

Radial Tire Inflation Pressure

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Achieving maximum tractor performance requires optimizing tire inflation pressure. Overinflated tires have smaller footprints and produce less traction. However, underinflated tires have decreased durability and life. Although both cases are detrimental, the majority of Kansas tractors have tires overinflated by 5-8 psi.

Overinflating tires 6 psi will significantly reduce tractive performance. The tire must have optimum ground contact to transfer power effectively. Figure 1 illustrates the effect of reducing rear tire inflation pressure on a 150 PTO Hp

MFWD tractor operating on disked soil. Operating at 10 psi in all four rear tires instead of 18 psi in the inside tires and 15 psi in the duals reduced wheel slip by about four percentage points.

The reduction in wheel slip means an increase in field capacity. In other words, the operator will now finish

tillage operations quicker. When field capacity is increased, labor and operating costs are reduced.

Benefits

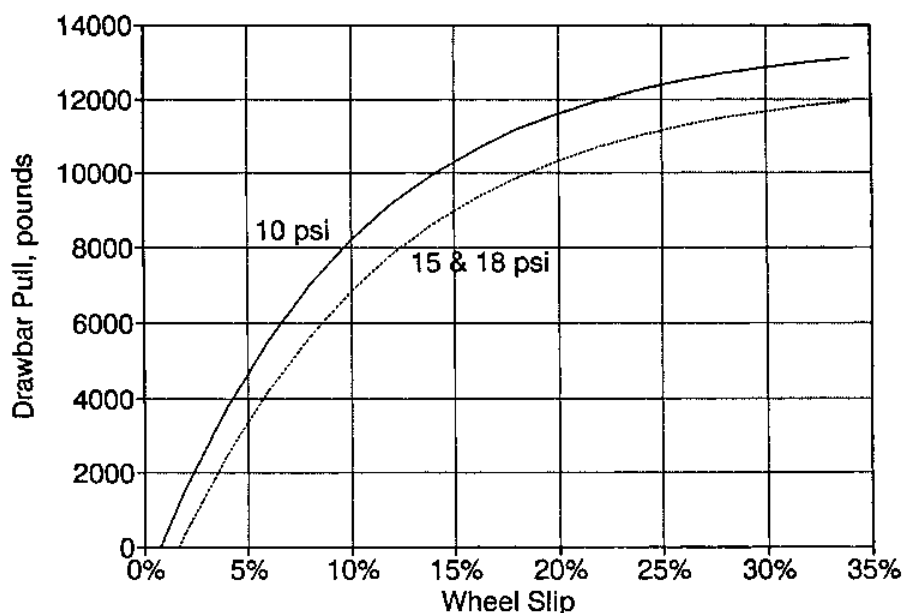
This small reduction in wheel slip could reduce fuel usage by as much as 10 percent. This improved performance came about at no cost to the owner, but simply by reducing inflation pressure. Other benefits of optimizing inflation pressure are increased tire life, improved ride, and reduced soil compaction.

The two items that influence a tire's contact area with the ground are inflation pressure and weight supported by the tire. Since the weight supported by the tire is determined by the amount of ballast on the tractor and seldom changes, inflation pressure must be adjusted to ensure optimum ground contact. The only way to achieve maximum performance from a tire is to use a tire table to adjust inflation pressure.

Determining Adjustments

The first step is to weigh each axle on the tractor. Find the tire size in the table on the next page and follow that line across until you find a weight that exceeds the measured axle weight. Then look at the top of that column for the pressure required to support the axle weight. Set tires to this inflation pressure when tires are cold. Checking inflation pressure weekly during peak tractor use is a good practice.

Figure 1. Wheel Slip (150 PTO Hp MFWD Tractor)



There are special cases where reduced inflation pressure will not significantly improve performance. One of these is when the tractor is pulling mounted row crop equipment that does not require much pull.

Since inflation pressure is adjusted for static loads, the tires may need more pressure to support the weight of the mounted equipment when raised. In this situation, static axle weights should be measured with the implement raised. Another common case is when the tractor is towing light draft equipment such as drills and planters. However, in this situation the reduced inflation pressure helps reduce compaction.

There are also some concerns about

lowering inflation pressure in radial tires. The primary concern is tire life. As long as inflation pressure is set for the weight that the tire is supporting, tire durability should not be a problem.

Tube Selection

Tube durability, on the other hand, could be a problem. You should select a tube with high natural rubber content for best durability. These tubes typically have a white stripe on them. Tubes with a blue stripe are undesirable.

Contact your tire dealer for more information about the tubes that he or she sells. There is also some concern about tires slipping on the rim. This should not be a problem as long as the

tire is correctly mounted. If too much lubricant is used during mounting, the tire could slip.

In summary, optimizing inflation pressure can improve tractor performance and can also reduce input costs such as labor and fuel. It can also improve the ride characteristics of the tractor. However it will require a higher degree of management to monitor pressure so that it does not drop below recommended.

For more information on bias ply tires and tractor ballasting ask your county Extension office for publications MF-985 "Selecting Tractor Tires" and MF-588 "Getting the Most From Your Tractor."

Table 1. Axle Weight (lbs) Supported by Dual Radial Tires at the Indicated Inflation Pressure

Tire Size	6 psi	8 psi	10 psi	12 psi	14 psi	16 psi	18 psi	20 psi
18.4R38	10400	12320	14000	15640	17120	18520	20000	21040
18.4R42	11000	13040	14800	16480	18040	19520	21120	22160
18.4R46	11560	13640	15560	17320	19000	20480	21640	23400
20.8R38	12600	14920	17040	18920	20680	22360	23920	25520
20.8R42	13320	15760	18000	20000	21840	23600	25160	26920
24.5R32	15120	17960	20400	22720	24800	26920	29040	30640
710/70R38	19500	22400	25300	28300	31200	34100	37100	40000

The above table is for dual radial tires only. Separate tables are required for single radials or bias ply tires used as singles or duals.



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