

**July 2022**

**Walker County Agriculture Update**

Greetings from the Walker County, Texas A&M AgriLife Extension office!

**Howdy!**

I’m sure this is no real surprise to most of us. The dry weather which has been affecting the rest of the State has caught up with our Walker County area. A few items you need to be aware of when addressing this overall situation are featured in this newsletter. *The importance of these items dictates need for a slightly longer than idea newsletter. – Reggie*

**Tree and Shrub Irrigation during a Drought**

*Doug Welsh, former Extension Horticulturist (retired)*

During a severe drought, the goal for tree and shrub irrigation is twofold; reduce water use to save precious water and money yet use enough water to preserve your substantial investment in your landscape trees and shrubs.

Irrigating large trees is often misunderstood. Laying a hose at the trunk of a large tree and letting it run for hours does not water a tree and can waste huge amounts of water. In addition, sprinkler irrigation systems do not water trees. They simply do not apply enough volume of water to meet the tree's requirement.

To irrigate trees and large shrubs within a lawn area, apply water just inside and a little beyond the “dripline”, not at the trunk. The dripline is the area directly below the outermost reaches of the branches. This is where the feeding root system of a tree or shrub is located.

Simply lay a slowly running hose on the ground and move it around the dripline as each area becomes saturated to a depth of 8 to 10 inches. For large trees, this watering technique may take several hours. *(\*Reggie’s note: Soaker hoses can be utilized but again the duration of use is lengthy. Keep in mind water delivery via this method may be “uneven” and actual GPH of applied water may be much lower than expected & will often vary widely between different hoses.)*

In the continued absence of significant rainfall, large trees and shrubs will benefit from a twice a month watering to help them survive drought and heat.

For more information on creating a healthy and sustainable landscape environment we invite you to visit the EarthKind website at <http://EarthKind.tamu.edu> or contact your local County Extension office.

**Toxic Plants & Livestock**

Heads up: During periods of drought, livestock tend to be more inclined to consume toxic plants simply due to the situation of what is available. Under normal conditions, livestock will usually avoid plants they seem to instinctively know are “not good to eat”. That situation changes drastically when plant availability is highly modified during extreme dry conditions. I recommend obtaining a copy of our Toxic Plants of Texas handbook for onsite reference -order this and keep a copy in your truck. [Toxic Plants of Texas (tamu.edu)](https://agrilifelearn.tamu.edu/s/product/toxic-plants-of-texas/01t4x000002dF5S) ($25.00 per copy/includes 106 most common potentially toxic plants in Texas with full color photographs)

\*More on Livestock Concerns: **Nitrate & Prussic Acid Accumulation**

Dry environmental conditions create periods where accumulation of toxic substances within plant tissue. If you are grazing and/or feeding cattle certain forage-based products grown during periods of environmental stress you need to be aware of this potential:

* *Nitrates and Prussic Acid in Forages, Sampling, Testing and Management Strategies*: [Nitrates-and-Prussic-Acid-in-Forages1.pdf (tamu.edu)](https://agrilifecdn.tamu.edu/foragefax/files/2013/05/Nitrates-and-Prussic-Acid-in-Forages1.pdf)
* For detailed and updated information on testing forages for these issues, please read the article toward the end of this newsletter.

**Featured Upcoming Events & Items of Note:**

**2022 Walker County Farmers Market UPDATE & Important News**

**Regular dates during the season are Wednesday and Saturday mornings**

**Time: 8:00 AM until Sell Out**

**Location: West Hill Mall parking lot (Highway 30 W, Huntsville, TX) Through the month of July 2022… then… location to be announced…**

Come out and visit our vendors as you can! You will love the products available.

News Flash: Challenges abound for this local group. Due to changes in facility utilization and parking availability, the Walker County Farmers Market will hold their last market at the West Hill Mall on the final Saturday of July 2022.

You may be able to help us: Unfortunately, our group is actively looking for a new home. Multiple options are being explored and if you have a thought of great locations or knowledge of a site which would be receptive to hosting the market, please let us know at the Walker County AgriLife office.

\*We wish to extend a heartfelt Thank You to West Hill Mall for their extensive years of support allowing the Walker County Farmers Market to meet at that location. It has been a great run and we have enjoyed working with your team over these many years!

**Homemade Huntsville (“Hands On” Workshops-Walker County)**

**Texas A&M AgriLife, Walker County**

**Remaining Events August through November 2022**

**Workshops will be held at the Walker Co Storm Shelter**

**Registration Fee includes ALL supplies, refreshments, and take-home items: $30.00 per person for any one session.**

**JUNE Registration Link:** [Homemade Huntsville – August 4, 2022 Pressure Cooking Workshop Tickets, Thu, August 4, 2022 at 10:00 AM – 1:00 PM | Eventbrite](https://www.eventbrite.com/e/homemade-huntsville-august-4-2022-pressure-cooking-workshop-tickets-231061108997?aff=erellivmlt)

Walker County, Family & Consumer Health Agent, Meredith Cryer has a scheduled educational series active and “on the front burner” with eight additional upcoming workshops scheduled April through November in our[**Homemade Huntsville**](https://www.eventbrite.com/e/homemade-huntsville-june-2-2022-pickles-relish-workshop-tickets-231050356837) series. These events are posted under the preceding link providing specific subjects, dates, times, registration, and other information. Be sure to scroll down the page to **Homemade Huntsville** (*the Preserving the Harvest sessions at the top of page are SOLD OUT*).

* August 4 – Pressure Cooking
* September 1 – Breads
* October 6 – Pies & Fillings
* November 17 – Holiday Treats

**Plant Identification Field Day Workshop (Walker County)**

**(Rain Make Up – Let’s see if we can make it RAIN again)**

**September 16, 2022 (Friday)**

**Sam Houston State University- Gibbs Ranch (Hwy 75 N, Huntsville TX, 77320)**

**6:00 PM to… (depends on how hot it might be)**

**$10.00 per participant – (Note: those who were registered for the rained-out Spring event– no Charge!)**

**CEUs: 3 Hours General per approval**

**Registration online at:** <https://www.eventbrite.com/e/walker-county-plant-identification-field-day-workshop-take-2-tickets-385886736617>

Hey Folks! Last time we tried this we got a REAL RAIN so sign up for this one and let’s make it happen again… This event is scheduled to encourage landowners with in-town jobs and absentee landowners’ participation-Take Friday afternoon off and come out for this “Hands-On/Feet-in-The Field” training. This field-based activity will examine numerous common plants (desirable AND otherwise) found in the Walker County area. Join us for this walk through the pastures & wood lines of East Texas with Dr. Barron Rector. Learn common names and useful knowledge about plants YOU see each time YOU interact with YOUR land. Participants will learn to “see” and understand many plants important to East Texas agriculture and land conservation. Participants with a specific curiosity about something growing on their land are encouraged to bring a quality & complete sample for expert review.

**EarthKind Landscaping Class (Walker County)**

**12:00 PM (NOON) to 3:00 PM Event likely will end well before 3:00 PM...**

**Walker County AgriLife Extension Service (102 Tam Road, Huntsville, TX 77320)**

**October 6, 2022 (Thursday)**

**Cost: FREE!! (&) LUNCH IS PROVIDED – FREE!**

**Registration online at:** <https://www.eventbrite.com/e/earthkind-program-tickets-385736055927>

**Event presented by Bluebonnet Groundwater Conservation District (&) Texas Water Resources Institute of Texas A&M AgriLife Extension**

This event will **HELP** **YOU** manage the water requirements and other costly inputs of your landscape -Water Management & Conservation related Topics:

* Shrubs
* Turf
* Trees
* Raised Planting Beds
* Hardscaping Ideas
* Native & Adapted Plants
* Irrigation options

Join us to learn excellent and PROVEN ways to conserve the utilization, consumption and ultimate COST of water supporting your landscape plants!

Our expert will provide you with the information and practical expertise needed to design and manage your own landscape.  Do you already have landscape in place? This educational event is something you can learn from and apply. Tips and suggestions during this event will allow you to reimagine or refocus a few items that will be well worth the cost of attendance! It’s FREE – take advantage of this opportunity for a FREE meal.

Be warned, you will leave this educational program informed on how you can save money and conserve water with a few simple and sound practices!!

*“Earth-Kind is an environmental stewardship program that uses proven, research-based practices from a combination of organic and conventional approaches to create and maintain landscapes, gardens, and fruit plantings that provide for maximum enjoyment, while minimizing maintenance and protecting our environment.”*

This EarthKind Landscaping event is sponsored by Bluebonnet Groundwater Conservation District in conjunction with Texas Water Resources Institute of Texas A&M AgriLife Extension Service. The program speaker will be Tim Hartmann, Assistant Professor & Extension Specialist-Fruit Crops, Texas A&M AgriLife Extension and Department of Horticultural Sciences, Texas A&M University. This program is free to attend, with LUNCH, refreshments and all materials provided.  **DO NOT MISS THIS!**

**Hold the Date: (!)**

**More information as this event develops…**

**Cow Country Congress**

**Date: October 21, 2022 (Friday)**

Time: TBA (usually 8:00 AM-or so through early/midafternoon)

Location: Madison Co (We are planning for a VERY interesting Ranch location- you will not want to miss this one)

Cost: TBD

Lunch will be provided!

**Area and/or Online Upcoming Events:**

**Houston County 2022 Landowners Program Series**

**Date: Several (see below)**

**Time: 9:00 AM to 2:00 PM CST**

**Location: Houston County (Crockett)**

**Registration: online at**  <https://tamuagrilifeextension.wufoo.com/forms/2022-landowner-program-series/>

**Cost: $45.00 per person / $65.00 per couple (+ $10.00 late fee after May 27)**

**Lunch will be own you own. Each class will require a minimum of 10 registrants to be held.**

**For additional information contact: Jo Smith** **jo.smith@agnet.tamu.edu** **(or) 936-544-7502**

**August 5**, General Seminar. Topics includeFood Plots for Wildlife; Pond Management, Aquatic Weed ID, Pond Water Testing, Hog Control, Property Tax Valuations/Exemptions as it relates to Agriculture,

Natural Resource Conservation Service Programs.

**September 9**, 5 Hour Pesticide CEU Recertification & Pesticide License Training Class (Cost & Registration is separate)

**October 21**, Cow Country Congress (Cost & Registration is separate)

**Ranch Horse Program**

**Date: July 31, 2022**

**Time: 8:00 AM to 3:00 PM**

**Location: Hildebrand Equine Complex, Texas A&M University**

**Cost: $50.00 per participant in person (or) FREE to all Beef Cattle Short Course Participants**

**Registration:** [Ranch Horse Program - Beef Cattle Short Course](https://beefcattleshortcourse.com/ranch-horse-program/)

**For additional information contact** **Jennifer.Zoller@ag.tam.edu**

Held in conjunction with Texas A&M’s annual Beef Cattle Short Course, this Ranch Horse Program is designed to support our horse industry and owners. Participants will gain insight on pasture management from Dr. Larry Redmon with the goal of managing and meeting your horse’s needs. Dr. Wesley Bissett will discuss emergency preparedness items for horse owners and help you understand the preparations you need for your operation. Bit mechanics and use will be discussed by master bit maker and horseman, Greg Darnall. Then the program will wrap up at the arena with professional horseman, Mike Major.

Participants will spend the afternoon at the arena with professional horseman Mike Major. Mike is a multiple time champion in the arena at AQHA and Stock Horse of Texas events as well as the 2022 Road to the Horse World Champion and recipient of the Jack Brainard Horsemanship Award. He and his family continue to run cattle in New Mexico, where all of his show horses are used as ranch horses. You can find out more about Mike at <https://mikemajorhorsemanship.com>

**Texas A&M Beef Cattle Short Course**

**Date: August 1-3, 2022**

**All Day/each day**

**Location: On campus TX A&M University (or) online option**

**Cost: $240.00 per participant in person (or) $160.00 per participant online before July 27 (**prices go up to $280 and $200, respectively, after July 27)

**Registration:** [**www.beefcattleshortcourse.com**](http://www.beefcattleshortcourse.com/)

**For additional information call 979-845-6931**

The Texas A&M Beef Cattle Short Course has a rich tradition and historical place in the programs emanating from the Department of Animal Science at Texas A&M University. Dating as far back as 1942, Professor John K Riggs started the first in a series of Beef Cattle Short Courses held on the campus of Texas A&M College to discuss the results of beef cattle research from the Texas Agricultural Experiment Station with Texas beef producers. This historical beginning and purpose are still the standard today for the Beef Cattle Short Course held at Texas A&M University.

Today the highly respected TAM Beef Cattle Short Course is nationally and internationally recognized as the largest attended beef cattle educational program of its type in the world. It has gained the respect from organizations, associations, Land Grant universities and agencies alike as the focal point for beef cattle educational information. The Cattleman’s College features more than 20 concurrent sessions. Topics include animal health, nutrition, reproduction, breeding, genetics, selection, research, marketing, and handling. Management sessions will cover business, forage, range, and purebred cattle. Topics such as landowner issues and fence building will be featured at this BCSC. Sessions are designed for everyone, from the newest member of the industry to the most seasoned producer. A number of pesticide CEUs and veterinarian CECs are available to attendees. Additionally, over 150 agriculture related businesses and trade show exhibitors annually attend the course and attest to the fact that it is the most highly attended activity of its kind anywhere in the United States. Annually over 1,700 participants attend the Beef Cattle Short Course to gain valuable knowledge about beef cattle production.

**Beef Cattle 706**

**Date: August 8, & 9, 2022**

**7:00 AM – 7:30 PM (Aug 8)**

**7:00 AM – 2:00 PM (Aug 9)**

**Location:  Rosenthal Meat Science and Technology Center Texas A&M University Campus, Texas A&M University, College Station, TX 77843**

**Cost: $50.00 per participant in person**

**Registration:** [**https://tamu.estore.flywire.com/products/beef-706-session-1**](https://tamu.estore.flywire.com/products/beef-706-session-1)

**For additional information call 979-587-9245**

The goal of Beef 706 is to teach cattle producers about the food side of their cattle business and how to utilize best management practices to improve beef quality and enhance profitability. Created in 1993, the Texas A&M AgriLife Extension Beef 706 program invites ranchers, educators, and allied businesspeople to register for the educational program. The Texas Beef Council is a sponsor and pays most of the program expenses; therefore, registration is only $50 per person.

**Beef 706 - Session 1 is for Texas:**

* Beef Cattle Producers and Managers
* Ranchers and Ranch Personnel
* Feedyard Personnel
* Allied Livestock Business Personnel
* Veterinarians
* Teachers
* Extension Personnel
* College Students

Hotel for the Beef 706 Booking Information - Cavalry Court: Begin by visiting the hotel's website at [www.cavalrycourt.com.](http://www.cavalrycourt.com/) From this page, block "book now" in the top right-hand corner of the page. Select the group's arrival and departure date and change the "promo code" drop down box to "group/block". The Group Code is: **B7RB730**. Once the code and dates have been entered, all of the rooms available within the block should show up. \*The following link will take you directly to the block and is the easiest way to book a room! **\*** [Cavalry Court Block Reservation](https://cavalrycourt.windsurfercrs.com/ibe/details.aspx?propertyid=14497&nights=2&checkin=08/07/2022&group=b7rb730)

Additional Information: Transportation – Participants will be able to drive on campus with their personal cars. Permits will be given when they arrive. Bring warm clothes (sweatshirt) and non-slip, closed-toe footwear as you will spend some time in rooms 40-50º F with potentially slippery floors. Please understand that there are inherent risks in some activities, in particular slippery floors, when fabricating a side of beef and viewing live cattle. **Primary Contact:** Daniel Hale daniel.hale@ag.tamu.edu, 979.587.9245

**RWFM Stewardship Webinar Series**

**Dates & Topics:**

* **July 19, 2022, - “Feeding Your Pond” (\*this event is to be held at a different time than the rest)**
* **August 4, 2022, -10 Common Grazing Management Misconceptions (1 Gen CEU/TDA licenses)**
* **September 1, 2022, --Drift Management: Wind, Weather, and Whether or Not to Spray (1 Drift CEU/TDA licenses)**
* **October 6, 2022, -Pesticide Recordkeeping & Complaints (1 L&R CEU/TDA licenses)**
* **November 3, 2022, -Grow More Grass (1 Gen CEU/TDA licenses)**
* **December 1, 2022, -Good Cow Management is Good Carbon Management**

**Time: These events are generally held 12:00 (Noon) to 1:00 PM; HOWEVER, the JULY 19 presentation will begin at 6:00 PM.**

**Location: Online**

**Registration: see links below with individual events.**

**Cost: $35.00 per participant.**

**“Feeding Your Pond” presented by Dr. Todd Sink**

**July 19 (Tuesday)**

**6:00 PM**

**Registration:** [Feeding Your Pond (July 19) - Products - Texas A&M University eStore (flywire.com)](https://tamu.estore.flywire.com/products/feeding-your-pond-july-19-24924)

Join us for a how-to educational program on strategies to "feed" your pond to grow larger and more abundant fish. Feeding you pond means different things, from fertilization programs to boost primary productivity and food production to literal fish diets and feeding fish. We will cover fertilization strategies to send your pond's food chain into overdrive as well as fish nutrition, diets, and what you should (and should not) feed your fish to maximize growth based on species and management goals. Timing of feeding and fertilization will also be covered.

**Primary Contact:** Brittany Chesser, Rangeland, Wildlife & Fisheries Management, brittany.chesser@tamu.edu

**10 Common Grazing Management Misconceptions (\*1 GEN CEU) *Presented by Dr. Jeff Goodwin***

\***August 4, 2022**

**12:00 (Noon) to 1:00 PM**

**Registration:** [10 Common Grazing Management Misconceptions (August 4, 2022) - Products - Texas A&M University eStore (flywire.com)](https://tamu.estore.flywire.com/products/10-common-grazing-management-misconceptions-25508)

Many times, the ecological barriers to production on a ranching enterprise are the easiest to address. Other times, it’s perceptual misconceptions that can affect an operation the most. Here we discuss 10 common grazing management misconceptions that can inadvertently impact a ranches’ productivity and profitability. 1 General CEU from the Texas Department of Agriculture will be given.  Registration ends August 1, 2022.

**Drift Management: Wind, Weather, and Whether or Not to Spray (\*1 DRIFT CEU) *Presented by Dr. Scott Nolte***

**\*September 1, 2022**

**12:00 (Noon) to 1:00 PM**

**Registration:** [Drift Management: Wind, Weather & Whether or Not to Spray (September 1, 2022) - Products - Texas A&M University eStore (flywire.com)](https://tamu.estore.flywire.com/products/drift-management-wind-weather--whether-or-not-to-spray-25355)

When conducting herbicide applications, especially aerially, drift is a priority and concern at all times.  This presentation will discuss relevant wind, weather, and general go vs. no-go considerations when preparing for herbicide applications. 1 Drift CEU from the Texas Department of Agriculture will be given.  Registration closes August 29, 2022.

**Pesticide Recordkeeping and Complaints (\*1 L&R CEU), *Presented by Perry Cervantes***

**\*October 6, 2022**

**12:00 (Noon) to 1:00 PM**

**Registration:** [Pesticide Recordkeeping & Complaints (October 6, 2022) - Products - Texas A&M University eStore (flywire.com)](https://tamu.estore.flywire.com/products/pesticide-recordkeeping--complaints--25366)

The presentation will discuss pesticide laws and regulation updates from the 2022 season.  Among the topics of discussion will be updates, pesticide applicator recordkeeping, complaints, direct supervision, and the pesticide waste disposal program.  The Texas Department of Agriculture is the lead regulatory agency enforcing pesticide law.  More topics may be included as the year has just started and many things may occur over the next 10 months that may need to be presented. 1 Laws and Regulations CEU from the Texas Department of Agriculture will be given. Registration closes October 3, 2022.

**Grow More Grass (\*1 GEN CEU), *Presented by Dr. Morgan Treadwell***

**\*November 3, 2022**

**12:00 (Noon) to 1:00 PM**

**Registration:** [Grow More Grass with Prescribed Fire (November 3, 2022) - Products - Texas A&M University eStore (flywire.com)](https://tamu.estore.flywire.com/products/grow-more-grass-with-prescribed-fire-25283)

Managing, optimizing, and enhancing native perennial grasses is a tough job, but even more challenging in plant communities that are constantly threatened by woody brush, such as honey mesquite and juniper species.  Join November’s webinar to learn some tips, tools, and resources available to grow more grass and keep encroaching brush and opportunistic forbs out of your grasslands! 1 General CEU from the Texas Department of Agriculture will be given. Registration closes October 31, 2022

**Good Cow Management is Good Carbon Management, *Presented by Dr. Doug Tolleson***

**December 1, 2022**

**12:00 (Noon) to 1:00 PM**

**Registration:** [Good Cow Management is Good Carbon Management (December 1, 2022) - Products - Texas A&M University eStore (flywire.com)](https://tamu.estore.flywire.com/products/good-cow-management-is-good-carbon-management-25249)

Illustration of how livestock ranching practices can be used to maintain soil health, with carbon as an indicator and a product. Registration closes November 28, 2022.

**Additional Items and** **Information of Note:**

Forage Producers, this one is pointed directly at you – with that said, the information concept is of importance to anyone managing turfgrass or ornamental landscape plantings.

Dry conditions create issues not only during the “dry”, but well into the periods of growth beyond when moisture is received. Due to lingering effects on pastures and hay fields, I have dug this article out of my archives of “Good Information to Know” files. Read it carefully.

**EFFECTS OF DROUGHT ON PLANT GROWTH**

*Larry A. Redmon, Extension Forage Specialist, College Station*

Because of the potential seriousness of a drought whenever and wherever it occurs, landowners

and managers need to be aware of the effects of drought on forage growth. Obviously, lack of

soil moisture restricts plant growth, both in terms of the total quantity of tissue produced and the

time that the plant tissue is produced. The extent to which forage production is decreased by

drought varies with the soil type, temperature, vegetation type, and current and past grazing

management. Every situation is different, and it is impossible to present management guidelines

that will be universally applicable especially for a state as large as Texas.

Productivity of annual plants generally will be reduced by drought more than that of perennial

plants. In a drought, annuals produce little or no forage. Annuals are not as deeply rooted as

perennial grasses and woody forbs or shrubs and trees and therefore cannot tolerate the same

degree of moisture deficit. In a drought, annuals will be very short with fewer leaves present and

will use available water to produce flowers and a viable seed crop earlier than is normally the

case. Typically, there are two peak germination periods for annuals in Texas. Germination in the

late summer through fall (September to December) will produce cool season annuals that grow

roots during winter and spring, with seed maturing in the spring or early summer before the

plant dies. With a lack of fall moisture, some cool season annuals may germinate later as warmer

temperatures are encountered. While the drought effects on forage production of annual species

is more pronounced compared with perennial species, annuals are well adapted to dry years

where they can escape periods of drought by remaining in the seed stage. Warm season annuals

typically germinate in the spring as warmer conditions arrive and persist. Annuals such as one seeded

croton, wooly croton, and spurges germinate under favorable moisture conditions and bypass

much of the rosette type growth of cool season annuals. Of particular interest is the fact that

many annuals are the first plants to emerge following drought. This is due to their ability, again,

to survive drought in the seed stage and germinate when the drought is broken. Some annuals

will be desirable plants while others may not. Be prepared to control unwanted annual species

with either herbicides or mowing if warranted.

Typically, warm season, perennial sod grasses and bunchgrasses support above ground growth

for six to nine months out of the year, depending on where in the state they are located. When

initiating growth following the winter dormant season, the plant must draw on food reserves

(carbohydrates) that were produced during the previous growing season and stored in the roots or

crown of the plant. About 20 percent or more of the current year’s growth will occur using these

stored reserves before the plant stops using reserves, begins to fully photosynthesize, and

maintain itself with mature leaves produced during the current season.

In a drought the plant has to rely on the stored reserves for a longer period of time, thus reducing

stored nutrients for future use and increasing the plant's susceptibility to damage in extended

periods of drought and grazing uses. A healthy root system is of paramount importance to the

growth of a forage plant when we realize that 50% to 80% of the plant exists below the soil

surface. An old range science rule of thumb is “if you take the shoot, you kill the root.”

Whether due to excessive grazing pressure or drought, lack of aboveground photosynthetic

material (green leaves) will decrease root production, thus, decreasing the plant’s ability to fully exploit the soil profile for badly need moisture.

The lack of available moisture usually reduces the length of the growing season. Warm season

perennial grasses will initiate growth in the spring, but produce less forage and go dormant

sooner under drought conditions. During drought plant growth begins to slow before

carbohydrate reserves (sugars and starches) are replaced. Because of this, grasses may enter a

longer than normal dormant period with less reserves. Once rainfall does come, the plant is

slower to respond. If heavy grazing has occurred, this may hinder the accumulation of new root

reserves. A perennial grass that is heavily grazed during the growth period could stop growth

altogether. If soil moisture were declining rapidly at the same time, the grazed plant would not

have an adequate opportunity to recover from the combined effects of heavy grazing and

drought. In drought years, grazing should be light to enhance the plant's ability to make

maximum use of soil moisture available. Plant loss or death occurs in periods with several

growing seasons with below normal precipitation.

Effects on forage nutritive value due to drought are variable. If the drought is not so severe as to

cause the plant to go dormant or be destroyed, there may actually be an increase in nutritive

value. Because plant growth rate is reduced, maturity does not have as great an effect on the

plant nutritive value as under more favorable growing conditions. If, however, the drought is

severe, nitrogen and carbohydrates will first be mobilized away from the leaf material to the

crown or root area with a resulting reduction in nutritive value. If the drought continues, there

will be senescence and associated leaf shatter that completely eliminates any potential for the

plant to serve as forage for grazing animals.

The effect of drought on forage plants is a function of both the intensity and duration of drought

and the general health and vigor of the vegetation before the drought. Plants with healthy root

systems and adequate carbohydrate reserves will fare much better during and after drought than

plants that have been struggling to maintain themselves continuously. This illustrates the need

for a soil test and fertilizer application based on soil test recommendation so that the plant has all

of the opportunity to tolerate drought that it is genetically capable of.

**Testing Forages and Hay for Hydrogen Cyanide (Prussic Acid) Potential** July 2022

J.P. Banta, J.M. Bell, V. Corriher-Olson, J.L. Foster, R.L. Noland, and J.K. Smith

Texas A&M AgriLife Extension and Research

In some situations, there may be a desire to test forages or hay for hydrogen cyanide or prussic acid potential. Hydrogen cyanide (HCN) or hydrogen cyanide potential are more appropriate terms and will be used throughout this document. Free hydrogen cyanide is not routinely found in the plant. Instead, the plant contains one or more cyanogenic glycosides that can be converted to hydrogen cyanide by enzymes in the plant or enzymes in the rumen of cattle, which is why the term hydrogen cyanide potential is used.

There are several testing procedures being used by various labs, which may lead to results varying from lab to lab. To evaluate the full hydrogen cyanide potential, it is critical that the testing procedure includes a beta-glucosidase enzyme. The inclusion of this step is necessary because it allows for the most accurate measurement of hydrogen cyanide potential and more closely represents the conditions and changes that would occur within the rumen. Samples should be submitted to a lab that includes a beta-glucosidase enzyme and incorporates standard samples to ensure the test is consistent. ServiTech Laboratories (servitech.com) is the only commercial lab that we are aware of that currently includes both steps and is the lab our group has used to test research and producer samples.

Research conducted near Amarillo in 2021 (Bell and Banta, unpublished data) revealed both hydrogen cyanide potential and nitrates in pearl millet, corn, forage sorghum, and sudangrass samples grown in the same trial. Based on this research and other sampling, if forages are being tested for hydrogen cyanide potential it would be advisable to also test them for nitrates as well. The same sample can be used for both. Cost for hydrogen cyanide, nitrates, and dry matter analysis are currently running about $43 per sample.

**Interpreting results:**

Results should be expressed and evaluated as mg/kg or ppm on a 100% dry matter basis (1 mg/kg = 1 ppm). Unfortunately, testing results can’t guarantee that a forage will be safe to feed. There is limited research in cattle regarding toxic levels of hydrogen cyanide. Additionally, toxicity is a function of cyanogenic glycoside concentration in the forage, rate of forage consumption, and rate of hydrogen cyanide detoxification in the animal. Mammalian species including cattle and humans can detoxify some level of hydrogen cyanide. Toxicity becomes an issue when absorption of hydrogen cyanide exceeds the bodies’ ability to detoxify it. Although testing cannot guarantee safety, knowing the level of hydrogen cyanide potential provides valuable information to make informed decisions regarding the risk level of a particular forage.

**Collecting samples:**

**Hay samples:** Use a hay probe to collect and composite samples from at least 8 to 10 representative bales from each cutting or lot of hay, just like would be done for other hay testing analysis. Mix the samples and place the composite sample in a quart sized plastic bag for shipping. Contrary to what has historically been thought, hydrogen cyanide potential can be an issue in some dry hay, even following a substantial post-harvest storage period. Research results from 4 experiments published by Dr. Stuart indicate that increased drying time, conditioning hay, or double conditioning hay did not lower hydrogen cyanide potential when compared with plant samples taken just prior to cutting.

**Fresh forage samples:** When collecting fresh forage samples, try to minimize bending or cutting of plant tissue until after the plants are dry. Plants should be cut approximately 2 to 4 inches above the ground and collected at random across the field. The number of plants to collect will vary by size. See below for size-dependent reference numbers of plants to collect. Generally, it would be desirable to collect enough sample to provide at least 100 grams of dry tissue for analysis.

• **Fresh plant samples** can be shipped overnight to the lab. Cut plants into 12 to 24 inch pieces so they will fit into a brown paper grocery bag (preferred) or trash bag. Place the bag in a cardboard box for shipping. Cut samples into as few pieces as possible. Samples absolutely should not be frozen and should not be placed on ice. Placing samples on ice could cause tissue freezing and cell rupture resulting in lower hydrogen cyanide values.

• Alternatively, **samples can be dried or partially dried prior to shipping**. Partially drying samples by placing them in the sun for a few days works well in many situations. It reduces shipping weight and allows for samples to be shipped with lower cost options compared to overnight shipping. If samples are dried, they can be cut or bent to help with shipping.

Amount of fresh forage sample to collect:

• Plants less than 12 inches tall: Collect about 40 to 60 plants.

• Plants 18 to 30 inches tall: Collect about 15 to 20 plants.

• Plants over 30 inches tall: Collect about 6 to 10 plants.

For additional questions about sampling please contact Dr. Jason Banta, jpbanta@ag.tamu.edu, or one of the other authors of this publication. **Note**: This document reflects the current information and understanding of hydrogen cyanide potential in forages, testing, and risks to cattle and other livestock. However, there is still much to learn about these topics and additional research and technology advancements may change scientific understanding and recommendations in the future.

Provisions from the American Disability Act will be considered when planning educational programs and activities.  Please notify the Walker County Extension Office if you plan on attending an Extension Educational program and need specialized services.  Notification of at least three to five days in advance is needed, so that we may have ample time to acquire resources needed to meet your needs.

Educational programs of the Texas A&M AgriLife Extension Service are open to all people without regard to race, color, religion, sex, national origin, age, disability, genetic information, or veteran status. The Texas A&M University System, U.S. Department of Agriculture, and the County Commissioners Courts of Texas Cooperating

By the way current estimates on American Bison (1990's) was 20-25 thousand on public land & 250,000 in private ownership. Interestingly in 2000 the US population was 291 million people. How many farmers are feeding all those residents? By the way current estimates on American Bison (1990's) was 20-25 thousand on public land & 250,000 in private ownership. Interestingly in 2000 the US population was 291 million people. How many farmers are feeding all those residents? Let's have a little history lesson: 1930 1 farmer fed 9.8 people, 1950 1 fed 15.5 people, 1960 1 fed 25.8 people, 1970 1 fed 47.7 people, 1980 1 fed 75.7 people, 1990 1 fed 100 people, 2015 depending on who's numbers you read 1 farmer feeds 144-155 people. More fun with history comming up!! The US population in 1870 (close to the height of the American Bison removal/harvest/slaughter-pick your favorite term there) was 38.55 million people vs. 291 million in 2000. A little more info, the 1790 U.S. population was 3.92 million people. So I'm guessing all these people today need to be fed by somebody or they better get to farming for themselves.. It seems this article intends us to turn away from the systems that are providing food and fiber for us all. Oh, back to that enteric greenhouse gas issue 22% of methane in the US is sourced that way, 8% by manure management (start adding), 6% other, 9% coal mining, 20% landfills (remember all those people-you have to do something with the stuff nobody wants), & 33% from natural gas and petroleum systems. So it looks like if we stop driving, heating our houses, throwing stuff away, and eating it is an easy problem to solve. By the way in the 1500's the American Bison population was estimated to be 30-60 million head but nobody complained about their enteric issues or had much of a care about them traveling through their crops, over their roads, or down main street in town. Since this article wants us to leave the equipment, fertilizers and enteric beasts behind which are supporting us, we better have more of you learning to farm. Otherwise somebody will be very hungry. These people are wanting us to go back to pre-1950's numbers and thinking its a good thing.By the way current estimates on American Bison (1990's) was 20-25 thousand on public land & 250,000 in private ownership. Interestingly in 2000 the US population was 291 million people. How many farmers are feeding all those residents? Let's have a little history lesson: 1930 1 farmer fed 9.8 people, 1950 1 fed 15.5 people, 1960 1 fed 25.8 people, 1970 1 fed 47.7 people, 1980 1 fed 75.7 people, 1990 1 fed 100 people, 2015 depending on who's numbers you read 1 farmer feeds 144-155 people. More fun with history comming up!! The US population in 1870 (close to the height of the American Bison removal/harvest/slaughter-pick your favorite term there) was 38.55 million people vs. 291 million in 2000. 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**Reggie Lepley**

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