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Izvorni znanstveni članak

### Morphological Analysis of Forest Tractor Assemblies

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#### Sažetak

The results of this paper present the morphological analysis of nine different types of tractor assemblies used in forestry practice in timber forwarding from thinning operations of lowland forests. Among these tractor assemblies 4 types are older, equipped mechanical cranes. The remaining 5 tractor assemblies, manufactured more recently, are equipped with hydraulic cranes, and two of them are additionally equipped with double-drum winches. According to the research results, older tractor assemblies have very favourable morphological characteristics, according to which they are classified as ecologically acceptable vehicles for the timber forwarding from thinning operations in lowland forests. However, work technology requires from the vehicle to reach each timber assortment processed in the stand, which also means higher possibility of damage to forest soil of poor bearing strength in lowland areas. Technical design of more recent types of tractor assemblies ensures environmental suitability in timber forwarding from thinning operations. The installation of an articulated joint on the semi-trailer shaft ensures small turning diameter and hence lower risk of causing damage to standing trees. The adequate breadth of tractor assemblies is achieved by use of narrower tyres on rear tractor wheels. Installation of the forest winch on the tractor assembly causes lower soil tracking and lower damage to soil and standing trees. They also exert imaginary pressure on the soil between 2 kPa and 4 kPa and hence they are more adequate for the work on forest soils of poor bearing strength than forwarders, as the lowest imaginary pressure exerted by forwarders is around 4 kPa.

#### Ključne riječi

tractor assembly; morphological analysis; timber forwarding; ecological suitability; thinnings



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