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Carbon Credit Payments

Companies are now starting to pay farmers to build and store soil carbon. Starting in 2020, carbon credits will be publicity traded and farmers can sign up to get paid on an annual basis the soil carbon they store. Why are companies willing to pay farmers to put carbon in the soil? First, carbon dioxide is a major greenhouse gas that is regulated as a potential pollutant. It is extremely expensive for companies to reduce their carbon footprint or reduce the emission of atmospheric carbon dioxide. It is cheaper for companies to pay someone else to tie up carbon dioxide as soil carbon than it is for them to do it themselves. Carbon trading with verification is required for this transaction to occur. Since farming practices are variable, the payment needs to be verified over time.

Soil is a major storehouse for carbon and carbon dioxide. Approximately 2.5 times all the carbon dioxide in the atmosphere could be stored in the soil. Ohio soils originally had 5-6% soil organic matter in the top furrow slice (6.7 inches) of soil. Most Ohio soils today only have about 2-3% SOM, so an additional 2-4% SOM could be stored as soil carbon. While leaves take in carbon dioxide for photosynthesis and expel oxygen, roots do the opposite, taking in oxygen and expelling carbon dioxide. That's why the atmosphere is roughly 400 parts per million (PPM) carbon dioxide and the soil is 3,000 to 10,000 PPM.

A carbon credit is a generic term for any tradable certificate or permit representing the right to emit one tonne (metric ton) of carbon dioxide or the equivalent amount of a different greenhouse gas. One tonne of carbon dioxide trades for about $15 per tonne or 1 carbon credit. Farmers could potentially get credit and paid for 2-3 carbon credits per year if they adopt management practices that gains soil carbon.

Most companies are planning to pay only 1/10 the value of each carbon credit over a period of ten years due to verification. The first year, 2-3 carbon credits valued at $15 are worth $30-45 so a farmer would be paid $3-$4.50 per acre. The second year, if the farm gains another 2-3 credits, a farmer could gain $3 to $4.50 plus the first years second installment of $3-4.50 or roughly $6-9 per acre. As long as the farm can continue to gain or maintain carbon, they will get the graduated payments. Since carbon credits are traded on the open market, the value may fluctuate. Depending on supply and demand, low demand may mean carbon credit prices fall below $15

per tonne, however most experts think the price may vary from $10 to $50 per carbon dioxide tonne or carbon credit.

The fastest way to lose carbon is to till the soil which results in the immediate loss of carbon dioxide from the soil. Tillage incorporates excess oxygen into the soil and speeds up the microbial decomposition of soil carbon by soil microbes. Raising low carbon crops like soybeans also results in a loss of soil carbon dioxide. Soil texture is important, with sandy soils being more permeable and able to hold much less carbon than clay or silty clay soils.

The fastest way to gain soil carbon and carbon credits is converting to long-term no-till, adding high carbon crops (corn and wheat), and adding cover crop mixtures high in carbon, (grasses primarily but also legumes to stabilize soil carbon). The majority (80-85%) of soil carbon is stored in the soil macroaggregates, so it is not the residue on the soil surface which is important, it's the roots. Adding root diversity or cover crop mixes allows a variety of roots (tap roots from broadleaves and legumes and fibrous roots from grasses) to populate the soil year-round to increase soil carbon through root exudates (sugars and carbohydrates). Building soil carbon is a slow process because almost 60% to 80% of carbon in the plant residue, especially surface residue, is lost to the atmosphere each year. Since roots are more protected, the carbon in the roots make up the majority of soil carbon. For more information, look up carbon credits on the internet or check out the Indigoag.com website for more details.