

### Wheat and Canola Nitrogen Management

Josh Bushong, West Area Extension Crops Specialist



Wheat and canola planting has already started, with most of it being “dusted-in” with hopes of rain to not only get it germinated but also established. Forage and grain yield goals are going to be heavily hinged on timely moisture. While wheat pastures have already had pre-plant nitrogen applied, fields could still benefit from in-season management.

Nitrogen (N) is a mobile nutrient and can be lost or become unavailable to plants. Source or type of N fertilizer used can also have a big impact. Different production systems will require more or less nitrogen up front than others.

In a dual-purpose or grazeout wheat system, more N is needed early compared to a grain only system. A grain only system needs about 2 lb. N per bu. of seed produced, or 80 lb. N for a 40-bu. grain yield. Producing wheat forage is greatly influenced by available N to the wheat crop, so more N is needed in a dual-purpose or grazeout system to produce adequate forage. It takes about 60 lb. of N to produce one ton of wheat forage. So, in a dual-purpose system 60-70 lb. of N will be needed at planting compared to 30-40 lb. of N for a grain only system. The second application of N is typically applied late fall to early spring.

For grain only producers, the old rule of thumb of 2 lb. N per bushel is a good starting place but that might be on overestimation. When looking at 15 years of field trial data from the OSU North Central Research Station near Lahoma, the optimum pounds of N per bushel ranged from 0 to 3.2. The average pounds of N per bushel to reach an economic optimum N rate was 1.6, however if 2 pounds per bushel was applied the grain yield would have been maximized 13 out of those 15 years.

Split application is often a best management practice in canola as well. The canola crop needs enough N to produce a healthy crop to better withstand the winter. Too much N in the fall or at planting can result in excessively large plants going into winter. Excessive N and prolonged warm growing conditions can lead to winter survival issues if the plants growing point starts to vertically elongate. Canola needs about 2.5 lb. N per bushel of seed yield, or 100 lb. N for a 40 bu. yield.

It is almost impossible to determine the total N needs at the time of planting. Topdressing N on wheat and canola is a good management practice because it decreases the risk of N losses as well as benefiting from influencing late season N recommendations based on the potential yield of the crop. Topdress application rates can be impacted by current expectations of the crop and weather forecasts. Basically, estimating the yield potential becomes more accurate as the season progresses.

Utilizing tools at hand can dramatically influence N recommendations. Applying N-Rich strips in early fall, especially in dry years like this, can help estimate N demands throughout the year for both dual-purpose and grain-only systems. This management tool can assist in determining N deficiencies or sufficiency. Farmers that applied anhydrous ammonia pre-plant into dry soils might have lost up to half of the N if it wasn't applied correctly. Open furrow slices, shallow placement, and lack of moisture for it to bind to led to the highest risks for losses.

The N-rich strips can be as simple as hand spreading a few cups of urea (46-0-0) or using custom built applicators on UAV's or tractors. The strips can be used to visually determine if there is enough N or not. If the strip cannot be seen, then there is no need to apply N at that time. If the strip can easily be seen, then more N is needed.



In addition to using N-Rich strips, all OSU Extension offices have access to a GreenSeeker® crop sensor. The hand-held sensors estimate the biomass and greenness of the crop both in and out of the N-Rich strip. Using the data from the sensor and an online calculator, yield estimates can be computed. This tool can help producers determine the yield potential of their crop with and without added N to make economic decisions on if or how much N needs to be topdressed. From past on-farm data, utilizing N-Rich strips with a handheld sensor averaged a net profit of \$10 per acre or more.

Contact your local OSU County Extension Office for more information.

## **Assessing Alternative Feeding Options**

**Dana Zook, West Area Extension Livestock Specialist**

We have moved into fall, and this is typically the season to discuss cow supplementation with producers. Due to drought, this year's conversation has taken a different tone and I have been providing a wide range of nutritional guidance. Here are some timely thoughts from those conversations.

Throughout this fall, the focus of my discussions has been on the selection of feed that is available and affordable along with strategies to deliver that feed most efficiently. Due to cost, some producers are choosing to use a lower protein supplement for their cows (14-25% protein). In a normal year, this is not the most cost-effective strategy because the cost per pound of protein is often the least in higher protein supplements (30%+ protein). This year, lower protein supplements will work because cows may also have a higher requirement for energy. When doing this, just be sure to provide enough feed to the cow to meet her needs. For example, 5 pounds of a 20% protein cube is equal to 7 pounds of a 14% protein cube; each of these combinations will provide one pound of protein. Be sure to make that adjustment. That being said, even a small amount of protein is better than none at all. The protein we provide to cows is actually feeding the microbial population in the rumen. The microbes in turn digest forages. It's an amazing system (a story for a different time). Research has shown that even just a small amount of protein will stimulate microbial activity and allow that cow to function. In certain situations, protein can be limited slightly (to reduce cost) without a huge decrease in cow productivity. The cow may not perform at 100% but will do just fine at 80% productivity. They will not fall apart overnight. Be aware this is specific to dry cows only; lactating cows are a totally different animal.



A number of alternative feeding strategies are available that will help stretch feed supplies and maintain a core group of cows. One such practice is limit feeding. In this scenario, a grain source and supplement are provided in just enough quantity to meet the animal's requirement. Hay will be offered but only to the minimum level needed to keep the digestive system healthy. To have total control of their diet, cows should be fed in a dry lot or sacrificed pasture. A mixer truck is not required for this, but it does take an increased level of management and some extra equipment.

If producers would like help assessing alternative feeding options, OSU Extension is here to help. There are a few things a producer can do to prepare and make the process more efficient. First of all, make sure all hay has been tested. We can estimate standing forage values, but the nutritional value of hay is too variable for an estimation. Also, prepare a list of feeds with prices that are locally available. I understand this does take extra work, but it is worth your time. Personally, I want to help producers make the very best decision for their operation and these details will make every ration analysis more accurate. Yes, the OSU forage lab is behind. But I assure you, we are all doing our very best to help producers during this difficult time.

To maintain a cow herd in this drought, certain steps must be taken such as culling, early weaning, and the employment of alternative feeding strategies. I know many producers have already taken these difficult steps to be more secure in the future. A very wise extension educator recently told me to consider the future before worrying about today. What steps can be taken today to ensure our goals will be met next spring

or summer? I believe that advice applies very well to the current situation. That's all I have for today. Contact your local extension office for assistance evaluating the nutritional situation of your beef herd. We are here to help.

## Title

**Trent Milacek, West Area Extension Ag Econ Specialist**

Feeding cattle is usually a simple affair in which producers feed a grassy mixture of hay and supplement with a 20% range cube. The pelleted feed increases the protein of the ration to meet the cow's needs which can vary depending on the stage of gestation and milking requirements.

I recently wrote about the cost of hay and varying qualities. In vague terms, a 10% protein ration will satisfy the needs of any cow regardless of her status as pregnant or nursing. This gives producers a goal to shoot for.

In speaking with producers who have recently baled failed crops, I have learned of hay that tested 2.5% crude protein and some over 10% crude protein. All of these observations are related to failed milo. What is the difference in value between these two hay sources to a rancher?



If I am supplementing a low protein hay source to get to a 10% crude protein ration, I may utilize 20% cubes. These cubes on the cash market are \$435/ton from one source I solicited information from. This is a good place to start.

How much hay will a cow eat? For a 1200 lb. cow eating 3% of her body weight, she will consume 36 lbs. of hay per day. This 36 lbs. of hay contains 0.9 lbs. of protein. Her

requirement in early lactation is for 3.6 lbs. of crude protein. Using 20% cubes I will need to feed 13.5 lbs. of 20% cubes per day to meet her requirement. It is probable that the cow cannot consume enough of this ration to meet requirements. Those cubes will cost \$2.94/hd./day for our example cow. If the bale weighs 1200 lbs., then a 10% crude protein hay source should be worth \$98/bale more than a 2.5% hay source. This is the reason I am an advocate for testing hay before you buy it.

This is simple math for a complex problem. Your herd will not match my example perfectly. OSU Extension offices have tools available to you to test hay and to calculate rations for your cattle. It is important to know your cow size, gestation or lactation phase and hay cost and supplement cost before trying to make calculated decisions for your nutrition program.

## **Extension Experience – Insights into Oklahoma Agriculture**

The Northwest Area Extension Staff would like to announce the creation of our new podcast *Extension Experience*. The *Extension Experience* podcast is brought to you by Josh Bushong, Trent Milacek, and Dana Zook. Each week they provide perspective on Agriculture topics and offer insight from our experience working with Extension Educators and Producers across Oklahoma.

The *Extension Experience* podcast is available on Spotify, Google Podcasts, and Apple Podcast platforms. You can also access the episodes on spotlight, <http://spotlight.okstate.edu/experience/>.

We hope you consider listening to Extension Experience.



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