



Reducing Tire Pressure Reduces Sediment

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In a three-year research and demonstration project conducted by the Intermountain Research Station on the Lowell Ranger District of the Willamette National Forest, reductions in sediment of up to 84 percent were achieved by reducing the inflation in logging truck tires. The demonstration consisted of driving loaded and unloaded logging trucks equipped with tire pressure control devices on 200-foot-long road sections with 11 percent grades surfaced with a "marginal" quality aggregate. The sites were instrumented to collect eroded sediment and runoff.

Tire pressures were held constant at 90 psi and 70 psi for two test sections. Tire pressures on a third test section were varied between 30 psi and 70 psi to match the load and speed of the vehicles. The trucks were equipped with Central Tire Inflation systems¹ to adjust tire pressure for the various test sections.

During a three-month winter period in 1992, 5 inches of precipitation fell and 501 loads of logs traveled over the roads. Sediment produced by the road

section with 70 psi tire pressure was reduced by 28 percent compared to the section with highway tire pressures of 90 psi. For the same conditions, sediment from the road section with variable 30/70 psi tire pressures was reduced by 54 percent.

The following year, during the same three-month period, 20 inches of precipitation fell and 616 loads of logs passed over the test road. Sediment production on the 70 psi tire pressure test section was reduced by 44 percent. The road section with the 30/70 psi tire pressure trucks experienced a reduction in sediment of 84 percent compared to the 90 psi tire pressure section.

The results are summarized in the table below. While the results achieved by varying tire pressure on other aggregates and other precipitation amounts could vary, researchers at the Intermountain Research Station believe that similar substantial reductions in sediment production can be realized on both aggregate and native surfaced roads with reduced tire pressure.

*Sediment Reduction Achieved by Reducing Tire Pressure
(Compared to 90 psi)*

Year	Rainfall (Inches)	Logging Truck Loads	Tire Pressure (psi)	
			Constant Reduced Pressure 70 psi	Variable Tire Pressure 30/70 psi
1992	5	501	28%	54%
1993	20	601	44%	84%
1994	11	1117	—	63%

¹ Central Tire Inflation is a commercially available modification to the air system of a truck that enables the driver to change tire pressures from inside the cab, depending on load and speed.

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