



Turning Cash Crops into Forage Crops

Josh Bushong, West Area Extension Crops Specialist

Unfortunately, some of our summer crops planted with intentions of a grain harvest have not turned out as planned. Due to prolonged heat and drought going into the crop's reproductive stages certain corn, grain sorghum, and soybean crops were not able to pollinate and set enough seed to cover the cost of producing the grain crop.



These farmers are forced to explore other options if taking these crops to harvest isn't justifiable. The options I've discussed with these farmers include using the crop as a forage, crop destruction, or simply do nothing for now. A farmer can harvest the crop as a forage by a few ways either grazed, hayed, or ensiled. Both herbicide application and tillage are standard options to terminate the crop, and both have their fit with pros and cons.

First and foremost, my first advise to farmers is to contact their crop insurance provider and have their crop inspected by a crop adjuster if they plan to terminate the crop. The grain yield estimates might be higher than the farmer expected. Each crop adjusting agency has their methods of yield estimation, but they all are just a current snapshot at that moment in time. Farmer's intuition on if the yield is going to continue to worsen or get better are not part of the equation. If the estimate is high the return this crop might be less, but long-term it can be beneficial to keeping the APH (actual production history) higher.

When deciding to make a forage crop out of a cash crop, there are a few questions farmers need to ask themselves. First, what pesticides (herbicides, insecticides, fungicides, etc.) have been used on the crop? Second, how much fertilizer has been applied? Third, how is this going to affect their cropping systems? Fourth, what's the market?

It is good to know what pesticides have been applied to the crop. This is mainly to double check to see if any of those products have a haying, grazing, or forage harvesting waiting period listed on the label. This is referred to as the "pre-harvest interval" or PHI on the product label. The PHI must be followed because the label is the law. Some products can be harmful or fatal for livestock that consume the forage.

Residual amounts of certain products could also be retained in meat and cause potential harm to humans.

One of the risks of haying corn or grain sorghum is nitrate and prussic acid poisoning. While applying nitrogen doesn't guarantee having a nitrate issue in the forage, it does pose more risk. Certain plant species like sorghums (haygrazer, sorghum-sudan, johnson grass, etc.) and some weeds (Pigweeds, kochia, lambsquarter) naturally accumulate more nitrates. If the grain sorghum or corn crop had been fertilized with nitrogen, I strongly suggest getting the forage tested.

All OSU Extension offices can handle both an acid drop (diphenylamine test) or submit an actual sample to the Soil, Water, and Forage Analytical Laboratory (SWAFL) on campus. The acid test is free, and results are instant, but the test is only qualitative resulting in a "Yes" or "No". Sending a sample to SWAFL will result in figuring out the actual amount of nitrates in the forage and only costs \$6.

Since nitrates can fluctuate, it is good to take a sample after the crop has been at least swathed and best if done after it is baled. The level of nitrates will not change in hay but can be reduced up to 20-50% in silage if done correctly. OSU Extension educators can also perform a prussic acid test. Prussic acid poisoning is a main concern if grazing. Sun-curing of hay will reduce prussic acid poisoning, especially if the hay is conditioned or crimped.

Dr. Brain Arnall, OSU Precision Nutrient Specialist, recently published a blog post on OSUNPK.com discussing the nutrient value of different crops and forages. Anytime something is removed from a field, either grain or plant matter, it is essentially removing nutrients with it. The value of the macro (nitrogen, phosphorus, potassium) and secondary nutrients being removed can add up to 54 to 90 dollars per ton of forage. Haying a failed crop will help offset investment in that cash crop, but may not cover the true value of the crop when more fertilizer will be needed for the next crop.

Haying crops like soybeans can provide a good quality forage with crude protein in the range of 14 to 21% and total digestible nutrients as high as 60. Soybeans can be more difficult to hay and often gets compared to haying alfalfa. The leaves are brittle and hard to retain once dried. Raking a dry windrow will result in a significant loss of leaves and coarse stems will be left. If raking is needed to make a desirable windrow for the baler, it is recommended to do so within a day of swathing.

Deciding what to do with a field in no-till has some challenges. Most air seeders can actually handle going through standing crops like corn. If the corn is tall enough, the front tool bar will likely knock over the stalks and pose little risk of snagging hoses or wiring. Shorter plants like grain sorghum might cause more issues. Vertical tilling a large amount of crop material can help manage residue to flow through seeding equipment but can also cause issues with reduced seed-to-soil contact. Burning is another option, albeit less popular especially if the farmer wants to keep the soil covered with some crop residue for soil moisture retention and weed prevention. Burning can also reduce soil organic matter content.

Fall Prep...Tips to Handle and Administer Vaccines

Dana Zook, West Area Extension Livestock Specialist

It's no secret that input prices have inflated across the ag industry. One sector of the industry that has felt the pinch is the beef industry. More than ever, producers are looking for ways to increase efficiency and improve productivity. To address this, OSU Extension hosted 9 meetings across the state this spring that were focused on simple practices that can increase profitability. These practices included preconditioning, calf health, and improved vaccine handling.

Each topic was very well received but our vaccine handling session sparked some curiosity among producers, providing much discussion. Based on the response at our meetings, we felt it would be valuable to producers to offer some tips to better handle and administer vaccines and antibiotics on your farm or ranching operation.

- Establish and maintain a Veterinary Client Patient Relationship (VCPR) to develop a herd health protocol for your operation. A veterinarian can be your most valuable asset!
- Maintain a good record keeping system that works for your specific operation. Treatment records should include brand of vaccine, product type (vaccine, antibiotic, etc.), bottle size, expiration date, type of injection (SQ, IM, or IV) and person giving treatment.
- Purchase all vaccines and antibiotics from a reputable supplier (Veterinarian, Distributors, Retail Stores). Time the purchase of all products as close to treatment as possible.
- Read and follow the label of all vaccines and antibiotics used. Maximize effectiveness of the product by using proper dosage according to animal weight (when possible) and interval of treatment.
- Store all vaccines and antibiotics at 35 F to 46 F, unless otherwise noted on the label. This should include during transport from supplier and at the processing site. A vaccine cooler can help keep vaccines at a constant temperature during travel or while using them chute side. Interested in making your own chute side vaccine cooler? Find detailed instructions at <https://extension.okstate.edu/fact-sheets/chute-side-vaccine-cooler.html>
- Use needles that are new, sharp, and the proper gauge for the product being used and animal being treated. Change needles every 10-15 head unless recommended by your vet. Never enter a vaccine bottle with a used needle.
- Use all modified live vaccines within 1 hour after reconstitution. Reconstitute with a sterile transfer needle. Killed vaccines should be discarded 2 days after being opened due to the repeated introduction of air and needles. To preserve the integrity and effectiveness of all vaccines, prevent exposure to UV light.



- Proper cleaning of all equipment being using during processing can be achieved using the following steps.
 1. Clean all exterior parts of syringes first.
 2. Flush internal parts 10-15 times.
 3. **USE ONLY HOT WATER OR DISTILLED WATER FOR CLEANING. AVOID SOAPS AND CHEMICAL DISINFECTANTS.**
 4. Allow equipment to air dry in a clean environment.
 5. Place in sealed bag to be ready for later use.
- Following Beef Quality Assurance (BQA) guidelines helps maintain the safety of beef producers and preserves the quality and integrity of the beef product being produced.

Cattle and Drought

Trent Milacek, West Area Extension Ag Econ Specialist

Drought has a way of dictating everything as it relates to agriculture. Cattle numbers and producer's plans for their cattle herds are being driven in one direction and the bottleneck will influence the success and future trajectory of the Oklahoma beef industry.

The mid-year cattle inventory report suggests that the total cattle and calf inventory in the U.S. is down 2% from a year ago. The magnitude of this contraction will likely continue as the availability of forage and replacement females is being decimated as herds are liquidated. Beef cow numbers are down 3% which exceeded most expectations seeing a 950,000 head loss compared to last year. Beef heifers are down 3.5% which will contribute to stretching out this liquidation and putting the prospects of any increase in beef cow numbers several years down the road.

The July cattle on feed report substantiates anecdotal observations as calves available for feedlots are disappearing and lighter weight calves are becoming the norm. Placements were down 2.4% year-over-year with marketings up 2%. Total cattle on feed was fractionally higher at 100.4% of last year's total.



Placements are coming from different sources as it is becoming a trend that lightweight calves are filling the void. Calves weighing less than 700 lbs. were up 4.1% over last year with cattle weighing more than 700 lbs. reducing by 6.1%.

Heifer slaughter increased by 3.8% with heifers on feed up 3%. This assault on the future cow herd should not be glossed over as the development of a heifer calf to cow and a resulting calf from her reaching the feedlot can take over 2 years. That means that these heifers being slaughtered now will not be producing calves destined for

feedlots in 2024 and 2025. Steers on feed were down 1.1%, which is a solid indication that once female supplies fizzle out, placement numbers will decrease at an accelerated rate. This will in turn contribute to marketings tumbling as numbers decrease.

Access to forage and hay has been increasingly difficult due to the drought. Substitute feeds are at an all-time high, if they can even be sourced, making it very difficult for producers to hold onto their herds. Culling from the old and young sides of the herd can only do so much. Producers must be very critical of unproductive cows and move them to avoid unprofitable feed bills. Even if drought-stricken areas receive rain, the damage is done for this year. Sunlight intensity decreases exponentially by the day and the total forage that can be grown is decreasing from a plant physiological standpoint. Producers should be focusing on how they will feed their herds until May, not entertaining hopes that this year can be saved.

Have You Evaluated Your Mineral Program?

Britt Hicks, Ph.D., Area Extension Livestock Specialist

The proper balance of protein, energy, vitamins and all nutritionally important minerals is needed to make a successful nutrition program. Nutrient balance is the key to any effective nutrition program.

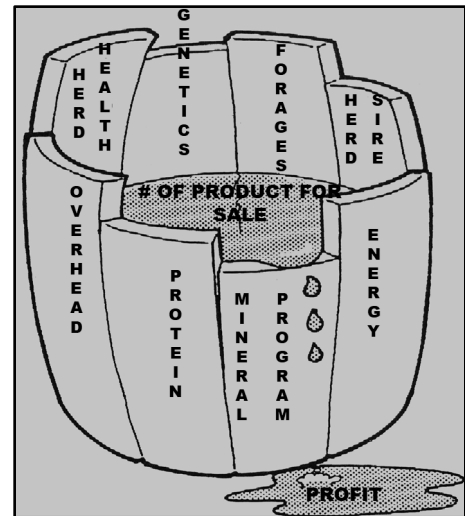
Minerals and vitamins account for a very small proportion of daily intake in cow diets and can be overlooked due to misunderstanding the importance of adequate mineral nutrition and because of the cost of supplementation. However, proper mineral and vitamin nutrition contributes to a strong immune system, reproductive efficiency, and weight gain. Mineral deficiencies often go undetected since visible reductions in performance are not visible immediately. In fact visible signs such as decreased bred back percentages may not show up till the following year. Even though forages may be green and lush providing adequate protein and energy, most all forages are deficient in one or more trace minerals.

As our knowledge of minerals grows, we are finding out that minerals may limit production in better-managed herds to a much greater extent than generally recognized. **The most limiting factor in an operation dictates productivity.** This concept is illustrated in the figure below. In this example, water is lost from the lowest slat in the barrel (mineral program) and the effect of other limiting factors (protein, energy, herd health, forage, genetics, etc.) would not be realized until the proper mineral program is provided. **In many operations, the mineral program is the most limiting factor.** In many grass pastures, phosphorus is frequently the most limiting nutrient. Whereas, in small grain pastures such as wheat or oats, calcium and/or magnesium are frequently more limiting.

Forage surveys have suggested that the trace minerals, copper and zinc, may be limiting nutrients in many situations. In national and Oklahoma forage surveys (~13,300 samples), the average copper and zinc levels were 6.3 and 24.2 ppm, respectively, as compared to suggested requirements of 10 and 30 ppm. Only including native grass

forage samples (~5,000 samples), the average copper and zinc levels were 5.9 and 22.8 ppm, respectively. In forage samples (1,150 samples) that I have collected over the last several years in Oklahoma and Texas, only 37.4% provided adequate zinc and 39.0% were adequate in copper. In addition, 51.5% of the forage samples that showed to be adequate in copper contained excessive amounts of iron and/or sulfur which can tie up copper leading to deficiencies. Cattle cannot perform to their genetic potential even if you meet over 100% of their protein and energy needs but fail to meet their mineral needs.

These surveys suggest that nearly all forages are deficient in one or more minerals and that there is a widespread occurrence of deficient levels of copper and zinc for beef cattle grazing forages. This is further complicated by the fact that the availability of minerals may be affected by the distribution and form of mineral in the feedstuff, as well as interactions with other minerals or dietary components that inhibit absorption or utilization of a given mineral. Research has shown that mineral deficiencies in ruminants fed forages often result from low availability rather than low concentration of a given mineral. Just because minerals can be found in plants does not mean they are available to the animal. Soil mineral level, soil pH, climatic and seasonal conditions, plant species and stage of plant maturity all factor into mineral content and bioavailability in forages. For these reasons, it is important that cattle be on a good, balanced mineral program to optimize performance.



Feeding a trace mineralized salt block is not a complete mineral program. The high salt content (often 90 to almost 100 percent salt) limits consumption substantially. In addition, such salt blocks generally contain extremely low levels of trace minerals. Salt blocks are cheaper and if cattle only consume a very small amount of it that makes it even cheaper. But, they are not more economical because cutting costs by feeding trace-mineralized salt instead of a complete free-choice mineral supplement can cost you quite a bit in the long run.

In summary, adequate minerals should always be available in any operation. Recognize the role minerals play in good health as well as fertility and growth. Frequently, the first thing a producer cuts from his program during tight times is the mineral program. Cutting the mineral program is never recommended since minerals are important in maintaining reproduction and performance. Cutting minerals out of a feeding program may reduce cost in the short term but will reduce returns and effectively increase cost over the long term. Based on my personal research and field experience with minerals over the last 35 years, I am convinced that marginal deficiencies in minerals probably are more costly to producers than are the added profits from feed additive such as ionophores.

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.



The image is a promotional graphic for the 'Extension Experience' podcast. It features a central orange rectangle with the title 'Extension Experience' in white, bold, sans-serif font. Below the title, in smaller white text, is 'INSIGHTS INTO OKLAHOMA AGRICULTURE'. To the right of this rectangle is a vertical photograph of a traditional metal windmill against a cloudy sky. Below the orange rectangle is the Oklahoma State University (OSU) logo, which consists of the letters 'OSU' in a stylized, orange and black font, followed by the word 'EXTENSION' in a plain, black, sans-serif font. Below the OSU logo are two smaller photographs: one of a brown cow's head and another of golden wheat stalks. At the bottom of the graphic, in a bold, orange, sans-serif font, is the text 'AN AGRICULTURE PODCAST PUBLISHED WEEKLY ON APPLE PODCAST, GOOGLE PODCAST, AND SPOTIFY'.

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