

Wheat and Canola Nitrogen Management

Josh Bushong, West Area Extension Crops Specialist

Sowing winter crops has started and I've received a few questions about how much nitrogen this fall. Forage and grain yield goals are going to be heavily hinged on timely moisture. While most 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 more than 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 the 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.

Contact your local OSU County Extension Office for more information.



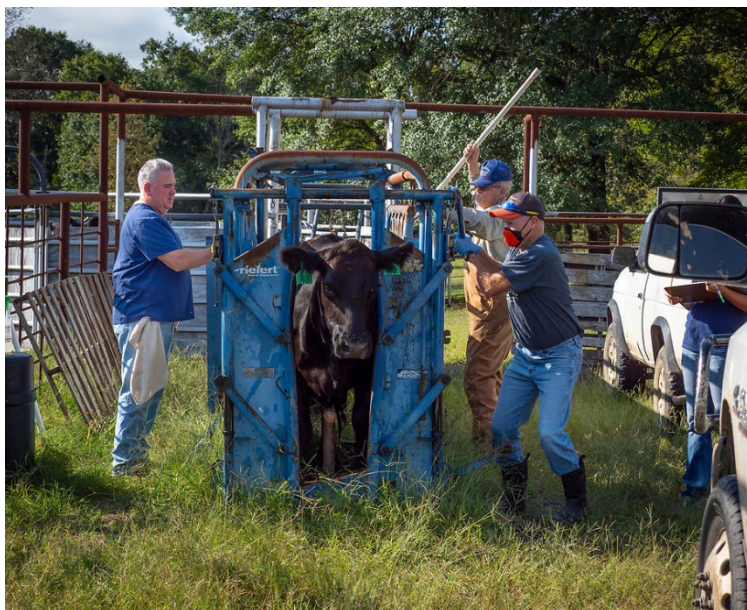
Pregnancy Testing – A Valuable Technology

Dana Zook, West Area Extension Livestock Specialist

Fall is an especially busy time for beef producers. Tasks abound and there doesn't seem to be an end to the checklist of things to do before cold temperatures creep in. In my last article, I focused on prep for weaning calves but this week I want to focus on our cows. Fall is typically a time I dive into nutrition (be assured, that will come) but I wanted to preemptively discuss pregnancy checking. These two conversations go hand in hand. Knowing which cows are pregnant is hugely valuable in gauging

supplementation needs for the winter. Managing open cows isn't something any producer wants to do and by utilizing at least one "preg-check" option, you will be ahead in the long run. In this article, we will briefly discuss palpation, ultrasound, and blood testing.

While writing this article, I was interested in the actual number of producers that pregnancy check. A great survey of actual producer practices is conducted periodically by the National Animal Health Monitoring System (NAHMS). In their 2017 report of small cow-calf producers (less than 50 cows), 14.2% palpate, 2.8% blood test, and 4.7% ultrasound for pregnancy diagnosis. Producers who own 50-199 cows have slightly higher incidence to do these practices; 29.3% palpate, 5.6% blood test, and 16% ultrasound for pregnancy diagnosis. Unsurprisingly, adoption and use of these methods increases as herd size increases. But, if we are just looking at adoption within



these two groups, no practice is done more than 30 percent of the time!

Now that we have a baseline of actual use across the industry, let's discuss the options. Historically, rectal palpation has been the industry standard. In this practice, the reproductive tract and/or the fetal calf is manually palpated to determine pregnancy status, approximate age of the calf, and any physical issues that may exist in the reproductive tract.

The 1980's brought the advent of technology to ultrasound, giving veterinarians another window of opportunity to identify pregnancy and the ultimate age of the calf. Ultrasound also gave vets the ability to determine sex and potential physical abnormalities. It's important to note that with both palpation and ultrasound, the veterinarian or individual performing the test has highly specialized training.

Blood sampling is the final option for pregnancy testing that first became available to the beef industry in the 2000's. Interestingly, it took a number of years to determine what indicator in the blood would be used to indicate pregnancy. Unlike humans, cows do not excrete a pregnancy identifier in urine and so instead we look to several different molecules in the blood. A blood pregnancy test can be done chute side with a result within 20 minutes, or the blood sample can be sent to a lab with a result within a couple days. A skilled producer can obtain blood samples for cows, but besides the pregnancy diagnosis, it does not give the insight like palpation or ultrasound.

It's very important to note that many of these tests can be conducted very early on to evaluate pregnancy (30-45 days). Early pregnancy determination is valuable; however,

OSU Extension would encourage producers to wait 60 days post breeding before getting cattle up to evaluate pregnancy with any method. Working cattle earlier than this can disrupt an embryo, potentially causing the loss of the pregnancy.

If you are considering pregnancy testing this year to determine those cows who are worthy of feeding this winter, consult your local veterinarian. He or she may have local options that make it easy and simple to pregnancy test your herd. My fellow Extension Specialist and OSU Veterinarian, Dr. Rosslyn Biggs says that pregnancy checking is a gateway for conversations between producers and veterinarians. Consider pregnancy checking this fall to start or continue that conversation.



Winter Annual Grassy Weed Management Practices

Josh Bushong, West Area Extension Crops Specialist

Weeds can have a substantial economic impact on growing wheat for grain. Either from direct competition with the crop or price implications of dockage and foreign material at the elevator, weeds also can impact a field for years to come. Fall herbicide applications but have proven to save the most yield. Depending on the weeds present and if using one of the two herbicide-resistant trait systems help determine if waiting till spring is the better option.

Grassy weeds such as feral rye, Italian ryegrass, and rescuegrass are prime examples where fall applications might be warranted mainly due to how difficult it is to manage them especially in conventional wheat. Cheat, other bromes, and jointed goatgrass issues will depend on how much actually came up this fall.

The two herbicide-resistant trait systems are Clearfield, which uses the Beyond herbicide, and CoAXium, which uses the Aggressor AX herbicide. For both systems the herbicide applications need to be applied when both weeds and the wheat are actively growing to ensure adequate weed control and crop safety. Under an ideal growing season, both systems will provide better weed control when sequential fall and spring applications are made. If the wheat continues to have drought stress and the weeds are remaining small this fall, I would defer to focusing just on a spring herbicide application.

Italian ryegrass continues to gain more northern acreage year after year. Heavy reliance on Axial XL and Bold, Group 1 type herbicide, has resulted in intensified selection of

herbicide resistance within the central corridor of the wheat belt of the state. Dr. Misha Manuchehri, OSU Small Grains Extension Weeds Scientist, has confirmed Group 1 resistance in Kingfisher, Caddo, Grady, Comanche, and Cotton counties. Widespread Acetolactate Synthase (ALS), Group 2, herbicide resistance was confirmed in 2008 around the time when PowerFlex was hitting the market. Our best recommendation now relies on delayed preemergent herbicides such as Zidua, Anthem Flex, and Axiom (not to be confused with CoAXium).

True cheat is an old enemy of wheat. ALS products such as Outrider (previously named Maverick) and Olympus have been excellent products to keep cheat managed. Unfortunately, these days are numbered. ALS herbicide resistant cheat was first confirmed in Kay County in 2010. Strong suspicion of resistance are continuing to be reported throughout north central Oklahoma.

The herbicide chemical families of Sulfonyurea (SU) and Imidazolinone (Imi) both belong to the ALS herbicide group (same site of action). As such, what we've observed is that once cheat becomes resistance to SU products the Imi products, like the herbicide Beyond, will also prove to have resistance. Meaning that if the SU herbicides are not controlling the cheat, using Beyond in a Clearfield production system will not work either.

Here are some management practices for this scenario in no particular order: 1. Use the new herbicide trait system CoAXium with the group 1 herbicide Aggressor AX; 2. Go winter fallow (with or without a summer crop rotation); 3. Rotate to canola; 4. Graze-out or hay-out the next wheat crop. Other management practices that can reduce cheat and other winter grasses include cleaning tillage and harvest equipment to avoid spreading, planting weed-free seed wheat, delay sowing, increase seeding rate, deep tillage, narrower row spacing, using a competitive wheat variety, and burning wheat stubble.

Feral rye was plentiful in all too many wheat fields last year. The Clearfield Plus system has shown improvement with the addition of Metholated Seed Oil (MSO) adjuvants. It's not perfect by any means, but can still be a viable option to greatly reduce rye if applied correctly. Sequential applications of 4oz/a of Beyond tank-mixed with MSO and a nitrogen source applied in the fall and spring also has shown more consistence results. Applications made prior to the rye reaching the tillering stage usually results in better efficacy and the second application in early spring helps reduce any escapes and late emerged rye.

Integrated weed management is using all the tools in our toolbox. We are currently in a time when it takes every management practice to produce clean wheat. Many cultural practices, as mentioned earlier, and continuing to rotate crops and herbicide sites of action will always be the foundation. Using new tools and traits greatly helps but can't be solely relied upon for the future of your farming operation.

Contact your local OSU Extension Educator to discuss weed management options for your operation.



Extension Experience – Insights into Oklahoma Agriculture

The West 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 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/podcast/>

We hope you consider listening to *Extension Experience*.



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