surface with *Castanea sativa* is 370 m from the sea level, a maximum of 402 m the highest point where I took surveys, and a minimum altitude of 338 m at the nearest point of the village .

General coverage of vegetation is kept to an average of 70% to a maximum of 75%, but having area coverage of 66% minimum. The number of plant species that builds up these areas is on average 35 species, but there are many species surveys with more than 37 species, and there is observed a number of surveys under 32 species.

General characterization of the surfaces on wich I took surveys in the area of distribution of the species *Castanea sativa*, located near Sintesti.

I have made surveys in the adjoining Sintesti, where I found some good chestnut species, which may have the most impressive size and are probably the oldest in the area, with impressive size of the block over 3m in circumference and reaches a height of 30m, with an impressive production of chestnuts, which certifies that They might be the oldest chestnut trees studied. The average altitude areas in question falls somewhere around 280m above sea level, with a maximum of 284m in the highest point where I took surveys in this area, and a minimum altitude of 276m at the lowest point away from the village.

The entire area is characterized by the species Castanea sativa in this area is surrounded by a dense shrub vegetation, which hinder the access to chestnut (*Crataegus monogyna, Rosa canina, Rubus caesius, Alnus glutinosa*) and the actual area of chestnut is a a curious phenomenon that herbaceous vegetation that almost missed. The number of plant species that builds these areas is around 36 species, reaching a maximum number of 44 species, and the minimum number being around 33 species. All these areas,and especially around mature specimens and old chestnut, there is a massive phenomenon of shoots, a phenomenon quite rare in the species Castanea sativa. In the case of reports on these surfaces the vegetation coverage is kept close to the Tomeşti, averaging 75%, maximum of 80%, while the minimum vegetation coverage is 65%.

Phenological characteristics of chestnut on the 4 locations with repeated raids on the area I found and observed the following phenological stages that takes place in cycle each year, with minor differences, as actually happened in those two years since I subbmited under scrutiny investigation the specimens of *Castanea sativa* in this area.

The greening of chestnut, a phenomenon that began around the average temperature of

about 7^0C, so that in SINTESTI started since 1.IV started and the other two locations, respectively Gladna Romana and Coşteiul de Sus this phenomenon appeared later in 7.IV this because specimens *of Castanea sativa* in the latter locations are confined in a slightly shady area being exposed in the north stands were slightly denser that other influences on these specimens . The phenomenon of greening, until the end when the foliar buds were opened around the 3-9.V around the average temperature of 16^0C, when the foliar buds are opened.

The actual flowering is made from 23-28.V at an average heating values of 267^0C, with clear differences between the four locations, so that the phenomenon of maximum flowering is mid-June. The phenomenon of flowering lasts until around the 13-15.VII, when all specimens opened their last flowers and pollination is underway.

Fructification begins around the time of 18.VII-20.VII and covers a longer period until 23 24.IX, when the achens of all specimens are in the ground and no longer in the trees . Activity of this species is extended until 17-20.X when are recorded around all specimens the fallen leaves on the ground and they enter at rest.

CONCLUSIONS

In the studied area I identified a total of 212 plant species belonging to 23 families, of which the best represented are: *Asteraceae* (Compositae) with 38 species. I mention that the structure of vegetation cover in the area is very diverse plant species including medicinal and pharmaceutical value, species with tincture characteristics, honey-bearing potential species, species with food value. Phytocoenosis studied belong to 10 plant associations, belonging to these three classes of vegetation are classified in five orders and six vegetation alliances. It is noted that in two cases in the studied area we found species of *Castanea sativa* forming association (Castaneo-Soo Quercion 1962), specifically in Costeiul de Sus and Gladna Romana where *Castanea sativa* is the most abundant and most compact forming real stands.

In the case of bioforms and geoelements I reached the following results: hemicryptophytes, are represented in proportion of 46%, followed by annual terofites, with 15%,for bioforms and in case o geoelemets,they belong generaly to Eurasian element in a proportion of 55 %, and the European element, with 13%.

Phenological observations made in the period: August 2008 - June 2010, looks to establish a gap between settlements phenophase taken as evidence and at higher altitudes (Coşteiul de Sus and Gladna), where the phenological ascpect is delayed with 2-6 days later from the phenological aspect of chestnuts near the areas with low altitude(Tomesti and Sintesti), where the chestnuts start earlier in vegetation, due to the altitude and their disposition at the end of the forest, in areas with sunny forest clearings, with southern exposure. So, the effective lenght of the vegetation season is in average 200 days per year.

The important role in biodiversity is to make connections with other plant species and animal species being the source of food for wild boar, rodents, birds etc. But most important is that besides the economic value represented by the wood as raw material, also offers the fruits in human nutrition.

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