THE REGRESSION EQUATION OF THE INCREMENTS IN MIXED BEECH SESSILE OAK FORESTS - VÂRCIOROG, DOBREȘTI, BIHOR COUNTY

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Abstract

For stands comparable structure is interesting to determine the equation of growth that have as a starting point diameters relative values, because they can be used later in other similar cases without having to go through every time calculation algorithm for determining growth equations. It will only take into account that comparisons can be made between close and stands with structures that grows in similar conditions.

The work is part of a larger study that led to the regression equations to determine the three types of resorts with the largest share of the middle basin of Crişului Repede river.

The types of stands under study are: 5153, 5242, 5243. All stands are repezentative for mixed oak and beech forests in the middle basin of Crişului Repede river.

This paper used for measurements 2500 square meters plots. In this plots I measure all trees with highest diameter than 8 cm and surrounding the average diameter I extract wood drill samples. The main conclusions support to promote mixed stands sessile oak and beech because they have high increaseas compared with pure stand forests with the same species.

The equations presented in this paper are useful for determining relative increases in other stands of the same conditions.

Key words: correlation equations**,** tree growth, mixed stands, beech, sessile oak, wood drill samples

INTRODUCTION

Stationary types listed in the summary are representative of the middle basin of Crisul Repede river as conditions for sessile oak and beech vegetation and as a share of occupied area. Stand conditions and growth condition for species determine variability of dendrometrical characteristics.

The variability of diameters is neuniform from one stand to another, with specification that the variation coeficient is between 20-30%, this fact is determinated by annual radiale rings growth (Giurgiu, 1967).

The literature presenting cases in which the coefficients of diameter variation are higher in stands of light species compared with shade stand species (Leahu, 1994). Type structure that even aged trees and relatively even aged trees also influence the rate and variability increases. Significant changes occur most often in relatively even aged stands where competition for space nutrition is higher than that of pure even aged stands (Briffa et. al. 1990). In relatively even aged stands the rate growth decreased with increasing diameter superior categories (Giurgiu, 1979).

Adjusting radial increases for even ege stand was done with linear equation, quality of adjustment being made with Fischer test. The purposes of this paper was the determination of growth equation and simultaneously encompassing the link between growth factors and the relative diameters. The great advantage of these growth equation are that it can be used successfully in similar conditions without any measurements sample plots (Cook, 1985, 1990). This study analysed mixed stands with even aged and uneven aged sessile oak and beech which are representative for the area of study. In the stands were placed plots with 2500 square metres, where I analyzed all trees from 8 centimeter diameter up. In this plots for trees that have the diameter close to average diameter we extract wood drill samples (Dorog, 2006).

MATERIAL AND METHOD

Establishing the methodology for sampling timber and that the choice of trees for sampling increases was done after careful analysis of the coefficients of variation and how that positioning the average diameter to the actual distribution of diameters (Popa, 1999). Determination at the level of the expermental distribution found the following: variation coefficients of increases have values between 20-30%, variation coefficients of radial growth categories diameters decrease from the lower to the higher order of magnitude as they fall 20-25%, increases the amplitude variation ranges somewhere between 0,1 and 1,9 mm. Trees selected to extract samples were chosen to be part of the category of diameters around the arithmetic mean of the average diameter.

Wood samples extracted drill involved polishing the extracted wood, scanning the samples, saving the image in bmp. format and analyzed the image using the ImageTool program. The results obtained by Options quantities annual rings Imagetool distance program leads to results by size in pixels, processing is accomplished using the relationship transformation below:

Ring size (mm) = 0,042333* Ring size (dpi)

RESULTS AND DISCUSSION

The regression equations were obtained by calculation procedure which is based on previously presented calculation procedures presented in the literature. The equations were determined by type of stand, for specific periods of variation of the diameter classes. It is important to note these ranges because of the extreme diameters age classes may influence the determinant of the coefficients of these equations several times. It was found especially for stands where the silvotehnical work does not

applied it was found a significant number of trees with diameters between 8-16 centimeters, which can radically change the coefficients of the regression equations. The equations which were determinated have taken account of these requirements and therefore the stands were chosen systematically in link with silvotehnical works.

For an easier determination and a simpler way of determining the coefficients of the regression equations were used relative diameters values noted by x and the relative values of increments noted by y. These are shown in the figure below (figure 1).

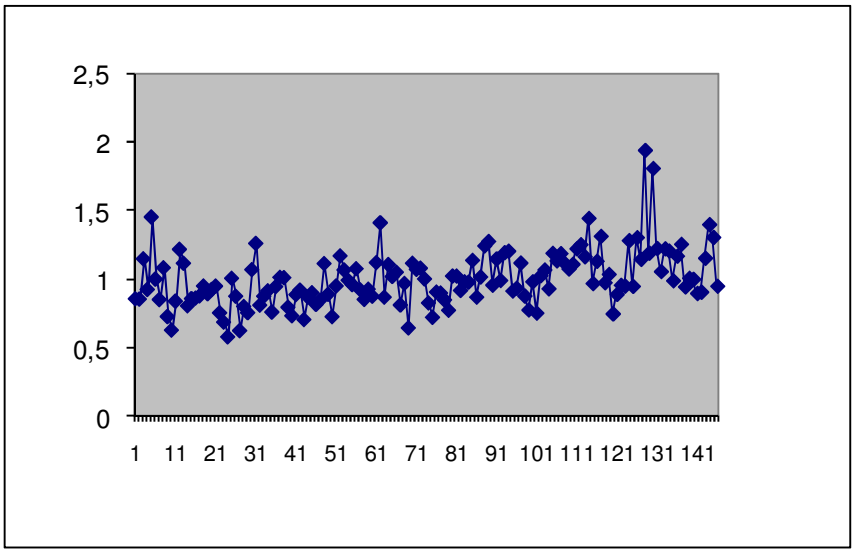

Fig. 1. Distribution of radial relative increases in relation to the diameters for mixed stands sessile oak-beech forests, stand type 5153

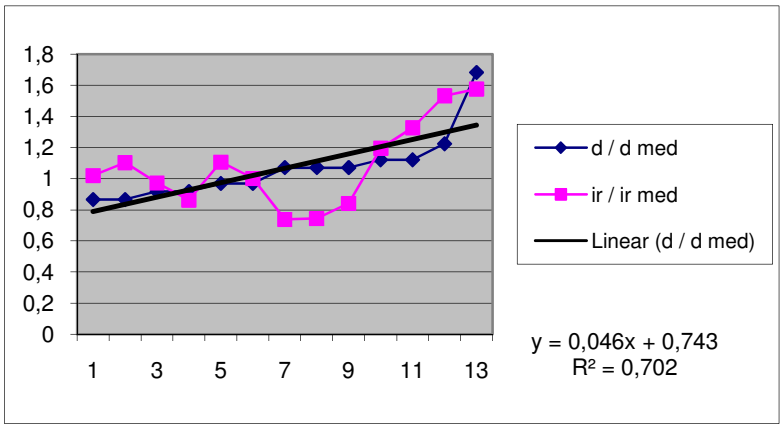

Fig. 2. The regression equation and radial distribution relative increases in relation to the diameters for mixed stands sessile oak-beech forests, stand type 5242

The equations are determined by linear form y = ax + b, so the type of stand:

5153 - y = 0,0021x+0,8486
5242 - y = 0,0462x+0,7431
5243 - y = 0,0059x+0,8274

with diameter ranges for which the equations are valid 16-40 cm, 34-66 cm and 24-64 cm.

CONCLUSIONS

Previously determined equations are of great use for production because they can easy found the increment of stands, but it is also a starting point for determining other equations regarding increases in other stands. The disadvantage of this equations that can be used only in the spread of diameters which were determined for extreme values of categories of diameters, they require further verification. The equations were built even aged stands for the relatively even aged stands is recommended further research to determine the coefficients of the regression equations.

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