MONTY'S PLANT & SOIL PRODUCTS

Providing Solutions for the Soil Environment and Plant Stimulation.
Working with Farmers in Their Goal to Produce Higher Yielding Crops

Apply to corn stubble "post harvest" to break down corn stalks.

Litter and Manure management is also vital to crop performance.

Avoid Planter issues next spring by treating residue this fall.

Apply Monty's Liquid or Dry Carbon

It Pay$ to Decompose

By Jon C. Frank

As the fertilizer prices rise so does the NPK value of your corn and wheat stover left on the soil. The question is can you get the residue digested in time to help fertilize the next crop?

I believe the answer is Yes – if you help the process along. Since residue and stimulate these vitally important residue digesters. Bacteria breaks down crop residue and converts it to organic matter. Soil organic matter is a holding tank for plant nutrients including carbons, calcium, sulfur and trace minerals along with NPK. Organic matter is like money in the bank when it comes to soil fertility. This is what residue needs to decompose into before it can be utilized by the next crop.

Monty's Plant Food Company has been promoting our fall residue program for years. During this time our message has remained consistent; feed the microbial population with sugar (Agri-Sweet) and nitrogen, add a catalyzing humate (Monty's Liquid Carbon) to start the process to a successful residue management program.

Making Money with Math

For the typical residue program, the breakeven point is right at 100 bushels per acre. What is interesting is that as yield increases so does your return on investment. Now for the math….

1. First you need to determine tons per acre of residue. With corn, the weight of the kernels (test weight) is equal to the weight of the stover on a dry matter.

   Tons of Residue = (Bushels/Acre x Weight of Bushels x % of Dry Matter) / 2,000 lbs/ton.

   For Example, a corn yield of 180 bushels/acre at 15.5% moisture:

   Ton of Residue = (180 bu/ac x 56 lbs x 0.845) / 2,000 lbs/ton = 4.26 Tons of Residue

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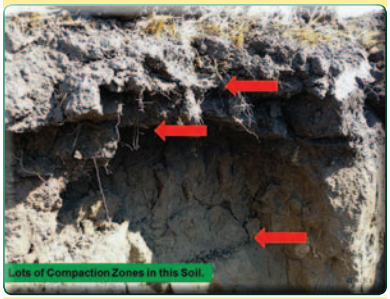
APPLICATION RATES FOR CROP RESIDUE MANAGEMENT

Mix 1/2 gallon Monty's Liquid Carbon and 1 quart Monty's Agri-Sweet

For optimum results, apply with 2 gal/ac of UAN.

Apply Monty's Liquid or Dry Carbon

The Fall Residue Program is really just a key to "unlock" some of the stored up fertility in your residue.



Monty's Liquid Carbon helps soils manage the issues from this past season's drought.

Monty's Liquid Carbon helps prevent side-wall compaction when planting next spring.

2. Next, you need to know the NPK value of one ton of corn residue. According to research by Iowa State University, the lbs/ton for NPK is 20, 7, and 33 respectively. Multiply these numbers by the total tonnage (4.26) and you get:

Nutrient	lbs/ton
N	85
P_2O_5	30
K_2O	141

The lbs of NPK tied up in your residue that need to be unlocked

3. Then the cost of NPK per lb should be determined. In this example, prices are based off of local co-op prices. Calculating the cost/lb of actual NPK is a 2 step formula. Let's take N fo example:

A. 2,000 lbs/ton x % N = lbs of actual N
Ex: 2,000 lbs/ton x 0.46 = 920 lbs of actual N

	Analysis	$/ton	$/lb of actual
Urea	46-0-0	$650	$0.71
Map	11-52-0	$740	$0.71
Potash	0-0-60	$650	$0.54

B. Cost/ton / lbs of actual N/ton = Cost/lb of actual N
Ex: $650 / 920 lbs of actual N = $0.71

This same formula applies to phosphate and potash values of Map and Potash.

4. Next, the value per pound is multiplied by the total pounds contained in the plant residue.

85 lbs N x $0.71 = $60.18
30 lbs P2O5 x $0.71 = $21.21
141 lbs K2O x $0.54 = $76.13
Total Value: $157.52

Lock and Key

The fall residue program is really just a "key" to "unlock" some of the stored up fertility in your residue. Our best guess is that 50% of residue can be digested and used to grow the next crop if the residue program is applied in the fall with the right combination of ingredients.

Basic Components	$/Acre
3 gal 28% or 30%	$5.76
1/2 gal/acre of Liquid Carbon	$12.00
1 qt/acre of Agri-Sweet	$3.80
Application	$6.00
Total	$27.56

By dividing the total dollar value of the residue by 2 we arrive at 50% of nutrients that can be potentially "unlocked" by following the residue program. While there is no guarantee of performance, field results suggest this is a realistic expectation. **$157.52 / 2 = $78.76**

Undigested residue causes many problems in the spring when planting. Germination is the worst.

Monty's Liquid Carbon contributes to Wheat Tillering this fall. North Carolina State University has tested Monty's Liquid Carbon for several years and is showing 10-15 bushel advantage in fall tillering, when used at planting.

Consult your local Monty's dealer or call 1-800-978-6342

WWW.MONTYSPLANTFOOD.COM

Value of Nutrients Ready for Next Crop

This value is compared to the total cost of the residue program to project the return on investment (ROI).

$$\text{Projected \% ROI} = \frac{\text{Projected Value of Unlocked Nutrients} - \text{Total Cost of Residue Program}}{\text{Total Cost of Residue Program}}$$

Ex: $\frac{\$78.76 - \$27.56}{\$27.56}$ = **186% ROI**

Benefits of Fall Residue Management

A major benefit of residue decomposition is increased disease protection from vectors that find safe harbor in plant residue (such as disease causing fungal and bacteria spores). Another problem with undigested residue is that it sucks up a lot of N during the next growing season and may even serve as a yield drag. In fact, research at the University of Minnesota suggests undigested residue can account for a 27 bu/acre decline in production. With fertilizer prices higher than a kite it makes more sense that corn residue is digested and nutrients unlocked rather than removed.

Adding 2 to 5 gal per acre of liquid nitrogen will enhance the digestion of the crops residue (depending on the amount of residue left on soil surface).

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Why is N so Important to Residue Decomposition?

BY JAMIE JONES

A recent Farm Journal article 'Fields That Never Catch Up' written by Darrell Smith who interviewed Ken Ferrie, exposes the interaction between soil microbes, N, and potential yield reduction. Ken Ferrie, Farm Journal Field Agronomist, explains that soil microbes are necessary in the breakdown of carbon in crop residue. Most importantly, these microbes need a comfortable living condition and ample food supply in the form of N.

Where does the N come from? That's right, the soil. Where does the soil get it from? Crop residue and fall applications of N. Let's take fall applied anhydrous for example. When a grower works the ground and then applies anhydrous an abundant food source is created for soil microbes whose populations then explode. In order to feed this population, a large amount of N is immobilized as a food source. In other words, the soil microbes take up a large amount of the N from the anhydrous and immobilize it; therefore, it's no longer available to the plant. As spring rolls around and young corn plants begin to grow and N deficiencies appear. Ferrie says "you will never get ahead of demands using only a fall ammonia application and no surface application if there is a great deal of residue incorporated."

What exactly are soil microbes? The groups of soil microorganisms responsible for carbon digestion (residue) include actinomycetes, fungi, and bacteria. Here is a breakdown of each group:

Actinomycetes—a unicellular organism that is somewhat of a mixture of both bacteria and fungi. The aroma of freshly tilled soil can be attributed to the by-product of actinomycetes. This microorganism is sensitive to pH but handle high temps and lack of moisture better than fungi and bacteria.

Fungi—if you've ever picked up a handful of soil and seen what looks like long white threads running through decaying plant tissue then you've seen soil fungi. Fungi are more tolerant of acidic soils than bacteria and actinomycetes but they do not tolerant high heat and drought conditions very well.

Bacteria—as a single-cell organism, bacteria tend to be moisture and pH sensitive. Ferrie states there are more than 20,000 species of bacteria in just a tablespoon of soil.

How can I Maximize Residue Decomposition? Keeping the microbes comfortable is key—minimize compaction, address pH issues, and fall broadcast N specifically for microbial use. It's also important to keep microbial populations up in the soil in order to break down root masses underground. Fall residue management, as Ferrie points out, is that northern states have a much shorter decomposition period compared to the south. When temperatures begin to dip down and soil goes into dormancy so does microbial activity. With such a small window to break down vast amounts of residue, Monty's Liquid Carbon and Agri-Sweet help microbes to digest residue quicker.

Note: *28% and 32% Nitrogen are volatile products—what happens if it's not incorporated? Monty's Liquid Carbon and Agri-Sweet has unique characteristics. Together they help stabilize N minimizing volatility.*