

Tire Pressure Matters When Harvesting Alfalfa

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With alfalfa harvest season quickly approaching, consider equipment status before heading to the field. An often overlooked aspect of machinery maintenance is tire pressure. Tires are often underinflated coming out of storage. Generally you inflate tires enough to move the machine without damaging the tires; when near sufficient air supply, inflate to the proper pressure for operation. Slight under or overinflation can have a large impact on pressure applied to the ground caused by machinery and tires.

Current University of Wisconsin-Madison research is investigating tire pressure effect on soil compaction and alfalfa regrowth. Early results indicated tire pressure influences regrowth. In this study, tire pressures on typical lugged agricultural tires varied between 9 and 25 psi. Alfalfa plots are driven on at these different pressures covering the entire plot with wheel traffic. Wheel traffic was applied during mowing, silage, and hay harvest. Previous research shows substantially more damage is caused to plants by allowing regrowth after cutting and then applying wheel traffic. In the current study, we hope to find differences in regrowth, yield, and soil compaction associated with both the timing of applied wheel traffic as well as the various tire pressures being assessed.

A University of Wisconsin Division of Extension Learning Store publication (A4181) assessed weight and tire size of various machines involved in alfalfa harvest. Machines with tires designed for agricultural use had applied ground pressures <250 psi. Machines equipped with tires meant for paved roads had ground pressures from 500-820 psi. Utilizing semi-tractor trailers or truck-mounted forage boxes can apply unnecessary stress to regrowing alfalfa. When on-road vehicles are moving hay bales off a field, the impact could be even greater, as the alfalfa has been allowed to regrow more than in a silage harvest situation. If your equipment requires new tires and you use these trucks for in-field purposes, consider installing flotation-type tires rated for on- and off-road use. They are designed to run at lower pressures, allowing machine weight to be distributed over a larger area, causing less compaction and less plant damage.

Inflation pressure variations have a large impact on the force applied to the ground from agricultural machines. In the A4181 publication, a range of inflation pressures were considered for a typical set of tractor tires. Calculations showed an increase in 1 psi of inflation pressure equated to a 7-psi increase in applied ground pressure. Across the range of pressures the specific tire was rated for, a change of 150 psi in ground pressure was calculated. Ensuring tire pressure is correct on your machines will minimize ground pressure applied and make sure proper traction is achieved. Proper inflation maintains normal tire wear, getting the most life out of your tires.

Utilizing agricultural tires both on- and off-road when hauling forage with a tractor-towed cart causes problems; tires work better on-road with higher inflation pressures, but these pressures can cause damage in the field. A solution is finding an inflation pressure that does not cause excessive wear on the road while minimizing applied ground pressures in the field. On-board tire pressure management systems are available to change tire pressure on-the-go. These systems do not have the capacity to refill an agricultural tractor tire from 5 psi to 25 psi in a short amount of time but may allow operators to change inflation pressures by small amounts between field and road use.

Tire pressure can have an impact on alfalfa regrowth and soil compaction in fields. Be sure to check and maintain proper tire pressures throughout the season and account for changes in tire temperature as the weather changes or during operation.