

BULGARIAN ACADEMY OF SCIENCES

FOREST RESEARCH INSTITUTE

Dept. of Silviculture and Forest Resources Management

Assoc. Prof. Dr. Ivailo Markoff

Research on forest valuation in Bulgaria

ABSTRACT

to a dissertation

for awarding the scientific degree Doctor of Science

This dissertation presents a series of theoretical and applied research, which were made for the development, implementation and maintenance of an ordinance for the appraisal of forests and forest lands in the Republic of Bulgaria. Much of this research has resulted in proposals for normative texts or numerical norms, most of which are still in operation.

Work on an ordinance on the market appraisal of forests began in 1994. It included calculations and methodological studies necessary for the adaptation of the methods of Western countries, as our reality often raises problems for which in literature has no ready answer.

The most important results in our view are the following:

- A quick and accessible way of presenting the classical theory is given, which shows the unity of the principles of valuation in all branches and the bases of the branch specifics of the methods of forestry.
- An adaptation of the classical theory to the practice of self-financing of forestry or financing of timber production from a monetary fund collected with a tax on logging is proposed. This includes a proof of the formula of v. Spiegel on the value of bare lands, known as empirical. The field of application of classical and generalized theory is distinguished. The forests with an IRR of forestry below 4% are recognized as an area of application of the latter.

- Proof of the formula for the appraisal of a potential construction land (the formula of the discounted probability), known so far without proof, is given.
- An adaptation has been made and a theoretical justification has been given for Weimann's method for valuation of forest land: the method is derived from the theory of income value and on this basis its field of application (lands with a high level of land prices) is determined. A combined method is proposed that overcomes this limitation while preserving the merits of the method.
- Based on Blume's formula, the magnitude of the appraisal error was theoretically investigated with recommendations for the accuracy of the measurements.
- A formula is derived for the relationship between the financial stocking rate and the final stocking rate of a forest stand. (The financial stocking rate is a reduction factor of monetary value that reflects the fact that the assessed forest is not fully stocked. The final stocking rate is the stocking rate of the forest at the age of its maturity). A formula for determining the final stocking rate based on growth tables is derived. The applicability in the conditions of Bulgaria of the tables known in the literature for the financial stocking rate is confirmed.
- A formula for valuation of forest land in "attractive properties" (i.e. development land) is derived on the basis of the market price for designated building land in compliance with the requirements of the current ordinance for valuation of real assets in forest areas.
- A formula for provisional valuation of the local market price of designated building land based on the local prices of flats and houses is derived.
- A simple formula for evaluating an individual tree growing in a forest, formerly known as empirical, is derived.
- A unified presentation of the monetary losses from physical damage of forest stands is proposed. A formula method is defined (formulas and a rule for choosing between them), which covers all types of damages known in the literature.

The dissertation also includes a number of application contributions, including models, tables, normative texts and software.