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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

Nitrogen on Winter Forage.

Most farms growing winter triticale forage with the high yield management package, are getting yields above what they expected yet the protein is less than what they want. With the high soy meal prices, the lack of forage protein hurts. Reality has caught up with them. As we pointed out last year in the March 2021 newsletter; a three-ton winter forage dry matter yield will remove 192 lbs. of Nitrogen at 20% crude protein. Insufficient nitrogen (and sulfur) will not only limit the protein of the crop but also drain the soil of available nitrogen so when corn is planted after, it does poorly for the first couple of weeks. A band aid answer is to put some popup nitrogen fertilizer in with the corn seed. The better answer is to put enough on the winter triticale and any not used will be there to supply the corn.



Insufficient nitrogen on a high yielding winter triticale forage can not only reduce your forage crude protein, but can adversely affect the next corn crop. In spite of banded fertilizer, it will be yellow and slow growing until soil organic matter releases more nitrogen.

Some have had manure spread and immediately plowed down in early September before planting. My research and that of Penn State University is that this is **NOT recommended** north of the Mason Dixon line (south border of Pennsylvania). The savings on fertilizer does not offset the yield loss from the later planting. You are much further ahead to get the triticale in and inject the manure in November. As we move further south (south of Pennsylvania Mason Dixon line) there is a long warm fall and having time to apply 4-6,000 gallons of manure before planting triticale can increase fall growth and increase spring yield. We have recorded storing up to 120 lbs. of N/a in the fall vegetative growth. My research and that of Dr. Ketterings of Cornell both agree that in the fall, for every additional pound of dry matter you are growing, you store 22% crude protein or 70 lbs. of nitrogen/ton of dry matter. This reduces the amount you have to inject in November or December or purchase next spring, to meet all the nitrogen and sulfur needs of the crop.



In our research, we tried plowing down manure in early September. The next spring, the 3 ton/acre dry matter yield had **NO increase**

As farms utilize the researched back package for high yields, adjustments need to be made to supply enough nitrogen and sulfur to support both yield and forage crude protein. Yields like this of 3.5 to 4 tons of dry matter/acre are getting more common.

where we added more nitrogen in the spring. Winter forage is more than just yield and the nutrients it contains are critical for economical dairy forage. In this study, we found at the 0 spring nitrogen rate we had 9% crude protein. Where we put 120 lbs. of nitrogen (plus sulfur) we got **19% crude protein**. The early September manure did not carry through. In this research, we calculated that the payback in soybean meal you didn't need to buy because you added spring fertilizer, was \$2.50 of soybean meal not needed for every \$1 spent on nitrogen.

We repeated the study and injected 8,000 gal/a manure early (just before planting) and late (last Monday in November). The early injected manure still needed 126 lbs. of spring-applied nitrogen to get to 20% crude protein. The late applied only needed 65 lbs. of spring-applied nitrogen to get the same crude protein. If we had applied 12,000 instead of 8,000 gal/a of manure in November of that study, then we would have achieved the 20% crude protein without any spring-applied nitrogen. The best time in the fall to inject manure is **after** the soil temperatures drop below **50F**. Before then you have the potential to lose a significant amount of nitrogen.

If you didn't get a chance in the nice weather of December to inject manure into your winter forage crop, (or had not bought your injector yet,) you still have a chance this spring as soon as the soil is trafficable. If you planted on time and had 6 to 10 inches of growth, you would have taken up approximately 50 lbs. of nitrogen the previous fall, especially if the field had manure the prior spring before corn. For a 3-ton dry matter crop, we suggest 9-10,000 gallons of manure injected (depending on what your manure tested). This, along with the fall nitrogen uptake, will supply enough for the total of 192 lbs. of nitrogen (higher yields will need more) to reach 20% CP. optimize spring yields.

A drag hose system is preferred as it keeps the heavy, soil-compacting, manure tires off of the field. Watch your forward speed as greater than 3 mph will tend to bring up more stones. We also suggest a relatively narrow coulter attach angle of 4 degrees to disturb less sod and to lessen the chance of stones lifted to impact the mower or chopper. If you do need to use a manure spreader to inject, we suggest keeping tire pressure below 15 psi (if your tires are designed for it) as Canadian research found this reduces compaction.

We do NOT suggest topdressing manure on winter forage, especially a crop that is 6 inches or taller. The manure will hang on the forage (see photo at right). Rain will not wash it off. When you mow you will be ensiling very highly digestible forage and manure. You may have gotten away with it last time doesn't mean you will the next. Adding insult to injury **74% of the nitrogen you are applying is going off in the air** and doing nothing for your crop. To get enough nitrogen you would have to apply 36,000 gallons of manure – in short, you would have to bury the crop in manure. It does not work. We strongly suggest against it. If you are not/can't inject, we suggest using fertilizer nitrogen (with an anti-volatilization agent so the crop gets all the nitrogen you paid for) and sulfur in an 8 N :1 S or 10:1 ratio to maximize protein and yield. Save the manure for corn fields where you can immediately incorporate it.



Broadcast manure on triticale is counter productive. 75% of the nitrogen is lost in volatilization. The remaining is insufficient to meet the needs of the crop. Rain does not wash it off and so you are taking a huge risk as manure mixed with high quality silage is prescription for health disaster when fed to dairy cows.

Sincerely,

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