



ADVANCED AG SYSTEMS'

Crop Soil News

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"It is the crops that feed the cows that make the milk which creates the money."

Advanced Ag Systems
Research, Education, Consulting

Innovative Rotation When Short on Corn Silage

"A drought will scare a person to death, a flood will starve him"

In many areas of the US we had extremely dry conditions. Northern areas and into Canada had the opposite weather. It would not stop raining. Not just small showers, but 2-3 inches at a dump. Even the ducks were carrying umbrellas! As we mentioned in the last newsletter, crops planted on winter forage stubble (see [picture page 3](#)) were clearly better than those without the winter crop. Even with winter forage some farms will struggle with forage supply through next year.

One step that many farms have successfully used regardless of size, is a **double crop** through the summer. The winter triticale followed by no-till corn was discussed in the last newsletter. Another alternative sets up a **different rotation** next summer. By spraying a runout hayfield with a low rate of glyphosate and 2,4,D this year in October in the north, and later in the south; the perennials, between the herbicide and the winter, completely die leaving a thin residue the next spring. This will warm earlier than most ground and so can be planted earlier. As the roots also have collapsed, it is an absolute dream to plant with a no-till planter. In northern areas, this may happen unintentionally to good hayfields when there is little or no snow cover and minus-25-degree weather hits. Snow is an excellent insulator. Without long stubble, snow blows off and extreme conditions can kill alfalfa, grass, weeds, etc. This opens a very productive alternative rotation.



Fall killed sod with no-till planted short season corn like this can give you mature corn silage by August 1 in northern regions. This can supply you mature corn silage until the full season crop is harvested.



The impact of warmer mellow soil can be seen in this picture where the right was fall killed, and the left was spring killed. The same corn planted the same time. The right was a deep blue green, the left a yellow green (picture was taken before we had color cameras). The practice resulted in **major yield increase**. This is not a new practice but a proven one I developed in early 1980's. Dave the Extension agent in the picture was just out of school. He has recently retired after a long and distinguished career.

Use this opportunity (sprayed out or winter killed) to plant as the first corn in the ground. The first, and simplest is to plant no-till corn to take advantage of both the nitrogen (only need a starter) and the improved soil structure (rotated corn usually yields 15 – 20% higher than continuous corn, and fall killed is 17% higher than that) followed by timely planted winter triticale. This will give you a low-cost forage supply. We have developed a **forage shortage variant** of planting a short-season silage corn no-tilled at the earliest possible time. This can give you **mature corn silage the first of August**. My suggestion is a floury kernel type as many short-season corns have flint-type parentage which means the kernels get hard and go through the cow without being digested, even with kernel processing. Many companies have worked to develop these and the results can be seen in Cornell's Joe Lawrence's variety trials (click [variety trial](#)) in New York. By harvesting mature corn silage on the first of August, you can have two weeks of fermentation and then be able to feed higher silage a month or two before your full season corn is ready. Farmers have harvested over 21 tons of silage the first of August using this system. The improved genetics in Lawrence's trial with short-season varieties were running 30 tons of 35%DM silage for the upper Vermont location this year.



A fall killed sod is a dream to plant in the next spring. There is enough residue to hold the soil but not so much to keep the soil cool. Thus you can plant short season corn silage first on this, for mature corn silage August 1.

A final addition is to **no-till alfalfa and grass companion immediately after the August corn silage harvest** as a late summer seeding. I have double-cropped corn/alfalfa seeding several times and was able to establish an alfalfa in early August. Of course, anything that delays corn maturity – prolonged dry period, cool or cold summer, extended rainy conditions, not planting early - will delay the corn harvest and subsequent chance of getting a highly productivity alfalfa seeding. If delayed more than 7 days after August 1, it hurts alfalfa yield to much the next year, then red clover and meadow fescue can be established. From my research (Albany NY) the clover and triticale combo needs to be in before September 1, or the legume fails.

Why Winter Forage

More farms in more countries including Canada and multiple states in Europe are capitalizing on growing **high-yield, high-quality, winter triticale forage as a cover crop on steroids**. There are multiple benefits of adding this crop to your regular rotations. The first, and most obvious, is soil erosion reduction or outright elimination. Even fields with shallow slopes will erode over winter as you can see in the picture at the right. The ground freezes from the top down. When a warm spell hits, the top inch will liquefy as the frost thaws from the top down. Snow melt or a winter rain can remove nearly all of this layer leaving thinner topsoil and mostly subsoil and stones behind. Thin layers removed each winter add up to little or no topsoil on the rise and too much in the hedgerow or ditch at the bottom of the slope. Field total yields will continue to decrease.

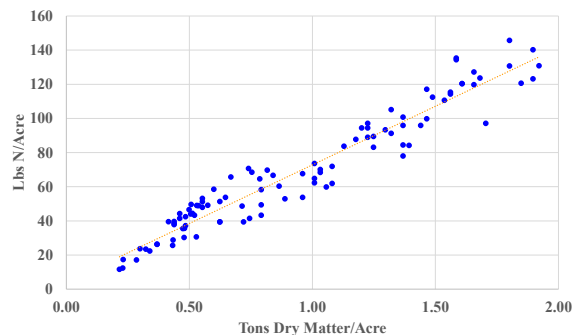


Winter sheet erosion is a tremendous soil and yield loss over time, leaving the field impoverished for you and the farmers after you.

The second impact from the lack of winter forage, strikes directly at your wallet. Fertilizer nutrients you paid good money for are leaching out, denitrifying, or being converted into less or completely unusable forms.

Nitrogen is held in the green tissue at the 22% Crude Protein level through nearly all amounts of fall growth. As you can see in the graph on the right, we have **stored up to 140 lbs. of nitrogen/A**. For the height of most growth for top yield, which is 1 – 1.5 tons of dry matter going into winter we are looking at 60 to 100 lbs. of N stored in northern (New York) climate zone. Further south more will be stored. We have research in the ground to determine how much. In addition, phosphorous which can tie up in an unavailable compound with other elements in the soil, is absorbed and held in the plant in an organic form. Potassium in some sandy soils can leach, but again not if it is held in tops and roots of the plants organic form.

Lbs. of Nitrogen/Acre Stored in Living Biomass



Advanced Ag Systems LLC/NYFVI

The third is **more important long term: the soil health and structure**. By growing a living crop all year, the roots' exudates support the diverse micro-organisms critical to healthy soil biological activity. This naturally reduces disease and other pathological organisms. It also allows the soil organisms to build soil structure under the winter forage sod. Research has found that soil health and structure deteriorate tremendously over the winter under **bare soil**. We saw this clearly in Green Bay this season. Fields with previous winter forage had corn that grew nearly normal. Those without had large areas of drowned or severely stunted corn with pockets of good corn all in the same row and estimated half the yield of the winter forage-treated fields.



This picture by Brent Peterson in Green Bay Wisconsin clearly shows the beneficial impact of real world changes in soil health. The corn on the right was tall, uniform. It was planted into a field that had several years of winter forage building the structure and health. The field on the left was traditionally left bare over winter and then tilled and planted in the spring. That corn is much shorter and very uneven. It goes from 2 ft. tall to tasseled, in the same row and yield estimates were only 13 tons of silage/acre. Same soil, same horrible (extreme wet) weather, very different results from incorporating winter forage in the rotation.

The bottom line that convinces many farms is that they can often get in one cutting more dry matter than all 3 – 4 cuttings of alfalfa. This is in addition to growing and harvesting nearly a full season of corn silage. Harvested at the correct time and method, results in a cream puff, **very high quality forage**. John Winchell of Alltech found over a three year period in Pennsylvania that in alfalfa and triticale, both harvested on time, the triticale had 9.5 more potential pounds of milk as projected by the NDFd 30.

Sincerely,

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Hand
to Better
Agriculture**

