

## **Falling For Colorful Foliage, November 4-10**

As our blistering, dry summer says goodbye and the air takes on a crisp, invigorating quality, we look forward to the gradual transformation of our trees in East Texas. Each year can be very different in the quality and the timing, but the transition from the lush green of summer to the often-vibrant hues of autumn is an anticipated delight. Have you ever wondered how trees develop their stunning fall colors?

The hopefully vivid annual display is primarily the result of a remarkable natural process that takes place within the leaves of deciduous trees. During the growing season, leaves are green due to chlorophyll, the amazing pigment responsible for the magic of photosynthesis, the process that converts sunlight into energy and subsequently fuels our planet. As summer fades, several factors trigger the changes we associate with fall color.

**Shorter Days:** As the days grow shorter in the fall, trees receive signals to prepare for the winter. These signals interrupt the production of chlorophyll, allowing other pigments to become more visible.

**Cooler Temperatures:** Cooler temperatures slow down the breakdown of chlorophyll, allowing other pigments, such as carotenoids and anthocyanins, to shine through.

Carotenoids are present in leaves throughout the year, but they are masked by the dominant green chlorophyll during the growing season. As the chlorophyll breaks down, the yellow and orange hues produced by carotenoids become more apparent. Trees like elm, hickory, and southern sugar maple often take on these warm colors in East Texas.

Anthocyanins, responsible for red and purple colors, are a little more complex. They are produced in response to excess sugars trapped in the leaves as photosynthesis slows down. Cooler nights trigger the creation of anthocyanins, resulting in the brilliant reds, oranges, and purples seen in dogwoods, red maples, and sweetgums.

Genetically, different tree species have varying amounts of these pigments, which contribute to the diversity of fall colors in East Texas. For instance, while red maples often produce vibrant reds, hickories typically showcase golden yellows.

Weather and soil conditions also influence the intensity and duration of fall colors. A cool, dry autumn with sunny days and chilly nights typically yields the most vivid displays. A drought year, on the other hand, may lead to leaves dropping early without a spectacular show. Wind and rain can spoil the painted party as well.

If you want to add a touch of fall color to your garden, consider planting tree species known for their brilliant autumn hues. In East Texas, some options include baldcypress, black gum, Chinese pistache (males only recommended), flowering dogwood, ginkgo (males only recommended), Japanese maple, pear, red maple, red oaks, sassafras, sweetgum, and white oak.

The transformation of East Texas trees into a breathtaking palette of fall colors is an annual gift. Understanding the science behind this process can deepen our appreciation of the natural beauty around us. If you want to check out a nice assortment of fall color in East Texas, visit the “Aceretum” (maple collection) at the Tyler Botanical Garden located within the Tyler Rose Garden. The Smith County Master Gardeners continue to expand the maple collection there adding more color and diversity each year. Fall color there generally occurs from mid-November into early December but is very weather dependent.

**Article Written By Greg Grant, Texas A&M AgriLife Extension Smith County Horticulture Agent**

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*Fall color in the Tyler Botanical Garden generally peaks around late November*

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**From Local to International, Agriculture Faces Multiple Issues, November 11-17**

I recently had to write a report over issues facing agriculture. This report was centered around one question. Discuss one issue that is currently impacting agriculture at the local, state, and international level? The hard part of this question was not finding issues, but picking just one issue at each level that I felt was the most important. I wanted to share with you today my answer to the above question as I believe these are important issues for everyone rather you are directly involved in agriculture or just enjoy eating food.

Local: Bermuda grass stem maggot is a relatively new pest effecting bermudagrass forage growers in eastern Texas. Bermuda grass stem maggot is a nonnative pest from southern Asia that was first reported in the U.S. in 2010. The pest was found in Georgia initially but has moved west across the southern U.S. with first reports in Texas during 2012 and 2013. The maggot is the larvae form of a very small adult fly. Damage occurs form the maggot feeding inside the stem killing the top two or three leaves of the shoot. Damage appears to be more prevalent in finer stemmed bermudagrass varieties like costal and tifton 44. Producers experience more damage in hay fields than pastureland as cattle will graze the top dead leaves. In hay fields growth will be stunted and yield loss can be expected in heavy infestations. As an extension agent I have noticed an increase in fields infected with the maggot and a general lack of knowledge amongst hay producers of this new pest. It appears that the pest is spreading and more education by forage experts and educators is needed to better prepare east Texas forage producers for this new pest. While new research has occurred on managing this pest in Texas, continued research will be needed to further develop managment plans and potential impacts. Additional herbicide trials can be utilized to help producers see the impact of this pest and herbicide control options.

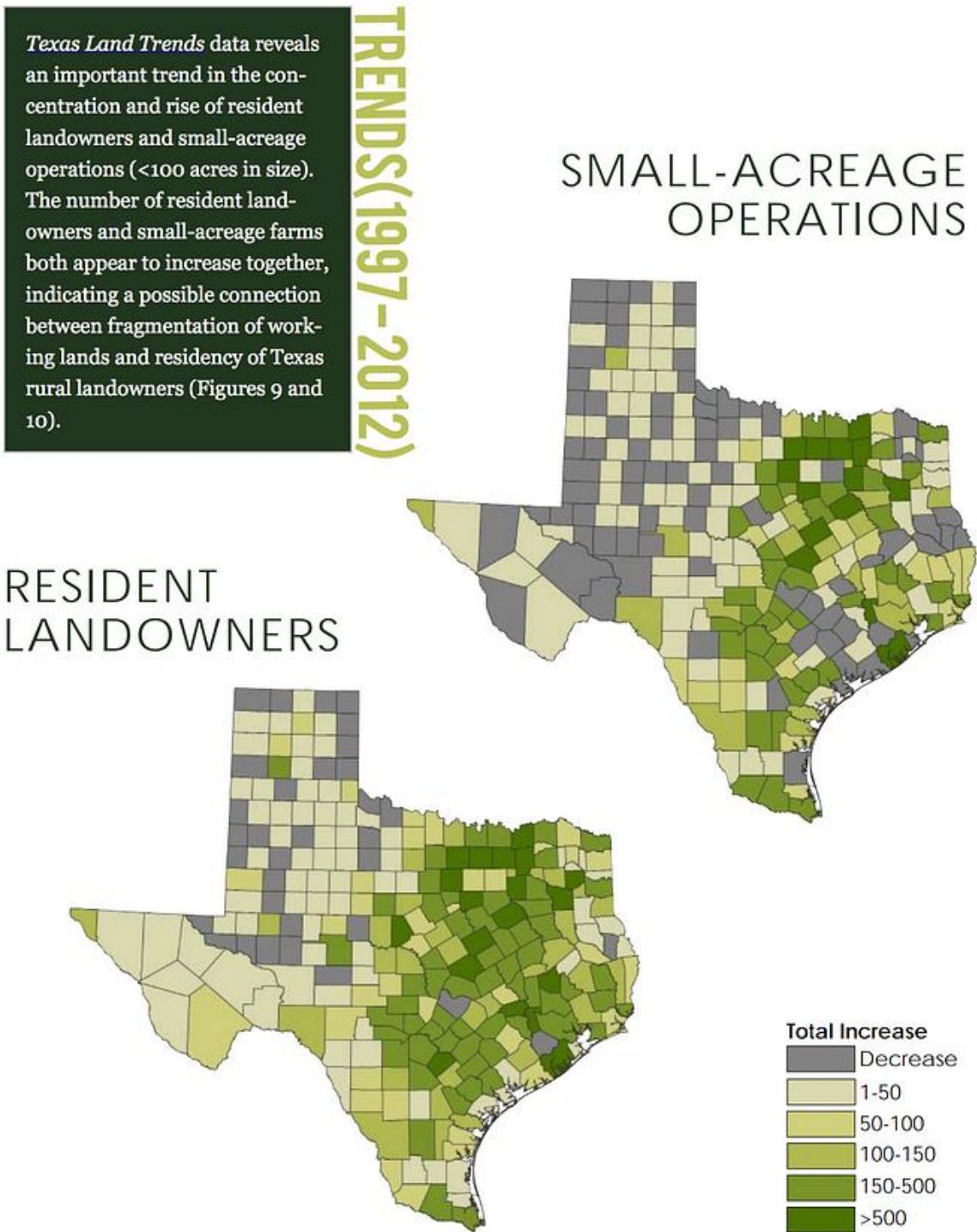
State: Changes in working lands across Texas. It is estimated that every year Texas loses quarter million acres to development. While this has an obvious impact to Texas agriculture and the avability of working lands it is also important to recognize other changes occurring. While Texas is gaining approximately 1,000 new farms and ranches a year the tract size is getting smaller exponentially as the average farm and ranch is now less than 100 acres in size. Landowners goals have also changed, the top 3 reasons for owning land is family recreation, hunting, and wildlife enjoyment. Around a third of Texas landowners have less than 10 years of

experience owning land and many live off the land in urban cores. Texas agriculture is changing as working lands get smaller, landowners goals change, and landowners skill level decreases.

International: Climate change has always been a hot button topic. While people tend to argue until they turn blue in the face for the causes of climate change, the impacts to agriculture are becoming hard to ignore. Climate change will affect agriculture worldwide by affecting yields, locations where crops can be grown, viability of certain crops, food supply chains, and famine in developing countries. Producers will need to adapt to challenges brought by climate change to ensure their operations remain profitable and governments will need to recognize these challenge to ensure food security worldwide. I am briefly going to review examples of how increasing temperatures, changing precipitation patterns, and increase levels of CO<sub>2</sub> in the atmosphere will affect agriculture. Increasing temperatures will have an impact on fruit production that requires chill hours like peaches. Peaches require a certain amount of chill hours during the winter to set fruit in the spring. In Georgia warmer winters are causing required chill hours not to be reached in peach production is being hampered. On the flip side warmer winters may support a growing citrus industry in Georgia. Changes in temperature are also affecting wildlife which is important for hunting, wildlife tourism, and animal agriculture. In northeast U.S. and southern Canada moose populations are moving further North, decreasing hunting revenue to some local cities. While southern States like Texas is seeing more tropical birds regularly attracting birders from around the world. Changing wildlife populations will affect animal agriculture in temperate regions around the world. As tropical wildlife species expand into temperate regions, they can be vectors for tropical diseases that can impact animal agriculture. Changing precipitation patterns will affect staple crops such as corn, soybean, and wheat. Some studies expect in the next 50 years corn yields will be reduced by 5%-15% in important corn growing regions such as the U.S. Midwest, Central America, and Sub Sahara Africa. Increase levels of CO<sub>2</sub> in the atmosphere benefits woody vegetation over warm season grasses. While all plants utilize CO<sub>2</sub>, woody vegetation is better equipped to utilize increased levels of CO<sub>2</sub> than warm season grasses due to different photosynthesis pathways. It is believed this is one reason for the increase of woody vegetation in grassland ecosystems as woody plants can outcompete warm season grasses. Increased woody vegetation impacts the productivity and stocking rate of grazing lands along with altering water avability and wildlife habitat.



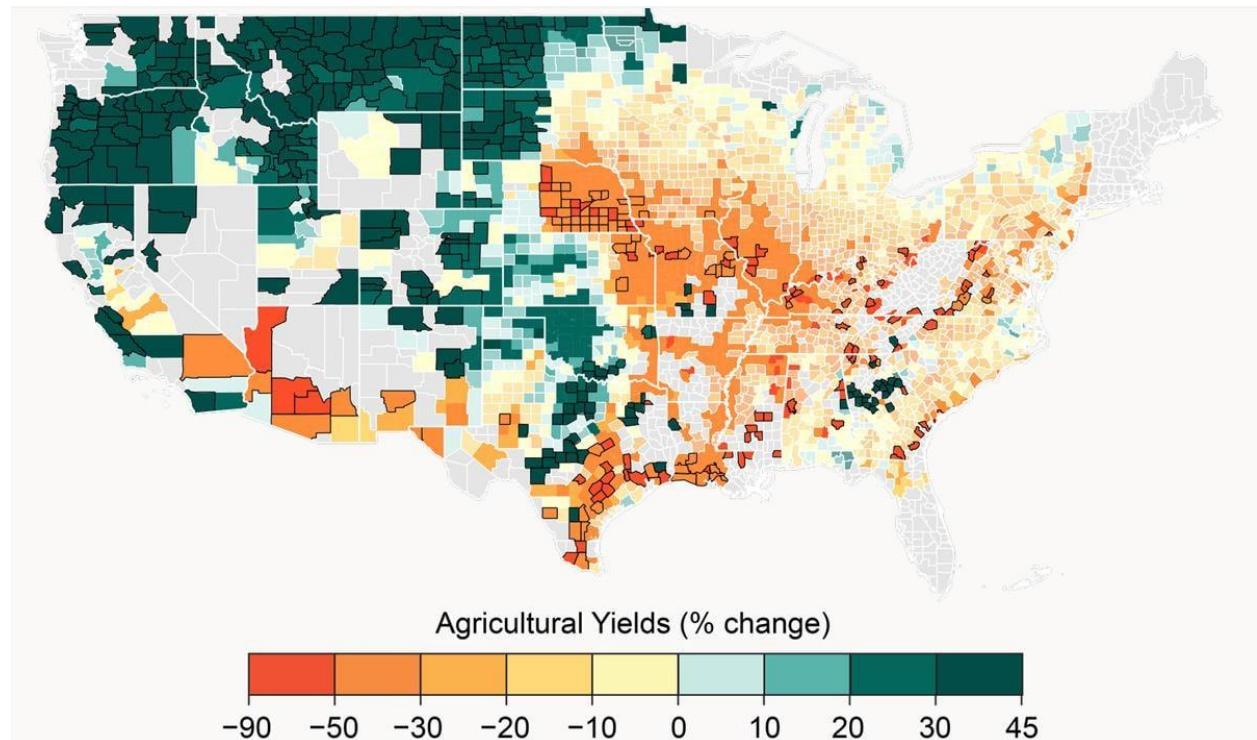
*Bermudagrass Stem Maggot (Photo courtesy of Joe Janak)*



(Top) Total change in small acreage operations (<100 acres) by county (1997–2012) (Bottom)

Figure 10. Total change in resident landowners by county (1997–2012)

*Texas Land Trends, Texas A&M Natural Resources Institute*



*Projected impact of climate change on yields of corn, wheat, soybeans and cotton by the years 2080-2099. Areas where yields are projected to decline (warmer colors) include some of our most important agricultural regions, such as the Corn Belt and California's Central Valley.*

*Map: Fourth National Climate Assessment, Figure 7.6 (Source data: Hsiang et al 2017).*

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**Sweet Potato Facts, November 18-24**

Sweet potato casserole may steal the spotlight at the Thanksgiving meal, but sweet potatoes are a nutritious vegetable that can be enjoyed year around. Sweet potatoes are an excellent source of vitamin A, with one cup of cooked sweet potatoes providing 768.7% of your recommended daily value of vitamin A. Vitamin A helps the body fight off infection. Sweet potatoes are also a good source of vitamin C which is a powerful antioxidant helping to defend your body against cell damage.

Sweet potatoes are a tropical plant that is well adapted to east Texas due to our warm humid summers. The plant originated from Central America where it is grown as perennial plant, which means sweet potato vines can live for multiple years. However, in the U.S. sweet potatoes are treated as a

warm season annual crop meaning the plant completes its entire life cycle in one year. Texas is the fifth largest producer of sweet potatoes in the U.S. and production is centered around Van Zandt County.

Sweet potatoes are a member of the morning glory or Convolvulaceae family and sweet potato vines resemble ornamental morning glory species known for their vines and colorful flowers. It should be noted Irish potatoes belong to the nightshade or Solanaceae family.

Varieties suited for Texas include Beauregard, Centennial, Jewell, and Vardaman. Sweet potatoes should be planted on sites that receive full sun. Plants grow best in well-drained, fine sandy loam soil with a slightly acidic pH. Soil that remains routinely wet will cause rot and disease issues. Sweet potatoes can handle extremely hot temperatures and can also tolerate light frosts. However, since the plants thrive best during hot days and warm nights they should be planted well after the last expected frost in the spring and at least 150 days before the first expected frost in the fall. Before planting incorporate 19 ounces of 15-5-10 fertilizer per 100 square feet. Work the soil into mounds 8 inches high and 36 inches wide. Space the mounds 3-4 feet apart.

Sweet potatoes are planted from slips not from seeds or transplants. Slips are also known as vine cuttings. Slips can be produced at home by buying disease-free sweet potatoes from a local market. Clean and then cut in half. Using toothpicks, suspend each half over a jar of water, submerging half of the piece in water. Place the sweet potato near a window. You will need to change the water regularly. Over the next few weeks, shoots will form on top. When ready to plant, carefully break off the shoots with any attached roots. These are the slips that you will plant.

Maintain even soil moisture throughout the growing season, in general sweet potatoes require 1 inch of water per week. Stop watering 2 to 3 weeks before harvest. Weed control is very important to allow the vines to cover the soil fully.

The best time to harvest sweet potatoes is immediately before or just after the first fall frost. Sweet potatoes bruise easily so be careful when harvesting and handling. Sweet potatoes can be cured to increase the sweetness of the potatoes harvested. To cure, place unwashed potatoes into a high humidity environment, at a temperature around 85 degrees for two weeks.

While sweet potato casserole may be a popular dish it is not a very healthy recipe due to all the added sugar. A healthier recipe you may want to try this Thanksgiving is seasoned roasted sweet potatoes.

### **SEASONED ROASTED SWEET POTATOES**

- 2 pounds (~3 large) **sweet potatoes**, peeled and cut into 1/2-inch pieces
- 2 tablespoons **olive oil**
- 3/4 teaspoon **fine sea salt** (*kosher salt; use less if using table salt*)





- 1/4 teaspoon **freshly cracked pepper**
- 1/2 teaspoon **ground chili powder\***
- 1/2 teaspoon **paprika**
- 1/2 teaspoon **garlic powder**

Preheat the oven to 425 degrees F.

Peel and cube the sweet potatoes into 1/2 inch pieces.

Place cubed sweet potatoes into a large bowl. Add the olive oil, salt, pepper, chili powder, paprika, and garlic powder on top. Toss to coat all the sweet potatoes.

Spread sweet potatoes out on a large sheet pan sprayed with a little bit of olive oil. Arrange cubes of sweet potatoes in an even layer. You don't want any potatoes overlapping or you'll end up with steamed potatoes instead of roasted potatoes. Bake for a total of 27-35 minutes. Flip the sweet potatoes over about every 10-15 minutes.

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**Livestock Guardian Dogs: Unsung Heros of the Livestock Protection Business, November 25 - December 1**

Livestock guardian dogs are rockstars in the canine world, even if most people never see them perform live. These unique animals are so important to the ranching industry that the Texas A&M AgriLife Research and Extension Center in San Angelo created an entire program dedicated to these livestock protection professionals. Livestock guardian dogs protect the lives of sheep, goats, poultry, and other livestock from predators in the area, and reduce financial losses that come with losing livestock. They save the lives of livestock and act as a deterrent to predatory wildlife, thus reducing the need for ranchers to use traps or lethal means to protect their livestock.

Until the turn of the century, livestock guardian dogs were not popularly used nor needed within Texas. But coyotes and other predator populations have grown and threaten the livelihoods of ranchers. "Early settlers of the major sheep and goat producing regions of Texas had nearly eradicated the common predators of small ruminants," explained Reid Redden, Ph.D., Texas A&M AgriLife Extension Service sheep and goat specialist, Department of Animal

Science associate professor and center director at San Angelo. “When numbers of predators began to rise, most ranchers lacked the understanding of how to best manage livestock guardian dogs under Texas ranching conditions.” Predators took a toll on animal numbers, financially hurting ranchers and in turn driving down livestock numbers while driving up costs for wool, meat and related products. The Livestock Guardian Dog Program in San Angelo was established to help address persistent predator problems by giving ranchers an alternative, cost-effective means of keeping livestock safe. “We have seen lambing and kidding increases up to 100% in less than a year when a producer uses livestock guardian dogs to protect his livestock versus trapping and other methods,” said Bill Costanzo, AgriLife Extension livestock guardian dog specialist, San Angelo. Increased survival rates for lambs and kids — baby sheep and baby goats — which are often an easy meal for predators, show the livestock guardian dogs’ direct impact to ranching operations’ bottom line.

Livestock guardian dogs have been utilized around the world for hundreds of years. Specialized breeding programs are in place to produce livestock guardian dogs that have the natural instincts, temperament and talent to protect livestock. There are specific breeds used as livestock guardian dogs. Despite being born into the business, livestock guardian dog puppies require training and early exposure to the species they will be protecting to increase success. If a puppy is bonded to sheep or goats or any other animal when young, it will naturally take the role of being the protector of what it considers to be its “family.”

For the past five years, a bonding project has been in place at the center to see how livestock guardian dog puppies best bond to the species they protect. The findings help breeders and producers put best practices in place to ensure their dogs work as well as possible with their livestock. The program has also studied whether puppies raised together work better protecting as a team, or if a solo dog or dogs previously unknown to each other perform better at their jobs.

What do livestock guardian dogs do? Simply put, livestock guardian dogs save animal lives. They protect livestock in several ways:

- Territorial exclusion. The dogs set up and monitor their territory regularly.
- Disruption. They disrupt normal predator behavior by being in pastures or on the range with livestock, which is a deterrent.
- Direct confrontation. Livestock guardian dogs will confront predators in their territory threatening their livestock and chase them away.

What don't livestock guardian dogs do? If you have an image of a dog chasing a herd or flock around, that is not a livestock guardian dog. Ranchers use herding dogs for herding tasks. Livestock guardian dogs are essentially livestock bodyguards. These dogs also are not family pets. Although they are familiar with their owners and may enjoy seeing them, they are attached to the animals they protect and prefer to stay with them. Livestock guardian dogs are not trained to kill predators, they deter predators. However, they will also not let a predator attack livestock without a fight.

The Texas A&M AgriLife Livestock Guardian Dog Program was established in 2017. In 2019, the Livestock Guardian Dog Bonding Project was formed. No other university or extension system has a program as large and as effective as the one in place where AgriLife Extension specialists collaborate with Texas A&M AgriLife Research scientists and students. These animal science experts study livestock guardian dogs to improve all facets of their health, life and working success — from puppy to professional protector. Redden said the program was designed to dispel commonly held myths of livestock guardian dogs, including that they cannot be socialized to people. The program was also implemented to improve best-management practices from weaning to adulthood, so that more dogs are trained and provided the guidance and tools to do their job. Work by the livestock guardian dog team includes:

- Studies on roaming behaviors and the use of tracking collars.
- Field days showcasing the latest research for ranchers and producers.
- Educational webinars featuring experts and industry leaders.
- Studies on the best methods for bonding the puppies with livestock.
- Publishing articles, blogs and papers outlining study findings.

The ongoing work, studies and educational programs being done by AgriLife Extension and AgriLife Research helps ranchers and producers not just in Texas but across the U.S. protect their livestock.



Articles November 2023

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