

Simulation modeling of forest dynamics in order to determine the allowable amount of forest use

P. T. Voronkov – Candidate of economic sciences, Head of Department of Forest Economics, Distinguished Economist of Russia, Russian Research Institute for Silviculture and Mechanization of Forestry

V. V. Djegtev – researcher, Russian Research Institute for Silviculture and Mechanization of Forestry, degtevvv@gmail.com

A. S. Shalnev – researcher, Russian Research Institute for Silviculture and Mechanization of Forestry, andrechalnev@gmail.com

Under the effective legislation 4 approaches are applied in calculation of estimated allowable cut: uniform use cut, 1st, 2nd and integral cuts. The approach selection is determined first of all by forest age structure however the calculation is done for several decades ahead with regard to mature stand regeneration real time often it is not sufficient.

To address this problem system dynamics and simulation modeling approach based on iThink. This software advantage is that a researcher should not have software and language skills. Simulation enables consideration of various factor impacts as well as their output impact rate.

Spruce stand age structure 4 options in 3750 ha forest lot aged 81 years were sampled. The estimated allowable cut is defined for every option by various calculations.

1st age allowable cut was the most various among all age forest age structure options. It varied within the 30 year period gradually reaching a balanced condition equaling uniform utilization cut estimated by rotation upper limit. This balance is reached over 2 thinning limits.

1 specifics of addressed estimated allowable cut calculations needs highlighting. Reliable annual cut value that is defined over time significantly lower the integral estimated cut than in 1st and 2nd age cuts.

The offered approach enables annual specification of estimated allowable cut that is urgent in its under use conditions as well as opportunities to analyze various forest management strategies.

Literature cited

Rosleshoz order of 27.05.2011 «On estimated allowable cut procedure».

Key words: *rated wood cutting, woodland dynamics, simulation modeling*