

The Nitrogen Puzzle

From the desk of Rylan McCunn

When striving for higher corn yields, nitrogen is generally the first input farmers think of. The truth is that adding more nitrogen to your field may not lead to higher yields but will almost certainly add to higher costs. So what is the right rate of N? Is a single application of nitrogen at high rates better than multiple applications of nitrogen at varying rates? Every farmer's situation is different, so solving the "nitrogen puzzle" needs to be done on an individual basis, not "one size fits all".

The first thing to consider is your yield goal. Corn yields can vary greatly from year to year. Realistically, your yield goal should be no more than 10% above your average yield. In areas with volatile weather patterns, that may be too low; in areas with very consistent corn yields, too high. Once you have chosen a reasonable yield goal, look at overall fertility. Are your phosphorous, potassium, PH and trace elements all at optimal levels? If not, you may want to spend a little more on dry fertilizer and keep your nitrogen rates at a more realistic level.

What is the nutrient holding capacity of your soil or your CEC? Putting 200# of NH₃ on a soil with a CEC of 14 is a waste of money. Nitrogen application levels should not exceed 10x the field's average CEC. A CEC of 14 can hold 140# of NH₃. If you have a low CEC and a high yield goal (like a CEC of 14 and a yield goal of 200) you need to consider multiple applications of nitrogen.

The last part of the nitrogen rate puzzle is out of your hands and up to mother nature. A 200 bushel corn crop may require 1.1# of applied N per bushel (220#) but will actually use 340# of nitrate. So where does that "additional" nitrogen come from? It comes from rain and the conversion of organic nitrogen into nitrate.

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8 a.m. – 5 p.m.

Saturday
Seasonally or
by Appointment
8 a.m. - Noon

Some of you can control your water input through irrigation but most of us rely on organic activity in the soil, rain and soil temperature. You can apply nitrogen up to a certain level but it is up to environmental conditions or mother nature to supply the rest.

Now that we have a realistic idea of how much nitrogen we need to apply, it is time to consider when the corn crop needs it. When does your corn require the most nitrogen? Important factors to consider are timing, placement and correct rate. Intake is normally low from emergence to around V5 but still needed. Some of the nitrogen can be out of reach for the plant at this stage or tied up in crop residue. As the corn moves toward the V8 stage, intake increases to roughly 4-9# per day. According to agronomist Ken Ferrie, "sufficient nitrogen is crucial during the V5-V8 stage because that is when many hybrids begin adjusting their potential ear size. Once a plant scales back its ear girth, we can't get it back." At V12 to R3, plants start to store some nitrogen in their stalk. This works as a reserve if required levels aren't available for intake. At V12 the growth becomes so rapid that you can almost hear the corn growing. After V12, nitrogen shortage will cause the ear to start aborting kernels. When the corn plant reaches R3-R5 the plant will start moving the nitrogen to the grain. If you notice the plant starting to change color, it is usually a sign the plant has started slowing down due to lack of available nitrogen. Nitrogen intake will also vary based on hybrid and variety.

If we know when a corn plant needs nitrogen, and in what amount, we can discuss how we are going to get there.

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Attention!

Wheat Growers!!

Reports of insects and disease in wheat have been seen in Oklahoma and Southern Kansas. Scout your fields to spot any issues you may have. Call our Kansas office to discuss the best plan of action for your fields!

Ben: 712-254-6454 ~ Jess: 712-254-6468 ~ Craig: 712-243-7066

The cheapest and most common source of nitrogen in our area is anhydrous ammonia (82-0-0). Anhydrous drawbacks are timing, application expense and product mobility. Generally, farmers apply anhydrous prior to planting when they have time and conditions are right, sometimes as much as five months before planting. Application costs vary from \$12 to \$20 per acre. Anhydrous ammonia converts to nitrogen through a bacterial process when soil temperatures are at 40 degrees or warmer. The warmer the soil the quicker the conversion. Once anhydrous ammonia converts to nitrogen it becomes mobile in the soil and can move out of the soil profile quickly with excessive rainfall or ponding. N-Serve, a product from Dow, will delay nitrification and has been proven to increase yields, but it is also another expense. Current anhydrous ammonia costs are \$455 a ton or \$.277 per unit.

ESN (44-0-0), an encapsulated granular urea, is another option. It takes 75 days on average for ESN to fully release its nitrogen into the soil. If you applied at planting, it is readily available from V-5 through maturity.

Drawbacks to consider with ESN:

- It is fairly expensive when compared to other sources of nitrogen
- It is a round granular product and can be moved by the wind on bare, frozen ground.
- ESN surface applied to steep slopes can be moved downhill by heavy rainfall.
- ESN should be incorporated, injected or spread into heavy ground cover like winter wheat or fall rye.

Wickman Farms, Inc. has had great success incorporating a mixture of ESN with AMS on their river bottoms. ESN currently costs around \$500/ton or \$.57 per unit.

A third nitrogen option is urea (46-0-0). Urea is volatile, so make sure it is either injected, incorporated or top dressed on well shaded ground, or that an impending rain is in sight. Urea applied post emerge can burn the corn plant if it gets caught in the whorl. Current costs for urea is \$290 a ton or \$.32 per unit.

Many of you prefer 28% or 32% UAN to Urea. UAN is a convenient product that can be applied with a planter, coultter cart or broadcast with a sprayer. Like Urea, UAN surface applied can volatilize and dissipate on warm sunny days. Currently, 32% UAN is \$230 a ton or \$.36 a unit.

AMS is the last nitrogen source we are going to mention. AMS (analysis 21-0-0-24) is generally spread right before planting, is highly soluble and contains the added benefit of sulfur. Most producers apply 100# to 150# per acre to supplement their other nitrogen sources and boost the sulfur levels in the soil (most of our soils test low on sulfur). AMS is currently \$255 per ton.

(cont pg. 4)

So where do you begin?

Follow these five steps to put your nitrogen puzzle together:

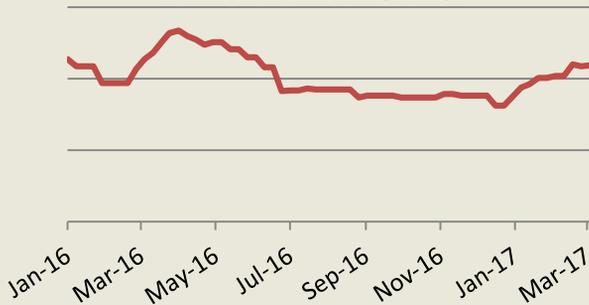
- 1) Identify a realistic yield goal
- 2) Determine nitrogen needs for each field
- 3) Go field by field and pick the best application method with the best fertilizer source. (Example: Injection with anhydrous in the hills or incorporation with ESN/AMS on the bottoms)
- 4) Be flexible. The weather can change your plan overnight.
- 5) Call your Wickman Chemical sales representative today!



HAPPY PLANTING!

Fertilizer Trends and Recommendations 01/01/2016 – 03/03/2017

Anh. Ammonia

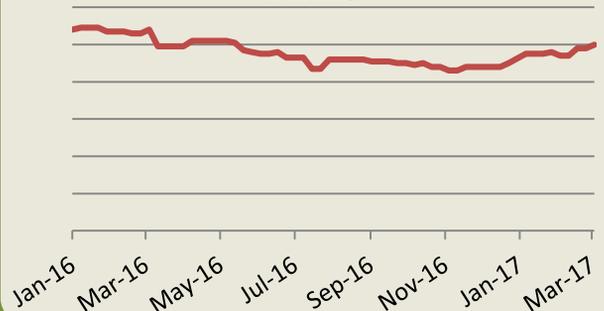


Pre-plant ammonia continues to move into the fields in parts of Missouri, Nebraska and southern Iowa. Production outages at some plants, truck lines and shortages at the terminals have led to increasing prices.

One source was quoted as saying, *“This was expected if we had an early run.”*

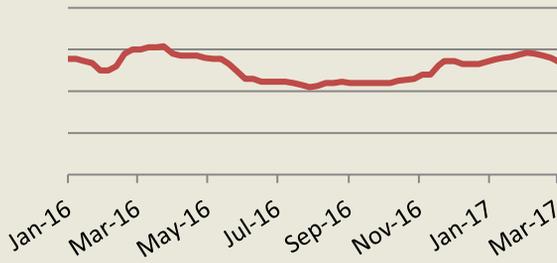
Well, we’ve had an early run!

AMS



AMS prices are in a broad range with the upper end for domestic product and the lower end for imported tons. We could see prices increase into spring with a potentially tight supply and strong demand.

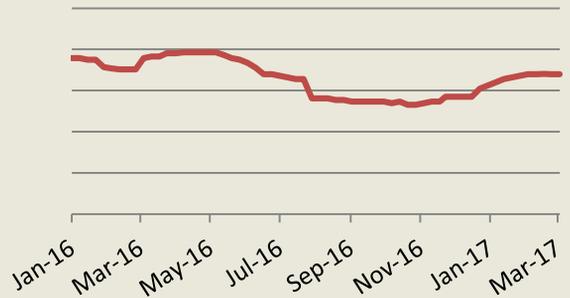
Urea



There will be plenty of Urea assuming Port Neal and Wever get their production ramped up. Supply could still be challenging if we have a wet spring and ammonia intentions are not applied. But so far that is not the case. Cover your spring 2017 Urea needs now.

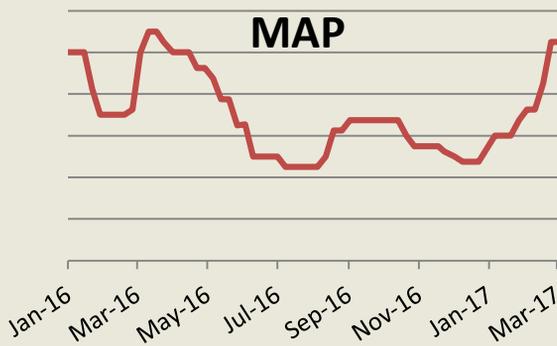
For a "Fresh" price on fertilizer, call your Wickman Chemical Sales Representative today!

UAN



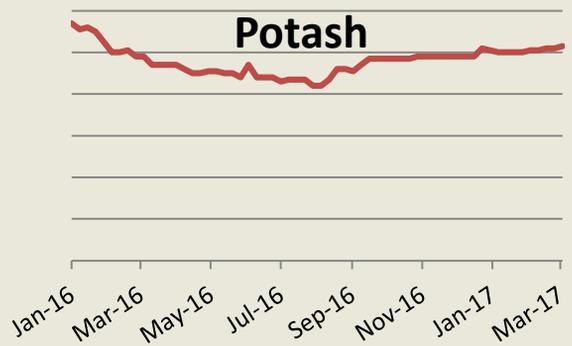
UAN prices have firmed. There is a broad range of prices but some deals are being cut on prompt tons and early delivery. Seasonal demand will push prices higher due to minimal prepay offers. Buy and take UAN now if possible.

MAP



MAP is selling at a premium to DAP. Prices are inching up due to strengthening demand and tight supply. No surprise here; we generally see warehouse supplies tighten and transportation costs rise at the end of winter. Prices will remain firm until summer fill begins.

Potash



Potash markets have been in a \$20 trading range since the first of the year. Inland terminals are currently at the high end of the price range. If you need potash, it is a good buy at the current price level.