Monthly Newsletter | February, 2024

TEXAS A&M AGRILIFE EXTENSION SERVICE SMITH COUNTY NEWSLETTER

The official monthly newsletter of the Texas A&M AgriLife Extension Service of Smith County

February Topics

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Result Demonstration Report

2023 Pasture Weed Control with Aerial Drone vs Commercial Ground Application

Gabriel Ranch
Cooperator

Clint Perkins, Stephen Gowin, Tommy Phillips, & Allison Morrow
Texas A&M AgriLife Extension Service County Agents for Smith, Rains, Kaufman & Van Zandt Counties

Patrick Sutton, Colton Spencer & Benny Martinez, Corteva Agriscience

Darren Rozell & Kevin Proctor, Rozell Sprayers & Manufacturing

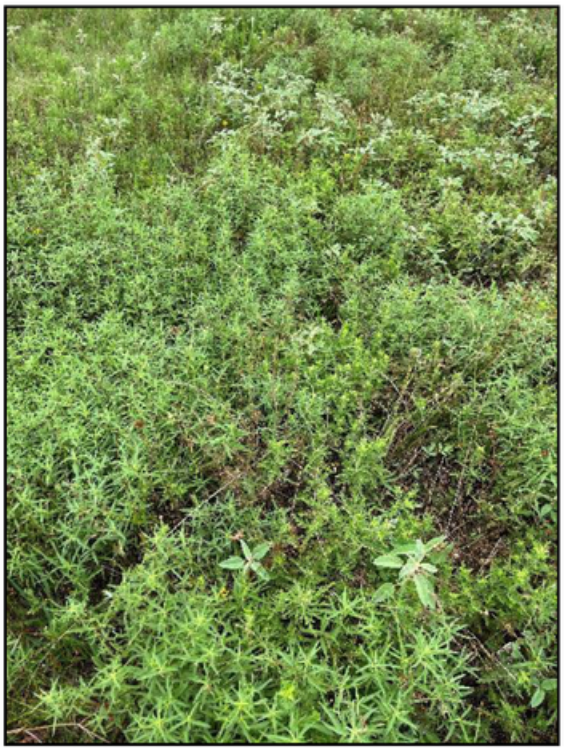
Introduction

The intent of these trials is to compare the efficacy for targeted weeds and or brush for drone applied technologies compared to conventional sprayer applications. Products are listed in order of importance. Targeted weeds and or bush should dictate product used or not used at the treatment site. All applications will be conducted in accordance with the product label, including application rate and Gallons Per Acre (GPA), for both Ground and Aerial application specifications.

Materials and Methods

The study site was established on June 12, 2023, at County Road 4414 (Tank Farm Road) in Colfax, Texas (Van Zandt County), 0.25 miles south of Interstate 20. The site was established common bermudagrass mixed with bahiagrass. The soils were a Bernaldo fine sandy loam, and a Woodtell loam, 1 to 3% slope.

Location of the results demonstration, Northeast of Colfax, TX (Van Zandt County).



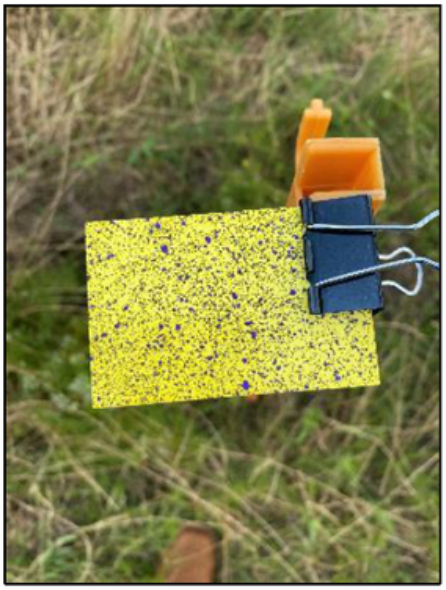
Weed populations at the time of application. (Photos by Clint Perkins)

Plant and pasture conditions at the time of application in June were good to excellent in terms of soil moisture and plant health. Weed species at the Gabriel Ranch treatment area in Colfax, TX included false ragweed (*Parthenium hysterophorus*), goatweed (*Croton capitata*), milkweed (*Asclepias viridis*), blackberry (*Rubus* spp.), ironweed (*Vernonia baldwinii*), and dogfennel (*Eupatorium capillifolium*).

Application Techniques for the Result Demonstration

Application System Data (drone)

- Aircraft Manufacture and model (DJI-T-40)
- Rotor Width: 9 ft
- Nozzle type: Sprinklers
- Nozzle Angle: Straight Down
- Swath width: 30 ft
- Pressure: 30 PSI
- Application Speed: 22 MPH
- Plot Size: 50 ft x 200 ft (0.23 acres)



Droplet patterns of the aerial drone application.

Conventional Ground Application System

- Application Type: Conventional ground
- Brand and Model equipment used: Rozell 14' Boom Sprayer
- Nozzle Type AI11002
- Nozzle angle for aircraft only: Straight Down
- Pressure: 40 PSI
- Plot Size: 30 feet by 200 feet (0.14 acres)

Droplet patterns of the conventional ground application.

Applicators for the Application Techniques

Aerial Drone Operator- **Kevin Procter & Justin Easley**

Conventional Ground Spray Rig- **Stephen Gowin**

Table I. 2023 Treatments and Rates for the herbicide applications with an aerial drone or conventional ground application.

App Type	Trt. No	Herbicide Trade Name	Rate	Rate Unit
Drone	1	DuraCor	16	fl oz/A
Ground	2	DuraCor	16	fl oz/A
Drone	3	Grazon PD3	20	fl oz/A
Ground	4	Grazon PD3	20	fl oz/A
Drone	5	MezaVue	24	fl oz/A
Ground	6	MezaVue	24	fl oz/A
Drone	7	Chaparral	2.25	oz/A
Ground	8	Chaparral	2.25	oz/A
Drone	9	GrazonNext HL	24	fl oz/A
Ground	10	GrazonNext HL	24	Fl oz/A
Drone	11	DuraCor + Remedy Ultra	16 + 8	fl oz/A
Ground	12	DuraCor + Remedy Ultra	16 + 8	fl oz/A

Table II. 2023 Application information for Result Demonstration

Date	June 12, 2023
Time	10:45 am to 12:15 pm
Air Temp	82 F
RH	68 %
Wind	8 mph E
Soil Temp at 6 in.	79 F
GPA	18 GPA for Ground Sprayer, and 2 GPA for Aerial Drone
Weed size	4-12 inches tall

Herbicide Efficacy Evaluation Details

Simple percent visual control of target species and percent visual desirable grass phytotoxicity (if present) were recorded at monthly intervals post application. Three randomly selected areas of observation per treatment for broadleaves, or three (3) transects of one hundred (100) plant live/dead counts for brush were evaluated and combined into a plot mean. Date of evaluation and a reference to the number of months after applications for weeds and brush were reported.

Table III. 2023 Mean plot efficacy (% Visual Control) of herbicide treatments for the control of weed species in bermudagrass pasture (MAT = Month after treatment).

App Type	Trt No	Herbicide Trade Name	All Weed Control 1 MAT 07/12/23	All Weed Control 2 MAT 08/12/2023
Drone	1	DuraCor	95	99
Ground	2	DuraCor	99	99
Drone	3	Grazon PD3	99	99
Ground	4	Grazon PD3	98	99
Drone	5	MezaVue	99	99
Ground	6	MezaVue	99	99
Drone	7	Chaparral	99	99
Ground	8	Chaparral	99	99
Drone	9	GrazonNext HL	99	99
Ground	10	GrazonNext HL	99	99
Drone	11	DuraCor + Remedy Ultra	99	99
Ground	12	DuraCor + Remedy Ultra	99	99

Conclusion:

Technology is dynamic that is adapting to different farming practices. Very positive results have occurred. Herbicide efficacy in these result demonstration trials we the same. Herbicides have proven to be an effective way of controlling weeds in warm-season forage systems using an aerial drone and a conventional sprayer.

Acknowledgements

A special thanks to the Gabriel Ranch for allowing the result demonstration to be conducted on the property and to Mr. Darren Rozell & Kevin Proctor (Rozell Sprayer and Manufacturing), Mr. Patrick Sutton, Colton Spencer, & Benny Martinez (Corteva Agriscience), Stefan Bush (EGEBIO) for donating the herbicides, surfactant, and drone lock drift control agents that were used in the result demonstration project.

Dealing with Freeze Damage ... Again

Written By: Greg Grant

Unfortunately, the last few years have brought us three rounds of major winter freeze damage and two rounds of summer heat and drought stress. Trying to determine the "cause of death" has become challenging. Our latest winter cold temperatures into the low teens and below followed a relatively mild fall and early winter. Plants do not like quick changes in temperature without time to harden off. Our low temperature in January also fell below our USDA Hardiness Zone 8b averages of 15-20 degrees Fahrenheit.

Severe cold can cause all types of problems for plants. Freezing temperatures can damage plants by rupturing plant cells as ice crystals form and rapid changes in temperatures occur. This time we didn't have a thick snow cover to insulate the plants though.

The signs of cold damage can be confusing since some damage may not be evident until months later. Leaves and tender shoots subjected to freezing temperatures appear water-soaked and wilted. These tissues will usually turn black within a few days. Tropicals such as esperanza and pride of barbados may have dead foliage and dead stems. We may have lost most of our camellia flowers and buds but hopefully not our famed azaleas.I think we also probably avoided stem damage on most of our evergreen shrubs, unlike the devastating 2021 freeze.

This type of damage occurs as a splitting of the stem or bark, typically near the base of the plant due to sudden changes in temperature. Once they become obvious, split stems and branches should be pruned to unaffected growth. Sometimes cold injury is not readily apparent until the plant starts to flower or actively grow again. At this point, cut out the dead and leave the living.

After a freeze or frost, the leaves of damaged herbaceous (annuals and perennials) plants may immediately appear wilted and water soaked. However, the freeze injury to the twigs, branches, or trunks often doesn't appear on shrubs and trees right away. Wait a few days and then use a knife or thumbnail to scrape the outer bark on young branches. Freeze-damaged areas will be brown beneath the bark; healthy tissues will be green or white.

Delay pruning until time reveals the areas that are living and dead and until the threat of additional frosts or freezes has passed (around April 1). Leaving dead limbs and foliage at the tops of plants will help protect the lower leaves and branches from nighttime radiation loss. Pruning after a freeze does not improve the outcome. Also, plants that are pruned tend to be invigorated more quickly, which may set them up for further damage in our unpredictable cycling of warm and cold temperatures.

So, do not be in a hurry to prune or remove your damaged plants. Some plants may appear dead but may not be. Corrective pruning should not be started until the full extent of the damage can be determined.

DO YOU WANT SOME GRAVY WITH YOUR MASHED POTATOES ?

Written By: Anthony Brown

On average each American consumes about 125 lbs. of potatoes or by-products from potatoes each year. Growing Irish potatoes in East Texas is simple and is not labor-intensive crop to maintain. Unlike most vegetables the edible part of the plant grows underground and is called a tuber not a root. After we eat potatoes with a meal, we sometimes become tired and sleepy, this is due to the high amounts of starch that potatoes contain, but they also provide good amounts of vitamins and minerals. Early spring and late fall are the best times for Irish potatoes to grow-- the days are warm, but the nights are cool. The two most common types are the red and white potatoes. Both types have different advantages that make them unique; the red potatoes can store longer, and the white variety will cook better. The different varieties that do well in Texas are:

- Red Flesh (Dark Red Norland)
- Red Lasorda
- Viking (White Flesh)
- Atlantic Gemchip
- Kennebec
- Superiod, (Yellow Flesh)
- Yukon Gold (Russet)
- Century Russet
- Norgold M
- Russet Norkatah

Irish potatoes like to be in full sun in well drained, and slightly acidic soils. When preparing your seedbed work the soil into beds about 10 – 12 inches high and rows about three feet part. Fertilization is needed early while growing potatoes. It is recommended that fertilizer is applied before planting. Flatten the beds 6-8 inches high and 10-12 inches wide when applying fertilizer. With the corner of a hoe open a trench down the row about 4 inches deep on each side of the seedbed. Apply half of the fertilizer, depending on your soil test and fertilizer recommendation. The seed piece or (eye) will be planted in the middle row between the two trenches. Potatoes are not traditionally grown using a seed; however, pieces of the potato will start a new potato. This is normally called an eye.

Depending on the potato size there can be several different eyes, and the potato can be cut up more than 4 or 5 times. Be sure and cut an eye out that is big and healthy to ensure that the potato will establish a good root system. Cut the potato about half the size of a hen's egg. Before planting, you should cut the eyes out and store them in a well-ventilated area so they can heal and not rot when they are planted in cold, wet, or very hot weather. Note, if we do experience a late frost some potatoes will die if the eye is rotten. Irrigation is very essential during the growing seasons so be sure to water the fertilizer in the soil especially in sandy soils.

Written By: Anthony Brown

In the case we do not have an adequate amount of rainfall, when beginning irrigation, you may find small growth cracks and second growth. If rainfall is followed by hot weather, the rest period for developing strong healthy tubers can be broken, causing them to sprout in the soil. Too much moisture will enlarge the pores on the tuber which causes them to rot in storage easily. Tubers produce on a potato above the eye. Soil should be pulled over the plant as it grows. Gardeners that plant in soft mulch have a smoother and better shape than those grown in heavy mulch. Potatoes will begin to enlarge and bulge through the soil. You need to cover the potatoes up with soil about 8-10 inches to protect them and keep them from turning green and keeping the soil temperature low which will increase the yield and quality. Most of the time potatoes will produce a flower and on occasions will produce some fruit. However, the fruit is not edible, but bear the true seed of the potato plant.

The natural predators to Irish potatoes are flea beetle, Colorado potato beetle, aphids, wireworm, and leafhopper. Weed control and Sevin (insecticide) are good mechanical and chemical alternatives that will help control the infestation. You can also use BT- based insecticides, as well as Sulphur, because it contains fungicidal properties that also help control disease. To prevent disease in potatoes, it is recommended that you rotate where you plant no more than once in the same area during a three year time span. You can also use neem oil, Sulphur and other fungicides before or after planting to prevent the spread of diseases. Harvesting potatoes is easy--when you see the tops begin to die then they are ready for harvest. You have to dig them out so it's best to use a shovel or spade 8-10 inches away from the potatoes, dig underneath, lift up, and proceed to shake the soil off the potatoes. To make sure that they are ripe you can rub your thumb across the skin and if the skin peels easily, then they are not ready for harvest just yet. After harvest potatoes need to dry out, they need to be in a well ventilated area. Typically, potatoes are fully grown in 95-110 days. If you get a spring crop, you can also have a summer crop. If you have any questions on how to purchase potatoes or need further assistance in growing potatoes, please call your local County Extension Agent.

EAN-029 03/21

REPLACEMENT HEIFER SELECTION, DEVELOPMENT, AND REPRODUCTION

Bruce B. Carpenter* and Ronald Gill**

SUMMARY

- Age at puberty influences economic efficiency of beef production through its effects on both age at first calving (2 versus 3+ years of age) and the time that a heifer conceives in her initial breeding season.[1]
  - Heifers of most breeds should have their first calf by 2 years of age.
  - On average, heifers that breed and calve early with their first calf will have higher productivity throughout their lives.
  - Puberty is determined by two things: age, depending on the breed type, and body weight as a percentage of mature weight.
- The risk of re-breeding failure is often highest in 2-year-old, first-lactation cows attempting to breed back for their second pregnancy, especially if their higher nutritional requirements are not met.
  - Nutrient requirements at this age are affected by the interactions of growth, lactation, changing dentition, and a relatively smaller rumen capacity compared to a mature cow.

Age at First Calving (2 versus 3 years) Affects Lifetime Productivity

Heifers that do not calve until they are 3 years old may experience less calving difficulty and wean a heavier calf compared to heifers that first calve at 2 years old.[2] However, total lifetime performance and economic efficiency favor heifers that calve first as 2-year-olds.[2, 3, 4] Also, calving difficulty in heifers of any age can be managed by breeding to lower birth weight bulls. Realize later-maturing Bos indicus—or high-percentage Bos indicus breeds—typically do not reach puberty in time to calve first as 2-year-olds.

*Professor and Extension Livestock Specialist
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Earliness of Calving Affects Lifetime Productivity

Heifers that become pregnant early in their first breeding season and successfully calve their first calf have been shown to have higher pregnancy rates (Table 1) and weaning weights of calves in later years.[5, 6] Also, early calving heifers have been shown to have increased chances of longevity as cows (Fig. 1) and a higher average lifetime return on investment (Table 2).[6, 7]

Table 1. Calving Period for First-calf Heifers: The Effects on Pregnancy Rates in Later Years[6]

The United States Meat Animal Research Center, 16,549 heifers

Pregnancy	Calving Period 1 n=11,061	Calving Period 2 n=4,372	Calving Period 3 n=1,116
2nd	93	88	84
3rd	93	90	80
4th	94	92	91
5th	94	92	89
6th	94	93	93

Table 2. Period of First Calving: The Effects on Lifetime Average Return on Investment per Female[7]

	1st 21 days	2nd 21 days	3rd 21 days	4th 21 days
Herd 1	14.8%	10.4%	4.7%	8.6%
Herd 2	(-3.2%)	(-10.3%)	(-12.4%)	(-11.2%)
Herd 3	9%	(-1.3%)	(-16%)	(-9%)
Herd 4	18%	9%	3%	(-10%)
Herd 5	14.7%	2%	6%	6%

*Data taken from five commercial herds and includes approximately 1500 calves from females that calved annually throughout their life.
*Prepared by L.R. Sprott, former Professor and Extension Beef Cattle Specialist Emeritus

[1]Day & Nogueria, 2013
[2]Nunez-Dominguez, Cundiff, Dickerson, Gregory, & Koch, 1991
[3]Chapman, Young, Morrison, & Edwards, 1978
[4]Morris, 1980
[5]Lesmeister, Burfening, & Blackwell, 1973
[6]Cushman, Kill, Funston, Mousel, & Perry, 2013
[7]Sprott, n.d.

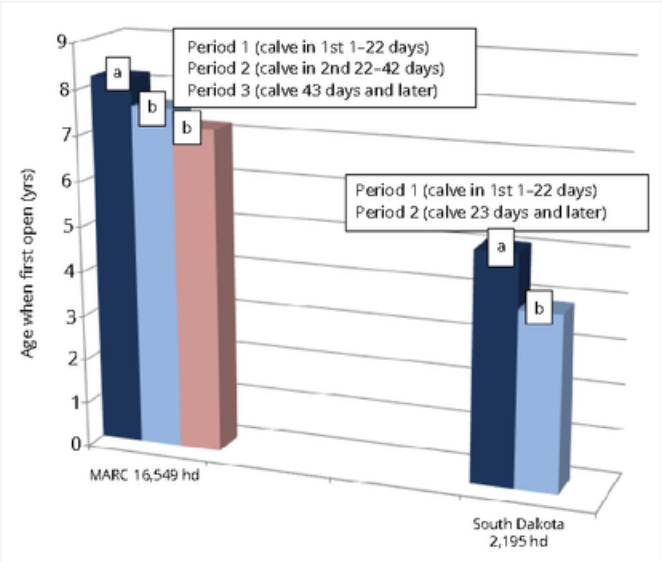

Figure 1. Calving Period for First-calf Heifers: The Effects on Age When First Open in Later Years

Heifer Selection

Most producers select replacement heifers sometime between weaning and the end of their first breeding season. Selection based solely on appearance is not well related to fertility. "Eye appeal" is not related to physiology and is often just one person's opinion.

Selecting heifers at weaning. If heifers are selected at weaning, age is no doubt the most useful criteria. Selecting heifers born in the first half of the calving season results in more mature animals that will require less time to reach puberty when compared to younger herdmates. Thus, calving records—the actual date, or at least the period within the calving season (early, middle, or late)—are the best way to identify these more mature animals. Some producers with extensive or remote pastures may not be able to observe cows during the calving season and may not know the ages of their heifer calves. If they select replacements at weaning, they usually just keep the biggest or heaviest, expecting them to be the oldest, which they often are. However, over time, selecting bigger heifers at weaning can subsequently lead to bigger cows. A correlation of 0.67 to 0.85 between these two traits has been reported.[8] Moderate cow size is necessary for many environments.

Genomic testing of calves to predict their future fertility and overall performance as cows is an emerging technology. Currently, it is limited to the Black Angus breed because of the large database required (GENEMAX®, Zoetis).

Selecting heifers as yearlings. Some producers simply keep a large number (or all) of their heifers at weaning and select replacements from those that get pregnant after their first breeding season. This does add significant cost to development because more heifers than are needed for replacements are being kept and managed. However, the added value of selling surplus heifers that are heavier and/or pregnant as yearlings has the potential to mitigate the extra development cost.[9] This strategy allows pregnancy to be the initial basis for selection.

Selection for puberty and/or early pregnancy. Heifers that have had one or more estrous cycles before, rather than during, their first breeding season have been reported to have higher pregnancy rates both as yearlings and again as 2-year-olds (Table 3).[10] Some strategies used to identify these kinds of pubertal heifers—and to refine the selection process among those that are pregnant—are discussed below.

One strategy is to use a short 45-day breeding season, either with or without artificial insemination (AI). Pregnancy rates will likely be somewhat lower than with longer 60- to 90-day breeding seasons, so plan on retaining an extra 20 to 25 percent more heifers. Heifers that become pregnant are fertile and are set up to begin their reproductive careers as early calvers, the importance of which has been discussed. Open heifers have added value due to older age and heavier weights.

Table 3. The Impact of the Number of Estrous Cycles Exhibited Prior to the Start of Breeding and Reproductive Performance of Heifers[10]

	Number of estrous cycles before the start of breeding				
	0	1	2	3	>3
Heifers first season, n	395	205	211	116	249
Weight before start of breeding (lb)	671[a]	702[b]	702[b]	715[bc]	715[c]
Age at start of breeding, days	420[a]	426[b]	426[b]	426[b]	430[c]
First-season heifer pregnancy percentage	**84[a]**	**90[b]**	**88[a]**	**89[ab]**	**94[b]**
Start of breeding to calving, days	300[a]	296[b]	295[b]	295[b]	296[b]
Weight of calves at weaning (lb)	396[a]	411[b]	414[b]	416[b]	405[b]
2-year-old cows, second season pregnancy percentage	**73[a]**	**85[b]**	**79[a]**	**90[b]**	**92[b]**

Means within a row without a common superscript differ (P <.05)

Pregnancy testing shortly after the end of longer breeding seasons by a skilled individual using either ultrasound or palpation is another way to identify and select early breeders. Another alternative is to blood test all heifers 30 to 50 days into the breeding season. Those identified as pregnant by blood test will have been bred in the first

[8] Kaps, Herring, & Lamberson, 1999
[9] Carpenter & Hogan, 2018
[10] Roberts, Ketchum, Funston, & Geary, 2013 (adapted)

30 to 40 days. A second pregnancy test of negative heifers is required at a later date to identify both later-bred and open animals.

Using estrous synchronization (ES) at the beginning of their first breeding season, either with AI or natural bull service, identifies pubertal animals because the response to ES treatment is dependent on puberty. Therefore, pregnancy to first synchronized estrus signifies both an animal that was already cycling prior to the breeding season—or very close to it—and an animal that is fertile. That is, she was able to conceive at her first breeding opportunity, and she is now set up to begin her reproductive years as an early calver. Using a blood pregnancy test in first-calf heifers at day 30 post-AI is one way to determine conception to AI versus clean-up bulls. To do this, wait to turn in clean-up bulls until day 14 after a single AI mating. Then, blood test all heifers at day 30 post-AI. Only those that conceived to AI (early breeders) will test positive for pregnancy at this stage. All other heifers testing negative at this stage are either pregnant by clean-up bulls or open. Again, all animals in the negative group will need to be pregnancy tested again at the end of that breeding season.

Not all producers are able to use AI. Still, giving a single shot of Prostaglandin $F2_{\alpha}$ (PG) and using a natural bull service on the first day of the breeding season is a well-known and inexpensive way to group cycling females to calve early, as most cycling females will come into heat within 4 days of the shot. However, a small percentage will be unable to respond to that treatment because they are in a stage of their estrous cycle where they do not have a functional corpus luteum on the ovary. Waiting 4 days after turning the bull(s) in to give PG shots is a strategy that may increase the opportunity to identify all—rather than most—pubertal heifers and, therefore, increase the opportunities for early pregnancy in response to that protocol among all pubertal animals.[9, 11, 12] A word of caution: Do not administer prostaglandin **after** day 4 to 5 of bull exposure, as it can cause abortions after this time. Blood pregnancy testing all animals at day 40 of the breeding season can identify those that conceived to natural bull service in the first 12 days and were, therefore, pubertal before the start of the breeding season. Again, the benefits of early puberty, early conception, and early calving have been described.[5, 6, 10] All animals that tested negative for pregnancy at day 40 will need to be re-tested for pregnancy after the end of the breeding season as would normally be done.

Reproductive tract scoring (RTS) has been used to identify mature and pubertal heifers just prior to their first breeding exposure.[13, 14] Additionally, it might be a useful tool to manage even lifetime reproductive performance.[14] RTS is a heritable trait, with an estimate of 0.32.[14] Heifers with higher RTS just prior to their first breeding season had higher pregnancy rates both as yearlings and again as 2-year-olds. In turn, these heifers calved earlier, and because of that, weaned heavier calves.[14] Age, body weight, and body condition score are all positively associated with RTS, and among these three, age was the most highly associated.[14] The main limitation to using RTS to predict puberty, in many areas, is finding qualified people who can palpate and/or ultrasound and then score the reproductive tract accurately (cervix, uterus, and ovarian structures).

Finally, predicting the number of replacements needed is related to culling rate in the cowherd. Cows are culled for reproductive failure, unsoundness, temperament, old age, drought, and other reasons. Overall cull rate and age makeup of the cowherd will thus be a consideration when estimating replacement heifer needs. Under good management, one might reasonably expect an 85 percent pregnancy rate in yearling heifers being bred for their first calf. Under that scenario, heifer retentions would likely need to be about 15 percent higher than whatever the predicted cowherd replacement rates are.

[11]Whittier, Caldwell, Anthony, Smith, & Morrow, 1991
[12]Larson, Musgrave, & Funston, 2009
[13]Anderson, LeFever, Brinks, & Odde, 1991
[14]Holm, Thompson, & Irons, 2009

Heifer Growth, Development, and Puberty

As stated, heifers of most breeds should have their first calf at 2 years old. Puberty is determined by age and weight in concurrence. After weaning, heifers are grown and developed to reach a "target" age that is based on their breed type and an estimated "target" weight for the first breeding. Research conducted during the late 1960s through the early 1980s indicated that puberty occurs at a genetically predetermined weight. Only when heifers reach their target weight can high pregnancy rates be obtained. Age targets are 12 to 14 months for English breeds such as Angus and Hereford, and 15 to 16 months for Continental breeds, such as Charolais or Simmental, and American breeds like Brangus or Beefmaster. Straight-bred or predominantly Bos indicus breeds typically reach puberty later and are usually not bred until they are 2 years old in order to calve first as 3-year-olds. The target weight is usually 60 to 65 percent of "expected" mature weight. Some research has reported that heifers developed to lighter target weights (50 to 57 percent of mature body weight) or those that were fed restricted diets were able to reach puberty and breed at acceptable rates.[15, 16, 17, 18] It should be noted that in studies that used mature cow weight, these weights were estimated from extensive databases and were essentially a "known" factor. Most producers can only guess what expected mature cow weight is, given the variation in mature cow weight within most herds. Target weight as a percentage of actual expected mature weight can be difficult to predict accurately. Therefore, the 60 to 65 percent rule probably offers some "insurance" when estimates of mature weight may be off.

If producers are interested in measuring and managing weight gain during development, one methodology might be:

1. Obtain individual heifer body weights at weaning;
2. Determine the correct target age and weight at first breeding for puberty;
3. Calculate the number of days between weaning and first breeding;
4. Calculate the needed average daily weight gain needed to reach the target weight (target weight–weaning weight/number of days);
5. Check-weigh heifers midway through the development phase (some might even prefer to weigh heifers every month); and
6. Adjust the feeding program if weight gain is too low.

[15] Funston & Deutscher, 2004
[16] Funston, Martin, Larson, & Roberts, 2012
[17] Roberts, Geary, Grings, Waterman, & MacNeil, 2009
[18] Endecott, Funston, Mulliniks, & Roberts, 2013

Research has shown that it does not matter if heifers grow at an even weight gain (the same amount each day) or at an uneven rate (low to high or high to low), as long as they arrive at the correct target weight for puberty.

Some producers may begin breeding yearling heifers 21 days prior to the start of breeding for their mature cows. In some environments, this may increase the chances of re-breeding as 2-year-olds. The trade-off is that there will be 21 fewer days to reach target weight for their first breeding as yearlings.

In summary, nutritional management of heifers is critical between weaning and the first breeding season. It can also be a factor during pre-weaning as well. Therefore, it is the overarching factor that influences age at puberty in heifers.[1] Nutrition is similarly critical prior to and after the birth of their first calf in order for successful re-breeding to occur.

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DRTX-PU-072 11/22

CAN THESE TREES BE SAVED?

Eric Taylor[1] and C. Darwin Foster[2]

A storm or other disaster can leave trees looking like there is no tomorrow. Major limbs may be broken or damaged, foliage may be shredded or stripped, or the bark may be torn or gouged. But what at first glance may look like mortal wounds are not necessarily fatal to a tree. Trees have an amazing ability to recover from storm damage.

FIRST, ASSESS THE DAMAGE

Before writing off a damaged tree as a "goner," homeowners should evaluate their trees by asking the following questions:

- Other than the storm damage, is the tree basically healthy and vigorous? If the tree is basically healthy, is not creating a hazard, and did not suffer major structural damage, it will generally recover if given first aid immediately after the storm.
- Are major limbs broken? The larger a broken limb is, the harder it will be for the tree to recover from the damage. If most of the main branches are gone, the tree may have little chance of surviving.
- Has the leader (the main upward-trending branch on most trees) been lost? In species where a leader is important to upward growth or a desirable appearance, saving the tree may have to be a judgment call. The tree may live without its leader, but at best it would be a stunted or deformed version of the original.
- Is at least 50 percent of the tree's crown (branches and leaves) still intact? This is a good rule of thumb on tree survivability. A tree with less than half of its branches remaining may not be able to produce enough foliage to nourish the tree through another season.
- How big are the wounds where branches have been broken or bark has been damaged? The larger the wound is in relation to the size of the limb, the less likely it is to heal, leaving the tree vulnerable to diseases and insects. A 2 to 3-inch wound on a 12-inch diameter limb will seal over with new bark within a couple of years.
- Are there remaining branches that can form a new branch structure? The remaining limbs will grow more vigorously as the tree tries to replace its missing foliage. Look to see if there are branches that can eventually fill out the tree's appearance.
- Is the tree of a desirable species for its location? If the tree is in the wrong location (such as a potentially tall tree beneath a power line), or is an undesirable species for the property (messy fruit, etc.), it may be best to remove it if it has serious damage.

THEN, MAKE THE DECISION

In general, the answer as to what to do about a particular tree will fall into one of three categories:

1: It is a Keeper

If damage is relatively slight, you should prune any broken branches, repair torn bark or rough edges around wounds, and let the tree begin the process of wound repair.

An easy call: A mature shade tree can usually survive the loss of one major limb. The broken branch should be pruned back to the trunk. In the months that follow, large wounds should be closely monitored for signs of decay.

Minor damage: Although the tree has been damaged, enough strong limbs may remain on a basically healthy tree to make saving it possible.

[1]Extension Specialist
[2]Associate Department Head and Extension Program Leader for Forestry

Too young to die: Young trees can sustain quite a bit of damage and still recover quickly. If the leader is intact and the structure for future branching remains, remove the damaged limbs and allow the tree to recover.

2: Wait and See

If a valuable tree appears to be a borderline case, resist the temptation to simply cut the tree down and be done with it. It may be best to stand back for a while and think it over. Remember that time is on your side. After careful pruning of broken branches, give the tree some time to recover. A final decision can be made later.

Easy does it: Resist the temptation to prune too heavily. Remember that the tree will need all the foliage it can produce in order to make it through the next growing season. Remove only the damaged limbs, then wait and see what happens.

Hold off: A healthy, mature tree can recover even when several major limbs are damaged. With large trees, a professional arborist should be brought in to assess damage and safely do any necessary pruning and branch removal.

3: Say Goodbye

Some trees simply cannot be saved or are not worth saving. If the tree has already been weakened by disease, if the trunk is split, or if more than 50 percent of the crown is gone, the tree has lost its survival edge.

Tree tragedy: This otherwise healthy, young tree has lost too much of its crown—the leafy head that is vital for survival. It will probably not be able to grow enough new branches and leaves to provide needed nourishment, and will never be able to regain its former beautiful shape.

Hopeless case: About all that is left of this tree is its trunk. The few remaining branches can not provide enough foliage to enable the tree to make it through another growing season.

Farewell to a friend: A rotten inner core in the trunk or structural weakness in branching patterns can cause a split trunk—the tree equivalent of a heart attack. The wounds are too large to ever mend, and the tree has lost its sap lifeline between roots and leaves. This tree is all but dead.

DO NOT TRY TO DO IT ALL ALONE

Some of your trees may have damage that is too close to call, or they may have hidden damage. If that is the case, you will need a tree professional to help you decide what to do. Do not hire just anyone who shows up at your door after a storm. Look for qualified arborists in the phone book or contact your state or city forester.

Vegetable Garden Planting Guide

for the Tyler Area

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
ASPARAGUS (Crowns)	■	■										
BASIL *				■	■			■				
BEANS, BUSH & POLE				■				■				
BEETS									■	■		
BROCCOLI *		■	■						■	■		
BRUSSEL SPROUTS *		■	■									
CABBAGE *		■	■						■	■		
CANTALOUPE (Muskmelon)				■			■					
CARROTS		■	■						■	■		
CAULIFLOWER *		■	■									
CHARD, SWISS		■	■						■	■		
CILANTRO		■	■						■	■		
COLLARDS/KALE *		■	■						■	■		
CORN, SWEET			■	■								
CUCUMBER				■			■					
DILL		■	■						■	■		
EGGPLANT *			■	■			■					
GARLIC (Cloves)								■	■	■		
LETTUCE (leaf)		■	■						■	■		
MUSTARD		■	■						■	■		
OKRA				■	■	■						
ONION (sets)	■	■										
PARSLEY *		■	■						■	■		
PEAS, ENGLISH/SNOW									■			
PEAS, SOUTHERN				■	■	■						
PEPPERS *			■	■			■					
POTATO, IRISH (Tubers)		■										
POTATO, SWEET (slips)				■	■							
PUMPKIN				■	■		■					
RADISH		■	■						■	■		
ROSEMARY*				■	■							
SPINACH		■	■						■	■		
SQUASH, SUMMER				■	■		■					
SQUASH, WINTER				■			■					
TOMATOES *			■	■			■					
TURNIPS		■	■						■	■		
WATERMELON				■								

* = TRANSPLANTS

Plant seed unless otherwise noted

By: Greg Grant, Smith County Extension Agent- August 2021

THINGS TO DO IN FEBRUARY

Plant Care

- Prune hybrid tea, grandiflora, and floribunda roses mid-month at 45-degree angles just above outward facing buds. Remove dead wood and crossing branches. Prune climbers after first bloom by removing oldest canes only. Prune shrub, tea, China, polyantha, and miniature roses with hedge clippers.
- Plant roses, groundcovers, trees, shrubs, vines, fruit/nuts, petunias, and snapdragons.
- Plant onion sets early in the month.
- Plant Irish potatoes around Valentine's Day.
- Begin to plant your garden with lettuce, cilantro, parsley, radishes, mustard, carrots, beets, turnips, broccoli, Brussels sprouts, kale, collards, Swiss chard, spinach, and cauliflower.
- Cut back frozen perennials and tropicals.

Pests

- Begin regular disease prevention programs for susceptible roses.
- Treat aphids on ornamentals with strong spray of water, insecticidal soap, or other appropriately labeled insecticide.
- At first sign of cabbage loopers on broccoli, cabbage, and cauliflower apply BT (Bacillus thuringiensis).

Odds and Ends

- Clean, sharpen, and oil outdoor tools.
- Check irrigation systems for missing or broken heads. Clean filters.
- Service mowers and power equipment.
- Clean out and/or mount bluebird nest boxes.
- Clean out and/or erect purple martin houses.
- Keep bird feeders filled with black oil sunflower seed.
- Keep bird baths clean and filled

Helpful Resources

Horticulture

East Texas Gardening with Keith Hansen: easttexasgardening.com
Facebook Page: *facebook.com/easttexasgardening*
Greg Grant 's Blog: *arborgate.com/greg-ramblings*
Facebook Page: *facebook.com/ggrantgardens*
Neil Sperry's Web Site: *neilsperry.com*
Facebook Page: *facebook.com/NeilSperryTexas*
Plant Answers: *plantanswers.com*
Texas Gardener Magazine: *texasgardener.com*
Facebook Page: *facebook.com/texasgardenermagazine*

Agriculture

Ranch TV: *https//ranchtv.org*
Facebook Page: *facebook.com/ranchtv/*
Texas A&M Wildlife and Fisheries Extension: *https://wfsc.tamu.edu*
Videos: *https://www.youtube.com/user/WFSCAgriLife*
Facebook Page: *facebook.com/wfscextension/*
Texas A&M Natural Resources Instiute: *https//nri.tamu.edu*
Facebook Page: *facebook.com/tamuNRI/*
Wild Pig Resources and Videos:*http://feralhogs.tamu.edu*

University Based

Texas A&M Aggie Horticulture: *aggie-horticulture.tamu.edu*
Facebook Page: *facebook.com/aggiehorticulture*
Integrated Pest Management: *ipm.tamu.edu*
Insect Answers and Information: *citybugs.tamu.edu*
Disease Diagnostic Laboratory: *plantclinic.tamu.edu*
Turf and Grass Care: *aggieturf.tamu.edu*
Texas A&M Forestry Service: *tfsweb@tamu.edu*
Soil Testing Information: *Soiltesting.tamu.edu*

Gardens

SFA Garden in Nocogdoches: *sfagardens.sfasu.edu*
The Garden at Texas A&M: *gardens.tamu.edu*

TEXAS A&M AGRILIFE EXTENSION

PRIVATE APPLICATOR TRAINING

Friday, February 2, 2024
Cotton Belt Building
1517 West Front Street, Suite 116A
Tyler, TX 75702
8:30 am to 12:00 pm

An opportunity to obtain the required training for Private Applicators. ***Training only, testing will not be offered during this training.*** The Texas Department of Agriculture no longer offers paper exams. ***Testing procedures will be explained during the training.***

Training is required for all Private Applicators. Study materials are available for purchase for $50 including the Private Applicator General Manual, the Texas Department of Agriculture's Laws and Regulations Manual, and all the handouts/worksheets needed for this training. These materials can be purchased ahead of the class for review or the day of the training. A $10 Registration fee will be charged for a total of $60.00 for this training course. **Cash, Credit Card, or check** made payable to the Livestock and Forage Committee.

Contact:
*To register for Training and/or to purchase study materials call (903) 590-2980

Anyone needing special assistance at an Extension program should contact the Texas A&M AgriLife Extension Office at (903) 590-2980 at least one week prior to the program or event.

OWNING YOUR PIECE OF TEXAS: KEY LAWS TEXAS LANDOWNERS NEED TO KNOW

February 20, 2024 - 9:00 - 4:00
Rose Garden Center
420 Rose Park Drive
Tyler, TX
Registration $75.00
7 Hrs CE's for Real Estate Agents

Speakers Include:

Tiffany Dowell Lashmet, Texas A&M AgriLife Extension Ag Law Specialist

Dr. Blake Bennett, Texas A&M AgriLife Extension District Economist

Program will address common issues facing landowners including:

- **Eminent domain**
- **Landowner liability**
- **Fence law**
- **Special use tax valuation**
- **and much more!**

Register online:

https://smith.agrilife.org/owning-your-piece-of-texas/

HERITAGE LAND BANK
We Have a Unique Perspective – Yours

TEXAS LAND ASSOCIATES
BROKERS THAT BUILD LANDOWNER LEGACIES

Anyone needing specific accommodations to participate in this educational meeting should contact Tiffany at 806-677-5681 at least five days prior to the event so arrangements can be made. The members of Texas A&M AgriLife will provide equal opportunities in programs and activities, education, and employment to all persons regardless of race, color, sex, religion, national origin, age disability, genetic information, veteran status, sexual orientation, gender identity, or any other classification protected by federal, state, or local law and will strive to achieve full and equal opportunity throughout Texas A&M AgriLife.

UPSHUR CO. FORAGE PROGRAM

1 HOUR CEU IPM

$15.00

February 15, 2024

GILMER GATHERS

755 US HIGHWAY 271 N,

GILMER, TX 75644

JOIN US AS CLINT PERKINS, SMITH COUNTY AG/NATURAL RESOUCE AGENT, PRESENTS THE LATEST FORAGE FACT. CLINT WILL COVER THE IMPACT OF SOIL FERTILITY ON PESTICIDE PERFORMANCE AND AS A WEED CONTROL MECHANISM.

REGISTRATION & MEAL:
5:00 PM TO 5:30 PM
PROGRAM:
5:30 PM TO 7:00 PM
QUESTIONS

RSVP BY FEBRUARY 12TH

EMAIL: tina.rosenbalm@ag.tamu.edu or 903-843-4019

Meal Provided By: CUTX

TEXAS A&M AGRILIFE EXTENSION

TRI-COUNTY BEEF & FORAGE CONFERENCE

SPONSORED BY TEXAS A&M AGRILIFE EXTENSION SERVICE: WOOD, RAINS & VAN ZANDT COUNTIES

FRIDAY, MARCH 1, 2024
8:30 A.M. - 3 P.M.
RAINS COUNTY FAIRGROUNDS
210 S. TEXAS STREET, EMORY, TX 75440

$30
Lunch included

3 CEU Hours

8:30 A.M.	Registration
9:00 A.M.	Using Soil Fertility as Weed Control Mechanism (1 IPM) *Clint Perkins - CEA - Agriculture & Natural Resources - Smith County*
10:00 A.M.	Break
10:15 A.M.	Toxic Plants and Control in Livestock Operations (1 IPM) *Dr. Vanessa Corriher-Olson - Professor & Forage Extension Specialist*
11:15 A.M.	Beef Cattle Management Decision Making 101 Stephen Gowin - *CEA - Agriculture & Natural Resources - Rains County*
12:15 P.M.	Lunch
1:00 P.M.	What Does It Cost to Run a Cow and Where to Save Money *Dr. Jason Banta – AgriLife Extension Beef Cattle Specialist*
2:00 P.M.	External Parasite Control for Beef Cattle (1 IPM) *Dr. Jason Banta – AgriLife Extension Beef Cattle Specialist*
3:00 P.M.	Adjourn

Please RSVP to your respective County Office by February 23, 2024, to guarantee lunch.
Rains: 903.473.4580 Wood: 903.763.2924 Van Zandt: 903.567.4149
If you need special assistance to participate in this program please contact your county office **one week prior** to the program

TEXAS A&M AGRILIFE EXTENSION

EAST TEXAS FRUIT, NUT, & VEGETABLE CONFERENCE

FEBRUARY 09, 2024

Rose Garden Center
420 Rose Park Dr
Tyler, Texas 75702

8:00 am Registration

8:30 am Blueberries
Dr. David Creech, Professor Emeritus-Stephen F. Austin University, Director SFA Gardens

9:30 am Muscadines and Bunch Grapes
Michael Cook Viticulture Program Specialist 11-North Texas, Texas A&M AgriLife Extension Service

10:30 am BREAK

10:45 am IPM on Tomatoes and Peppers (1 CEU)
Dr. Rafia Khan, Assistant Professor Extension Entomologist - Texas A&M AgriLife Extension Service

11:45 am LUNCH (Provided)

12:30 pm Pears
Dr. Andrew King, King's Nursery & Assistant Director SFA Gardens

1:30 pm BREAK

1:45 pm Blackberries
Dr. Tim Hartman, Assistant Professor & Extension Specialist - Fruit Crops, Texas A&M AgriLife Extension Service

3:00 pm Adjourn

How to Register: Website or Scan QR code below

https://smith.agrilife.org/fnvc/

TEXAS A&M AGRILIFE EXTENSION

Online registration is $25.00 per person
Cut off for registration is February 07, 2024 by 5:00 pm

Online registration will accept credit/debt card

(5 % convenience fee when using credit/debit cards)

(If you need assistance registering online stop by your local County Extension Office)

2024 Library Lecture Series

Sponsored by the Smith County Master Gardeners Association

A series of five programs designed to educate the community in all things gardening. The lectures are held the third Friday of each month, January through May, beginning at noon in the Taylor Auditorium of the Tyler Public Library.

1/19

Growing the Longview Arboretum: The Good, The Bad & The Muddy
Steve Chamblee, Executive Director, Longview Arboretum, brings a fast-paced behind-the scenes look at the development of the Arboretum from a pipe dream to a beautiful garden.

2/16

Things I Wish I Had Learned Sooner
Baxter Williams, Master Rosarian, American Rose Society, gives a light-hearted look at both the right information about rose horticulture against the historical lore that has been passed down.

3/15

Texas Superstar
Lynette Sewell, Master Gardener, will discuss the Texas Superstar program in which every effort is made to ensure that highlighted plants will perform well for Texas consumers.

4/19

Tried & True, New & Different, Plants to Try to Find and Use in Your Garden , **Keith Hansen, former Extension Horticulture Agent in Smith County**, will help us discover plants that may not be familiar to us, or , maybe they are.

5/17

Bloom Where you are Planted - Make Your Garden Fit Your Life
David Gary, Master Gardener, gives an inspiring presentation that serious gardening is possible despite physical limitations.

TEXAS A&M AGRILIFE EXTENSION

TEXAS MASTER GARDENER
TEXAS A&M AGRILIFE EXTENSION
Smith County

FRUIT TREE PRUNING & MANAGEMENT WORKSHOP

Friday, February 16, 2024

Location: 18777 CR 2107 Troup, Texas 75789

Agenda

10:00am	Importance of Soil Testing & How to Collect Soil Sample
10:15am	Fruit Production & IPM Strategies in East Texas
10:45am	Break
11:00am	Hands on Tree Pruning
12:00pm	Adjourn

ANTHONY BROWN

Prairie View AGNR Extension Agent, Smith County

BRANDON HAWKINS

Prairie View AGNR Extension Agent, Bowie County

Lunch will be served
Bring a lawn chairs & pruning tools
Cost of program is FREE
RSVP by February 14, 2024 by calling (903) 590-2980

PVAMU extension
COLLEGE OF AGRICULTURE, FOOD, AND NATURAL RESOURCES

agnr
AGRICULTURE AND NATURAL RESOURCES

Professional Landscape Maintenance Annual Conference

FRIDAY, FEBRUARY 23, 2024

Registration: 8:00 am *
Program: 8:30 am
Adjourn: 12:00 pm

Rose Garden Center
420 Rose Park Dr
Tyler, Texas 75702

English/Spanish translation for participant questions

$ 10.00 per person

CLINT PERKINS, AG/NR AGENT, SMITH COUNTY

Using soil fertility as a weed control mechanism in the landscape

DR. RAFIA KHAN , ASSISTANT PROFESSOR & EXTENSION ENTOMOLOGY SPECIALIST

Common landscape and nursery insect pests of East Texas and their identification

GREG GRANT, HORTICULTURE AGENT, SMITH COUNTY

Basic pruning in the landscape

*Pre-registration is an option, especially if companies would like to send multiple employees: please call (903) 590- 2980

CITY OF TYLER WATER UTILITIES

TEXAS A&M AGRILIFE EXTENSION

TEXAS A&M AGRILIFE EXTENSION

YOU ARE CORDIALLY INVITED

BACKYARD CHICKEN SEMINAR SERIES

Weekly Virtual Seminar on Topics Related to BackYard Poutlry

STARTS MARCH 18TH THEN DAILY

11AM-12NOON

EGG GRADER TRAINING CERTIFICATION SEPARATE AND STARTS 4/16 11AM-12NOON

Register for Backyard Workshop
@ https://tinyurl.com/2s28hew2

Register for Egg Grader Training
@ https://tinyurl.com/3vxbukxs

Contact Gregory.Archer@ag.tamu.edu with questions

CHICKEN BASICS

3/18 INTRO, HOUSING, LIGHTING

3/19 BREEDS AND NUTRITION

3/20 SELLING EGGS AND POULTRY AND FOOD SAFETY

3/21 HEALTH AND DISEASE

3/22 CHICKENS, YOUR GARDEN, AND THE ENVIRONMENT

EGG GRADER TRAINING

4/16 EGG COMPOSITION AND BIOLOGY

4/17 EGG MICROBIOLOGY AND FOOD SAFETY

4**/18** INTERIOR EGG QUALITY AND DEFECTS

4**/19** USDA GRADING STANDARDS

FRUIT GRAFTING & BUDDING WORKSHOP

Friday, April 5, 2024 * 9AM to 3PM

Gold Hall * 101 Elm Street * Hallsville TX 75650

REGISTRATION FEE: $50 - Lunch Included!

SPACE IS LIMITED TO 30 PARTICIPANTS!

Register via QR Code

This hands-on workshop will provide a thorough understanding of the art & science behind several propagation techniques. Training will include detailed demonstrations & hands-on practice.

Propagation Techniques: Cleft & Bark Graft, T-Bud, Chip-Bud, Four-Flap Graft & More!

Dr. Tim Hartmann
Extension Specialist and Assistant Professor
Texas A&M AgriLife Extension Service

ATTENDEES WILL TAKE HOME GRAFTED FRUIT TREES!

PARTICIPANTS SHOULD BRING THEIR OWN PRUNERS & GRAFTING KNIFES.

Questions?
Gregg County AgriLife Extension (903) 236-8429
Harrison County AgriLife Extension (903) 935-8413

TEXAS A&M AGRILIFE EXTENSION