

Summary of the content

INTRODUCTION

The chapter focuses on outlining the meaning of the main definitions in this field. The relationship between the other disciplines and main sciences is introduced. The main important research topic in this field is listed.

FORESTS AS A WORKING ENVIRONMENT AND SOURCE OF RAW MATERIAL

The effect of the location, climatic factors and terrain on forest work is presented. The principles of terrain classifications is introduced. The effect of forest composition (trees) on forest work (productivity) is presented. Main tree types, wood assortments, industrial processes and grading rules are shortly introduced.

TIMBER SALE AND PRE-HARVEST PLANNING

General principles of different forest regeneration and harvesting practises (globally) are introduced. General principles of wood trade are outlined. Practises of wood trade in certain case areas are presented (Russia, USA, Canada, Europe, Scandinavia, etc.). The effect of certain wood characteristics on industrial use and price of wood is outlined.

Technical details of planning of harvesting site are listed. The methods of including environmental factors and diversity on forest activities are outlined. The effect of timing of forest harvesting on productivity and quality of harvesting is presented.

TIMBER HARVESTING

Classification of tree harvesting methods. Introduction of the mostly used methods in the world (8 methods). Broad description of Cut-to-length (CTL) method is presented (Traditional motor-manual technique/chain saw technique, Modern harvesting technique, Piling of logs, Forwarding of timber, Harvester-Forwarder (harwarder) technique, Non-professional techniques, Assessment of quality of harvesting)

Basic principles of forest machine enterprising and general safety regulations of forest work are presented. The main harvesting techniques of Energy Wood is presented (this chapter is rather short since there are a new book dealing with this subject)

LONG-DISTANCE TRANSPORTATION OF ROUNDWOOD AND MILL RECEPTION

Basic wood transportation methods and vehicles are presented.

WOOD PROCUREMENT PLANNING AND TRANSPORT LOGISTICS The planning procedures of wood procurement of modern forest enterprises are outlined.

STRUCTURE AND BASIC FUNCTIONS OF FOREST MACHINES

The basic idea of engines is shortly introduced. Main transmission methods are presented. The basic ideas of moving, steering, loading, delimiting and cutting are presented. The main functions of harvesting computers and auxiliary devices are introduced. The basic principles of machine measurement and tree bucking optimizations are broadly presented.

RESEARCH METHODS IN FOREST ENGINEERING

Aims of research and basic research methods at the field of forest engineering are introduced. The principle of cost calculation is presented. The basic idea of operations research and the main applications at this field is introduced.

FOREST ROAD CONSTRUCTION AND MAINTAINANCE

The basic principles of forest road network planning and forest road construction are introduced.

SILVICULTURAL TECHNOLOGY

All basic silvicultural methods and tools are shortly reviewed. These are cleaning, burning, cultivation, seeding, planting and fertilization.