No-Till Builds Soil Health

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Private pesticide applicator training programs are conducted by Extension agents who must hold a commercial category 10 license. This allows use to teach these educational programs recertifying private applicators in categories like agronomic crops and horticulture. The private pesticide applicator license allows farmers to purchase restricted use (most are today) pesticides and to apply these according to label. Private applicators seek to control pests in their crops, including yield impacting weeds, disease and insects. Safety, Legal and Pest Management are the important categories required in these programs regulated by state (VDACS) and federal (USDA) authorities.

No-till farming is supported by the use of chemicals to control weeds. Tillage can be eliminated and this improves the soil. An early lesson learned surrounds the soil benefits found when tillage is reduced or eliminated through no-till farming. When soil is left undisturbed by no-till, it builds organic matter and soil life – visible life would be earth worms and roots, most is smaller. Scientists say there is more life under the ground than above. There are no worn out soils under no-till.

Adding oxygen through tillage increases the rate of organic matter decay and increases the release of carbon dioxide - a major building block of organic matter. In certain cases, like with cold wet soils having high crop residue, it would be desirable to increase decay of organic matter - most often not. Building soil organic matter removes carbon from the air, adding it to the soil. There is a natural rate of decay for soil organic matter, no-till allows this process to proceed on its own, improving soil along the way and importantly, storing nitrogen for future crop use. Find Alan Franzleubbers work on this topic.

The biological benefit from no-till is significant when compared to lands farmed under tillage. To imagine a good no-till soil containing structure and soil life, go into the forest and dig down to find this soil. You can smell it, you can feel it, you can see it, the forest soil is a good place to learn these facts. While the forest soil is naturally organic, we often find many of these same characteristics in long term no-till soils.

Some crop lands in Culpeper have been under no-till for decades and many pasture lands have never been tilled – these examples show the best soil structure, organic matter and soil life. No-till soils are full of life, are resilient during drought, store and release nutrients at a moderate pace and support long term crop production. Our Piedmont soils benefit from no-till farming as organic matter is in needed most in these old, highly eroded soils.

My predecessor, Roy Heltzel, was fond of digging in soil. This helped him evaluate the conditions needed for successful agronomic practice – he was a soil scientist at heart. You can see and feel soil tilth, you can find and evaluate compacted layers, you can see effects on root growth and know that deep roots access nutrients and water down through the soil profile. Soil scientists dig holes in the ground, crawl down in these deep pits to poke around in the revealed profile, investigating up close the features of a soil. Understanding soil supports success in crop production and Roy was good at sharing this knowledge with his farmers.