

Extension Master Gardener Volunteer Program Building Garden Resilience Through Research-Based Vegetable Variety Trials

The Situation

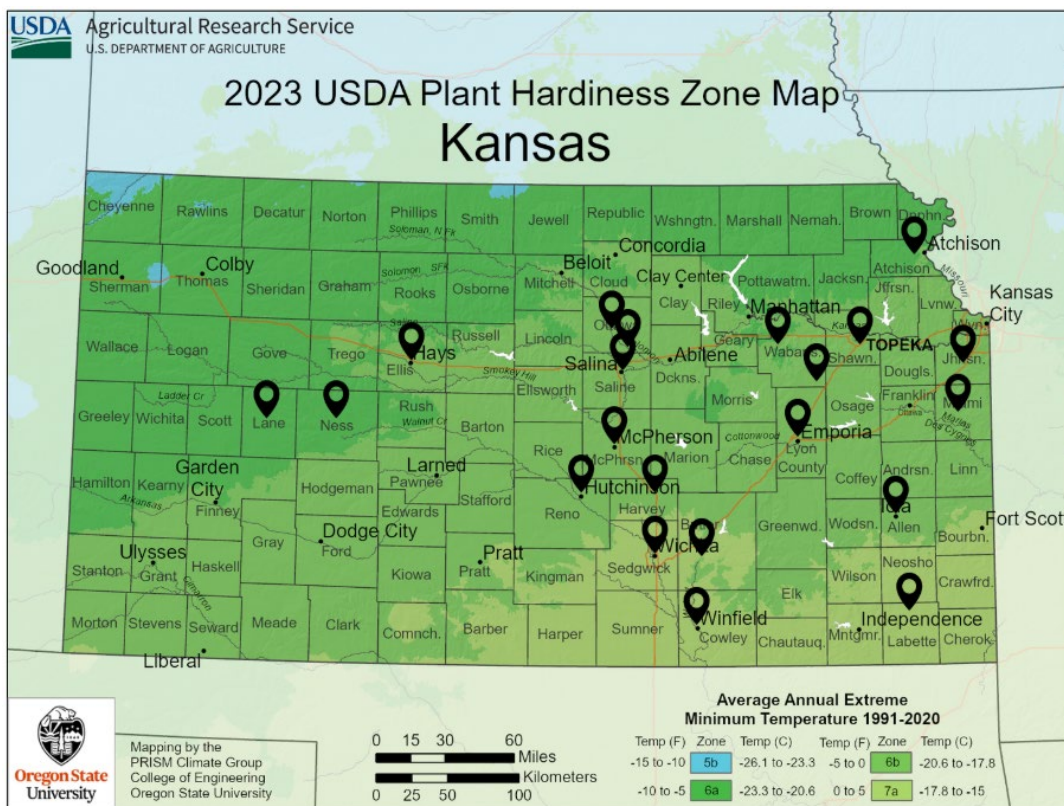
Since late 2021, Kansas has experienced prolonged drought conditions, with more than 50% of the state affected for over 180 consecutive weeks¹. Compounded by record-breaking heat, intensified windstorms and soil degradation, these extreme weather patterns have reduced home food production, weakened plant resilience and strained water resources. The National Oceanic and Atmospheric Administration reports that 2024 ranked among the warmest years on record for Kansas². These shifting conditions highlight the urgent need for research-based, regionally adapted vegetable varieties that can thrive in drought, heat and variable soils to sustain food production and ecosystem health statewide.

What We Did

For over 30 years, Kansas Extension Master Gardener (EMG) volunteers have collaborated with Kansas State University horticulture specialists and seed companies to conduct research-based vegetable variety trials that evaluate new varieties for adaptability to Kansas's variable climate.

Following standardized research protocols and applied Integrated Pest Management (IPM) strategies, volunteers grow test varieties at community, demonstration, school and home garden sites that represent diverse growing conditions and planting styles, including in-ground and raised beds. Tomato and pepper varieties are monitored throughout the growing season, with data on vigor, yield and disease resistance contributing to statewide research that informs regionally adapted variety recommendations for home gardeners and community growers.

Through this citizen science approach³, Kansas EMG volunteers build trust with stakeholders by connecting academic research to local needs. Educational programs, field days, garden tours and media outreach expand public understanding of climate-adapted food production while reinforcing Kansas State University's role as a trusted source of horticultural knowledge. Together, these collaborative efforts advance resilient, science-driven gardening that strengthens food security and sustainable growing practices across Kansas.



Extension Master Gardener Variety Trial Garden Sites - 2024
([USDA Plant Hardiness Zone Map](#)⁴)

Outcomes

Statewide vegetable variety trials led by Kansas EMG volunteers translated data-informed research into practical guidance that strengthened gardening success, community food security, and environmental resilience across Kansas.

- **53% of EMG local units** active in 2024 were involved in the vegetable variety trial.
- **168 trained EMG volunteers** contributed **5,345 hours** across **19 counties**, generating region-specific data that informed Kansas State University Extension recommendations for home gardeners.
- Their **service was valued at \$164,940**, demonstrating the statewide scale of citizen science supporting applied horticultural research.
- **24 trial gardens** totaling over **281,116 square feet** evaluated **35 vegetable varieties** under Kansas's heat and drought conditions (across three of Kansas's four plant hardiness zones), producing localized data on resilience and productivity.
- Of the **63,239 pounds of produce grown**, **34,127 pounds (approximately 54%)** were donated to **40 community organizations**, including food pantries, food banks and senior centers, providing an estimated **11,376 fresh servings (\$64,500 in produce)** to Kansans facing food insecurity.
- **127 educational programs and demonstrations** engaged **5,000 Kansans**, increasing knowledge of vegetable selection and sustainable gardening under climate stress.
- **A comprehensive statewide report**⁵ summarized trial methods, planting practices and performance results, providing Kansas home gardeners and Extension professionals with accessible, research-based recommendations for successful vegetable production.

Success Story

Tomatoes are among the most popular vegetables grown in Kansas home gardens and one of the most frequent topics of inquiry received by county Extension offices. Gardeners regularly seek reliable recommendations on variety performance, disease resistance and flavor. Results from the Kansas State University vegetable variety trials are highly valued and frequently shared through garden hotlines, farmers markets and Extension outreach statewide.

For over 20 years, Kansas EMG volunteers in Harvey County have brought this research to life through an interactive “Tomato Tasting Table” at the county fair. The event features tomato varieties from the statewide trial, giving fairgoers a chance to compare flavor, color and texture while voting for their favorite. This hands-on experience connects scientific evaluation with personal preference in a fun, community-centered way. Results from the tasting are shared through local media and Extension programming led by Extension professionals and EMG volunteers.

When the 2024 tasting event was canceled due to weather-related delays in tomato maturity, it underscored the value of the trial itself. Unpredictable growing conditions directly affect crop success, highlighting the importance of regionally tested, resilient vegetable varieties that can withstand Kansas’s heat and drought. Through these outreach efforts, Harvey County EMG volunteers continue to strengthen public understanding of climate-adapted gardening and the role of research in sustaining local food production.

Harvey County Fair Tomato Tasting Event



[Tomato Tasting Results](#)⁶

(Images courtesy of Harvey County EMG program)

References

- ¹ Map Archive, U.S. Drought Monitor. <https://droughtmonitor.unl.edu/Maps/MapArchive.aspx>. Retrieved October 28, 2025.
- ² 2024 Climate Summary and Highlights, National Oceanic and Atmospheric Administration. <https://www.weather.gov/ict/2024Climate>. Retrieved October 28, 2025.
- ³ Collaborating with Extension Master Gardeners to Evaluate Tomato Cultivars, Purdue University. <https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1135&context=mwvtr#:~>. Published January 1, 2015.
- ⁴ 2023 USDA Plant Hardiness Zone Map Kansas, U.S. Department of Agriculture. https://planthardiness.ars.usda.gov/system/files/KS150_HS.png. Retrieved October 20, 2025.
- ⁵ Tomato and Pepper Variety Trial – 2024, Kansas State University Department of Horticulture and Natural Resources. <http://bit.ly/4oKJnXJ>. Published December 2024.
- ⁶ Tomato Tasting Results, K-State Research and Extension Harvey County. <https://enewsletters.k-state.edu/harveycounty/2017/08/20/tomato-testing-results/>. Published August 20, 2017.

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[2024 Statewide Impact Report](#)