United States Department of Agriculture
Natural Resources Conservation Service

Helping People Help The Land

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The Reverchon Naturalist

Recognizing the work of French botanist Julien Reverchon, who began collecting throughout the North-Central Texas area in 1876, and all the botanists/naturalists who have followed ...

Extreme Heat Survival for Plants 2012

Story by Marilyn Sallee
Cross Timbers Native Plant Society of Texas
& Tarrant Master Gardeners
Annetta, Texas

If the drought and heat of the summer of 2011 fried your yard, get ready for the heat of the summer of 2012. Speaking at the Wichita Falls water conference in October, 2011, KFDX Meteorologist Bryan Rupp explained that the precipitating cause of the heat, La Niña in the Pacific, is in place again for this summer, and may extend a year or more after that. Look for more heat records to break, less rainfall, and more extreme conditions to come.

In general, the climate trend shows all areas of Texas receiving less rainfall than the historic average. Now it is time to learn how to conserve water, live with the heat, and landscape for drought. Native plants have lots of experience and good coping skills to deal with heat and drought. To help them do their best in extreme conditions we need to see their world through their eyes.

Plant Survival Skills

Most people are aware of the way some plants will droop or fold their leaves in the heat of the day to conserve moisture. When that trick isn't enough, some plants actually drop their leaves and look dead, but they are just holding onto the moisture in their roots. Those black, leafless stems or even bare-branched shrubs and trees are just doing what they need to survive. Many will come back from the roots once the cooler temperatures and moisture return in the fall. Do not rip out a plant just because the top looks dead. Watch for new growth around the base of the plant this fall or next spring. They have been highly stressed and will need extra care, but many may come back just fine. The best of them will come back after repeated drought stress – those are the individual plants learning and adapting to new climate conditions. Treasure them.

This photograph shows the Upright Prairie Coneflower (Ratibida columnifera), also called Mexican Hat, during last year's record drought and heat making a comeback. (Photo courtesy of Marilyn Sallee)

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See You Down the Road

By Ricky Linex
NRCS Wildlife Biologist
Weatherford, Texas

Being a Meteorologist Must Be a Tough Job

Being a meteorologist must be one of the toughest jobs there is—never always right, sometimes more wrong than right, and even when you do your job to the best of your ability, no one appreciates the talent and experience it took to make that prediction that indeed materialized 48 hours later. Meteorologists are often the bearers of bad news, especially during extended droughts, heat waves or ice storms. We can always retreat into our humble abodes where the temperature can be moderated and comfort can be found. However, for the free, wild and natural plants and animals out there, how we treat the land impacts the growth potential and survival of these species.

Most folks were beginning to forget the weather extremes of 2011 with the blessed rainfall that much of north central Texas received during the winter and early spring. Everything greened up early, the wildflowers were 3-4 weeks ahead of normal, wheat was being cut in the Abilene area the first week of May – fully a month earlier than normal; but now we remember what it is like when the rains become scarce, and the temperatures are higher than normal. The meteorologist now calls our attention to the above average high and low temperatures for the day, so is this foretelling of what is to come for the summer? How quickly the green colors of late winter and early spring have turned straw brown across the landscape. A flurry of growth from these cool-season annual grasses and forbs falsely painted the picture that the drought was over. These annuals, some of which were intentionally planted, such as annual ryegrass, took the welcomed moisture from the sky and quickly made their annual growth producing large quantities of seeds that will lay dormant during the hot, dry summer only to quietly invade the land again next winter. Now the brown pastures and roadsides thirst for moisture while the warm-season grasses, forbs and trees must make do with whatever soil moisture remains.

Warm-season perennial plants that were abused in 2011 by livestock or by mower are in low vigor and still need rest to allow leaf growth which allows for roots to grow and replace those roots lost to drought and over-grazing. Short tops on herbaceous plants means short roots. Short roots are less able to pull the remaining moisture from the grip of the soil particles. The all important roots gather the raw materials such as water, nitrates and minerals which are converted into plant food by the leaves. Roots also serve as storehouses for food which is essential for initial green-up or regrowth. The leaves are the food factories. In the presence of sunlight they combine carbon dioxide from the air and water, nitrates and minerals from the soil to make plant food.

Perhaps we are not out of the drought after all. When you end the year 5-10 inches below normal for several years in a row, are you ever really out of a drought? Those who work the land for a living and those who gain enjoyment and leisure from tending gardens are the epitome of faith demonstrated in actions and deeds. They plant seed in the hope and belief that sufficient rains will come to make a crop. Sometimes that crop is annually planted as wheat, corn or cotton and sometimes the crop is perennial grasses, native or otherwise. We depend upon both types of crops for our existence. How we care for the land will determine our future as it has since the first plow was pulled across the virgin prairies and cleared woodlands of our nation. The wise use of our natural resources will keep Texas looking like Texas. A little rain never hurts either. What chances for average rainfall does that wise meteorologist give us for this summer?

(Continued from page 1 — Extreme Heat Survival for Plants 2012)

Conversely, many short-lived perennials survive the extreme conditions by giving up, and putting their all into seed production. Some of those amazing bloom displays in the heat were the plant making sure its seeds had a good chance. It put all its life-energy into making flowers and seeds. It may look great, but that is its final hurrah. Save those seeds to make new plants if the parents don't leaf out in the spring.

Again, this is the plant trying to develop coping skills. Some of those seeds may have traits to help them survive more extreme conditions in the future. Some native seeds actually rely on the extreme conditions to germinate their seeds. You may know that some seeds need special harsh treatment to sprout. The heat and sun pounding them all summer is another way to scarify or acid-etch to penetrate thick seed-coats or crack tough shells. From buckeyes to bluebonnets, watch for those slow-geminating seeds to put out new life in the more extreme years.

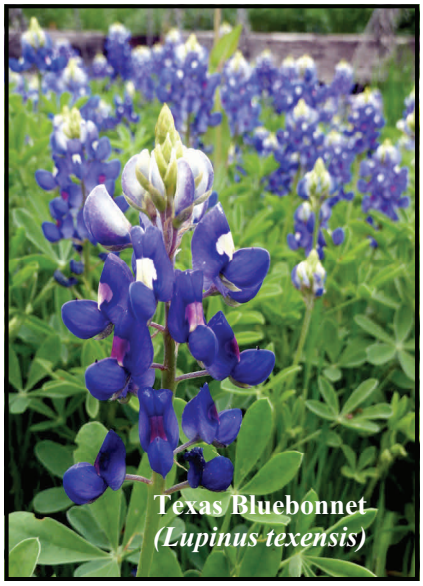
And then there are the true Texas-tough plants that actually do best in those extreme conditions. Many native plants, especially those from the western part of the state, saw the heat and drought as business as usual. They evolved to thrive in the extremes and have been tested through past drought cycles. Many of these plants actually preferred the drier soils and harsh conditions. These are the plants that do not do well in amended garden beds with regular watering – they can't take being treated nicely. They not only survive the heat, they actually thrive in it. Think amazing displays in the worst heat – like flame acanthus, Texas lantana or four-nerve daisy, or even the non-native crepe myrtle. The toughest Texas natives put on their best show when the temperatures soar and force the humans into air conditioned summer seclusion.

Texas is a big state with too many ecosystems to make a comprehensive, statewide list, much less publish it here. Plants that do well in the salt-marshes of Galveston may not handle the alkaline desert soils of El Paso or the acid and moisture of the Pineywoods. But you can collect the data you need for your area, create your own list of plants, and share it with others in your local chapters. These are the plants we will be watching for as the best drought and heat tolerant landscape plants as the drought continues.

It's time to start your own list of what survived and thrived in your area, look at others' gardens and make notes from your own and keep collecting the data through next spring, and even next year. Then share it with your local chapter. The extreme summers are giving us a great opportunity to learn about the extreme survivors in our local region and make better choices for the future.

The Flame Acanthus (Anisacanthus quadrifidus), above, just riots against the peak heat of the 2011 drought with bright red blooms. (Photos courtesy of Marliyn Sallee)

Even the state flower of Texas, the Texas Bluebonnet (Lupinus texensis), right, showed its brilliant colors during the record-setting heat and drought last summer.



Plains Coreopsis (*Coreopsis tinctoria*)

Story by Znobia Wootan
Junction, Texas

The relief of some long awaited, much appreciated frequent fall rains after a brutally dry summer has brought some hope for some spring color in the Texas landscape. There are some staple wildflowers that you can almost always depend on seeing in the spring: bluebonnets, lemon Mint, Indian blanket, prairie and clasping coneflower, Mexican hat and Plains coreopsis. Plains coreopsis (*Coreopsis tinctoria)* is not just another little yellow flower but a proven survivor.

It has the unique capability of producing a seed crop faster than any farmer finds comfortable even after the application of so called weed sprays. It is also a dependable warm season nurse crop for our native grass and perennials wildflower plantings in areas that are prone to erosion. Plains coreopsis likes well-drained sites that get adequate water and blooms in abundance after a wet spring. Bottom lands are often covered in the red highlighted yellow flowers. The seeds can be sown in late fall or early spring and are used in ornamental gardens and in wildflower meadow seedings from Canada to Mexico and from the east coast to the west coast.

Plains coreopsis germinates best when exposed to light, so planting in a sunny location directly on the surface and covering the seed very lightly with soil is recommended. Although it is considered an annual, sometimes it will bloom for two or three years if the weather cooperates. Plains coreopsis usually germinates in the fall and overwinters as a small rosette, which is a round low growing group of leaves.

A large percentage of wildflowers have this same growth cycle. In early spring the stems begin elongating and branching sometimes reaching a height of 4 feet, but usually around 2-3 feet. Anywhere this wildflower is planted it will draw pollinators of all types as it is a generous nectar source and birds love the seeds. At the end of the branched stems are numerous flower heads that are 1-2 inches in diameter.

Being an annual, the seeds must be allowed to mature and disperse in order for there to be more blooms the following season. The flower petals have a tint of red at the center, and they are used even today for producing red and yellow dyes. The flowers can also be boiled to produce a red beverage that has several medicinal uses. A majority of your landscape should be made up of the dependable performers such as Plains coreopsis in combination with as much diversity as you can add. This approach will always bring results upon the landscape. Consider your dependable performers as your meat and potatoes, and the herbs and spices would be the high diversity component neither one by itself is as good as the two combined. *(Photos courtesy Native American Seed Company)*

This Plains Coreopsis, left, grew from seed in a sunny location directly on the surface, and was covered very lightly with soil. Each seedpod, inset photo, can have hundreds of tiny black seeds inside. Also, interesting round blue-grey buds, right, open up into beautiful flowers with a splash of red.

Malta star-thistle

Every Master Naturalist's Nightmare and Yours, too …

Story by Sheryl Smith-Rodgers

Blanco, Texas

On a cloudy March afternoon, we stood alongside a shaded creek that ran through The Trails of Horseshoe Bay, a gated community in Central Texas with dedicated green spaces and a nature preserve. As part of our Texas Master Naturalist training, my classmates and I were studying riparian habitats with Natural Resources Conservation Service Wildlife Biologist Ricky Linex and Civil Engineer Kenneth Mayben.

As we meandered along, the pair discussed different soil types and pointed out native plants, like elbow bush, little bluestem and spike rush. Then Linex leaned down and yanked up a spiny green plant, roots and all.

"THIS is Malta star-thistle," Linex said, holding the specimen up for us to see. "This is bad stuff, and it's spreading everywhere!"

Earlier that morning, Linex had told me about the highly invasive species that's been as bad, or as worse than bastard cabbage (*Rapistrum rugosum*), the yellow-flowered annual that invaded the Hill Country this spring.

I knew firsthand about the bastard cabbage. A week before, my husband, James Hearn, and I had volunteered several hours, pulling bastard cabbage from open fields at Blanco State Park. I'd also seen blankets of the bastard cabbage covering roadsides, pastures, and even yards. I was quite relieved that we didn't have any in our yard. In 2007, our one-acre property on Ninth Street in Blanco was certified as a Texas Wildscape.

After the riparian workshop, I looked closer that evening at some healthy green plants thriving in our adjoining lot, which we call The Meadow. Uh, oh! Danged if we didn't have the dratted Malta star-thistle (*Centaurea melitensis*) in our Wildscape.

The next evening, we donned gloves and started hand-pulling thistle. The next day, I pulled up more and even walked across the street to yank up some growing in our neighbor's yard. In no time, we became experts at identifying the nasty stuff, both full grown and seedlings.

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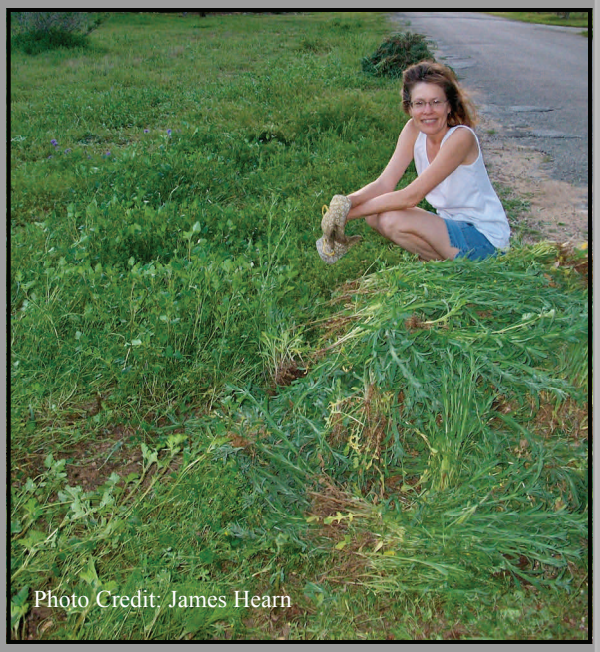

With donned gloves and battling the thistle, author Sheryl Smith-Rodgers, above, starts creating piled-up bunches near her home in Blanco, Texas.

(Continued from page 5 — Malta star-thistle)

At my computer, I reported our thistle to the Early Detection and Distribution Mapping System, a web-based mapping system for documenting invasive species distribution. The website was launched in 2005 by the Center for Invasive Species and Ecosystem Health at the University of Georgia. My record identification for our outbreak of Malta star-thistle is 2027636.

For many days, we pulled and bagged up Malta star-thistle from our property. I grumbled as I worked. There's no doubt in my mind that *Centaurea melitensis* deserves the lowly common name like the one bestowed upon *Rapistrum rugosum*.

While battling the thistle, I exchanged e-mails with Linex, and asked about how best to control the weed.

"There are chemical methods, but the plants might still produce seed because of the length of time required for the chemical to work," he replied. "Hoeing or pulling will get roots and all. According to a forest service publication, mowing and I suppose, weed-eating can cause the plant to send out side branches. Check out *Field Guide for Managing Malta star-thistle* on Google to read more."

I also asked if the piled-up bunches of pulled thistle could make seeds?

"If it hasn't produced yellow flowers, it won't make seed," Linex wrote. "The ones you've pulled were caught early so they are done. And I forgot to add that the untouched plants will bloom different heads through early summer."

By mid-May, my husband and I were still pulling and bagging thistle, but by no means did we get it all. Had we wasted our time? Had we accomplished anything at all? Depressed and frustrated, I e-mailed Linex and asked.

"Remember what Winston Churchill said during WWII," he quickly wrote back. "*We shall defend our island, whatever the cost maybe, we shall fight on the beaches, we shall fight on the landing grounds, we shall fight in the fields and in the streets, we shall fights in the hills; we shall never surrender*."

"We must be like the British and continue to fight, never giving up," Linex continued. "But the fighting has to involve more than just one or two caring souls; it must include the entire neighborhood, the entire city, county and even the state to push back this threat."

"It is a good fight," Linex concluded. "Keep up the good work!" And that we shall, Mr. Linex. That we shall.

Sheryl Smith-Rodgers works as freelance writer and photographer. This spring, she completed her Texas Master Naturalist training with the Highland Lakes chapter. Read her blog, "Window on a Texas Wildscape," at sherylsmithrodgers.blogspot.com. After finishing this article, she went outside and pulled more thistle.

The Importance of Seed Collecting

Story by Brandon Carr, NRCS Soil Conservationist
James E. "Bud" Smith Plant Materials Center
Knox City, Texas

Have you ever wondered where the plants came from that are planted in our conservation mixes? Releases from Plant Materials Centers and other private organizations initially come from individual seed collections. Seed collections are the first step in an extensive process that brings new plant materials to address individual resource concerns. Taking the time to identify superior plants and collecting the seed is crucial for solving these resource concerns.

Seed collection involves four steps. The first step is to identify the species. Species being collected by Texas Plant Materials Centers are located at http://www.tx.nrcs.usda.gov/technical/pmc/plant_collection_11.html. It is important to learn as much information as possible about different plant species. This will eliminate a bad seed collection due to misidentification, seed immaturity, and seed damage from disease or insects. The second step is to locate collection sites. When a desired plant is found, make notes or record GPS readings to ensure the plant can be found later. Collection sites need to be undisturbed areas such as woods, power line and railroad right of ways and known prairie remnants. Avoid areas that may have been commercially planted in the past such as roadsides and highway medians. Next, the collection site needs to be monitored. With the information learned in step one, determine the optimal collection time. Seed collections can be ruined if seed is harvested too early or too late. A general rule is that most seed will mature within 4-6 weeks after bloom. The final step is to collect the mature seed.

A good seed collection will come from at least 30 different plants, although more is even better. Seed collections should consist of as much mature seed as possible, but always leave some seed so that reseeding can occur in the area. Once seed is collected, it should be air dried and placed in a paper bag or seed collection envelope.

A plant collection form located at http://www.tx.nrcs.usda.gov/technical/pmc/docs/ecs580.pdf should be filled out and sent with the collection. The form provides information about the site where the collection was found. GPS coordinates are important because in some instances, additional seed may be needed and the exact place can be easily found. Seed should not be stored in a plastic bag as this can cause mold and rotting of the collection. Paper bags or envelopes work the best for storing the collection. The seed should then be sent to the plant materials center or organization that is making the collection. Upon arrival at the plant materials center, a unique accession number will be assigned permanently to each collection and testing can begin. The first seed collections selections are next.

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BRIT® Guide to Texas Range and Pasture Plants
By Botanical Research Institute of Texas (BRIT)

Description

This field guide developed for mobile devices is a valuable resource for individuals who want to better understand and appreciate key range and pasture plants of Texas. These plants have an impact on the economic well-being of our state's agricultural industries and the region's biodiversity.

This guide is intended for anyone who has an interest in Texas range and pasture plants, including farmers, ranchers, and naturalists. We've also included some features that are specifically intended for students throughout the state who participate in plant identification competitions. The Flashcard section lets you view a plant image and try to recall the name and other information that you've memorized, while the Identification Quiz lets you take a test and tracks your answers so you can get more practice that will help you in your competitions.

<u>BRIT Guide to Texas Range and Pasture Plants</u> was available starting in May 2012 for Android devices. It can be obtained in the Apple iTunes Store for your iPhone, iPad or iTouch. Please visit www.brit.org/rangeplants for more details about this informative field guide for mobile devices copyrighted by the Botanical Research Institute of Texas.

(Continued from page 7—The Importance of Seed Collecting)

Morphological Characteristics and Conservation Uses Are As Follows:

Morphological Characteristics:

- Perennial, cool-season bunchgrass
- Grows 24-36 inches tall
- Reproduces by seed mostly from April to June
- Leaves may be 3-10 mm wide and can either be smooth or have hair
- Panicle is 10-26 cm long with lowers branches usually compound, spreading, or ascending
- Found on Edward's Plateau and North-Central Texas regions
- Grows in open woods, moist canyon slopes and bottoms, rocky grasslands, and along stream banks
- Prefers partial shade and calcareous or sandy loam soils

Morphological Characteristics:

- Native, multi-stemmed, spreading legume, warm season perennial
- Stems are 2-10mm in length and are prostrate to suberect, Petioles are 2-5mm long
- Leaflets are narrowly elliptic or linear
- Distribution is in post oak savannah, blackland prairies, cross timbers and prairies, Edwards plateau, and rolling plains
- Found on prairies and open ground, rocky and clayey areas
- Fruit is long, narrow, and bunched on the end of the stems
- Flowering occurs from late May through June

Conservation Use:

Texas Plant Materials Centers have identified these plants as having potential benefits to the following conservation practice standards: 645 Upland Wildlife Habitat Management, 342 Critical Area Plantings, 562 Recreation Area Improvement, 550 Range Planting, 512 Pasture and Hay Planting, and 391 Riparian Forest Buffer.

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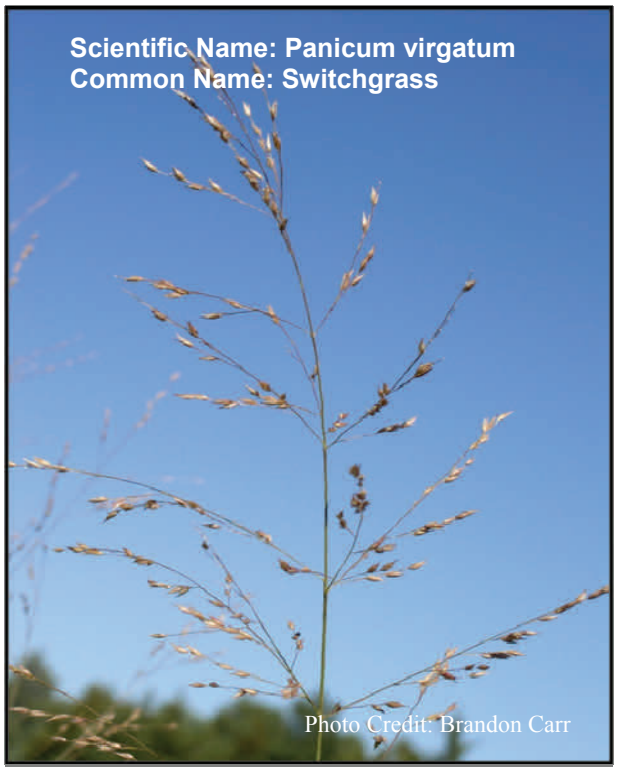
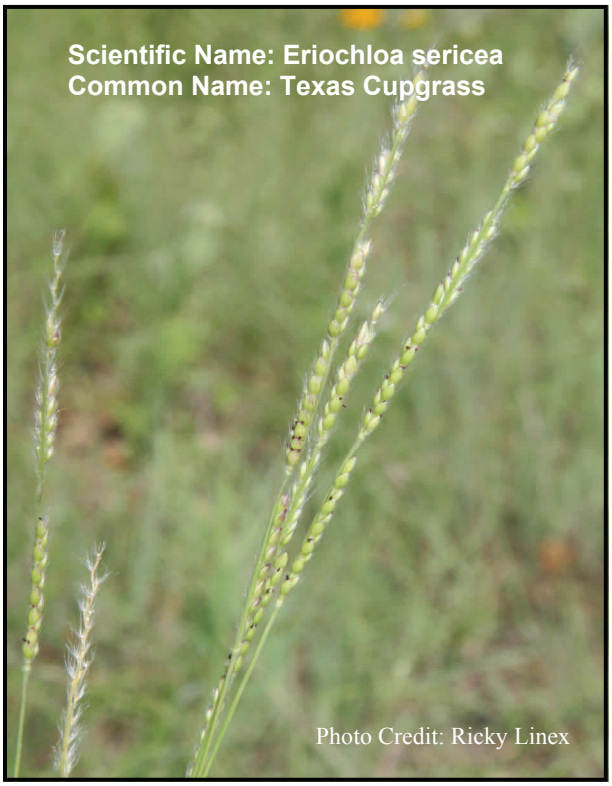
(Continued from page 8—The Importance of Seed Collecting)



Morphological Characteristics:

- Stems are erect 3 to 10 ft tall, robust, with short rhizomes; stems firm and tough with rhizomes are scaly and creeping
- Sheaths are rounded, often red to purplish at base; blades are 10-24 inches long and 1/8 to 9/16 wide, flat, elongate, adaxial surface at the blade base with a triangular patch of hair
- Distinguished from other warm-season grasses by the hair at the point where the leaf attaches to the stem at all stages of development
- Panicle is 6-24 inches long, pyramid-shaped, open with seed borne on the tips of the branches; lower nodes with branches in whorls
- The glumes are unequal, acute to acuminate, the first glume is 3/4th the length of the second and encircles the base of the second glume
- Starts growth in March and April and seed matures late August through October
- Ripe seeds sometimes take on a pink or dull-purple tinge, and turn golden brown in the fall; reproduces from seed, rhizomes, and tillers



Morphological Characteristics:

- Native, an erect perennial bunchgrass; warm season and can be found in North Central Texas, the eastern portion of the Edward's Plateau and Rolling Plains, and the Rio Grande Plains
- Reproduces by tillers and seed while seed presses tightly against the seed head and appears to sit in a small cup
- Leaves are 1/16 to 1/8 inch wide and 4 to 11 inches in length, plant height is 12-48 inches while blooming occurs from April through October
- Stem of seed head will have a zig-zag appearance after seed falls and usually grows on a clay or clay-loam soils in prairies or roadsides

Conservation Use:

Texas Plant Materials Centers have identified these plants as having potential benefits to the following conservation practice standards: 327 Conservation Cover, 645 Upland Wildlife Habitat Management, 342 Critical Area Plantings, 562 Recreation Area Improvement, 550 Range Planting, 512 Pasture and Hay Planting, 332 Contour Buffer Strips, 393 Filter Strips, and 528 Prescribed Grazing. The planting of Switchgrass and Texas cupgrass can provide excellent food and cover benefits for wildlife and livestock as well as help conserve our soil.

DALLAS LAND MANAGEMENT WORKSHOP FOCUSES ON NEEDS FOR SMALL RURAL PROPERTIES

Dallas, Texas – Landowners interested in learning methods to preserve or rehabilitate wildlife habitat will want to plan on attending a land management workshop presented by Texas Parks & Wildlife Department (TPWD) and Texas AgriLife Extension Service, with support from the North Texas Master Naturalist chapter, to be held on **Friday, July 27, from 8:00 a.m. to 4:00 p.m.** at the Texas AgriLife Research and Extension Urban Solutions Center, 17360 Coit Road, in north Dallas. Workshop topics will include maintaining habitat quality for wildlife, pond management and aquatic weed control, prescribed burning, erosion control and drought management, and wildlife tax valuation. The cost for the day-long workshop is $50 and includes lunch.

Presenters include **Dr. Dale Rollins**, quail expert and founder of the Rolling Plains Quail Research Ranch in Roby, who is a wildlife specialist at the Texas AgriLife Extension & Research facility in San Angelo, Texas, and will share his expertise on managing habitat for wildlife. **Billy Higginbotham**, professor and extension wildlife and fisheries specialist headquartered at the Texas AgriLife Research & Extension Center in Overton, will speak on pond management and weed control. **David Sierra** of the East Texas Ecological Education Center in Tyler, will cover techniques for prescribed burning, and **Michael Brooks** of the Natural Resources Conservation Service will speak on drought management and erosion control. Additionally, **Brett Johnson,** TPWD urban biologist, will speak about the fundamentals of wildlife tax valuation.

The event is being presented by the TPWD and Texas AgriLife Extension, in cooperation with the Texas Master Naturalists—North Texas Chapter. Sponsors include Long Star Ag Credit. Vendor booths and information tables are available. More information and registration are available online at www.ntmn.org/landownerwkshp or by calling Fred Burrell, County Extension Agent 214-904-3050, or Brett Johnson, at 972-293-3841.

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