



ADVANCED AG SYSTEMS'S

Crop Soil News

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

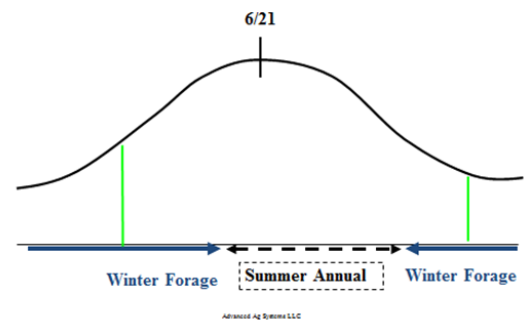
Rotations: Makes Money and Sense

For a number of these newsletters I have been bringing the results of our many research projects at the **Cornell Valatie Research Farm** in Eastern NY. The focus has been on high yielding, very high quality forage that can support dairy rations encompassing greater than 70% forage in the diet and high milk production with high components, critical to leveraging profit back into dairying. NONE are silver bullets. All have to operate within the farm system, soils, and labor/equipment resources you have. That integration is the crop rotation. Rotations are something everyone mentions but few really step up and apply. Ironically the one who makes the most money with rotations is the farmer.

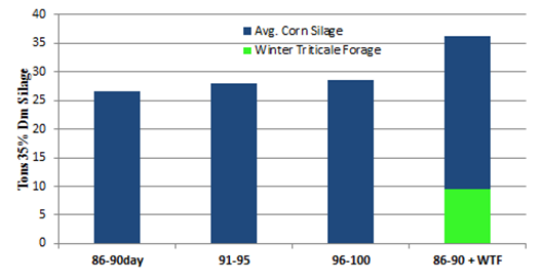
Winter forage rotation: The advantage of winter forage is that it utilizes part of the year that we normally do not consider growing crops here in the north. As you can see in the graph at the right, the longest day of the year is June 21, no matter where you live in the northern hemisphere. When we grow summer annuals the ground sits bare for 75% of the time until the corn rows close in mid-June. This is a tremendous waste of growth potential. Research has found that bare soils during that time contribute to major degradation of soil health and structure, and loss of fertilizer nutrients.

One rotation is to plant the summer annual with the goal to be off the field by the first half of September in the Albany NY area. We found it is critical for high yields in the north to have enough time to develop the maximum number of tillers on winter forage in the fall. September 15 planted triticale was 33% higher than October 4 plantings. Forget wheat planting dates – it is counterproductive in triticale winter forage (Hessian fly is not a problem). To do this we plant a slightly shorter summer annual to assure it is off, and the triticale in, by the first half of September. Before you wax hysterical that we HAVE to grow the longest season corns to get the maximum yield consider two items. First, based on the Cornell test plots there is only a slight, but consistent yield increase from longer season corn. See graph above of Dr. Cox's average corn silage yield trials. There is also an increase in the risk to that crop of not maturing or having

Growth Potential: light intensity & hours



Double Crop with Shorter Season vs Straight Traditional Corn Silage

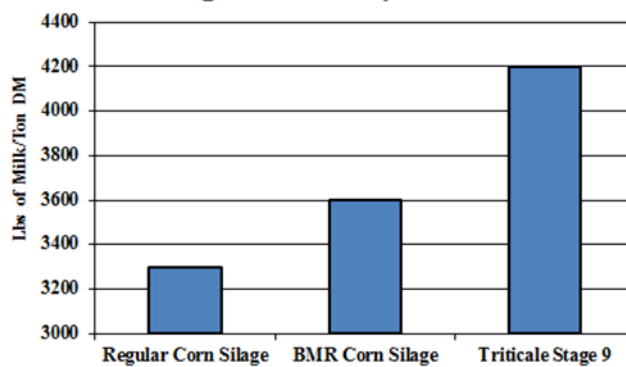


Dr. Cox, Cornell

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to harvest in late season mud. Frost killed corn that is rained on will leach out the plant sugars critical to rapid, complete fermentation. Ironically the slight decrease in corn yield is more than offset by a **significant increase in total yield** of winter forage that **IS FAR SUPERIOR TO THE CORN SILAGE** you are giving up. If you look at the graph on the right, fermented winter triticale has higher potential milk/ton than regular or even BMR corn. We still need to grow and feed corn. We are just re-allocating a small portion of the season in the fall to maximize the winter forage potential.

Winter Forage: Highest Quality Forage on Today's Farm



At this point there are two potential rotations utilizing winter forage.

Winter forage-Energy crop-Winter forage. The first rotation is to plant your summer energy crop (slightly shorter season corn or bmr sorghum). The maturity would be targeted to come off as silage the first week of September. You immediately apply 3 – 5,000 gallons of manure, and incorporate it to capture the nitrogen. This will supply your fall nitrogen and a significant portion of the phosphorous and potassium for a rapid fall establishment. Drill the winter forage seed 1.25 inches deep at about 100 - 125 lbs/acre. (We need to research the seeding rate of early plantings that have more time and nitrogen to tiller than our past seeding rate tests). A properly fertilized and planted stand will usually out compete most of the potential weeds. Herbicides are available for those that don't. The next spring, apply at least 100 lbs of nitrogen with an anti-volatilization agent at early green up. Harvest the forage at flag leaf stage. Apply and incorporate manure and plant your energy crop to start the rotation again. (results on right in graph on page1)

Energy crop -Winter forage + Legume. A variation on the above rotation is to shorten the season slightly so the energy crop is off and the winter forage is planted **BEFORE THE LAST WEEK OF AUGUST** for the Albany NY area. This opens a window to plant the winter forage with red clover. The legume will establish and survive very well over the winter (does NOT work with alfalfa). If you miss the fall window because of delayed energy crop harvest, you can frost seed the red clover the next spring. The spring is a harvest 8 – 10 tons/a of high quality winter forage silage in what would be the legume seeding year, and then go on to take 2 to 3 more cuts of very high yielding high quality red clover. A future newsletter will cover how we are consistently making haylage-in-a-day from red clover. The clover will last another 2 years and then the crown borer and root borers will have weakened the stand. You can either fall kill or take a spring cut and follow with an energy crop and winter forage again. The clover sod will supply all the nitrogen (other than starter) for the energy crop. The energy crop can be followed with either the above rotation of winter forage or with a winter forage + red clover cycle.

We are developing a slick rotation that involves alfalfa but the research is not complete (it worked so well we obviously must have missed something!!).

Sincerely,

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