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**LIVE BIOMASS OF CROWNS OF SCOTS PINE TREES  
IN STANDS OF CHERKASY BIR**

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The main purpose of the research was to analyze the peculiarities of formation and to develop regulatory and information support for securing assessment of components of live biomass of crowns of scots pine trees in stands of Cherkasy Bir.

Information support for assessment and modeling dynamics of crown live biomass components for trees of Scots pine in planted stands of Cherkasy Bir is based on the materials of established temporary sample plots as well as cut and processed model trees. A methodology for collection and processing research data after Lakyda (2002) forms the basis for achieving goals of the research. Computerized processing of the research data was provided using both specialized packages of applied scientific software, developed by scientists of NULES of Ukraine (PERTA, ZRIZ, PLOT) and modern statistical software (MS Excel, Statistica etc.).

Assessment of variability of quantitative indices of crown live biomass components was made with use of multi-factor approach involving of a certain amount of impact factors – mensurational indices of tree and stand. It is found that when applying the described approach, only few factors are statistically significant.

During development of mathematical models of relation of mass of tree greenery, branches and foliage (needles) with tree and stand mensurational parameters – age, diameter at breast height, tree height and stand relative stocking, a great number of model combinations were used. Herewith, on 5% significance level indices with significant impact on dependent variable were included into the model, and those with weak or nearly absent impact were excluded. Optimization of the model for every studied index lied in sufficient minimization of arguments and a uniform system of mensurational indices, or those which can be easily defined and measured in field. Substantial attention was paid to adequacy of the model, which was evaluated through determination quotient ( $Q^2$ ) and statistical analysis of model residues.

When analyzing the resulting models for assessment of the main components of crown live biomass of scots pine trees in planted stands of Cherkasy Bir, it is found that mensurational parameters of tree stem (age, diameter at breast height, tree height) and relative stand stocking are the arguments in the model of relation. They are included in the final equation on 5% significance level. Inclusion of age into the regression increases accuracy insignificantly.

The developed mathematical models for assessment of the main live biomass components of crowns of Scots pine trees in artificially planted stands of Cherkasy Bir may be used as the regional regulatory and information support for industrial, scientific and other branches of industry for providing sustainable forest management with complex utilization of all types of forest resources.