Major County OSU Extension

Agriculture Newsletter

Oklahoma Cooperative Extension Service - Division of Agricultural Sciences and Natural Resources - Oklahoma State University

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Preparing for Wheat Pasture

Josh Bushong, Area Extension Agronomy Specialist

August is now here and sowing wheat for pasture is just around the corner. Producers wanting to take of advantage of early-planted wheat for fall forage have many challenges to consider in order to produce enough forage to graze. Sowing wheat early significantly increases the possibility that diseases and insect pests can limit fall forage production.

When growing wheat for forage one of the easiest ways to get more tonnage is to plant early. Research conducted from OSU has shown that more forage is produced the earlier we plant. Some trials show that sowing wheat the first week of September yielded about twice as much fall forage as a mid-late September planting date. When sowing wheat this early we can sacrifice some grain potential and some issues can occur. When planting this early the potential for pests can increase. These pests include many viruses, root rots, foliar diseases, hessian flies, wheat curl mites, wireworms, army cutworms, and weeds. Some aid can be made through the use of seed treatments that include an insecticide and/or a fungicide. These seed treatments can reduce root/foot rots, bunt, smut, leaf rust, powdery mildew, hessian fly as well as reduce aphids that can transmit barely yellow dwarf virus. When selecting a seed treatment be cautious of grazing restrictions, which can range from 0-45 days depending on product used.

Over the past few years, getting a stand off a going has been challenging due to armyworms and some mite-transmitted diseases (wheat streak mosaic, high plains disease, or Triticum mosaic). The best management practice would be to prevent a “Green Bridge” prior to sowing the wheat. A minimum of two weeks of nothing green (including corn, sorghums, volunteer wheat and other grassy weeds) is needed to allow the wheat curl mite to starve out prior to wheat seeding. The wheat curl mite still might vector these viruses when invading from neighboring fields, but the viruses will cause less of an impact due to a later infection.

When selecting a wheat variety be sure to note certain characteristics like acidic soil tolerance, high soil temperature germination sensitivity, coleoptile length, forage production potential, pest resistance, recovery after grazing, and first hollow stem date. Utilizing certified seed wheat can also ensure adequate seed quality. Good seed vigor with a known germination percentage will aid in developing early seedling vigor, which will typically lead to producing more fall forage.

Forage testing -- A key decision aide

Glenn Selk, Oklahoma State University Emeritus Extension Animal Scientist

Hay fields in most areas of Oklahoma are producing an average to above average number of big round bales this summer. The quality of the hay will be quite variable. Some will supply a great deal of the nutrients needed to maintain body condition on beef cows this winter. Other hay will be lacking in protein and energy and will require a substantial amount of supplement to be fed or the cattle will lose weight and body condition during the winter months.

Forage analysis can be a useful tool to remove some of the mystery concerning the hay that producers will feed this winter. The out-of-pocket costs of protein and energy supplements are further fuel to this advice. Testing the grass hays this year for protein and energy content will help the producer design winter supplementation programs most appropriate for the forage supply that is available. To learn more about matching supplements with available forages, download and read Oklahoma State University Fact Sheet ANSI-3010 "Supplementing Beef Cows".

There are several good methods of sampling hay for forage analysis. Most nutritionists would prefer to use a mechanical coring probe made specifically for this purpose. The coring probe is usually a stainless steel tube with a serrated, cutting edge. It is 1 inch in diameter and is designed to fit on a 1/2 inch drill or brace. Cordless drills make these tools quite mobile so that the hay bales to be tested do not have to be hauled to be near an electrical outlet. The hay samples are place in paper or plastic bags for transfer to a forage testing laboratory. Cores are taken from several bales at random to obtain a representative sample to be analyzed. More selections for forage sampling tools can be found on the National Forage Testing Association Website.

Grab samples can also be obtained and tested. To receive the best information, grab several samples by hand from about 6 inches into the open side of the bale or the middle third of a round bale. Place all of the sample in the bag. Do not discard weeds or stems, just because they look undesirable. They are still part of the hay that you are offering to the livestock. Be certain to label the forage samples accurately and immediately, in order for the laboratory analysis to be correctly assigned to the proper hay piles or bales. Obviously the more samples that are sent to the laboratory for analysis, the more information can be gained. Just as obvious is the fact that as the number of samples increase, the cost of forage testing increases. Any of the potential nitrate accumulating hays should be tested for nitrate concentration. Detailed information about collecting hay samples can be found in OSU Fact Sheet PSS-2589 "Collecting Forage Samples for Analysis".

Samples can be taken to the OSU County Extension office near you and then sent to the OSU Soil, Water, and Forage Testing laboratory in Agricultural Hall on the campus at Stillwater. The price list below gives some of the options from which producers may choose to best fit their situation. There are other commercial laboratories available that also do an excellent job of forage analysis.

Forage Analysis Price list from OSU Soil, Water, and Forage Testing Laboratory

Protein only	Protein and Moisture Only	$8.00
Basic Analysis	Protein and Moisture, ADF, TDN, Net Energy for: Gain, Lactation, Maintenance	$14.00
Basic Plus Energy Plus Relative Feed Value (RFV)	Protein, Moisture, ADF, TDN, Energy, NDF –(Neutral Detergent Fiber), RFV - Relative Feed Value (Alfalfa Only)	$20.00
Nitrate Toxicity	Nitrate and Moisture	$6.00

Does Stocking Density Affect Growth and Puberty Attainment of Replacement Beef Heifers?

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

Public scrutiny of beef production systems is growing rapidly, and cattle welfare is one of the main targets for attention. Thus, cattle producers are challenged with improving production efficiency while fostering animal well-being. Stocking density is one example of management that may impact welfare and productive efficiency in cattle operations. In spring-calving cow-calf herds, replacement heifers are weaned in the fall and exposed to their first breeding season the following spring. Hence, these heifers are frequently developed in drylot systems to facilitate feeding and management during the fall and winter. However, research has shown that raising cattle in areas with elevated stocking density stimulates stress reactions which impairs reproductive function in beef cattle. Montana research has reported that heifers developed in drylot (~118 sq ft/heifer) compared to heifers developed on native range (~1.8 acres/heifer) gained over two times more body weight (BW; ~84 vs 33 lb). However, heifers developed in drylot had greater average or resting heart rates and spent less time loafing than heifers developed on native range. New Mexico research has also shown that heifers developed in drylot had greater average daily gain (ADG, 1.52 vs. 0.58 lb/day), but reduced pregnancy rates (84 vs. 91%) compared with cohorts reared on range pastures.

Oregon State University researchers hypothesized that elevated stocking density impairs welfare and reproductive development in beef heifers. To test their hypothesis, they compared growth, physical activity, stress-related and physiological responses, and puberty attainment in heifers developed on high (drylot) or low (pasture) stocking densities from weaning until the start of their first breeding season. In this experiment, 60 Angus x Hereford heifers averaging 210 days of age and weighing 485 lb were assigned to two stocking density treatments for 182 days: drylot (~150 sq ft/heifer) or pasture (~6.2 acres/heifer) . The pastures were harvested for hay prior to the beginning of this experiment, and negligible forage was available for grazing throughout the experimental period. Thus, all heifers (both treatments) were limit-fed daily a diet consisting of 8.8 lb of alfalfa hay and 6.6 lb of corn (both on dry matter basis) along with ad libitum access to water and a commercial mineral/vitamin mix.

Heifers were fitted with a pedometer fixed behind their right shoulder and weekly pedometer results were recorded and blood samples were collected for puberty evaluation via plasma progesterone. On days 0, 49, 98, 147, and 182 of the experiment, hair samples were collected from the tail switch for analysis of hair cortisol concentrations. Cortisol concentration in hair from the tail switch have been validated as a biomarker of chronic stress in cattle given that cortisol is gradually accumulated in the emerging tail hair.

There were no differences between treatments for final heifer BW (786 lb) and ADG (1.71 lb/day) during the 182 day trial. However, heifers on pasture took more steps per week than drylot heifers (19,839 vs, 3,147). This outcome was expected since the pasture heifers had more space to roam. Hair cortisol concentrations were greater for drylot than pasture heifers beginning on day 98 indicating the drylot heifers experienced more chronic stress. Drylot heifers experienced delayed puberty attainment compared with pasture heifers (Figure 1) despite their similar ADG. At the end of the trial, a greater number of pasture heifers were pubertal compared to drylot heifers (66.5 vs. 31.9%). It was reported that within heifers that reached puberty during the experiment, drylot heifers were heavier (820 vs. 703 lb) and older (363 vs. 328 days) than pasture heifers at puberty attainment.

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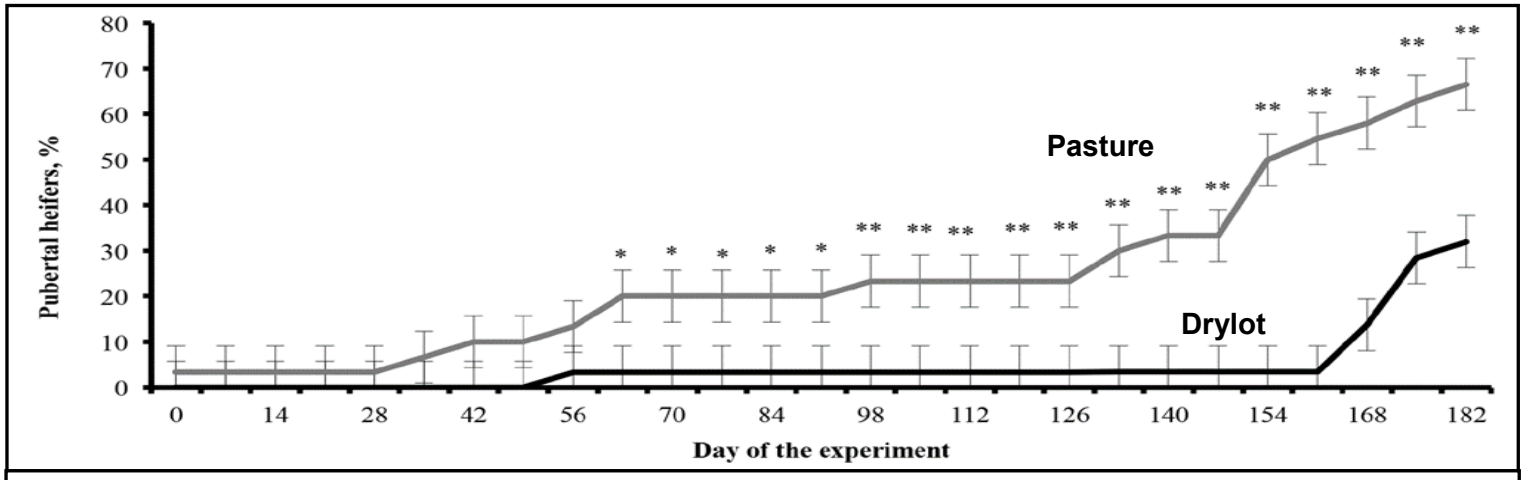


Figure 1. Puberty attainment in heifers reared in low stocking density (pasture, ~6.2 acres/heifer) or high stocking density (drylot, ~150 sq ft/heifer) from day 0 to 182 of the experiment. Adapted from Schubach et al., 2017.

These authors concluded that "rearing replacement beef heifers in drylot with high stocking density negatively impacted stress-related and physiological responses, and delayed puberty attainment compared with rearing heifers in pastures with low stocking density. In addition, these results were independent of heifer nutritional status and growth rate, but were associated with reduced physical activity and increased chronic stress caused by high stocking density." These results suggest that stocking density should be considered in heifer development programs to optimize reproductive and overall efficiency of cow-calf operations. Heifers developed in drylot may grow faster but reach puberty later than heifers developed on pasture.

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 we 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.

Extension Experience
INSIGHTS INTO OKLAHOMA AGRICULTURE
OSU EXTENSION

Grain Sorghum Harvest Aids

Josh Bushong, Area Extension Agronomy Specialist

Utilizing harvest aids for grain sorghum has become more popular in recent years. Historically, the crop would be left to terminate and senesce naturally. The main purpose of applying a harvest aid would be to improve harvest timing. Delayed harvest after the grain becomes mature can potentially reduce grain yields. An exposed crop can experience losses due to pest pressures like bird damage, as well as environmental losses like severe storms with strong winds or hail.

Many factors can delay harvest. Some newer genetics may exhibit characteristics like “stay green” where the plants stay green longer. At harvest, the higher moisture content of the plant can potentially spike grain moisture if combines are not set correctly. If fields have excessive weed infestations, the same concerns of spiking grain moisture at harvest can delay harvest. If stands are on the thin side and growing conditions improve later in the season, the addition of late tillers can become problematic. Unevenness in maturity of a field can also delay harvest.

Preparing the crop for harvest is achieved when harvest aids are applied correctly. Harvest aids in grain sorghum fall into two groups, herbicides and desiccants. The products available have very little influence on the grain itself but work more in the vegetative biomass of the plant. Therefore, these products have very little to no direct impact on grain moisture. Glyphosate, carfentrazone, and sodium chloride are currently the only three products labeled for use in grain sorghum.

Sodium chloride is a true desiccant and may not kill the crop but can rapidly dry-down any plant material that it contacts. If not harvested in a timely fashion, plant lodging or regrowth can occur. Glyphosate and carfentrazone are herbicides that, when use as directed, can terminate the crop or weeds. Glyphosate is more widely used, but generally takes longer to shut down the plants. Glyphosate also has a longer pre-harvest interval at seven days, while carfentrazone is only three days. Carfentrazone is a good option to assist with broadleaf weed desiccation and is a great option to tank-mix with glyphosate if there is concern of herbicide resistance.

If a producer chooses to have a harvest aid applied, applying the product correctly will greatly affect any potential economic gains. The first component of applying these products correctly involves application timing. A harvest aid should not be applied any earlier than physiological maturity, often referred to as black layer. Appling too early can reduce grain fill which will directly reduce grain yields.

To check for black layer, inspect the base of seeds on multiple plants, tillers of each plant, and locations within each panicle. Delayed plant emergence and late tiller additions will likely be farther behind. Typically, panicles mature from the top down. Maturity can widely range, so understanding how far along most of the crop is will improve proper application timing. Applying too late will not reduce grain yield but delaying harvest due to labeled pre-harvest timing intervals may lead to losses.

In addition to proper application timing, adequate spray coverage is also an important part in a successful harvest aid application. Apply these products in a minimum of 10 gallon of water per acre when ground applied or a minimum of 5 gallons of water per acre when aerially applied. Under certain conditions, like thick canopy of sorghum or weeds, increasing carrier volume up to 15 or 20 gallons of water per acre can increase efficacy of these products.

Harvest aids have no impact on yield potential in sorghum. Since these applications are made after physiological maturity, total yield potential has been set and crop dry-down is the only aspect remaining. Just like other crop protection products, harvest aids will only protect yield potential. A two-year study recently done by Oklahoma State University found yields for sorghum not treated with harvest aids resulted in an average reduction of around 7 bushels per acre in north-central Oklahoma and just over 5 bushels per acre in the panhandle.

More information can be found in the OSU factsheet “PSS-2183 Using Harvest Aids in Grain Sorghum Production” or by visiting your local OSU Extension office.

Trapping Nuisance Armadillo

Dwayne Elmore, Ph.D., Extension Wildlife Specialist

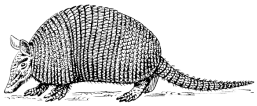
Armadillo feed on invertebrates such as insects and earthworms by digging in loose soil. This digging can become a nuisance when it happens in the home landscape. Damage is generally most pronounced in the summer months as lawns are irrigated which makes the soil easier to dig in and brings invertebrates closer to the surface. Armadillo damage is easy to identify as it is noted by multiple shallow holes (usually up to 6”). Also, they will often root similar to pigs, especially in loose mulch.

Armadillo frequently dig and root in lawns or in mulch. Tree squirrel and skunk damage can look similar but is usually smaller in diameter and depth compared to armadillo damage.

Armadillos are generally easy to capture in a live-catch trap using funnels. This trap set has used existing barriers such as a tree to help funnel armadillo. Notice the poultry wire held in place with rebar. Fresh soil covering the bottom of the trap would also be a good idea.

If damage is excessive and exceeds tolerance, trapping should be considered. While armadillo can be caught farily easilly, after a few episodes of trapping and disposal of the animal you may decide the damage is tolerable after all. If so, consider cutting back on irrigation to lessen the liklihood of future damage. Armadillos are not protected in Oklahoma and may be trapped all year. Trapping is highly effective using an approximately 12 x 12 x 32-inch live catch trap and funnels to direct the armadillo into the trap. Poultry wire (at least 12” tall) held up with rebar or other rigid stakes works well for the funnels. Do not leave any space between the trap door and the wire or the armadillo is likely to push through the gap. Place the trap either in the area of the landscape where damage is pronounced or where armadillos are entering the landscape (if known). Irrigate the area immediately around the trap to increase chances of capturing the armadillo as they seem to be attracted to freshly irrigated lawns. Also, line the bottom of the trap with freshly dug soil to attract the armadillo and to help them feel secure entering the trap. Once trapped, it is not legal to move the armadillo to another location and release it unless you have landowner permission. If you do decide to kill the armadillo, do it as humanly as possible or call a professional nuisance wildlife control operator (https://www.wildlifedepartment.com/law/nwco-operators) to have them remove the animal.

A shot to the head or spine with a 22 caliber rimfire rifle or high velocity air rifle will work. Before shooting, make certain that there are no rocks or other hard objects under the armadillo to prevent a ricochet. Also wear eye protection to prevent debris from injuring your eyes. To reduce the potential of leprosy transmission, use gloves when handling the armadillo or the trap. For additional tips on dealing with nuisance armadillo, see http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-11773/NREM-9029-2.pdf.



Brent Ladd, Extension Assistant, Ag Economics

August Garden Tips

Vegetables

August is a good month to start your fall vegetable garden. Bush beans, cucumbers, and summer squash can be replanted for another crop. Beets, broccoli, carrots, potatoes, lettuce, and other cool-season crops can also be planted at this time.

Soak vegetable seed overnight prior to planting. Once planted, cover them with compost to avoid soil crusting. Mulch to keep planting bed moist and provide shade during initial establishment. Monitor and control insect pests that prevent a good start of plants in your fall garden.

Finding Farm Management Resources Wherever You Are

Brent Ladd, Extension Assistant, Ag Economics

Producers may access information on farm financial management topics along with production, marketing, and risk management through their smartphone on the e-Farm Management website. This site includes videos, tools, and publications for farmers and ranchers to strengthen their farm management skills.

In the Income Statement video, viewers learn the definition of an income statement and ways that it can be used by a producer on their farm or ranch. The video explains the income statement's relationship to other financial statements. Lastly, the video shows the difference between a cash and accrual income statement.

To view this video and find additional information on the farm income statement, visit: http://agecon.okstate.edu/efarmmanagement/income.asp .

More information on this and other farm management topics may be found: 1) by contacting your nearest Extension Educator 2) on the e-farm management website (http://agecon.okstate.edu/efarmmanagement/index.asp) or 3) on the OSU Ag Econ YouTube Channel (https://www.youtube.com/user/OkStateAgEcon).