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Traffic Zone Tillage

Determining the need for tillage in harvest traffic zones can be a challenge. K-State Soil Management Specialist Dr. DeAnn Presley outlines the multiple step process in the most recent KSU Agronomy eUpdate (<https://eupdate.agronomy.ksu.edu/>): multiple 18-inch-deep holes followed by an evaluation of soil structure looking for platy structure then root penetration. If compaction *is* present, you then have to evaluate the depth of the compaction to determine tillage depth. It might take a little more time than we have to give.

When time is limited, tillage might occur *without* as thorough an evaluation as we'd like. It's a judgement call and in many cases works out well – but what can happen when it doesn't?

For starters, while tillage *does* temporarily loosen soil, because of what happens during a tillage pass (natural soil structure is broken into smaller pieces), tilled soils re-compact and actually become *more dense* with time. If traffic patterns can't be adjusted, the positive initial effects of the tillage pass will likely last only a few years at best.

Longer term, the alteration in soil structure results in subtle changes that may not mean a lot most years but can become increasingly visible in more extreme conditions. Organic matter in tilled soils may not be much different than in no-tilled soils at greater depths in the soil profile, but in the top two inches, studies in Kansas have shown improved infiltration rates of close to an inch per hour (Presley, 2012), a difference that can be quite notable during heavy rainfall events. No-till soils also tend to accumulate more organic matter than conventionally tilled soils and resist future compaction events to a greater degree as well (Blanco, et al., 2009). More organic matter not only contributes nitrogen back to the system but becomes a win-win when it may also reduce the need for tillage in the future due to the 'plasticity' organic matter can provide to soils.

Tillage might be the answer, but it might come as a cost as well. If you're on the fence about post-harvest tillage operations, check out Presley's article at the link above for tips on how to make it as effective as possible.