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### Reducing Tire Stubble Damage

Tire damage from harvested crop residue is a major problem. Due to genetic modifications, higher corn populations with more stalks, and low cutting heights; the shorter stiffer stubble causes tire damage. Stalks cut 3” to 5” high do not allow the tires to push the stalk over to minimize tire penetration, creating a “field of rebar” that the tires have to cross. The strength of the stalks combined with changing harvesting techniques, leave shorter stalks and increased tire wear and is especially prevalent with certain corn and soybean varieties.

Soil health can play an important role in stubble decomposition. Soil temperatures above 50<sup>0</sup>F, adequate moisture, and healthy fungus speed up crop residue decomposition. Unfortunately, longer maturity crops, late harvest (colder temperatures), and fungicide application are negative factors in stubble decomposition. Utilizing early maturing crop varieties and limiting fungicide application helps decompose stubble. Harvesting corn high (below the ear) and leaving the stalk standing followed by crimping with a crop roller will reduce tire damage. Rolling the stalk over reduces tire puncture and keeps the stalk and leaves from blowing away. Rolling crop stubble also prevent prevents crop residue from clogging ditches and improves the habitat for beneficial soil organisms.

Tire manufacturers offer several options to reduce tire stubble damage. Front tractor tires are replaced 3x-4x faster than rear tractor tires due to crop stubble penetration. Front tires take more of the hit, knocking down stalks ahead of rear tires. Solution: Get something in front of the tractor or combine to knock down the stalks, which may double or triple the tire life. Combines, tractors, grain carts, drills, and planter tires, wagons, and semi-trucks and trailers can all be affected by stiff stubble strength and tire damage.

Stubble or stalk stompers which lay over the crop residue are common on combines. Corn headers with steel sliders and steel rollers in front of tires efficiently bend stalks before it penetrates the tire. This is the single most important technological thing a producer can do to reduce stubble damage.

Often, depending on the size, structure and geometry of the tire tread pattern, the crop stubble is clamped and guided to the tire surface. The result is high contact pressure with the possibility of damage. If the tire survives the first 1,000 hits, more will come and cause cavitation at the rubber surface. To minimize this risk, the pattern shape or tread design can be optimized. **A 45°**

**orientation of the lugs is better than 23°.** The higher angled tire lugs allow the crop residue to slide off the tire rather than puncturing the tire.

Stubble damage occurs in two ways: 1) either cuts and penetrations to the tread or the sidewall or 2) through repeated stubble chipping which causes small chips of rubber to be dislodged from the tread area. This damage eventually leads to exposure of the tire cords and the need for tire replacement. Tire damage occurs when tires are run over rows rather than in between rows, so selecting a narrow tire that fits between rows may help. Wider tires run over the rows have more damage to a small portion of the tread, and may require tire replacement.

The main components of tires are rubber and fabric. Tires can only take a limited amount of abuse before failing. As rubber ages, it hardens and makes the tire more resistant to stubble damage. Stubble resistant compounds are used in some agricultural tires for resiliency. Steel belts are tire components that resist puncture. If you are having issue with punctures through the tread, steel belts are an important tire construction attribute to reduce this issue. Other issues that farmers can look into are reducing air pressure on tires and looking at the balloon ratio of tires. These items are too complicated to sufficiently address in this article, but warrant more farmer research.

In short, to reduce stubble damage to tires, a tire recommendation is to use a knock down mechanical device, look to purchase tire with higher angle lug to deflect, and check to see if tire has steel belt construction to reduce punctures. Go to <https://agtiretalk.com/reduce-stubble-damage-tire-manufacturers-answer/> for more information on how to reduce stubble damage in tires.