

MEASUREMENT OF DYNAMIC PRESSURE UNDER FOREST TIRES

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Abstract:

Driving with heavy forestry vehicles in the forest always effects the compaction of the soils. This can be in conflict with sustainable forest management. To create a stress-reaction model of the influence of driving in forests it is necessary to know the pressure on the surface beneath the wheel. A lot of research has been done in the laboratory or with static pressure. However, these dynamic effects have not yet been measured under real conditions and inhomogeneous surface. This research project has developed a new method for measuring dynamic pressure under forest tires in the forest. The project 'Direct measurement of pressure beneath forest-wheels on inhomogeneous surfaces and their impact on forest soils' is designed to supply this missing information.

A measurement-system was developed where some force-sensors are implemented directly into the surface of the tires. The data from these sensors is analyzed in real-time and pressure can be calculated and digitally visualized. In combination with an excavator for manipulating the wheel, the machine driving on the soil can be simulated for different conditions like different machine weights, wheels, surfaces, types of soil, tire pressure and number of crossings. Their impact on the soil can be measured under controlled conditions. One advantage of this method is that the study can be repeated with the same conditions on different forest stands.

With this research better data about impact on the soil has been revealed. The presentation shows the new method and actual results of this study.