THE INFLUENCE OF THE MANAGEMENT TYPE ON THE DIAMETERS CATEGORIES` STRUCTURE OF SOME STANDS FROM O.S. DOBREŞTI U.P. III VÂRCIOROG

INFLUENȚA MODULUI DE GOSPODĂRIRE ASUPRA STRUCTURII ARBORETELOR DIN CADRUL O.S. DOBREȘTI U.P. III VÂRCIOROG ÎN CONTEXTUL DEZVOLTĂRII DURABILE

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Abstract: *The investigated forest stands are included in the same site type, 5153 according to Romanian classification of site type. The plots were randomly selected within the stands assigned to the Production Unit III Vârciorog. The aim of the present paper is to stress structural differences that appear under same site conditions as a consequence of the application of different management methods.*

Rezumat*: Arboretele luate în studiu sunt incluse în același tip de stațiune 5153, în concordanță cu sistemul românesc de clasificare a tipurilor de stațiune. Suprafețele de probă au fost amplasate randomizat în Unitatea de Producție III Vârciorog Scopul acestui material este acela de a pune în evidență diferențele care apar în aplicarea măsurile de gospodărire în raport de condițiile staționale în vederea dezvoltării durabile.*

Key words: *stand, structure, site, management methods*
Cuvinte cheie: *arboret, structura, stațiune, măsuri de gospodărire*

INTRODUCTION

The structure of a stand in a general way refers to the way of internal organization of the system. Structure on diameters` categories means a way of distributing the number of stands on diameters` categories. With the purpose of mentioning the structure on diameters` categories, on inventory, the stands have been gathered on diameter categories with amplitude of 2 cm.

This paper's purpose is to debate in which way the stand which vegetates on the same sort of environment(5153 - Hilly of big brown edaphic sessile oak stand with Asarum Stellaria)shows structures on diameter` categories more or less closer then the ones showed as optimal in the field literature. The even-aged stands usually show a regular structure, the adjustment being recommended to be made by the law of Charlier type A, a distribution more flexible then the normal law because takes into consideration the asymmetry as well as the excess. In the uneven-aged stands the recommended connections are the Meyer function and Liocourt descending geomethrycal progression.

Of course the structure of the stands is also influenced by the management way and especially by the foresttehnical interventions which, take place from the insemination of the stand to its exploitation. In a stand the distribution of the trees on diameters` categories gives exact information about its structure, as well as the measures which were and will be taken to lead the stand towards the management goal, according to the working-plan.

WORK METHOD

The measurement were made for the stand which vegetates on the same type of environment (5153). 428,6 ha belonging to the same type of environment can be found in U.P. III Vârciorog.

Choosing the subparcels and the place was randomly. Measurements of the following subparcels were taken: 72B, 73C, 75A, 75D, 77C, 78C, 81A, 86F, 87B, 89B, 90B, 92B, 93C, 95B.

A number of 14 testing areas, each with a surface of 2500 m^2 were made.. For the results to be statistical representative, the number of testing areas was previously calculated. A variation coefficient of 15% and the representation error of 10% were used. The stands, partially or totally descendant, in which substitutions were given, were excluded from measurements.

The testing areas were made squares of 50 meters aside. On a ground with an inclination bigger than 5 degrees, the crosscut allowance was calculated for the reduced surface to remain 2500 $m^{2.}$ On the testing surface, the entire stand having the diameters more than 8 cm, were measured.

After the primary conversion of the data, 14 experimental distributions in which, the variation amplitude of the diameter` classes was between 8-56 cm, resulted..

Using modern methods of data` conversion the adjustment of the experimental distributions, according to the normal law, Charlier type A, was made for the stands who's distributions have a similar structure, and, for the others with rather even-aged or uneven-aged structures, the adjustment was calculated according to Meyer distribution. A simulation of an intervention for even-aged or uneven-aged stands was also made which, could bring them to a similar structure as the even-aged one, who's adjustment should be made according to the upper functions.

RESULTS AND DISSCUTIONS

The structure of the stands in ratio with the age, according to the management plan, is rather even-aged. The even-aged structure, in some point, deviates from the normal structure, that's why, in this paper, the adjustment according to Charlier and Meyer law was made.

One thing observed at the studied stands is the high variation of the stands number distribution, on diameter categories, the variation coefficient having values between 31-41,4%. This variation may have 2 causes: the thinning were not made in time or were made badly, extracting mostly, sessile oak and European beech of large diameters from which, immediate incomes can be obtained without taking into consideration the goal of the thinning interventions of the stands.

This way, in the stands no 77C, 89B, 90B, 95B, according to the management plan, are shown as executed in the decade previous to the thinning. The distribution on stands` number shows the following particularities:

In u.a. 95B although in 1996 thinnings were made, the stand shows thin trees with diameters of 8, 10, 12, 14, 16 in a large number as resulted from the figure above. The stands in these categories can be found in the IVth and Vth Kraft classes and are represented only by the European and white beech. These trees should have been extracted at the last intervention in a quantum of 50-60%, as the results of the normal and Charlier distributions calculation shows.

Similar results were obtained also in u.a. 77C. In this subparcel the inferior diameters` categories are less represented, still the thinning made in the last decade (1994) followed, as previously, extracting large diameters trees.

As a consequence of the thinnings, better results were obtained in the other 2 subparcels 89B and 90B.Eloquent in this case is the lower figure. One can observe the adjustment of the experimental frequencies, according to the 2 laws, is almost perfect according to theoretical laws.

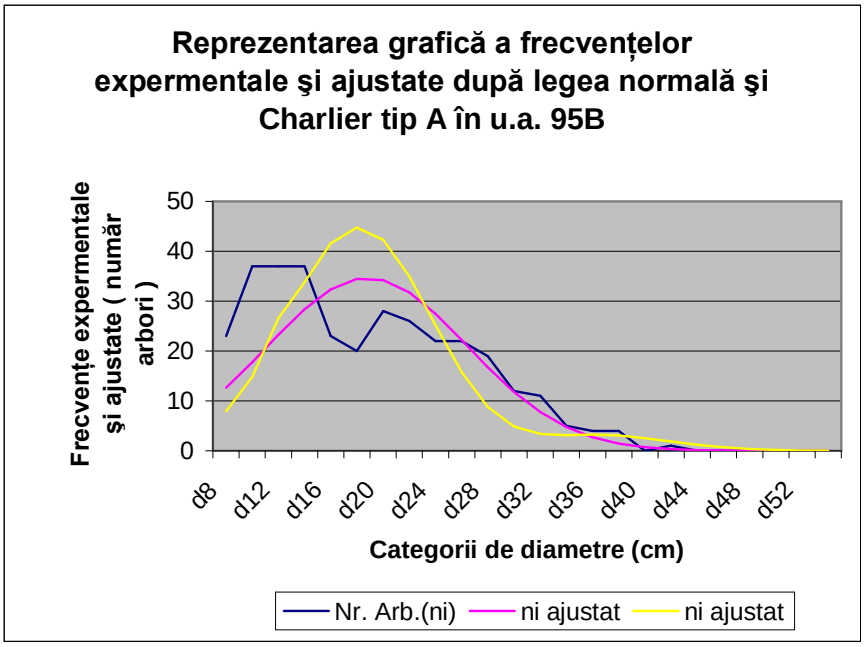

Figure 1. Number trees structure comparison with normal law and Charlier law in 95 B

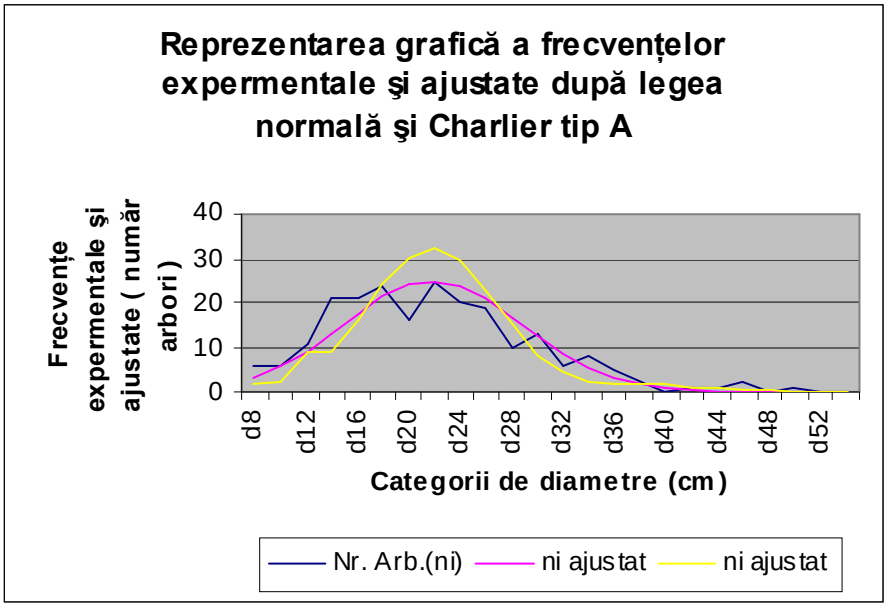

Figure 2. Number trees structure compasrison with normal law and Charlier law in 77 C

In the other subparcels only cleaning works was done. In these stands a lot more

obvious variation of tree number on diameters` categories is observed. This way, the most frequent situations will be presented as follows:

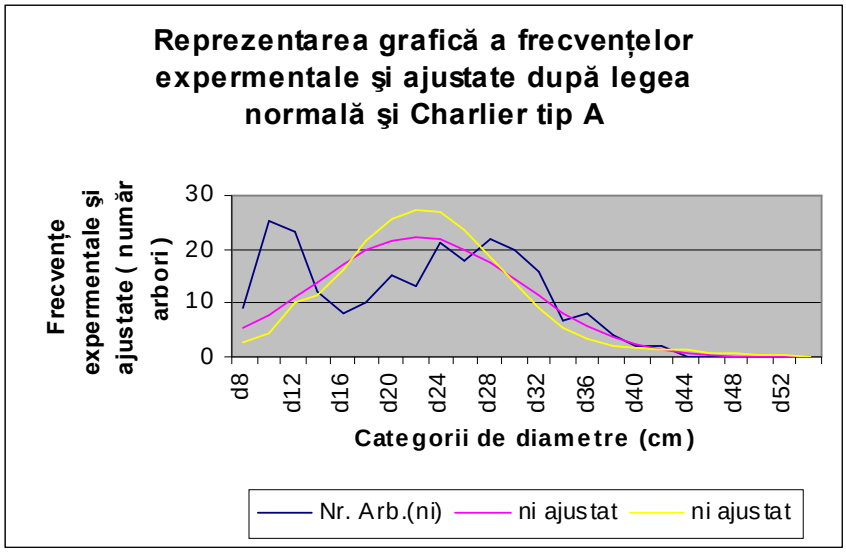

Figure 3. Number trees structure comparison with normal law and Charlier law in 86F

In u.a. 86 F, 2 values are distinguished, first represented by small-sized trees, like European and white beech and the second one basically represented by sessile oak.

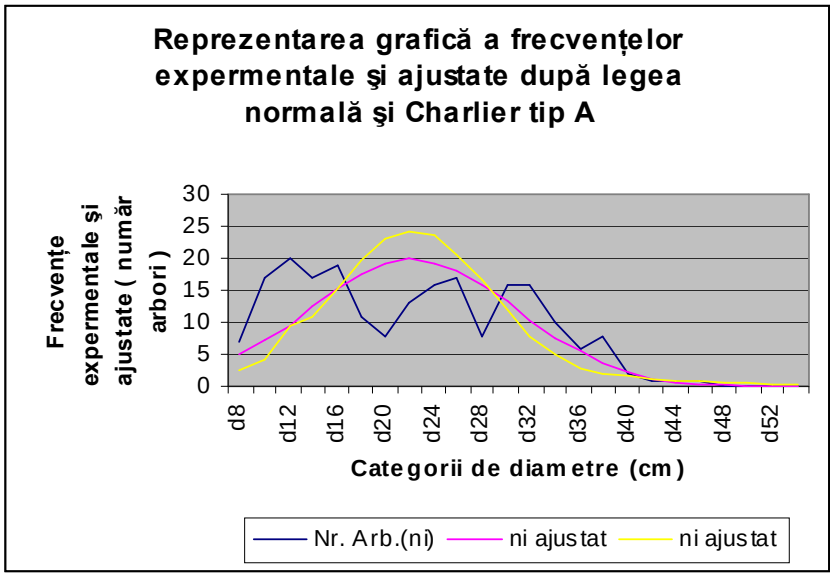

Figure 4. Number trees structure comparison with normal law and Charlier law in 87B

A similar situation appears also in u.a. 87B. Here, several values occur which, seem to have resulted from sanitary cuttings performed in 1995. The 2 subparcels 87B şi 86F are very similar in structure, they have the same composition 7Go3Fa and still, in the places were interventions were made (87B – sanitary cuttings 1995) a bigger deviation from the normal and Charlier curve is observed.

Simulating an intervention on the inferior diameter categories, the structure can approach more the two theoretical curves as it can be noticed in the figure below.

The intervention meant to extract the trees from 8, 10, 12, 14 categories, in a number of 69 trees, the intensity on number of trees being 29,4%. The intensity on the primary surface is more reduced, 6,5%, because the extraction of the trees from the inferior diameter categories was simulated.

Simulating some interventions in order to reach uneven-aged structures, is harder to achieve because the structure of most of the stands gets close to the normal structure and, on the other hand, reaching the uneven-aged structure needs more interventions and a longer time to perform it.

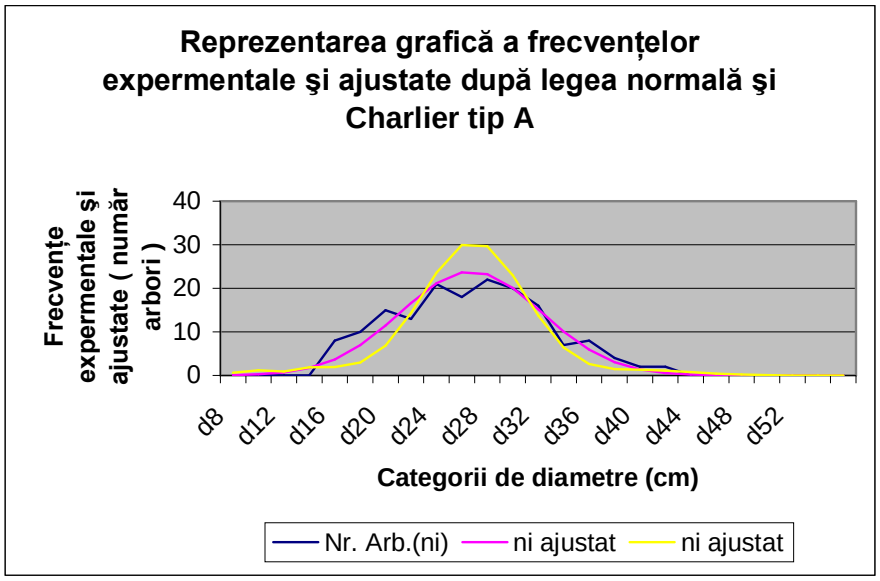

Figure 5. Number trees structure simulation with normal law and Charlier law in 86F

CONCLUSIONS

From the analysis of these 14 testing surfaces, result three important things concerning the structure of the stands on diameter categories.

The first thing is that thinnings were systematically made in the stands and, as a result, the structure of the stands is very close to Charlier structure. From this point it can be deduced a thing already known and that is the silvotechnical intervention, well placed, will reflect in the future in the structure of the stand.

Another thing is that, although thinnings were placed, the structure of the stands is a lot different from the normal structure. This fact is the result of an inappropriate placement of the work, basically meaning the extraction of the big-sized types instead of the structure of the

stand improvement.

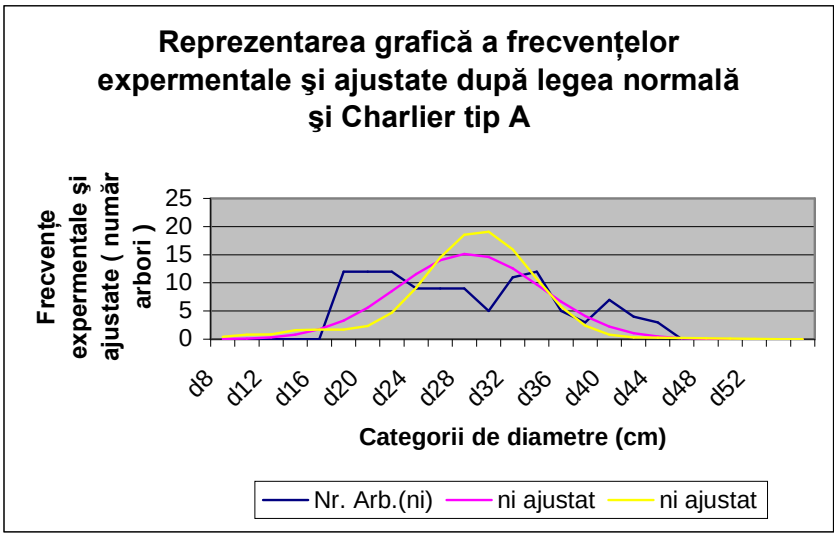

Figure 6. Number trees structure simulation with normal law and Charlier law in 75 D

Another conclusion results from the analysis of the stands in which none intervention has been made in the last decade and which have structures that derives a lot from the regular structure, the interventions made 2 or even 3 decades ago having a great matter of saying.

Simulation of the interventions, in a few stands for normalizing the structure, leaded to intervention intensities on trees number around 30-45 % while, the intensity on primary surface had values between 5-15 %. The thinning meant the extraction mainly of small-sized European and white beech, generally trees left behind on growths.

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