COMPARATIVE ANALYSIS OF YIELD DISTRIBUTION IN FIRST AND SECOND-CLASS QUALITY FIR AND SPRUCE SAWLOGS (Abies alba Mill./Picea abies L.): A CASE STUDY FROM NORTH MACEDONIA

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ABSTRACT

The efficient utilisation of sawlogs represents a crucial determinant for the operational success of sawmill capacities. Sawlogs serve as the primary raw material in sawmill operations, and their rational use is influenced by several production-related factors. Key determinants impacting sawlog utilisation include wood species, log quality classification, technological capacity of sawmills, and workforce proficiency, among others. Of particular importance to sawlog processing methods are wood species and quality classification. A principal indicator of sawmill performance lies in the quantitative yield of raw material, defined by the volume of lumber produced from log processing. The economic viability of sawmills is grounded in this quantitative utilisation, with wood species and quality classification exerting the most substantial influence.

This paper presents findings from a comparative analysis conducted at a sawmill facility in Berovo, Republic of North Macedonia. It examines the yield from fir/spruce (Abies alba Mill./Picea abies L.) sawlogs of both first- and second-quality classes. The analysed logs maintain a consistent length of 4.0 meters. The average diameter for first-class logs ranges from 27.0 to 57.0 cm, while for second-class logs, it spans 38.0 to 62.0 cm. The mean yield rate for first-class logs is 68.93%, and for second-class logs, it is 61.55%. A comparative analysis is provided for the coarse and fine waste generated from log processing for both quality classes. Sawing was conducted using a horizontal band saw, and the resulting lumber is designated for construction and structural purposes.

Key words: fir, spruce, quantitative yield, quality class, lumber