## von Gadow, K. & Hui, G. (1999): Modelling Forest Development. Forestry Sciences 47., Kluwer Academic Publishers, Dordrecht

Reference: von Gadow, K. & Hui, G. (1999): Modelling Forest Development. Forestry Sciences 47., Kluwer Academic Publishers, Dordrecht Short reference: von Gadow & Hui (1999) First author: von Gadow, Klaus Year: 1999 Abstract

Modelling Forest Development Klaus von Gadow Gangying Hui

The key to successful timber management is a proper understanding of growth processes, and one of the objectives of modelling forest development is to provide the tools that enable foresters to compare alternative silvicultural treatments. In a managed woodland, the most important periodic disturbances are the thinning operations, which are often carried out at regular intervals and which usually have a significant effect on the future evolution of the resource. Thus, a realistic model of forest development includes both natural growth and thinnings. One of the outstanding features of this book is its inclusion of thinning models at varying levels of resolution and consideration of differences in forester's tree marking behaviour. Other interesting aspects include regional resource forecasting approaches, generalized stem taper functions, generalized diameter-height relations, new ways of describing and reproducing forest spatial structures, crown modeling and iterative competition modeling. Worked examples and code are provided where appropriate. The intended readership is graduate students.

## forest management methodology: modelling Notes

Modelling Forest Development Klaus von Gadow Gangying Hui

Tartalom: 1. Introduction Types of Forest Models **Data Requirements** Permanent Plots **Temporary Plots Interval Plots** 2. Projecting Regional Timber Resources **Empirical Yield Functions Fully Stocked Forests** Non-fully Stocked Forests Yield Functions based on MAI Estimates 3. Modelling Stand Development Height **Anamorphic Height Models Disjoint Polymorphic Height Models** Non-Disjoint Polymorphic Height Models **Basal** Area Potential Density The limiting Line **Estimating Potential Density** Natural Decline of Stem Number State-Space Models Stand Volume and Product Yields Thinning Models **Classical Description of Thinning Operations Thinning Weight** Type of Thinning 4. Size Class Models **Diameter Growth Projecting Diameter Distributions Stand Table Projection** -Diameter Growth as a Function of Diameter -Growth Modifiers -Change of Relative Basal Area -A Worked Example -Transition Matrices **Diameter-Height Relations Generalized Diameter-Height Relations** 

**Bivariate Diameter-Height Distributions** 

**Estimating Product Yields** 

Volume Ratio Methods

Modelling Stem Profiles: Form Quotients, Splines and Polynomials

Parameter-parsimonious Stem Profile Functions

Generalized Stem Profile Functions

Stem Quality Assessment and Prediction

Modelling Thinnings

Change of Distribution Parameters

Movement of the Diameter Distribution after Thinning

Separation Parameters

Modelling Foresters' Tree Selection Behaviour

5. Individual Tree Growth

**Generating Spatial Structures** 

Variables for describing Spatial Structure

-Size Differentiation

-Species Segregation and Mingling

-Aggregation

Using Structural Variables to generate Positions with Attributes

**Competition Indices** 

Overlapping Influence Zones

Distance-weighted Size Ratios

Available Growing Space

Shading and Constriction

Spatial Growth Models

FOREST, PROGNAUS and MOSES

SILVA

Spatial Thinning Models

Imitation

Prescription

6. Model Evaluation

**Qualitative Evaluations** 

Quantitative Evaluations

-Characterizing Model Error

-Statistical Tests

List of Symbols

Literature

Index

Címszavazva - GE

Publisher: Kluwer Academic Publishers, Dordrecth Journal: Forestry Sciences Location: ER Archívum (1999/P-002) Type: educational work, book chapter Katalógusba vette: Gulyás Györgyi Katalógusbavétel időpontja: Tue, 11/10/2009 - 12:00