

Farmers are well aware of the risk for poor crop emergence and uneven plant stands resulting from high levels of crop residue at planting time. However, crop residue on the soil surface has many benefits which add to soil quality. Primarily it creates a barrier between the soil surface and weather extremes. Crop residue is also an important source of nutrients and carbon for various soil nutrient cycles. Multiple tillage passes have historically been the answer to create a more ‘ideal’ seed bed. Can an ‘ideal’ seed bed be created without intensive tillage? Functioning soil biology will harvest crop residue and increase SOM (Soil Organic Matter) this increase in SOM will directly increase soil productivity and farm profitability.

Tillage places crop residue and soil particles in close contact and also stimulates nitrogen release from SOM. This process results in soil microbes having access to nitrogen allowing for the decomposition of crop residue. This is a break even process at best when working towards retaining carbon and increasing SOM in the soil. Break even works for the short term, but when considering long term soil quality, a process with positive results is preferred. Intensive tillage can also negatively impact soil aggregation which impacts the quantity and diversity of soil microbial populations. Soil microbes require a stable home, abundant food source and a steady environment to remain alive and active in the soil.

Blake Vince, no-till and cover crop farmer, sums up crop residue management like this, “Roots not Iron”. Choose living roots over tillage to enhance soil biology, which leads to long term soil quality. Living roots form a symbiotic relationship with soil microbes. Along with living roots, organic carbon through manure additions enhances the microbial communities in size and diversity. MORE microbes mean MORE consumption of crop residue. Removing a portion of crop residue and replacing it with manure (high energy feed) will lower N requirements by allowing nutrients to be available for the crop to utilize quicker.

Is persistent crop residue a problem or a symptom? Ag research is answering the question; persistent crop residue is the symptom and reduced soil biological function is the problem. Focusing on ‘what lies beneath’ the soil surface will promote long term \$green\$ above the soil surface!

References:

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