THE PRODUCTIVITY OF THE ROMANIAN SILVOSTEPPE FORESTS

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In this paper four sites are reviewed (Ciofliceanca, Comana, Măgura and Ogarca Forest) from the point of view of the herbaceous stratum productivity. These studied sites are representative forests of Romanian silvosteppe forest. They are located in the south-south-east of Câmpia Română.

Key words: productivity, biomass, herbaceous stratum.

INTRODUCTION

The studied forests are located in the south-south-east of Câmpia Română. Surely, they are typical forests of Romanian silvosteppe forest. Those of the forests are located less than 50 km from Bucharest: Ogarca Forest (Vlașin village, Schitu locality, Giurgiu county), Comana Forest (Comana locality, Giurgiu County), Ciofliceanca Forest (locality, Giurgiu county), Măgura Forest (Greaca locality, Giurgiu county).

MATERIAL AND METHODS

The collection of the vegetal material had been got up seasonally, in order to watch the biomass accumulation, on 0.25 m^2 surfaces, in one hundred repetitions (1, 3, 5).

In order to determine the biomass quantity on surface unit, a number of 25–50 individuals have been collected, depending on the gravimetric dimensions of plants, which were weighed with the analytic balance, in fresh and dried state (85°).

Knowing the individual medium weight for every species, as well as their frequency and density a square meter the quantity of biomass (fresh and dried) on surface unit was determined (2, 4).

RESULTS AND DISCUSSIONS

The **Ciofliceanca** forest consists of pure trees of de *Quercus pedunculiflora*, classified in the ***Quercetum pedunculiflorae*** Borza 1937 association. The community is growing on intense bad chernozem that is characteristic for forests steppe of the southern of Câmpia Română. The herbaceous synusia is various and has 60 cm height and 55–60 % medium average.

The widely distributed species are: *Dictamnus albus, Galium verum, Adonis vernalis, Trifolium alpestre, Lithospermum purpurocaeruleum, Euphorbia virgata, Vinca herbacea, Melica altissima, Asparagus officinalis, Cruciata laevipes, Physalis alkekengi, Agrimonia pilosa, Fragaria viridis, Thalictrum minus, Vincetoxicum hirudinaria Brachypodium sylvaticum, Bromus inermis*. Among them, the species with an important biomass contribution are: *Cruciata laevipes* (36% frequency, fresh biomass 0.83 g/m^2), *Physalis alkekengi* (32 % frequency, fresh biomass 3.37 g/m^2) , *Agrimonia pilosa (*24 % frequency, fresh biomass 4.57 g/m^2), *Fragaria viridis* (54 % frequency, fresh biomass 0.09 g/m^2), *Thalictrum minus* (14 % frequency, fresh biomass 1.89 g/m^2), *Vincetoxicum hirudinaria* (24 % frequency, fresh biomass 3.03 g/m^2), *Brachypodium sylvaticum* (64 % frequency, fresh biomass 10.57 g/m^2), *Bromus inermis* (65 % frequency, fresh biomass 3.4 g/m^2).

The association from **Comana,** framed in ***Fraxino pallisae-angustifoliae-Quercetum roboris*** Popescu *et al.*, 1979.

The herbaceous stratum with 40 cm medium height and 25 % covering is composed of: *Asarum europaeum, Asperula taurina, Galium odoratum, Sanicula europaea, Carex divulsa, Brachypodium sylvaticum, Galeobdolon luteum, Polygonatum latifolium, Mercurialis perennis,Asperula taurina, Euphorbia amygdaloides, Carex remota, Dactylis polygama, Carex hirta, Pulmonaria officinalis*. Among them, the species with an important biomass contribution are: *Pulmonaria officinalis* (19 % frequency, fresh biomass 4.53 g/m^2), *Brachypodium sylvaticum* (52% frequency, fresh biomass 11.27 g/m^2), *Carex diffusa* (26 % frequency, fresh biomass 0.36 g/m^2), *Galeobdolon luteum* (12 % frequency, fresh biomass 0.73 g/m^2), *Asperula taurina* (29 % frequency, fresh biomass 2.11 g/m^2).

The community of the turkey oak brushes of **Ogarca** forest (***Quercetum cerris*** Georgescu 1949) is developed on compact, brown and podsolisation soils, with the high percent of carbonates.

The grassy stratum is up to 35–40 cm and covering 30–35% percent. The most of the species are xero-mesophilous elements: *Festuca valesiaca, Lithospermum purpurocaeruleum, Paeoenia peregrina* var. *romanica, Lychis coronaria, Thalictrum aquilegiifolium, Th. lucidum, Stachys officinalis, Valeriana officinalis, Cruciata laevipes, Physalis alkekengi, Potentilla recta, Geum urbanum, Fragaria viridis, Poa angustifolia Ornithogalum flavescens, Astragalus glycyphyllos, Carex spicata, Potentilla argentea, Polygonatum latifolium, Iris variegata, Lathyrus niger*, etc. Among them, the species with an important biomass aport, are: *Cruciata laevipes (*12 % frequency, fresh biomass 1.24 g/m^2), *Physalis alkekengi* (9 % frequency, fresh biomass 4.36 g/m^2), *Valeriana officinalis* (35 % frequency, fresh biomass 10.27 g/m^2), *Paoenia peregrina* var. *romanica* (42 % frequency, fresh biomass 27.03 g/m^2), *Lithospermum purpurocaeruleum (*57 % frequency, fresh biomass 11.84 g/m^2), *Ornithogalum flavescens* (6 % frequency, fresh biomass 2.09 g/m^2), *Carex spicata (*6 % frequency, fresh biomass 1.12 g/m^2), etc.

The arboretum from **Măgura** (Greaca) forest framed in ***Ceraso mahaleb-Quercetum pubescentis*** Jakucs et Fekete 1957 association, is growing on slopes (30°) with southern exposure. The herbaceous stratum, with 60 cm height and 35–45% covering, is composed of *Vincetoxicum hirudinaria, Origanum vulgare, Lithospermum purpurocaeruleum, Carex humilis, Veronica chamaedrys, Festuca valesiaca, Poa angustifolia, Alliaria petiolata, Allium rotundum*. The species with an important biomass aport are: *Alliaria petiolata* (46 % frequency, fresh biomass 3.83 g/m^2), *Brachypodium sylvaticum* (32 % frequency, fresh biomass 11.27 g/m^2), *Carex diffusa* (25 % frequency, fresh biomass 0.36 g/m^2), *Asparagus verticillatus* (32 % frequency, fresh biomass 4.73 g/m^2), *Anthriscus trichosperma* (28 % frequency, fresh biomass 2.51 g/m^2).

But, as you could see in the figure (Fig. 1), there is a characteristic for all four sites: the estival biomass is higher then the autumnal biomass. The values and the rate of decreasing differ from one to other sites due to various and different both abiotic and biotic factors and that is a local characteristic feature for each sites. According to the figure (Fig. 1), at Ciofliceanca Forest the estival biomass is the highest (up to 300 g/m^2).

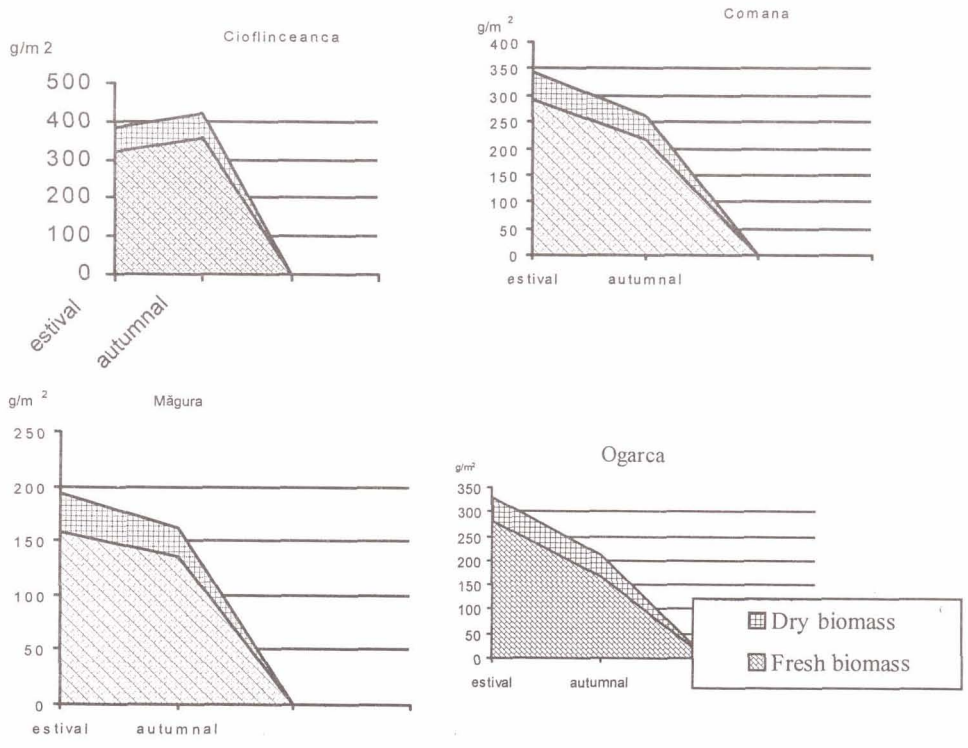

Fig. 1 – The dynamics of the biomass of the stratum herbaceous.

CONCLUSIONS

Intra-seasonal dynamics of the various aboveground primary producer compartments for the four forest sites present significant differences.

The seasonal peak values of the primary producer compartments are examined as indicative of the net accumulation of the organic material, and the relationships of these peak values to various abiotic regimes at the investigated sites.

The variation among the studied sites could be noticed. More then this, through the differences among the existent abiotic factors in these four sites (temperature, precipitations, exposure), could be explained the varied accumulations of biomass (too low at Măgura Forest and too high at Ciofliceanca Forest).

In this way, the productivity in estival and autumnal seasons could be explained (for June – September period, respectively).

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