



RESIDUE MANAGEMENT: ROI

Calculating solutions to higher yields through better residue management.

As fertilizer prices rise, farmers need to consider the value of the residue they have on their fields after harvest. The corn stalks, soybean residue and wheat stover left behind contain valuable stores of NPK. Can the farmer utilize the nutritional benefits of this residue to help offset my fertilizer needs next spring? The key is to recruit your soil biology to get the residue digested and turned into plant food in the soil.

As the weather turns cool in the fall, the microbial life already in your soil tends to slow down. Consequently, farmers need to feed and stimulate these residue digesters to continue working well into the fall to convert this residue into organic plant food ready for your crop to take up next spring.

Soil biology breaks down residue and converts it into organic matter. Increasing organic matter in the soil allows the soil to hold more of everything, including water, NPK, secondary and micronutrients, such as calcium, sulfur, as well as organic carbons.

Unfortunately, Over the past several years it has become harder and harder to break down many of the genetically modified hybrids. These hybrids are described as having “stacked traits” because of the higher levels of lignin in them.



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

Joe Dedman, Monty's Vice President of Agronomy, says Monty's has been promoting the fall residue management program that has brought satisfaction to many users for years. Throughout the years the message remained consistent-start the process of digestion by feeding the microbial population with sugar (Agri-Sweet™ FG) and Nitrogen (UAN), and add a catalyzing humic (Monty's Liquid Carbon™) to produce a successful residue management program.

UNLOCK AND RELEASE THE NUTRIENTS

Monty's fall residue program is the key to “unlock” the nutrients contained in the residue on your fields. We estimate that 50% of the residue can be digested and turned into valuable plant food to grow next season's crop if the residue program is applied “post harvest” in the fall with the right combination of ingredients.

By multiplying the total dollar value of the residue by ½ (50%) we can calculate the dollar figure of the nutrients we can reasonably expect will be “unlocked” and available for next year's crop. While there is no guarantee of performance, field results suggest 50% is a realistic expectation.

| RESIDUE MANAGEMENT PRODUCTS | \$/ACRE |
|-------------------------------|---------|
| 2 QTS/A MONTY'S LIQUID CARBON | \$12.00 |
| 1 QT/A MONTY'S AGRI-SWEET FG | \$3.26 |
| 10-15 GAL WATER + 3 GAL/A UAN | \$5.76 |
| APPLICATION | \$8.00 |
| TOTAL | \$29.02 |



Avoid planter issues next spring by treating residue this fall



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

RESIDUE MANAGEMENT CAN PROVIDE POSITIVE ROI

The value of the nutrients unlocked by the residue management program is compared to the total cost of the program to project the return on investment (ROI). The projected value of nutrients in corn residue is \$161.11 (see calculations on next page). In the example below, the projected value of unlocked nutrients is \$60 ($\$161.11 \div 1/2$ (50%) = \$80.56). The return on investment is 178%.

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

$$\text{Ex: } \frac{\$80.56 - \$29.02}{\$29.02} = 178\% \text{ ROI}$$

HOW RESIDUE MANAGEMENT PAYS YOU. As crop yields increase so does your return on investment in a residue management program. Here is how the figures work for you:

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

$$\text{Tons of Residue} = (\text{Bushels/Acre} \times \text{Weight of Bushels} \times \% \text{ of Dry matter}) \div 2,000 \text{ lbs/ton}$$

For Example, a corn yield of 200 bushels/acre weighing 56 lbs/bushel at 15.5% moisture:

$$\text{Tons of Residue} = (200 \text{ bu/ac} \times 56 \text{ lbs} \times 0.845) \div 2,000 \text{ lbs/ton} = 4.73 \text{ Tons of Residue}$$

2. Next, you need to know the NPK value of one ton of corn residue. According to research done by Iowa State University, the lbs/ton of N=20, P=7, K=33. Multiply these numbers by the total tonnage (4.73) and you get:

| NUTRIENT | LBS/TON |
|----------|---------|
| N | 95 |
| P2O5 | 33 |
| K2O | 156 |

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

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

$$\text{Step 1: } 2,000 \text{ lbs/ton} \times \% \text{ N} = \text{lbs of actual N}$$

$$\text{Ex: } 2,000 \text{ lbs/ton} \times 0.46 = 920 \text{ lbs of actual N}$$

| | ANALYSIS | LBS/TON | \$/TON | \$/LB OF ACTUAL |
|--------|----------|-----------|----------|-----------------|
| UREA | 46-0-0 | 920 | \$540.00 | \$0.59 |
| DAP | 18-46-0 | 360N/920P | \$750.00 | \$0.82 |
| POTASH | 0-0-60 | 1200 | \$600.00 | \$0.50 |

$$\text{Step 2: Cost/ton} \div \text{lbs of actual N/ton} = \text{Cost/lb of actual N}$$

$$\text{Ex: } \$540 \div 920 \text{ lbs of actual N} = \$0.59$$

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

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

| | | | | |
|----------------|---|--------|---|------------|
| 95 LBS OF N | X | \$0.59 | = | \$56.05 |
| 33 LBS OF P2O5 | X | \$0.82 | = | \$27.06 |
| 156 LBS OF K2O | X | \$0.50 | = | \$78.00 |
| TOTAL VALUE | | | | = \$161.11 |

200 bushels/acre corn, can generate \$161.11 worth of NPK that is locked in the residue on one acre!

NOTE: Information based on Spring 2023 fertilizer prices.

THERE ARE MANY BENEFITS OF APPLYING A FALL RESIDUE MANAGEMENT PROGRAM

The additional activity of the soil biology results in an increase in disease protection from many of the fungal and bacterial spores that over winter in the residue. Unless the residue is digested and broken down, the large amount of residue left in the field will cause planting issues next spring - not only from the tough stalks hanging up on planter coulters and shanks, but the microbial biology will take and use some of the nitrogen applied in the spring to feed themselves for the digestion of the residue. Residue can even cause a yield drag as young corn plants are trying to get started.

In an article in *Corn & Soybean Digest*, 2/15/2011, by Edith Munro, research conducted at the University of Minnesota suggests that undigested residue can contribute to as high as a 27 bu/acre reduction in yield. When residue is digested by spring it allows soils to dry out and warm up quicker for better seed bed preparation as well as emergence of planted seed.

Contact your representative today for more information!



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“ For each acre, apply 2-5 gallons of Liquid Nitrogen and 1/2 gallon of Monty's Liquid Carbon to enhance the digestion of crop residue. ”

Joe Dedman, Vice President Agronomy

APPLICATION RATES FOR CROP RESIDUE MANAGEMENT

For optimum results, mix 1/2 gallon Monty's Liquid Carbon with 2-5 gallons of UAN per acre. Add 1 quart of Monty's Agri-Sweet FG for better results!

