

Cultivate

THE MAGAZINE OF THE STATE BOTANICAL GARDEN OF TENNESSEE

SUMMER/FALL 2025

**2X GOLD
WINNER**

*Gold for Graphic Design
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- 2025 ACE Awards*

UTGARDENS
INSTITUTE OF AGRICULTURE
THE STATE BOTANICAL GARDEN OF TENNESSEE



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Cultivate is the magazine of the State Botanical Garden of Tennessee. It is published twice yearly in cooperation with the UTIA Office of Marketing and Communications.

Photography is a combination of UTIA Marketing and Communications staff photographers and submitted photos.

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ACE Awards

The 2024 summer/fall issue of *Cultivate* won the Gold Award from the Association of Communications Excellence, and designer Nadia Harris won the Outstanding Professional Skill Award for graphic design.

FROM THE Managing Director



Summertime, and the livin' is easy Fish are jumpin', and the cotton is high.

Although these lyrics from the famous aria in the opera *Porgy and Bess* refer to Charleston, South Carolina, I suspect that from Mountain Home to Memphis, all of Tennessee can relate to at least two out of three of these summertime scenarios, with West Tennessee experiencing all three.

The dog days of summer are upon us, and those lazy, hazy, hot, and crazy days soon will give way to hints of fall. Farmers and gardeners by this time of year are a little wilted like thirsty hydrangeas, but we keep after the weeding and watering as best we can.

Our reward is allowing ourselves to experience front porch time, admiring our and Mother Nature's handiwork. Nothing is as satisfying as sitting back on the porch swing in the cooler part of the evening and enjoying the sights and sounds of the garden.

I have such fond memories of sitting outside under the shade of an old persimmon tree at my grandparents' place, listening to the chirping crickets and helping my grandmother snap beans while dad hand cranked the old machine making peach ice cream as we listened to my grandfather regaling us with his current "the one that got away" fishing story.

I get sentimental remembering those days, but the joy of recreating them in new ways helps keep me in the present. I now have my own neighbors to visit with over the garden fence; I get my ice cream already made from the local creamery and shop at the farmer's market for my garden-fresh produce. Sure, my garden is slightly weedier than in the spring—I need to get caught up on deadheading—and the bird bath seems to need constant cleaning and filling. Yet, I find walking barefoot through the grass viewing my garden in the late evening to be one of summer's great delights.

Enjoy the last days of summer, plan your fall planting by attending one of the UT Gardens plant sales, and, above all, keep your livin' easy.

James Newburn,
Managing Director
UT Gardens, Knoxville

SPECIAL THANKS

The faculty and staff of the UT Gardens would like to thank the hundreds of volunteers, members, and supporters in Jackson, Crossville, and Knoxville who continue to help our UT Gardens grow.

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ON THE COVER – RACHEL JACKSON ASTER
Photo courtesy of Whitney Hale, Education Coordinator,
UT Gardens Knoxville

IN SEASON

Rachel Jackson Aster

Whitney Hale, Education Coordinator,
UT Gardens, Knoxville

The longer I spend in the Gardens the more I believe that most of us find our best selves out there. Plants connect us through space and time, art, and culture. One such plant story is that of the Rachel Jackson aromatic aster, *Symphotrichum oblongifolium* 'Rachel Jackson' (formerly *Aster oblongifolius*).

You may have heard of President Andrew Jackson, who hailed from Middle Tennessee. But did you know that his wife, Rachel, was an avid gardener? Rachel cultivated the gardens around their home, known as The Hermitage. She died in 1827 and was buried in a tomb in the gardens. The president visited the tomb often and laid flowers at her grave.

Ryan Gainey, the late garden designer from Atlanta known for his exuberance and passion for plants and people, designed gardens all over the South. Gainey is also known for his plant selections that have made significant contributions to the plant market. One such selection is the 'Rachel Jackson' aster that he named.

S. oblongifolium 'Rachel Jackson' is a fall-blooming perennial that tends to be more mounding and clumping, creating swaths of striking purple in the landscape. Occasional division and cutting back in the early summer is necessary to maintain shape; it grows to be about 3 feet tall and as large as 10 feet wide. Blooming from late October into November, this plant provides late-season food for pollinators. It grows well in most soil types but prefers well-draining soil. Shade will result in leggier plants, but it still performs reasonably well in part-shade and excellently in full sun.

Though Gainey died in 2016, his love and understanding of plants lives on. It seems only natural that he would have selected a vibrant fall-blooming plant from the gardens of Rachel Jackson. This aster, connected to them both, continues to be a favorite among Southern gardeners.

'Rachel Jackson' Aster,
Photo Credit: Whitney Hale



Photo Credit: Gross & Daley Photography (NYC)
Courtesy of The Trustees

Naumkeag

5 Prospect Hill Road,
Stockbridge, Massachusetts 01262
413-298-8138
the.trustees.org/place/naumkeag

TRAVEL

Naumkeag: Where Garden Dreams Take Root

Michelle Reimert, Tennessee Extension
Master Gardener, Knox County

Perched on a hillside in Stockbridge, Massachusetts, Naumkeag is a horticultural masterpiece where history, art, and landscape architecture come together in dazzling harmony.

Originally built in the 1880's by Joseph Choate, a prominent attorney and later US Ambassador to the United Kingdom, the estate began as a refined Gilded Age retreat. His wife, Caroline, an accomplished artist and advocate for women's education, was instrumental in founding Barnard College. Naumkeag is the Native American name for Salem, Massachusetts, Joseph Choate's hometown.

Designed by Stanford White of McKim, Mead & White, the forty-four-room shingle-style summer home radiates understated elegance. But it's the gardens, full of movement, color, and personality, that have earned Naumkeag its place among New England's most beloved garden destinations.

The transformation of Naumkeag's grounds was the life passion of the Choates' daughter, Mabel. In the 1920's, she teamed up with landscape architect Fletcher Steele, whose flair for the dramatic and eye for the modern led to a thirty-year collaboration that produced one of the most imaginative garden designs of the twentieth century.

Steele didn't simply plant flowers; he composed landscapes. He softened the south lawn into a graceful curve that mimics the Berkshire ridgeline beyond. He carved out terraces for Mabel's treasured oriental tree peonies and layered crimson, gold, and tangerine roses along sinuous lines of blush-pink gravel. When Mabel asked for a more elegant path to her cutting garden, Steele responded with the now-iconic Blue Steps, an architectural cascade of sky-blue landings framed by white birch and clipped yew, descending the hillside like a waterfall.

Throughout the gardens, Steele struck a balance between classic beauty and playful surprise. He believed a garden should not appear new but instead feel as though it had grown into its setting over time. In the Afternoon Garden, he indulged in theatricality, intricate parterres, Venetian iron benches, a grape arbor, enormous fuchsia-filled urns, and candy-striped gondola poles—all creating a cheerful, captivating effect. Mabel adored this "joy and delight," as she called it, and hosted garden parties that lit up the hill with color and conversation.

"Of all the works of man, the garden alone...becomes more beautiful as the generations pass through it."
— Fletcher Steele

Mabel's global travels, especially to China and California, inspired many features, including the Chinese Garden with its moon gate and thoughtful plantings that evoke a sense of balance and discovery. Every corner of Naumkeag invites exploration, whether along a shaded Linden Walk, beside the serene Evergreen Garden, or through the dazzling layers of peonies, hydrangeas, and climbing roses that fill the estate.

When Mabel died, she left Naumkeag to The Trustees of Reservations, Massachusetts' conservation organization dedicated to preserving spaces of natural and cultural importance. Thanks to their stewardship, the gardens have been lovingly restored and are open to visitors from spring through fall. In 2007, Naumkeag was designated a National Historic Landmark District and is now operated as a nonprofit museum.

Today, Naumkeag offers more than a glimpse into the past. It invites you to step into a living canvas where imagination, horticultural vision, and timeless design bloom together.

MY FAVORITE THINGS

Stately Specimen

Bald Cypress Makes a Statement in the Landscape

Jason Reeves, Research Horticulturist,
UT Gardens, Jackson

T*axodium distichum*, or common bald cypress, is a long-lived, native pyramidal conifer that typically grows 50-70 feet tall and 20-30 feet wide. Although its foliage resembles that of a needled evergreen, it is in fact deciduous, as the common name suggests. Bald cypress makes a beautiful stately specimen.

In the fall, its soft needle-like leaves turn orange-russet to yellow and hold for weeks before dropping to reveal the reddish-brown fibrous bark. Its stout trunk, distinctive form, and compact branching give the impression of great age even when it is young.

Despite bald cypress' natural affinity for damp or even wet conditions, it performs well in most moisture levels and soil types. Few plants are happy in such a wide range of settings. It grows admirably in standing water to average unirrigated residential soils and is drought tolerant once established. Bald cypress tends to form knees (domed shaped upright root growth) in swampy to wet soil or irrigated soil but rarely does otherwise. Hardy in USDA zones 4 to 9, bald cypress can be used in the landscape in many ways. They look great standing alone, in groups, as an informal screen, and in a rain garden.

If you don't have room for a full-size bald cypress, there are several fun cultivars on the market. Smaller than the straight species, 'Peve Minaret' can grow 15-20 feet tall and 4-6 feet wide in ten to fifteen years. When grown in rich moist soil, as much as one and a half feet of growth can be expected per year. This cultivar's compact branches grow in a somewhat tiered upswept formation and produce smaller branchlets. These branches are heavily covered with beautiful quill-like leaves, creating an overall feathery effect that begs to be touched. The effect is almost Hobbit-like. It can be kept even more compact by pruning its branches back to 3-6 inches from the trunk in late winter every two to three years.

This type of pruning creates dramatic pygmies or Dr. Seuss-like slender trees covered with many short branches or minarets forming tufts of beautifully dense foliage.

Two other cultivars that offer unique ornamental appeal are 'Cascade Falls' and 'Falling Waters'. Both are weeping forms. 'Cascades Fall' was discovered as a chance seedling by Graeme Platt at his nursery in Auckland, New Zealand, in the late 1980s. I visited Graeme and Rosemary several times in the early 2000s when I was living in New Zealand and saw the original 'Cascade Falls' growing along their pond.

'Falling Waters' was introduced some years later and named after Frank Lloyd Wright's famous architectural masterpiece. It was originally promoted as one that would form its own leader right away, but that is not often the case.

Both 'Cascade Falls' and 'Falling Waters' can vary greatly in growth habits from plant to plant. Either can look like a giant Mr. Snuffleupagus from PBS's *Sesame Street* with multiple upright weeping leaders to one central leader with numerous cascading branches. To encourage one to form a leader, staking can help. I staked the 'Cascade Falls' I planted in December 2007 to about 8 feet. It is now 17 feet tall and 19 feet wide and one of the most asked about trees in the Gardens. I do feel 'Falling Waters' is more likely to form a leader on its own as well as easier to encourage by staking. Andy Pulte's 'Falling Waters' at his home in Knoxville formed its own leader when he planted it in 2013 and is now about 23 feet tall and 4 feet wide at the base. Conversely, a 6-year-old tree at the UT Gardens, Jackson, that was staked when planted and is 6 feet tall and 10 feet wide and is just now forming a leader. So just know if you plant either of these, the shape and form can really vary, but whatever you end up with will be fun to have.



Peve Minaret – Jason trims the branches back to 3-6 inches every other year on this trio of 'Peve Minaret' in the UT Gardens, Jackson, giving them a Dr. Seuss look.



Cascade Fall – A seventeen-year-old 'Cascade Falls' in the UT Gardens, Jackson, brings back childhood memories of Mr. Snuffleupagus from Sesame Street.

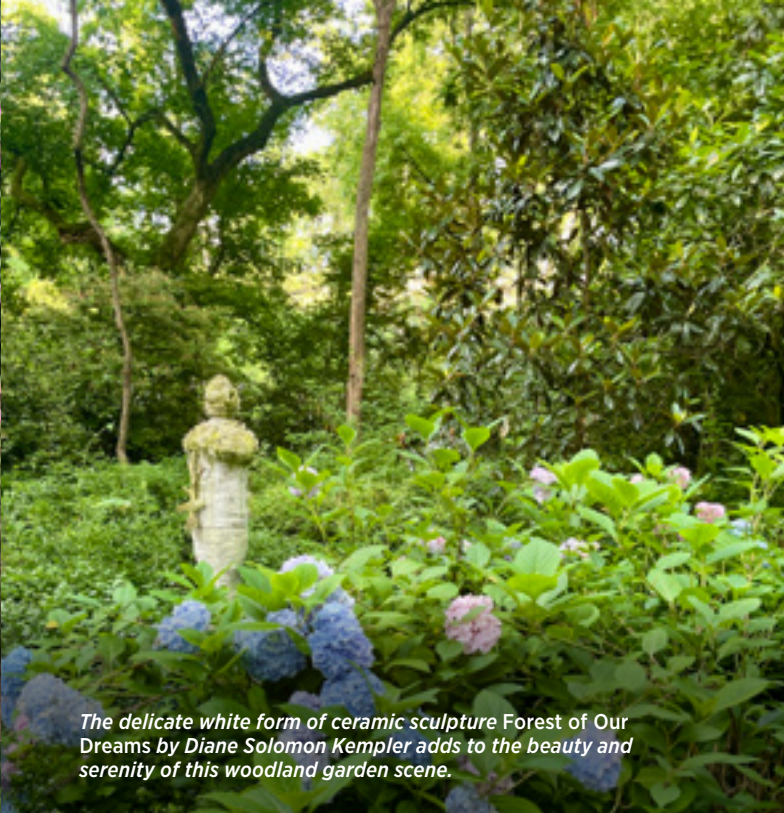
IN THE GARDENS
KNOXVILLE



It takes a dream team! Our summer interns, volunteers, and horticulture staff roll up their sleeves to bring the trial beds to life with bold blooms and bright ideas.



Our old pickup truck is brighter than ever, decked out in a burst of Suncredible yellow sunflowers from Proven Winners. Summer looks sunnier already.



The delicate white form of ceramic sculpture Forest of Our Dreams by Diane Solomon Kempler adds to the beauty and serenity of this woodland garden scene.



Frogs are beloved members of the sculpture collection. Visitors find them engaged in all sorts of relaxing activities.



Kids of all ages enjoy making music in the Children's Garden. These participants in the Volunteer Leadership Academy explore the Gardens while learning about careers in the green industry.



Big shoutout to our education coordinator Whitney Hale, third from the right, for teaming up with CAC Beardsley Community Farm to lead an inspiring community tour. Connecting people to plants—and each other—is what we're all about.



Big leaf hydrangeas grace the garden with luxurious flowers that range from pink to blue to deep lavender.



The Children's Garden hops with creativity this summer! Featuring the 2025 Art in the Garden theme "Bunny Tales," this whimsical display celebrates the imagination of our community's talented young artists.



The rustic artistry of this driftwood horse head sculpture captures the imagination in the garden's lower valley.



The surrounding forest provides a rich backdrop for this abstract metal dancer.

IN THE GARDENS
GATOP

IN THE GARDENS
CROSSVILLE



The Dragonfly Habitat was completed just in time for last year's Fall Gardeners' Festival by our class of 2024 Master Gardeners. They did a phenomenal job, and it has been a crown jewel in the Gardens. Not only have we had the opportunity to learn about dragonflies and their life cycle but tree frogs, too!



The Garden Buzz pollinator event is a great opportunity to help the community replenish our native pollinator plants. Master Gardeners educate visitors with the wonderful displays for bee and butterfly education they created.

IN THE GARDENS
JACKSON



Our whale's tongue agave (Agave ovatifolia) produced a flower stalk last spring. The plant only lives ten to twenty years before producing its iconic "death bloom" that can reach as high as 15 feet. Our desert spoon (Dasylirion wheeleri) bloomed alongside it, attracting thousands of pollinators to our dry bed of tree yucca, cacti, and other drought-tolerant selections.



Master Gardener Kristi Dubois enjoys a little fun in the sun, planting and weeding the butterfly garden. She has been part of the Adopt-a-Spot program for three years, and she participates in group education programs. A popular favorite activity Kristi created is the pollinator scavenger hunt.



More than 150 visitors attended our third annual Garden Buzz: The Celebration of Pollinators last June. We were excited to host a variety of family-friendly activities, including bee displays, honey tastings, educational booths, free plant giveaways, arts and crafts for kids, and a guided garden tour.



The beds around the old AgResearch Center flagpole now display a Mediterranean garden after a renovation in June 2024. We added a variety of drought-tolerant plants such as rosemary, lavender, dwarf figs, German bearded iris, and more, which are now well established.



Local nature enthusiast and photographer, David Clark, takes photos in the butterfly garden. Some of his photos have been used for our butterfly notecards as well as for local nature articles and classes.



We partnered with the Natural Resources Conservation Service and Quail Forever to create a natural pollinator patch in the Gardens. This section of native wildflowers and grasses serves as an example of both habitat for quail and a food source for pollinators. A variety of educational programs and tours have taken place, with future events planned to showcase this easy and impactful land management practice.

LEARN WITH US.

The UT Gardens sites in Knoxville, Crossville, and Jackson offer a number of ways to learn about the world around us. Join us for tours, lectures, workshops, plant sales, and special events suitable for all ages throughout the year.

KNOXVILLE

Plan now for the many classes, workshops, and events offered in the UT Gardens, Knoxville. All events require preregistration. Visit utgardens.tennessee.edu to learn more. Knoxville is located in the Eastern Time Zone, and event times are listed accordingly online.

CROSSVILLE

Classes and events are held at the UT Plateau AgResearch and Education Center in Crossville. Visit utgardens.tennessee.edu regularly for an updated list of happenings, or email ccmgnews@gmail.com to receive email updates. Registration is required for all classes. You may register in person at the AgResearch and Education Center office or by phone/email to Jennifer Burns at 931-484-0034, jburns35@tennessee.edu. Crossville is located in the Central Time Zone, and class times are listed accordingly online.

JACKSON

For more information regarding events, visit utgardens.tennessee.edu or call 731-424-1643. Jackson is located in the Central Time Zone, and event times are listed accordingly online. Watch Jason and Celeste on Facebook Live on select Mondays at 9:00 a.m. Central on the UT Gardens Jackson Facebook page.

FEATURED EVENTS

KNOXVILLE

- Oct 3 Fabulous Fall Plant Sale
Friday, 4:00 p.m.-7:00 p.m. (EDT)
- Oct 4 Fabulous Fall Plant Sale
Saturday, 9:00 a.m.-2:00 p.m. (EDT)

CROSSVILLE

- Aug 26 Fall Gardeners' Festival
Tuesday, 9:00 a.m.-3:00 p.m. (CDT)

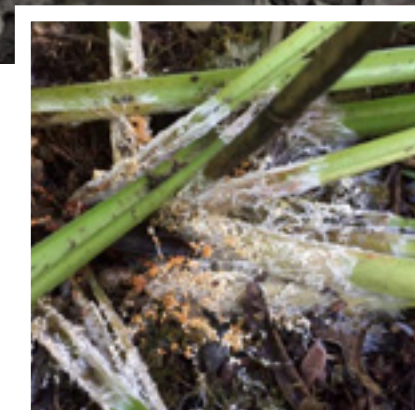
JACKSON

- Oct 2 Fall in the Gardens
Thursday, 9:00 a.m.-8:00 p.m. (CDT)
- Oct 3 Fall in the Gardens
Friday, 10:00 a.m.-2:00 p.m. (CDT)



Southern blight found on Jerusalem artichoke (*Helianthus tuberosus*)

Watch for signs of Southern blight in your garden. In this photo, notice the white fungal growth around the base and tiny brown sclerotia on the soil surface.



KEEP YOUR GARDEN HEALTHY

Southern Blight: A Persistent Threat to Tennessee's Gardens and Nurseries

Nar Ranabhat, Assistant Professor and Extension Plant Pathologist, Department of Entomology and Plant Pathology

Southern blight, caused by the soilborne fungus *Agroathelia rolfsii* (formerly *Sclerotia rolfsii*), is a widespread and destructive disease that affects more than 500 plant species. It is a notorious disease because of its wide host range and its ability to persist in diverse agricultural and garden settings. Tennessee's warm, humid summers create ideal conditions for the fungus to thrive. This aggressive pathogen poses a threat to a wide range of beloved garden and landscape plants. Hosta, hydrangea, azalea, ground cover creepers, aster, dahlia, daylily, peony, petunia, salvia, dogwood, and crabapple are among the many ornamental hosts susceptible to this pathogen. Once established, Southern blight can be devastating for both backyard gardeners, landscapers, and commercial growers.

"This aggressive soil fungus thrives in Tennessee's warm, humid summers, and it doesn't go away easily."

HOW DO YOU SPOT IT?

Monitor your garden and nursery production regularly and look for leaf scorching, wilting or flagging of leaves, collapsing plants, big patches on ground cover, white fungal growth around the base, and tiny brown sclerotia on the soil surface.

HOW DOES IT SPREAD?

Southern blight usually attacks plants at the base, near the soil surface, where the fungus produces cottony white mycelium at the crown and tiny brown sclerotia, which look like mustard seeds. These sclerotia can remain viable in the soil for years and withstand extreme environmental conditions. The disease spreads through contaminated soil and mulch, tools and equipment, water runoff, and infected plant materials.

PREVENTION AND MANAGEMENT TIPS

Prevention is key. Use sterile soil or potting mixture in the garden or containers. Plant resistant cultivars, if available. Sterilize tools and equipment between uses. Rotate crops with non-host plants. Remove plant debris regularly. Infected plants should be removed and destroyed. Remove the top three inches of soil from at least 12 inches beyond the infested soil. For soil solarization, cover infested areas with clear plastic for four to six weeks during the hottest part of summer to kill the pathogen. As with many plant diseases, keep an eye out for signs and symptoms of Southern blight, especially during the hot, humid days of summer, and act quickly if you suspect an infection. Preventive and curative fungicides may help in high-risk situations or during favorable weather conditions.

"Vigilance is your best defense. By catching symptoms early and acting quickly, you can protect your garden from this tenacious soil-borne threat."

Compost pile at the UT Organic Crops Unit

ORGANIC GARDEN METHODS

Picking the Right Fertilizer

Annette Wszelaki, Professor and Commercial Vegetable Extension Specialist, Department of Plant Sciences

Fertilizers supply essential nutrients that help plants grow and increase the yield of fruits and vegetables. With many fertilizer options, how do you decide which type of fertilizer to use? And what are the differences between organic and conventional (synthetic) fertilizers?

Organic fertilizers are derived from natural sources such as compost, animal manure, plant residues (i.e., cover crops, green manure) or animal by-products (i.e., fish emulsion, feather meal, blood meal, bone meal). They release nutrients gradually, enrich the soil with organic matter, and enhance microbial activity. This can help improve soil structure, water retention, and long-term fertility. Organic fertilizers also can pose a lower risk of polluting water sources through runoff, as their nutrients are less soluble than those in synthetic fertilizers.

Often growers or gardeners have an economical supply of manure or compost, but packaged organic fertilizer products like bone, blood, and feather meal and liquid organic fertilizers are often more expensive on a per nutrient unit basis. Furthermore, it will often take a much greater volume of those products to provide the same amount of nutrient as a synthetic product.

Another important consideration for compost and manure is knowing their source and ensuring that they are free of persistent herbicide residues—specifically from the pyridine carboxylic acid class of herbicides, including aminopyralid, clopyralid, and picloram. When animals eat forages from pastures treated with these chemicals, the herbicides can remain active in their manure even after passing through the animal’s digestive system. They also remain active after being composted. Residues of these herbicides can persist in the soil for more than a year after application of this compost or manure to a field or garden. These herbicides can cause reduced germination, stunted growth, and/or cupped or twisted leaves in garden plants.

For more information on how to be sure to prevent accidentally applying these herbicide residues to your garden, refer to UT Extension publication *Before You Plant: How to Check Your Soil, Manure or Compost for Possible Chemical Contamination from Herbicides*.

Conventional or synthetic fertilizers are manufactured from inorganic compounds, typically containing high concentrations of nitrogen, phosphorus, and potassium.

These nutrients are quickly available to plants, leading to rapid growth and higher yields. Some synthetic fertilizers are pelleted or coated to provide a more gradual release of nutrients over a longer period of time.

Conventional fertilizers are widely used due to their availability, affordability, consistency, and effectiveness. However, excessive or improper use can lead to environmental impacts such as eutrophication, the process where nutrient runoff stimulates algal blooms and depletes oxygen in water bodies, which in turn can harm aquatic life. Moreover, over time, synthetic fertilizer use can lead to the buildup of salts in the soil, which can decrease plant growth and yield.

There are many considerations when choosing a fertilizer, depending on your goals and the crops you are growing. By understanding the specific needs of your crops and weighing the benefits and limitations of different fertilizer types, you can make informed choices that support both plant growth this season and the health of your garden over time. Always be sure to do a soil test in the fall to ensure—no matter what type of fertilizer you choose—you are applying the right amount.

Resilience

The Post-Wild Pollinator Garden

Holly Jones, Horticulturist
UT Gardens, Knoxville

As the warm summer sun dries the dew from the wings of sleepy bumble bees and bright yellow goldfinches venture out to begin collecting seeds for their breakfast, the long winding perimeter of the great lawn at UT Gardens, Knoxville, lights up with a vibrant display of color, scent, and sound. Summertime is the peak season for flowers that provide nourishment for foraging insects and birds in this new meadow-inspired installation, but signs of life can be found year-round. Fall is rich with the ripening seed pods of Baptisia and late blooming asters. In winter, the slowly decomposing black button-shaped seed heads on hybrid Rudbeckias stand out against dormant straw-colored grasses. And in springtime the color deepens on evergreen sedges, tiny leaves begin to show as perennial geraniums break dormancy, and the growing cycle begins anew.

I was given the opportunity to design the planting scheme and guide the management of this 5,000-square-foot garden in fall 2022, and since that time, both the garden and I have been enriched. The goal was to transition the space away from an input-intensive annual flower and foliage display to a lower maintenance, ecologically rich, chemical free, dynamic plant community that still provides beauty and serenity for our guests. Based on the beneficial insect activity and the number of people that I see taking pictures, I think we are well on our way.

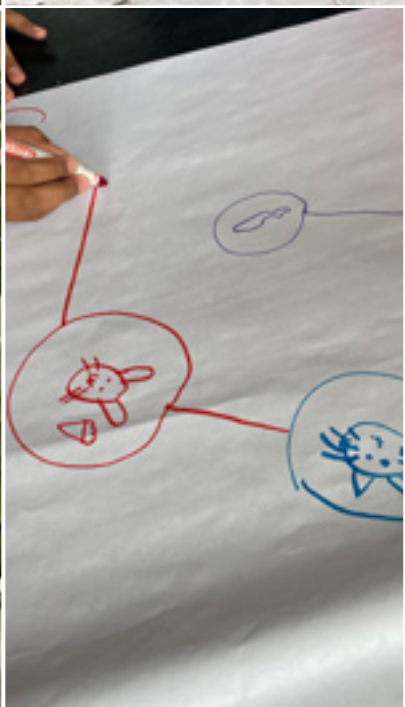
The name, Post-Wild Pollinator Garden came from the 2015 book *Planting in a Post-Wild World: Designing Plant Communities for Resilient Landscapes* by Claudia West and Thomas Ranier. Their guiding philosophy is that most gardens and designed outdoor spaces will never replicate untouched wilderness, and rather than reaching for the unattainable goal of a perfectly restored natural environment, gardeners should consider building attractive, environmentally responsible landscapes that support biodiversity while accepting and even celebrating human influence and engagement.

Some of the key management practices are delaying and reducing garden “clean-up” to provide nesting opportunities for native bees and other insects, reducing and eventually eliminating mulch applications to keep soil organic matter low and to allow for open areas that promote seed propagation, eliminating fertilizer inputs, minimizing irrigation, staying vigilant with weed removal and embracing an inclusive plant palate that allows for beneficial non-invasive plants. It is important to do your research and be both open-minded and careful when it comes to plant selection.

This dynamic garden is an ongoing experiment that will change each year as young plants come into maturity, seedlings appear in surprise locations, and we discover which plants grow well together in our unique climate.

For more information on invasive plants, check out the USDA National Invasive Species Information Center at invasivespeciesinfo.gov/terrestrial/plants.

For a list of plants in our Post-Wild Pollinator Garden, visit tiny.utk.edu/postwildplants.



RESEARCH SPOTLIGHT

Getting Rooted in GARDENING

Whitney Hale, Education Coordinator
UT Gardens, Knoxville

Will learning about growing fruits and vegetables in a garden help students excel in math and science? This is a question the UT Gardens, Knoxville, education team hopes to answer. Initiated by Whitney Hale and Derrick Stowell, the team is currently conducting social sciences research as part of the largest federally funded project the Gardens has been awarded as the primary recipient. The project aims to make connections between horticultural education, green careers, and classroom instruction.

“Getting Rooted in Gardening” is among nine grants awarded to organizations across the nation through the Food and Agriculture Service Learning Program of the US Department of Agriculture’s National Institute of Food and Agriculture. UT Gardens, Knoxville, won a competitive grant worth \$220,455.

The goal is to understand how to best reach young people who will grow up to engage in the green industry and who will lead healthier lifestyles here in Tennessee and beyond. The project has four main components. First, the team developed a series of nine lesson plans that were taught in eight fourth-grade classrooms. Each class took a pre- and post-test to evaluate learning. The data will help determine if lessons aimed at improving understanding of specific science and math standards using gardening and nutrition lessons are worthwhile and viable ways to support classroom learning. This is important because teachers are evaluated on how their students perform on these tests, and students receive different placements and feedback based on their scores, too.

Many people in the horticulture community believe that gardening and nutrition lessons are valuable, but this research will provide data to either support that claim, tell us how to best implement a curriculum such as ours, and possibly whether it is worth taking classroom time or not.

The outcomes will take us further in understanding how public gardens can best support students and teachers.

Additional elements of this project include activities at the Gardens and for educators. To support teachers, the Gardens will share curriculum, host workshops, and provide a school garden guide crafted specifically for East Tennessee. Our garden guide and many other parts of this project were made possible through another component, which is the service-learning element. With funds from this project, four Community Action Committee AmeriCorps members, who each worked forty hours a week for seven to ten months, and camp interns helped run the final component of this project, which is summer camp and field trips. Of course, these are perennial programs, but this funding helps provide scholarships and even bus stipends to make these impactful experiences more accessible to all in the community.

Since the project started in 2023, the team members have all grown significantly by learning new skills, more about the green industry, and creating a network of support within the community.

This project would not be possible without the help of CAC AmeriCorps, Rooted East and Knox County Community Gardens and Growers Alliance, UT Extension Knox County, Knox County Schools, CAC Beardsley Community Farm, and so many others.

“Getting Rooted in Gardening” is funded by the United States Department of Agriculture National Institute of Food and Agriculture Food and Agriculture Service-Learning Program under award number 2023-70026-40845.

The content in this article has not been formally disseminated by the US Department of Agriculture and should not be construed to represent any agency determination or policy.

Children and adults alike love to learn by doing! Here you see our program participants' handiwork.

— KNOXVILLE —



Sylvia and Donald Rifkin, who graduated from the Knox County Master Gardener class in 2024, bring skill sets and backgrounds that are both deeply aligned and beautifully complementary. Sylvia serves in the Adopt-A-Spot program. Donald supports her work every step of the way and offers his skills as a builder. This winter, the pair helped us rebuild the Hobbit Hole in our Children's Garden, which had started to deteriorate after years of play.

The dynamic duo are no strangers to public service. They met in Miami in the 1980s, where both worked in law enforcement. Sylvia served as a 911 call-taker for twenty-seven years, and Donald served thirty years on the police force and twenty-seven in the Coast Guard Reserve. After retiring, they moved to Sequatchie County first and then Knoxville.

Sylvia draws inspiration from her grandmother, who was a talented green thumb. "She used to speak to the plants," Sylvia says. Today she volunteers not only with UT Gardens but also with the community garden at Concord Methodist Church and the Knoxville Botanical Garden. She credits gardening with keeping her healthy and clearing her mind.

In addition to his passions in woodworking, forestry, beekeeping, and ornithology, Donald serves with the Coast Guard to this day. As a member of the Knoxville Auxiliary Flotilla, he coordinates free training and safety checks on boats of all sizes. After all their years as civil servants, they continue showing up for others. "This is how we keep things moving—how we show the young people to give back," they say.



— CROSSVILLE —

Master Gardener Don Molen is a great addition to the volunteer team. He's hardworking, motivated, always willing to take on new tasks, and fun to be around. Don first came to the Gardens last year as a community volunteer. He moved from Campbell Hall, New York, to Crossville because of the beautiful mountain views, open pastureland, rural peace, and friendly people. Volunteering is a great way to meet like-minded people, learn about gardening in a different environment, and it fulfills the need to get your hands dirty.

"The love of gardening is deeply rooted within my family—from the early age of being my grandmother's little helper in her rose garden to planting and maintaining my mother's backyard oasis," Don says. That early passion led to a degree in landscape design and nursery management, followed by a career in the green industry. No wonder he has proven to be a valuable asset so early on.

Don recently led a team to revamp our water feature. It is a huge improvement and once again a highlight in the space. We are eager to see what project Don takes on next.

— JACKSON —

Gardening means something different to everyone. For many, it's a way to connect with the natural world or a tradition passed down through generations. If you ask Cathy Gilliam, a Madison County Master Gardener, plants are how she makes a difference.

"People tell me that seeing flowers blooming at my house always lifts their spirits and brightens their day. That's exactly why I do it," she says.

Building on a love of gardening instilled by her mother, Cathy began the Master Gardener program in 2009. At the time, she was still working at Lifeline Blood Services in Jackson, Tennessee, a career she cherished for twenty-eight years. Her lifelong commitment to service now continues through her volunteer work as part of the Greenhouse Crew at UT Gardens, Jackson, where she found a team of passionate plant enthusiasts, who she now considers friends—and even family.

For fifteen years, she has helped maintain thousands of plants and supported educational programs that inspire future generations of gardeners. To Cathy, it's all about creating a space that nurtures joy, beauty, and connection.

"I often see children and families exploring the displays. Gardens that wouldn't exist without our volunteers," she says. "God creates so many beautiful things we can share with the community, and that's something worth growing."



EARTHTONES

BEYOND THE BLOOMS

Stewardship Practices Support Beneficial Insects in the Home Garden

Celeste Scott, Extension Horticulture Specialist,
Western Region

Designing home gardens to support pollinators has been all the buzz in the gardening world, and enthusiasm only continues to grow each year. Have you ever found yourself Googling “best plants to support bees” or “native host plants for butterflies?” If so, you are in good company, and your efforts towards environmental stewardship are commendable.

While it's true that our beloved pollinators rely on a steady and varied supply of floral and foliage resources from spring through summer, what about the rest of the year? As home gardeners, how can we continue to support pollinators and other beneficial insects through the fall and winter?

Let's take a moment to look beyond the blooms and discover other unique relationships between flora and fauna that work together to build a thriving community of beneficial insects in the home garden. Have you ever wondered where all the insects go during the dormant season? Many insects such as leafcutter bees, resin bees, and mason bees overwinter in their larval or pupal stages, hidden inside hollow plant stems. Others, including lacewings, lady beetles, and numerous butterfly species take shelter beneath the protective cover of leaf litter or bark. Blue-winged wasps, bumble bee queens, and syrphid flies, burrow into the soil for protection. As cooler weather sets in, we can intentionally support many of these insect populations by rethinking a few of our routine fall garden chores.

An easy change is to leave the stems of various herbaceous and woody plants standing throughout the winter months. Many insects rely on these hollow stems as shelter for their eggs and developing young. Different species prefer different stem diameters. For example, leafcutter bees prefer 6-millimeter-diameter holes while mason bees prefer 8-millimeter-diameter holes. These preferences make it important that gardeners leave behind a variety of plant material.

Allow stems to dry out and remain standing through the winter. If spent flowers are unsightly, you can trim the heads off. However, you may like to leave select seed heads that are beneficial food sources to birds (*Rudbeckia*, *Echinacea*). In the spring cut the stems back to varying heights between 18 inches and 24 inches. By then, the stems will be dry and hollow, creating ideal nesting sites. As new growth emerges, it will eventually outgrow and mask the standing stems that were left behind. As summer comes along, insects will begin to lay their eggs in the hollow stems. Continue this cycle each year, leaving a mix of old stems (now hosting insect egg/larvae) and fresh stems to be used the following season.

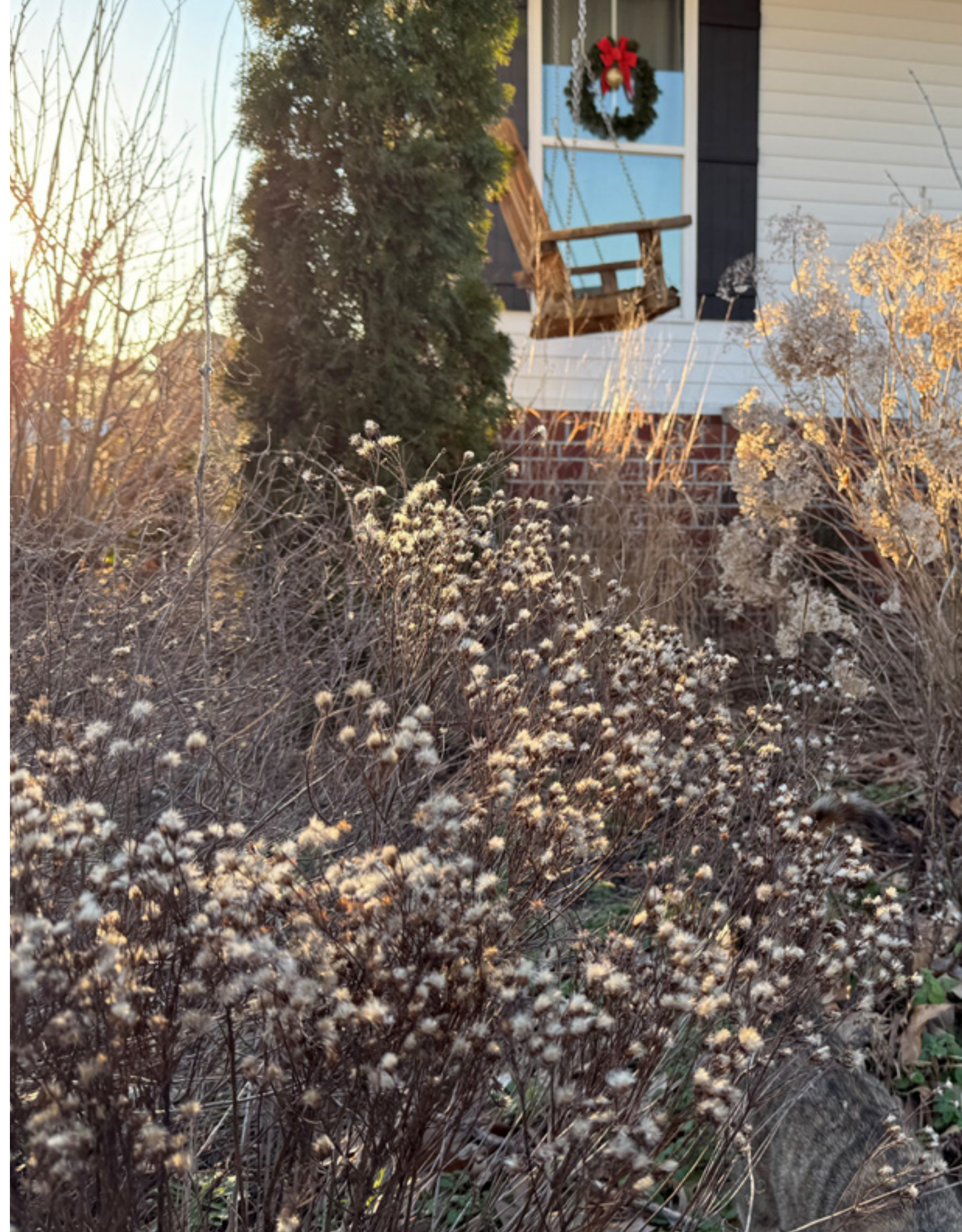
Another simple adjustment to the fall chore list is to leave more leaves. It sounds easy, and it is, but there are a few key things to keep in mind. Many beneficial insects overwinter in leaf litter as larvae or pupae, often tucked inside cocoons, attached to the underside of leaves or stems or wrapped in leaf litter as camouflage.

To protect them, it is important that the leaves remain whole. Avoid shredding or mulching leaves if they are being moved to another location. Instead, lightly rake or use a leaf blower on a low setting to reposition them without damaging the fragile life hiding within.

Adopting and implementing these practices can be challenging, especially for gardeners who prefer a highly manicured aesthetic in the landscape, but these actions don't have to be blanket practices. If you like the tidy look of hardwood mulch in the front landscape, consider leaving more leaves in a lower-traffic area. If you prefer a managed look near your patio, try the standing stems method in a less prominent area, or experiment with just a few plants to see how it feels for the season. Oftentimes, gardeners who traditionally do a thorough fall clean-up find they enjoy the unexpected beauty that standing stems add to the winter landscape.

Ultimately, you are the one who decides where the balance falls for your home garden. But these simple adjustments can make a big difference. They help preserve pollinators and bolster predatory insect populations, which can naturally reduce pest insects and the damage they inflict. What gardener doesn't love that?

*For more information on stewardship practices for home gardeners that support beneficial insects, visit: TN Smart Yards at tnyards.utk.edu
UT Hort at UTHORT.com
Xerces Society at Xerces.org*





Home Sweet Home

A Look Inside the Hive

Jennifer Tsuruda, Assistant Professor and Extension Specialist
Department of Entomology and Plant Pathology

A parasitic Varroa mite on the thorax of a newly emerged adult honey bee.

After a long and exciting active beekeeping season in the spring and summer, many beekeepers welcome the cooler weather and shorter days of fall. While many think this is the down time for beekeeping, the reality is this period is critical for ensuring colonies survive the winter.

Management opportunities decrease in the fall and winter, but collaborative research to understand winter honey bee biology provides beekeepers with information to make management decisions. This supports honey bee populations but also fosters the health of other pollinators that interact with honey bees and facilitates the pollination of crops and landscapes.

There are many types of bees and other pollinators that are valuable and important for our ecosystems, but being managed pollinators, it is easier to quantify and track challenges of honey bees through national surveys of beekeepers across seasons and operation types. In January 2025, early reports of losses were higher than previous years, so Project Apis m., a non-profit organization that supports the beekeeping community, surveyed nearly 850 beekeepers managing roughly two million colonies. They found hobby beekeepers (each managing one to forty-nine colonies) lost an average of 51 percent of their colonies, sidelineer beekeepers (each managing fifty to 500 colonies) lost an average of 54 percent, and

commercial beekeepers (each managing more than 500 colonies) lost an average of 62 percent, totaling more than 1.6 million colonies, with an economic impact estimated at over \$600 million.

The US Department of Agriculture (USDA) sampled commercial operations for disease pathogens, pesticide residues, issues related to Varroa mites (a parasitic mite that transmits honey bee viruses and feeds on developing and adult bees), environmental factors, and management. They linked the early-2025 high losses to high virus levels and signs of Varroa mites with resistance to a commonly used Varroa miticide.

These concerns are not new, but they highlight the urgency for integrated pest management (IPM) strategies against Varroa mites and their associated viruses.

The good news is that the UTIA apiculture program has been collaborating to provide beekeepers with timely information for IPM of Varroa mites. Along with other land-grant universities, the USDA, and beekeepers, we focus on winter monitoring (monitoring is a principle of IPM) to better understand when we can treat Varroa mites in honey bee colonies with an organic acid product (which does not yet have resistance issues) when conditions allow for high efficacy.

Most miticides do not penetrate pupal cell cappings, so Varroa mites in pupal cells (where they reproduce) are protected from treatment. When capped brood is limited/absent in colonies, most/all of the mites in the colonies are on adult bees and exposed to miticide treatments—this is the critical period we aim to identify. For the last three years, we have measured the amount of capped brood (the pupal stage of development, similar to the chrysalis stage of butterflies) every two weeks from mid-fall to mid-winter. We also monitor adult bee populations, feeding, Varroa treatment, and survival. Data are put onto maps on a website roughly within a week, providing beekeepers with timely information to decide if colony

conditions (low/no capped brood) in their area are suitable for organic acid treatments. Monitoring will continue in 2025–2026, along with comparisons of monitoring year, stocks, and management. Additionally, beekeepers are surveyed about Varroa mite issues and future projects will aim to address these issues and further support the beekeeping community, which in turn helps support the health of other pollinators, food security, and Tennessee's landscapes.

Learn more on our website:
tiny.utk.edu/winterbrood

TENNESSEE

Gardening Frontiers

Knox County Master Gardeners Celebrate Forty Years

A new idea was implemented in Knoxville forty years ago. Two UT Extension agents heard about a new type of volunteer program that was successful in a small number of states. They talked with agents in other states about a training program in which volunteers would learn about horticulture, then volunteer to help their communities. Would that work in Knoxville, Tennessee?

Forty years later, the answer is a resounding yes. With no budget and a need to develop a curriculum in a short time, UT Extension agents Doug Dalton and Harry Bryan created the Knox County Master Gardener program, which began its first training program in October 1985.



Nancy Howell,
Tennessee Extension Master Gardener,
Knox County

The Knox County program grew out of necessity, says retired Knox County Extension leader Harry Bryan. "We were getting lots of questions about plants and landscapes from county residents," he says. In the early 1980s, UT Extension awarded scholarships to agents to cover the cost of exploring ideas that could be applied here.

Bryan received one of the awards and used it to travel to several states, including Texas, Georgia, Kentucky, Virginia, and Arkansas. He wanted to learn how those states were handling the increased information requests. "Agents in those states kept mentioning a program called Master Gardeners," he recalls.

Retired UT Extension agents Harry Bryan, left, and Doug Dalton, right, founded the Knox County Master Gardener program in October 1985. Photo by Nancy Howell



Early Knox County Master Gardeners, from left to right, Audrey Gallagher, June Zachary, Virginia Raskin, and Fritzie Logan. Zachary was past president of the Knox County Council of Garden Clubs, and Raskin was the first KCMG president.

Bryan returned from a month of traveling and learning and met with his team to explore ideas. "I asked Doug if he would be interested in taking on a Master Gardener project, and he said, 'Yes, if you'll help.' At the time, Doug was working with what Extension called community clubs, developed to create groups by topic, interest, neighborhood, and other parameters so agents could enlarge their outreach to groups. We had stacks of phone messages from the public about horticulture, which was my particular area," Bryan recalls.

"Harry came back from his trip enthusiastic about something called Master Gardeners," Dalton says. But Extension had no budget to spend on this idea. So, Bryan, whose area included livestock, approached the Knox County Livestock Association to fund the first class.

The nation's first Master Gardener program was founded in 1973 by David Gibby and Bill Scheer at Washington State University to expand the capacity to deliver high-quality horticulture information to the public. Now Master Gardener programs are active in forty-nine states as well as Canada and South Korea. In the more than fifty years since the founding, the areas of outreach have grown far beyond the original plant clinics to encompass sustainability, food production, and human health and well-being. However, the mission of the Extension Master Gardener program has remained focused on improving lives through horticulture education outreach that extended the reach of local Extension into urban and rural communities.

In Knoxville, a curriculum for the new Knox County program was created by Dalton and Bryan, and recruitment of applicants began. Bryan had a morning farm report radio program on local station WIVK, which he used for years to promote the Master Gardener program.

Approximately eighty people applied for the first class, with forty-eight selected for the class held at the Karns Community Center.

The next year, the graduates of the 1985 class volunteered to help train the second class. "We came up with guidelines for volunteers, such as the use of research-based publications, but our graduates just knew how to do that. And they all got along so well," Dalton says.

Among new interns were garden club members, long-time gardeners, retired military, and even faculty on the agricultural campus. Dave Craig, a UT faculty member, became a Master Gardener in 2002, then president of the KCMG in 2004. "He relished being a Master Gardener," says his wife, Betty. "He even volunteered more than 800 hours one year." Craig, who died in 2020, was responsible for offering landscaping and gardening best practices to hundreds of new gardeners, students, and new homeowners.

For the two Extension agents who founded the Knox County Master Gardener program, their efforts led to huge success. "We accomplished all we planned and a whole lot more," Dalton says. Knox County Extension agent Rylan Thompson agrees: "We have benefited over the years from the great work of Doug and Harry and those early Master Gardeners who created the foundation that we are building on forty years later."

As part of the anniversary, UT Gardens, Knoxville, is providing space for a special commemorative bed, which will be designed by Jack McCoy. Other events will take place during the year to mark this milestone.



IN-SEASON EDIBLES

Prickly Pear Margarita

Holly Jones, Horticulturist
UT Gardens, Knoxville

Cool off in the hot afternoon with the uniquely delicious flavor and striking pink color of a prickly pear margarita. The key ingredient is homemade prickly pear syrup that also can be used for mocktails, as a topping on vanilla ice cream, to make salad dressing or any creative recipe you can dream up. Prickly pears, also known as tunas in Spanish from a Tiano Caribbean language origin, are the fruit of the *Opuntia* cactus. While many species within this genus produce edible fruit, there are a variety of flavor profiles in the different types, and some are more palatable than others. It is best to identify your cactus before consuming it. Tennessee boasts a native prickly pear cactus (*Opuntia humifusa*) with mildly sweet dark pink fruit. The following syrup recipe was adapted from James Beard Award-winning author and chef Hank Shaw. The margarita recipe came from my kitchen.

STEP 1: MAKING PRICKLY PEAR SYRUP

Ingredients:

- 3 pounds prickly pears
- 3 cups of sugar
- Water to cover
- Juice of two lemons or 1 tablespoon citric acid

Instructions:

1. Rinse the fruit to remove dust and debris. You do not need to remove the peels. Carefully handle the prickly pears, as they may still have tiny spines. Use gloves or tongs to avoid getting pricked.
2. Place the fruit in a saucepan with enough water to cover. Bring to a boil, then turn off the heat and let steep for 30 minutes.
3. Mash the fruit with a potato masher and then push it through a strainer. Rinse the strainer, line it with cheesecloth and push the pulp through the cloth. This step is important to remove any tiny spines. Press the pulp as much as possible to get all the juice out.
4. Return the strained juice to the saucepan and add three cups of sugar to taste. Stir over medium heat until the sugar dissolves completely. Turn off the heat and let the liquid cool for about 15 minutes.
5. Add lemon juice or citric acid for extra brightness in flavor. Add a little at a time and taste as you go, adjusting amount to your preference.
6. Pour into a clean glass jar and seal with a lid. It can be stored in the refrigerator for up to one month.

STEP 2: MAKING THE MARGARITA

Ingredients:

- 2 ounces tequila
- 1 ounce freshly squeezed lime juice
- 1 ounce homemade prickly pear syrup
- Ice cubes
- Sugar mixed with Tajin spice blend for rimming (optional)
- Lime wheel for garnish

Instructions:

1. If desired, rim your glass with salt or sugar by running a lime wedge around the edge and dipping it into your chosen coating.
2. In a cocktail shaker, combine tequila, lime juice, prickly pear syrup, and ice cubes.
3. Shake vigorously for about 15 seconds.
4. Strain into your prepared glass over fresh ice.
5. Add a lime wheel or even a small slice of prickly pear for some extra pizzazz.

Enjoy!



GARDENS GALA

We celebrated an especially memorable “Evening in Bloom” at the 2025 UT Gardens Gala in Knoxville thanks to a brief downpour that left our shoes a bit damp but not our spirits or generosity. The event raised \$186,608 in funding to support the teaching, research, and outreach efforts of the Gardens! A heartfelt thank you goes out to our honorary hosts, UT Knoxville Chancellor Donde Plowman and her husband, Dennis Duchon, and to this year’s presenting sponsor, the Boyd Foundation. Mark your calendar for next year’s gala, which will be held April 24, 2026.

Photography by Stephanie Wilson



UT GARDENS, CROSSVILLE



UT GARDENS, JACKSON

TRENDS

Mapping Garden Collections

Whitney Hale, Education Coordinator
UT Gardens, Knoxville

Do you recall your first visit to a museum? Museums have been a favorite place of mine for as long as I can remember. Seeing one of Monet's *Water Lilies* for the first time—the scale, the brushstrokes, the colors—you just cannot capture that from a book or show. Whether it is an art, history, or even sports museum, visitors engage with and get excited about the collections presented there. Public gardens, like the UT Gardens, are a type of museum with collections as well, and we want to help create core memories, too.

Garden collections are a bit different than the typical museum collection. Though we do have more permanent exhibits, most of our collections and displays are living things and, thus, change frequently. Imagine viewing an item at a museum without having any context or prior knowledge about it. Do you think it might be difficult to understand why it is there or what is significant about it? That can be what many visitors experience at public gardens.

Plants in our gardens are the objects in our collections, and to help our communities connect with them, we are exploring new ways of improving the visitor experience with the collections.

In league with the likes of Missouri Botanical Gardens, Longwood Gardens, and The Morton Arboretum, UT Gardens are bringing collections into the hands of the visitor. Each of these gardens has made efforts to create a dynamic mapping experience that enables visitors to find out about the collections and spaces around them using location services. Gone are the days of relying on paper maps and separate booklets printed for new features and collections. Today's audience is familiar with using GPS technology to navigate, but we are taking the experience a step further. Not only can we now use our maps to assist with wayfinding, but we can also provide up-to-date information about our plant collections, fundraisers, rentals, and more without any downloads or printing errors!

UT Gardens, Jackson, has created a map with points noting where each tree in the Gardens' arboretum collection is located. By clicking a point, you can find out the name of the tree. If you open the map on your phone in the Gardens and allow location services, then you can more easily identify the trees near you. Check their website regularly for updates on new maps and tours, including a new spring flower trail.

UT Gardens, Crossville, has an online map that can help visitors prepare for their visit and provide more detailed information while present in the Gardens. The map has a timeline of the Gardens' history along with a guided map tour that includes links to plant lists for the featured gardens.

Easy to read, helpful navigation improves the visitor experience in Crossville, too!

In Knoxville, we use mapping resources as well. Our newest project is a web application that can be used online in a web browser or saved to the home screen of a smartphone. This app provides mobile maps of general points of interest, collection highlights, and seasonal walking tours. By allowing location services, visitors can click through the points around them to see what is close by. We are currently showcasing multiple collections and a spring walking tour. Our mobile app also has information about event rentals, parking, our photography policy, and much more. Check regularly for updates and additions. For more detailed information about our featured collections, visit our collections and gardens page on our main website.

As the State Botanical Gardens of Tennessee, UT Gardens strives to set the pace for excellent horticulture, collections management, and horticultural education and interpretation in our state. By placing research-based information about our collections in the hands of our visitors along with other important details, we are improving accessibility, opening lines of communication and potential revenue sources, and better meeting the needs of our community. Be sure to visit utgardens.tennessee.edu as you plan your next trip to one of the locations of the State Botanical Gardens of Tennessee; you are sure to find valuable maps and collections details to make your trip the best one yet!

Innovative mapping and digital engagement is taking place at each of our State Botanical Garden locations across Tennessee.



UT GARDENS, KNOXVILLE

Scan the QR code to find our maps or for information on the UT Gardens.





LAST LOOK
Never Enough Plants

Our three Gardens locations offer a large variety of annuals, perennials, shrubs, and trees at seasonal plant sales each year that support the Gardens. Many of the plants you see in the Gardens are often grown by Gardens staff for plant sales. Take a piece of the Gardens home with you!



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301 Ag & Natural Resources Bldg
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