

UNIVERSITY OF MISSOURI EXTENSION

Callaway County



2023 Annual Report

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573-226-3268

**SERVE
MISSOURI.**

**DELIVER
MIZZOU.**



Extension
University of Missouri

an equal opportunity/ADA institution



Office of Extension
and Engagement
University of Missouri

**OFFICE OF THE VICE CHANCELLOR
FOR EXTENSION AND ENGAGEMENT**

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Columbia, MO 65211

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December 2023

Dear county commissioners and friends of MU Extension and Engagement,

Thank you for your important partnership with the University of Missouri Extension this past year.

I want to highlight three areas that address needs you helped us identify.

You may recall that the FY 23 state budget provided a one-time \$5 million infusion to MU Extension for growth. Of that, we allocated about \$3 million for field faculty in the areas of agriculture, 4-H, health/human development and business and community development.

Through a dedicated hiring effort, and thanks to that allocation, we have hired 168 new employees since November 2022. That includes 72 academic/faculty members, most of whom are field specialists in a priority area noted above, and 96 staff members (e.g., office administrators, youth and food and nutrition associates, etc.).

We also returned more faculty to local program delivery that best serves your county's needs, while preserving the partnership and relationship building work you value. Our extension and engagement specialists focus full-time on that work as they serve their assigned multi-county groups. Currently, 19 have been hired, with two more in the pipeline.

Finally, we are prioritizing our work with county extension councils. In the new role of partnership and council development director, Lorin Fahrmeier focuses on strengthening council representation and governance. This role will build stronger links with regional, educational and campus leadership to better identify and address local priorities.

At the UM System level, our engagement work across four universities and with leaders across the state makes a difference in areas of greatest need: broadband, workforce development, health access, food security and healthy futures for our youth.

Your county annual report shows what we are accomplishing together as we Serve Missouri and Deliver Mizzou. We look forward to strengthening that partnership with county commissioners and community stakeholders in the coming year.

Sincerely,

Chad Higgins, PhD
Interim Vice Chancellor, MU Extension and Engagement
Chief Engagement Officer, UM System

Who we are

Faculty and staff



Dawn Fox
County Office Support Staff

Sean Eberle
4-H Youth development Educator

Chrisee Brandl
Field Specialist in Livestock

Elizabeth Anderson
Extension Engagement Specialist

Charles Ellis
Field Specialist in Agricultural Systems Technology

Mary Sobba
Field Specialist in Agricultural Business

Rusty Lee
Field Specialist in Agronomy

Dhruba Dhakal
Field Specialist in Horticulture

Tina Edholm
Field Specialist in Human Development

Marsha Moore
Small Business Development Center Business
Counselor

Brian Schweiss
State Ext. Specialists, Sustainable Forestry

Heather Warren
Nutrition Program Associate

Council members

Rev. Paul Klepees, Chairman

Jennifer DeLashmutt, Vice-chairman

Julie Hale-Harris, Secretary

Gary Jungermann, Co-Treasurer

Richard Vaughn, Co-Treasurer

Hadley Linnenbringer

Frances Vaughn

Bryli DeLashmutt



County commissioners

Gary Jungermann, Presiding Commissioner

Randall Kleindienst, Eastern District Commissioner

Roger Fisher, Western District Commissioner

Budget and more

Appropriations budget

Income

County Appropriations	62,000
Total Income	62,000

Expenses

Salaries/Benefits	52,700
Travel	3,300
Rent/Lease Equipment	2,000
Office Supplies/Service	2,000
Repairs/Maintenance	200
Insurance	1,600
Furniture/Equipment	200
Total Expenses	62,000

Keep up with MU Extension in Callaway County!

Follow us on Facebook!



Check out our website:

<https://extension.missouri.edu/counties/callaway>

Return on investment

University Endowment	67,765
Endowment Interest	3,404
Program Revenue	4,384
Interest Income	7,028

MU Extension is a unique funding partnership.

Extension funding is a three-way partnership of federal, state and county government. Federal and state money, through the University of Missouri system, pay professional staff salaries, training costs, computers and communication equipment. County funds support the local office, secretarial and youth assistant salaries, staff mileage and council expenses.

The Callaway County Extension Council, faculty and staff would like to express our appreciation to the Callaway County Commissioners for their continued support of extension programs.



Local Support

Did you know you can donate directly to Callaway County Extension with a gift to be used immediately or as an endowment contribution for long term efforts. Monies put into the endowment are left forever to earn interest with the county office benefiting each year. You can also direct your donation to a specific program such as 4-H or Master Gardeners.



Callaway County

UM System Footprint in the county in 2023



FY23 county students

362 students

- 257 Undergraduates
- 105 Graduate and professional students
- 250 Full-time students
- 112 Part-time students
- 64 Pell grant recipients (aid year 2023)



County employees and retirees

794 people employed by UM

- 346 Campuses
- 430 MU Health Care
- 18 UM System

274 UM retirees and beneficiaries

UM salary and retirement income: \$48.1 million

UM state tax revenue: \$1.5 million

UM federal tax revenue: \$7.2 million



County alumni

Selected school alumni

- 18 Medicine
- 103 Nursing
- 209 Health Professions
- 7 Dentistry
- 14 Pharmacy
- 4 Optometry
- 33 Veterinary Medicine
- 427 Agriculture
- 291 Engineering
- 57 Law

Alumni teaching K-12

- 122 teachers
- 26.6% of all district teachers
- 8 principals and administrators
- 29.6% of all district principals and administrators



County breakdown

MU

- 306 students
- 1,872 alumni
- 344 employees

UMKC

- 23 students
- 67 alumni
- 1 employee

Missouri S&T

- 28 students
- 172 alumni
- 0 employees

UMSL

- 5 students
- 65 alumni
- 1 employee



County population: 44,449



County services provided

Health care (FY23)

- 22,318 in-state patients seen at MU Health Care, with \$9.2 million of uncompensated care
- 11 in-state patients seen at UMKC School of Dentistry with a statewide average of \$43.61 per patient in uncompensated care
- MU Health Care's Missouri Telehealth Network recorded 12,029 visits to 7,336 patients having ZIP codes associated with the county

Extension (2022)

- 2,014 Total educational contacts from MU Extension to residents of the county, including:
- 66 contacts related to productive farming, better gardening, and managing natural resources
- 1,948 contacts related to healthy eating and aging, strengthening families, personal finance, or youth development



Construction projects

- \$2.8 million remitted to 7 county vendors, for 19 projects



County properties and offices

Midwest Claypan/McRedie, Tucker Prairie
MU Extension in: Callaway County



The university advances Missouri citizens and communities through its mission of teaching, research, public service, and economic development across our four campuses and University of Missouri Extension.

Prepared in December 2023, based on the best available and most recent data. Data Sources include: Missouri Office of Administration • UM IR • MU Institute for Public Policy • Center for Applied Research and Engagement Systems (CARES) • MU • UMKC • Missouri S&T • UMSL • UM System • UM Health Care • MU Extension • US Census Bureau • US Dept. of Health and Human Services • National Science Foundation



Callaway County

UM System Statewide Footprint

Economic and Community Development Highlights

- In 2022, Business Development Specialists worked with small businesses and entrepreneurs statewide to create or retain 81,645 jobs.



\$3.1
billion

For every dollar invested from 2019 to 2021, the MU Extension Business Development Program has returned \$133 in economic impact for its clients by increasing sales more than \$1.6 billion. For a total impact of \$3.1 billion, the program has generated more than 37,000 jobs and attracted nearly \$451 million in capital investments and \$1.5 billion in government contracts.

- Between FY17 and FY22, UM System brought Missouri more than \$1.46 billion in federal and private research funds, funded primarily from outside the state, but spent within the state.



In FY23, UM System was issued 33 patents and filed 61 new U.S. patent applications.

- In FY23, the UM System awarded 805 design and construction project contracts throughout Missouri, for a total investment of \$279.2 million in the state.



In FY23, to improve access to medical and health related services, MU Health Care's Missouri Telehealth Network's Show-Me ECHO program provided 18,381 hrs of case-based instruction to 2,938 learners located in 112 of 114 Missouri counties and the city of St. Louis.

Education and Training Provided



41,992 police, fire fighters, and medical professionals attending continuing education (2022)



Agriculture and natural resource programs served 174,692 farmers and related businesses (2022)



311,749 youth and stakeholder educational contacts in 4-H clubs, schools, camps and other programs (2022)

Education Highlights

FY23 Financial Aid Awards

In FY23, 67.3% of the UM System's 80,702 students received financial aid totaling \$973.7 million

MU

27,256

students receiving financial aid

\$536.0M

financial aid awarded

UMKC

11,859

students receiving financial aid

\$217.3M

financial aid awarded

Missouri S&T

6,748

students receiving financial aid

\$117.7M

financial aid awarded

UMSL

8,489

students receiving financial aid

\$102.8M

financial aid awarded



UM System's MOREnet (Missouri Research and Education Network) provides internet connectivity, access, support and training to 58 higher education institutions (230,000 students), 485 K-12 school districts (832,000 students) and 132 public libraries (serving nearly 3 million Missourians) in 2022.

- UM System awarded 50.5% of the 32,098 Bachelor's or higher degrees awarded by Missouri four-year public institutions in 2022-23.
- UM System awarded 36.6% of the 1,935 research doctorates and 26.9% of the 3,593 professional doctorates awarded by Missouri public and not-for-profit private institutions in 2022-23.
- In FY23, UM System's \$37.9 million in National Science Foundation (NSF) grants represented 88.3% of all NSF grants made to Missouri public colleges and universities.
- In 2023, over 10,900 Missourians accessed mobroadband.org, part of the UM System Broadband Initiative which helped the statewide build-out of high-speed internet infrastructure. MU Extension also supported residents in making individual challenges to the FCC that resulted in \$810,000 in additional funding for the state of Missouri.

Supporting the University of Missouri is an investment in the future of Missouri.

Missouri Grand Challenges: Local Solutions



CALLAWAY COUNTY

Knowing Missouri's Needs

MU Extension asked Missourians to share the greatest challenges they and their communities face.

We heard that feedback and made big changes in the way we work with council and local partners to improve lives. Locally, a network of county engagement and subject matter specialists now share MU's knowledge, research and engagement, targeting programs, information and assistance in:

- agriculture and environment
- youth and family
- business and community
- health and safety

For each grand challenge, MU Extension and Engagement targets a specific gain by 2023:



Economic opportunity

Increase MU Extension and Engagement's economic impact to the State of Missouri from \$1 billion to \$1.5 billion overall, and from \$88 billion to \$100 billion in agriculture, the top economic sector



Educational access and excellence

Increase participation in postsecondary education from 66% to 70%



Health and well-being

Improve Missouri's health ranking from 40th to 35th in the nation

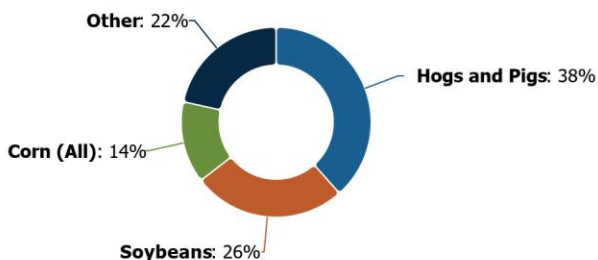
Knowing Local Challenges



CHALLENGE 1: Economic Opportunity: Agricultural Economics

Leading Agricultural Products

Total Commodity Sales: \$124,533,000



Net Farm Income

Net farm income (total sales, government payments, and other farm-related income minus total farm expenses) reflects the strength of the local agricultural community and can be an important measure for lenders and policy makers. The report area had a combined net farm income of \$21,389,000 in 2017, an average of \$14,874 per farm. This is below the statewide average farm income of \$29,485.

Report Area	Total Farms	Average Farm Income
Callaway	1,438	\$14,874
Missouri	95,320	\$29,485

Data Source: US Department of Agriculture, National Agricultural Statistics Service, [Census of Agriculture](#). 2017.

Data Source: US Department of Agriculture, National Agricultural Statistics Service, [Census of Agriculture](#). 2017.

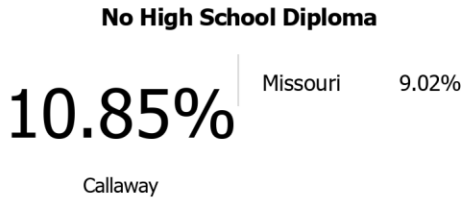


CHALLENGE 2: Educational Access and Excellence: *Educational Attainment*

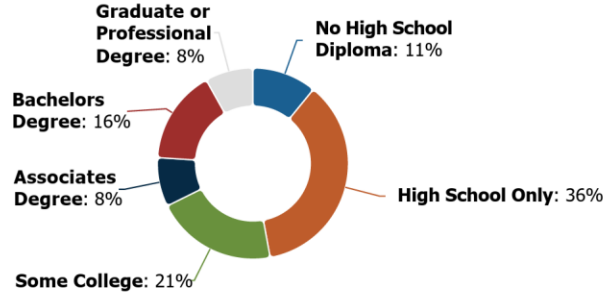
Adult Educational Attainment

Educational attainment shows the distribution of the highest level of education achieved in the report area, and helps schools and businesses understand the needs of adults, whether it be workforce training or the ability to develop science, technology, engineering, and mathematics opportunities. Educational attainment is calculated for persons over 25 and is an estimated average for the period from 2017 to 2021.

In the report area, 20.6% of adults have at least some college education and 24.2% of adults have an associate's level degree or higher. However, 36.2% stopped their formal educational attainment after completing high school, and 10.9% of adults did not complete high school.



Data Source: US Census Bureau, [American Community Survey](#). 2017-21.



Data Source: US Census Bureau, [American Community Survey](#). 2017-21.



CHALLENGE 3: Healthy Futures: *Mental Health*

Deaths of Despair

Untreated mental health conditions, substance abuse, and stress have caused an epidemic of "deaths of despair" across the United States. Research shows that deaths due to suicide, alcohol-related disease, and drug overdose have caused the first decreases in U.S. life expectancy in the 21st century. Within the report area there were an estimated 147 deaths of despair, or 45.83 deaths per 100,000 population between 2011 and 2017. This rate is lower than the state rate of 52.01 per 100,000, and represents an increase of 0.24% since the 2001-2007 report period.

Poor Mental Health Days

Self-reported mental health status is a widely used measure of health-related quality of life. In 2018, adults in the report area averaged of 4.9 mentally unhealthy days per month, which is lower than the state average of 4.9. This measure of mental health status has worsened since 2014, when adults in the report area averaged 4.1 mentally unhealthy days per month.

Mortality Rate, 2014-2020



Data Source: Centers for Disease Control and Prevention, [CDC - National Vital Statistics System](#). Accessed via [CDC WONDER](#). 2014-20.

Average Poor Mental Health Days per Month, 2018

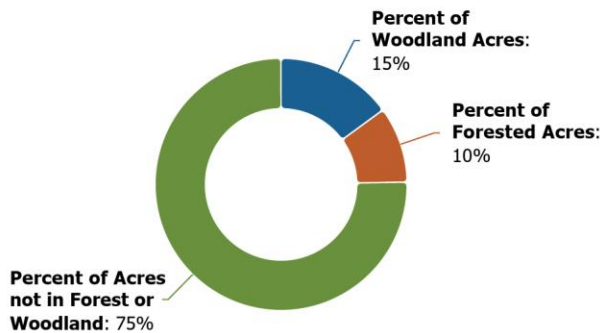


Data Source: Centers for Disease Control and Prevention, [Behavioral Risk Factor Surveillance System](#). Accessed via [County Health Rankings](#). 2020.



Forested, Woodland & Non-forested Acres

Sustainable management of forests and woodlands and harvesting of mature trees support the state’s \$10.3 billion forest products industries. Forests have a closed canopy (>80% cover) permitting little light to penetrate to the ground below. They consist of several overlapping layers of trees, with a mid-story and understory comprising a variety of shade-tolerant shrubs and a sparse layer of soft-stemmed plants. Woodlands have a more open canopy (30-80% cover), and their sparse, woody mid-story allows more sunlight to reach the ground. This light permits the growth of a dense ground cover containing a variety of wildflowers, grasses and sedges. Fire plays a large role in maintaining woodland habitats.



Data Source: Multi-Resolution Land Characteristics Consortium, [National Land Cover Database](#).

Rotational Grazing

A planned rotational grazing system allows time for vegetation to rest and recover before being grazed again. In 2017, nearly 16,000 Missouri farms reported practicing rotational or management-intensive grazing. With 11 million acres of row crops and nearly 2 million grazing livestock animals (mainly cattle), Missouri is well suited to capitalize on the grazing potential of cover crops. In addition to generating more income, grazing cover crops can have a positive impact on soil health. Manure, hoof action and the root responses that grazing elicits stimulate soil biological activity and lead to healthier soil and healthier crops.

Percent of Operations Utilizing Rotational Grazing



Data Source: US Department of Agriculture, National Agricultural Statistics Service, [Census of Agriculture](#). 2017.



MU EXTENSION **Serves MISSOURI and Delivers MIZZOU** through credible statewide programs

Missouri 4-H for ages 8 – 18



Community clubs are organized by volunteer club leaders and teams of recognized volunteers. Members attend club meetings, elect officers, enroll in projects and plan learning and community service activities. Some clubs opt to be single-project clubs, where all members focus on the same project.



A **SPIN club** focuses on a specific topic led by an expert in the field. While community clubs may meet over the full 4-H program year, SPIN clubs meet for set periods, typically from several weeks to a couple months. SPIN clubs can elect officers and plan learning activities with options of public speaking, community service and links to career readiness.



4-H Natural Resources programs employ hands-on activities in climate science, environmental sustainability, renewable energy, sportfishing and wildlife conservation. The **Shooting Sports program**, which teaches marksmanship, safe firearm use, hunting and archery principles, is a prime illustration of how 4-H programs promote holistic youth development and responsible citizenship. Supported by caring adult leaders, these programs offer opportunities to cultivate life skills, self-worth and conservation ethics.



Legend



Agricultural Growth
& Stewardship



Economic
Opportunity



Educational
Access &
Excellence



Health
& Well-Being

Callaway County

Missouri 4-H

Local Profiles and Stories

A community of 1059 4-H Youth learned life skills, contributed to their community, and participated in college and career readiness programs. Findings from our evaluation study reveals that Missouri 4-H do the following.

Missouri 4-H'ers:

97% said they are willing to follow rules even when no one is watching.

95% help others reach their goals.

99% said they show respect for other's ideas.

97% said they like to do new things.

97% said they learn from their mistakes.

98% are willing to work on something difficult.

89% think about their choices affecting others.

98% treat others how they want to be treated.

91% are comfortable working in groups.

95% look for ways to involve all members of the group.

93% like to learn about people who are different from them.

75% are comfortable being a leader.

91% are willing to try something they might get wrong.

Top six

Top Skills Developed because of 4-H:

1. Leadership
2. Building Relationships/Meeting new people
3. Project Skills
4. Willing to try new things
5. Public Speaking/Presentation Skills
6. Sportsmanship/Handle Competition

What youth enjoy most about 4-H:

1. Exhibiting at fairs
2. Participating in projects
3. Going to Camp
4. Community Service
5. Participating in Contests

Career Readiness

- *75% said 4-H Helped me decide what I will do after high school.*
- *96% said 4-H has given me skills that will be helpful after high school.*
- *86% said I know what I want to do after high school.*

4-H also prepares youth for the work-place. Youth must be prepared to live and work in a world we cannot completely envision – competing for jobs that do not yet exist, using technologies that have not yet been invented to solve problems that have yet to be identified. 4-H is the only youth development program with direct access to technological advances in agriculture, life sciences, engineering, learning technologies and social sciences from the university system. This brings relevant science content and hands-on learning that helps youth thrive (Arnold, Bourdeau, & Nott, 2013).

Callaway County

Sean Eberle - 4-H Educator

Missouri 4-H

Local Impact

4-H Youth Development 4-H Clubs

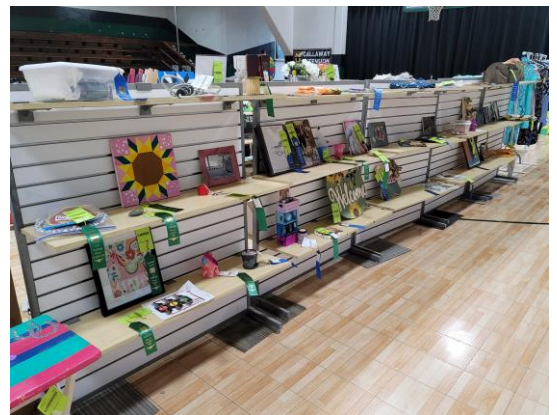
A total of 213 youth participated in Callaway county 4-H Community Clubs. Callaway County 4-H clubs offer long-term educational experiences in which members learn life skills such as decision making, public speaking and working with others. Members learn by doing under the guidance of adult volunteers, who teach projects ranging from computers science and arts to animal science and healthy living. Clubs also involve youth in community service, camping and educational trips.



Cole, Callaway, and Osage 4-H'ers at the STL Zoo!

Embryology

Embryology returned to Callaway County and served 844 youth across the county. We look forward to growing this program. Schools, daycares, and homeschools all participated.



References

Arnold, M., Bourdeau, V., & Nott, B. (2013). Measuring science inquiry skills in youth development programs: The Science Process Skills Inventory, *Journal of Youth Development*, 8(1).



MU EXTENSION **Serves MISSOURI and Delivers MIZZOU**
 through credible statewide programs
Agriculture and Environment



The Missouri Integrated Pest Management

Program, funded by USDA grants, has been an important extension program for 30-plus years. Mizzou IPM distributes articles, pest monitoring data and publications on how to improve the application of integrated pest management strategies and systems.

The MU Soil Testing Program delivers research-based nutrient and lime recommendations to more than 32,500 customers annually.



Management-intensive grazing

involves dividing large fields into smaller paddocks and systematically rotating livestock among them. Producers who attend grazing schools learn how to reduce costs through improved livestock, grazing and pasture management while getting insights into fencing, watering systems and grazing system design.

The annual impact of management-intensive grazing is estimated to be \$125 MILLION per year in Missouri.



The Missouri Show-Me-Select Replacement

Heifer Program strives to enhance beef herd reproductive efficiency, boost farm income and establish dependable sources of quality replacement cows in Missouri.



Since its inception more than 900 FARMS have enrolled, with an estimated statewide impact of \$200 MILLION.

Legend



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being

Callaway County

Agriculture and Environment

Local Impact

Missouri Strip Trial Program



The Missouri Strip Trial program began in 2016 with a limited number of producers around the state participating. Since then, the program has continued to grow with additional producers and expanded trials being applied to cooperator fields. East Central Missouri producers are prominent in this program with many trials being conducted in East Central Missouri in 2023. In 2023 16 trials were conducted in East Central Missouri in six different counties. The strip trial program uses producer fields, equipment, and management to compare different crop management

practices. For 2023 these trials included:

- Nitrogen management in corn production. (3)
- Fungicide application in soybeans. (6)
- Comparing cereal rye, winter wheat and no cover crop in a corn/soybean rotation. (2)
- Crop response to sulfur applications. (3)
- The two-year effect of planting soybeans into growing winter cereal rye and the following years corn yield. (2)

Data collection during the growing season included:

- Crop stand establishment.
- Weed control.
- Crop response to treatments using drone flights during the growing season.
- Yield monitor data and mapping during harvest to measure treatment affects.
- Targeted soil sampling after crop harvest for nutrient levels and soybean cyst nematode levels.
- Drone imagery to monitor plant growth, residue levels and pest pressure.



After results are compiled, meetings are arranged with the participating producers to evaluate the results and get feedback on the program from participating producers. Results from East Central Missouri producers are combined with other producers around the state and summarized on the strip trial web site <https://extension.missouri.edu/programs/strip-trial-program>.

Callaway County

Agriculture and Environment

Local Impact

Missouri Farm Lease Program

A total of 42 participants participated in trainings offered in September through in-person and online classes. The class reinforces the importance of good, clear communication and how it can enhance a farm lease and encourage a healthy landlord-tenant relationship.

Topics covered were current farmland rental rates and future trends, specific items to include in a farm lease, how to legally terminate a farm lease in Missouri, flex leases, and crop and livestock arrangements.

By taking the class, participants gain insight from both the landowner and tenant perspective, encouraging leases that are fair for both parties. This promotes optimal land use leading to more sustainable profitability.

The class encourages better landlord-tenant communication, which lowers conflict and avoids costly litigation.

All surveyed participants from the session hosted at College of the Ozarks in Point Lookout, MO indicated they would recommend the program to others. Over half indicated they would use information learned in the program in evaluating current leases and/or in dealing with leases in the future.



Callaway County

Agriculture and Environment

Local Impact

Private Pesticide Applicator Training

Number of Callaway County Learners

Twenty-three Callaway County citizens participated in the Private Pesticide Applicator training facilitated by Rusty Lee, Field Specialist in Agronomy. This 2.5 hour program gave a collective learning total of 57.5 education hours.

What Did They Learn?

Upon completion of the training, participants were able to:

1. Recognize the need to correctly identify pest organism prior to choosing a pest management strategy.
2. Understand the concept of economic thresholds and economic injury levels when making pest management decisions.
3. Possess a basic understanding of biological control and other non-chemical methods of pest management.
4. Better understand the format and information provided on each pesticide label.
5. Recognize the importance of using label information in all phases of application.
6. Understand the importance of having a Material Safety Data Sheet, and other materials available when applying pesticides.

7. Understand the need for proper selection and use of protective clothing and safety equipment.
8. Understand the importance of the "Restricted Use Pesticide (RUP) designation for certain pesticides
9. Consider environmental impacts when selecting a pesticide for use.
10. Consider impact of pesticides on water sources when applying a pesticide.
11. Understand the need and procedure to develop an emergency plan (fire, storm, flood, other) with local emergency officials.

How Does This Work Make Callaway County and Missouri Better?

Enables farmers to meet the legal requirements mandated by the Environmental Protection Agency and the Missouri Department of Agriculture's Bureau for Pesticide Control on the safe and proper use of agricultural pesticides on their farmlands, including restricted-use pesticides (RUPs).

This enables farmers to meet society's demands for lessening agriculture's environmental impact.

Callaway County

Agriculture and Environment

Local Impact

Callaway County Forage Loss Assessment 2023

State-wide Overview

The 2023 forage production season featured a prominent drought event that continues to impact the State. Drought conditions first emerged in April (Figure 1) when the state recorded its 4th driest April (- 2.17") dating back to 1895. Precipitation totals remained below average in May (-1.87") and June (-2.72") with average monthly temperatures running 1 to 2 °F above normal (Figure 2). Several rounds of heavy rainfall in late July and early August helped to bring temporary drought relief, but dry conditions returned in September and October. Overall, the seven-month period from April to October has been the 14th driest (-6.02") for Missouri and 2023 is currently the 7th warmest year on record through October (Figure 3). The largest precipitation deficits and areas most impacted by drought are approximately located along an axis from southwest to northeast Missouri (Figures 4 and 5).

This year's drought occurred during the growing season, resulting in widespread negative impacts to the agricultural sector. Depleted soil moisture has led to poor pasture and crop conditions along with mature tree stress. Timely rainfall in July and August provided some relief to crops, but the return of hot and dry conditions in September and October limited fall pasture growth. Agricultural water supply has also been a persistent issue with many pond levels low or dry. Larger streams and rivers have also been dry, with up to 40% of the state's monitoring gauges measuring streamflow that is well below normal since April. Hydrological drought has also contributed to commercial navigation impacts along the Mississippi River, especially south of St. Louis. Altogether, there have been 984 community drought impact reports through the Condition Monitoring Observer Reports (CMOR) program this year (Figure 6).

The transition from October to November in Missouri was marked by beneficial rainfall and colder temperatures but conditions were short lived. As of November 20, Missouri is on track for another month featuring both above normal temperatures and below normal precipitation, extending the 2023 drought through the end of the fall season. This has resulted in a continuation of drought impacts including agricultural concerns, enhanced fire risk and low water levels on streams, rivers and ponds. As of November 14, approximately 55% of the state remains in drought with 19% of the state being characterized as either severe or extreme drought (Figure 7).

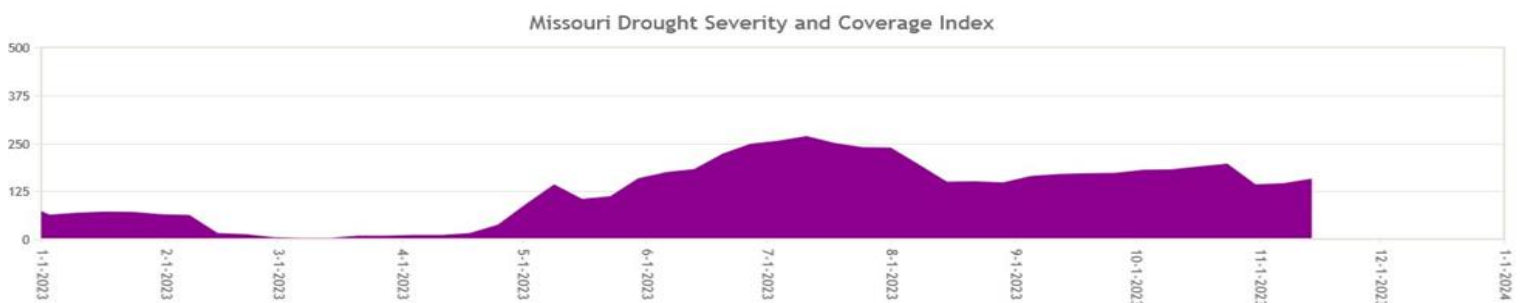


Figure 1. Missouri Drought Severity and Coverage Index (DSCI) from January 1, 2023 to November 14, 2023. DSCI values quantify the combined spatial extent and severity of drought conditions. Data provided by the National Drought Mitigation Center (<https://droughtmonitor.unl.edu/DmData/TimeSeries.aspx>).

Callaway County

Agriculture and Environment

Local Impact

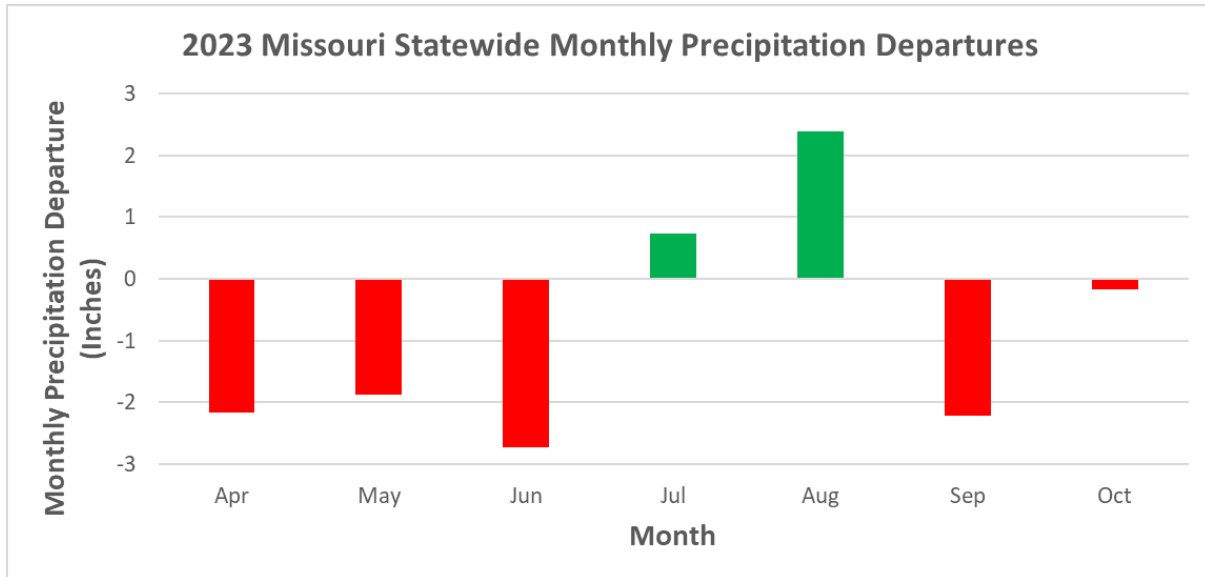
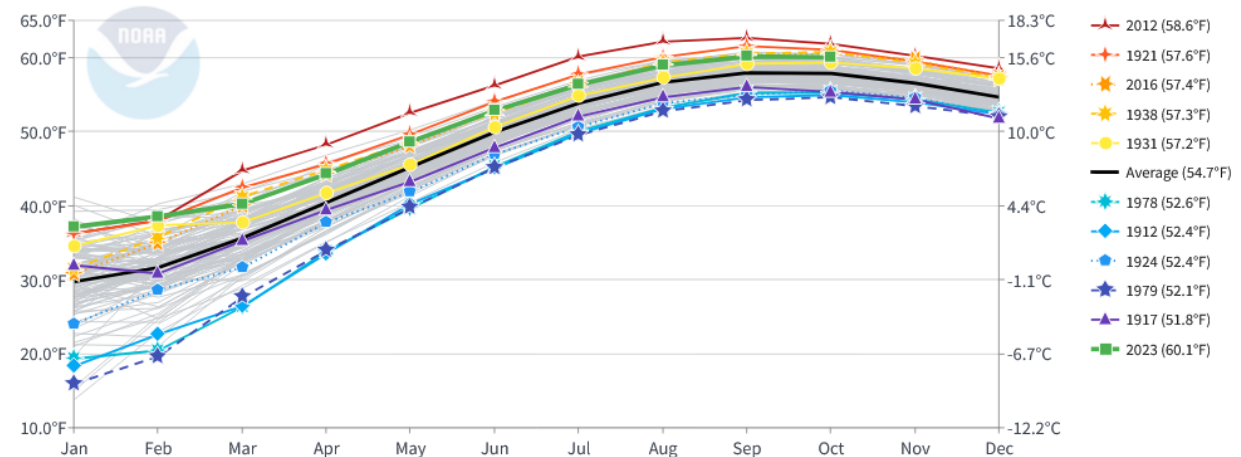


Figure 2. Statewide monthly precipitation departures from normal during April to October 2023. Precipitation normals based on 1901 – 2000. Data provided by the National Center for Environmental Information (<https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/>).

Missouri

Year-to-Date Average Temperature



Powered by ZimChart

Figure 3. Missouri 2023 average temperatures (green) compared to other years. Data provided by the National Center for Environmental Information (<https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/>).

Callaway County

Agriculture and Environment

Local Impact

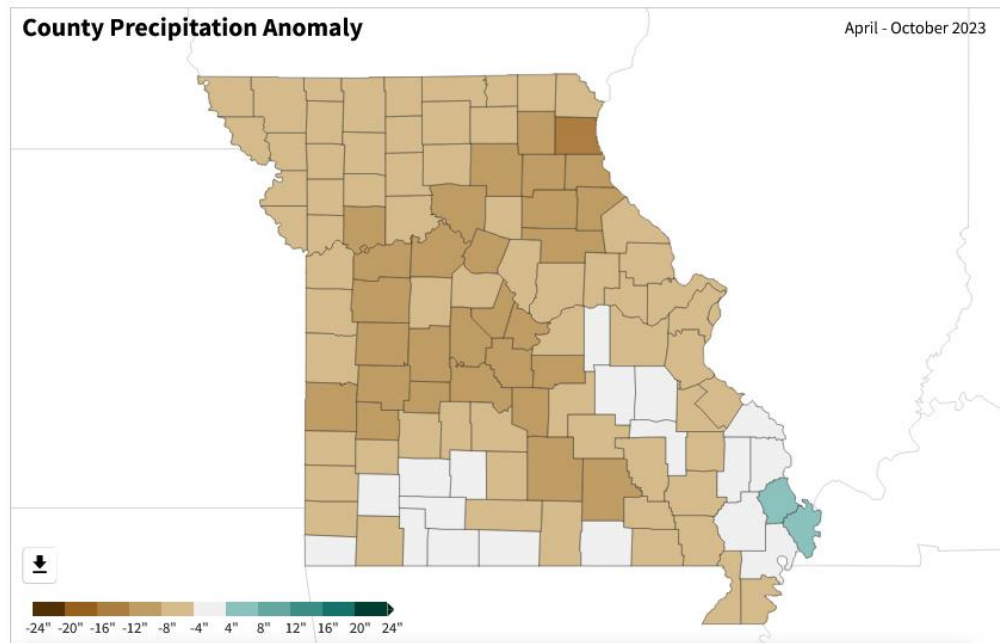


Figure 4. County-averaged precipitation departures from normal during April to October 2023. Precipitation normals based on 1901 – 2000. Data provided by the National Center for Environmental Information (<https://www.ncei.noaa.gov/access/monitoring/climate-at-a-glance/>).

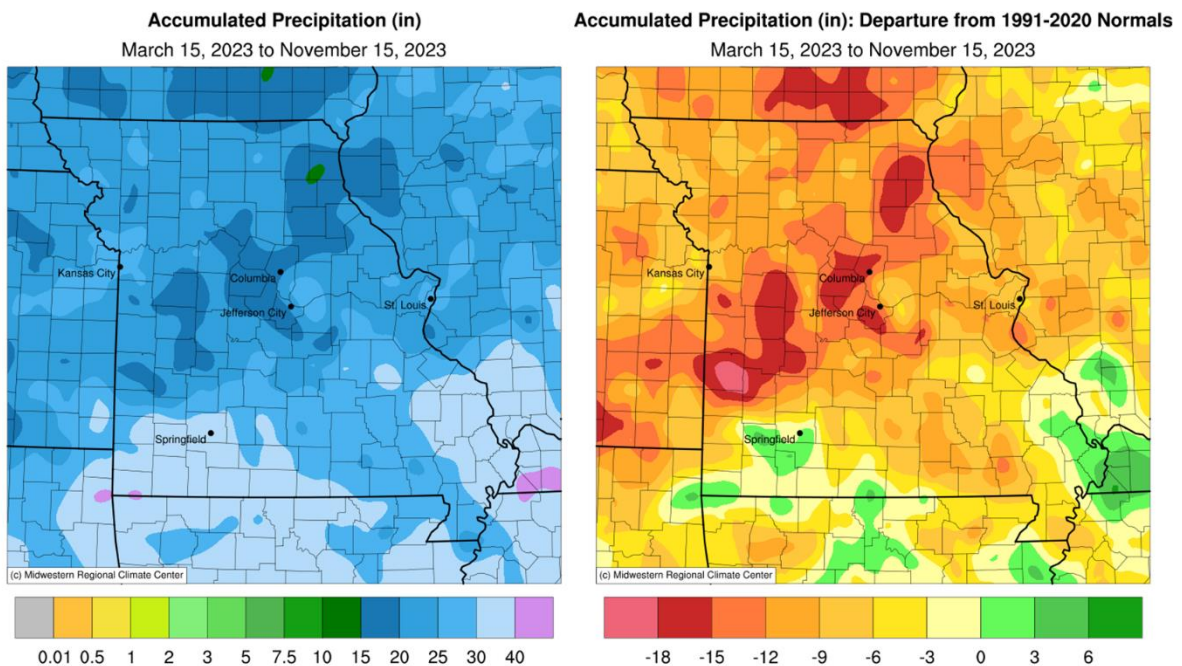


Figure 5. Precipitation accumulation (left) and departures from normal (right) from March 15 to November 15, 2023. Data provided by the Midwestern Regional Climate Center (<https://mrcc.purdue.edu>).

Callaway County

Agriculture and Environment

Local Impact

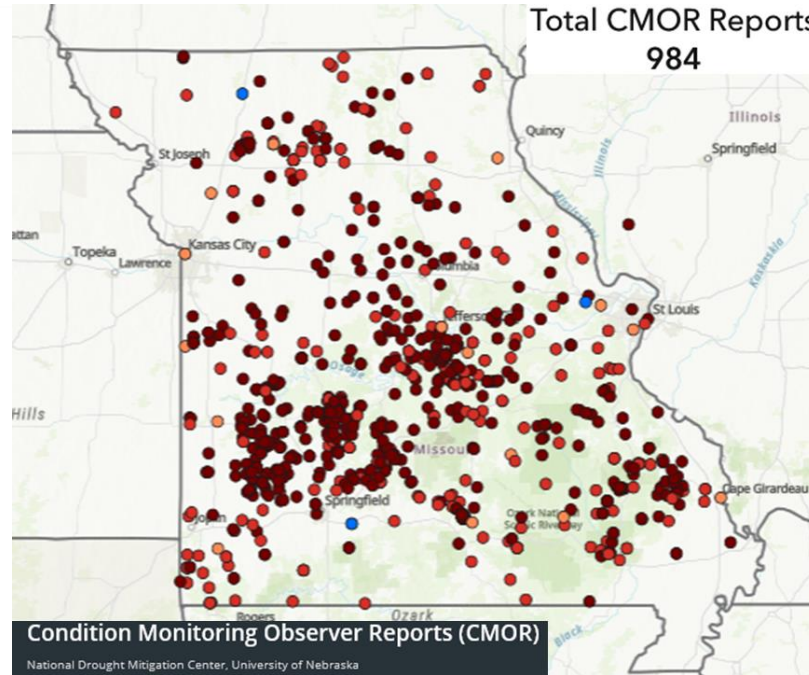


Figure 6. Missouri drought impact reports submitted by the community to the National Drought Mitigation Center's Condition Monitoring Observer Reports (CMOR; <https://droughtimpacts.unl.edu/Tools/ConditionMonitoringObservations.aspx>) system from January 1 to November 19, 2023.

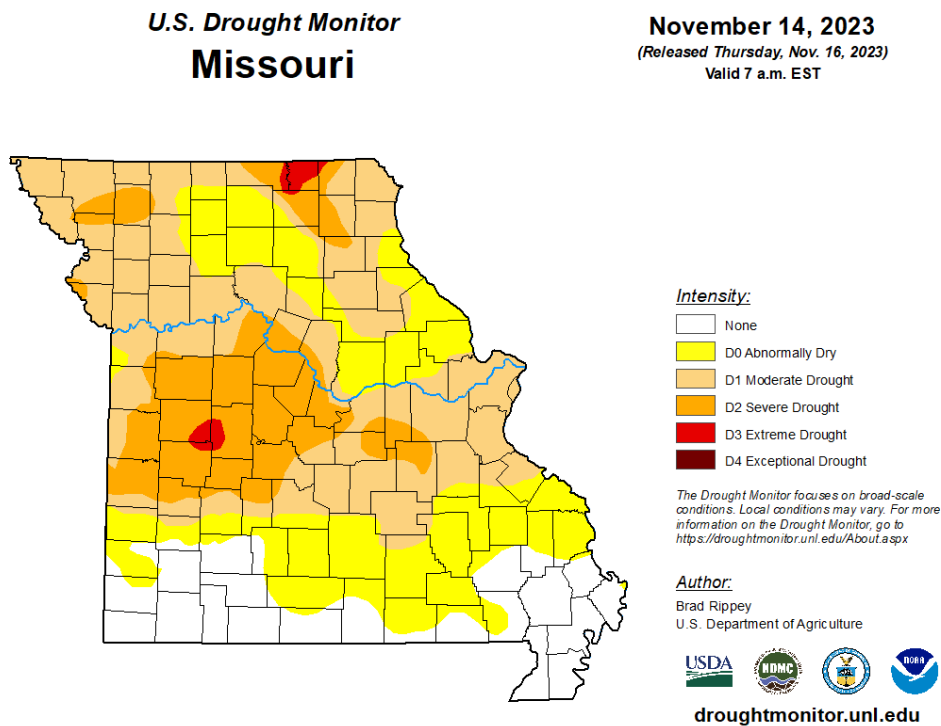


Figure 7. Most recent U.S. Drought Monitor depiction (retrieved 11/20/23).

Callaway County

Agriculture and Environment

Local Impact

County Specific Data - Callaway

Cool-season grasses are the predominate forage species in Callaway county. Much of its annual forage production occurs prior to the summer “slump” period of July and August. That makes April, May and June the quarter of the calendar to make or break a year’s forage production.

Assuming soil fertility is adequate, soil moisture is the largest determining factor of forage production. This direct plant response makes tracking rainfall, and its contribution to soil moisture, an excellent barometer of forage production. During the April - June period, rainfall for Callaway county was 7.46 inches below the 1901-2000 average amounts. This represents a 59 % decline in precipitation during this critical period of forage production. My observations of pastures and hayfields in the county, including conversations with area producers, provided a verification of this expected reduced forage productivity claim.

While there was some short-term relief from a few July and August rains, our cool-season grasses saw April - June temperatures for the county being 4 % above the 100-year average, and more importantly, a lower-than-normal soil moisture level to start the growing season due to our drought actually beginning in the fall of the previous year.

These measurements, observations and conversations shape my opinion to be that Callaway county experienced a 59 % reduction in forage growth for the 2023 growing/grazing season.



MU EXTENSION **Serves MISSOURI and Delivers MIZZOU**

through credible statewide programs

Business and Community

Missouri Small Business Development Centers (SBDC) provide professional training and customized one-on-one counseling to small businesses across the state. **In 2023, this took the form of 124 clients counseled, 543 training event attendees, and eight new businesses started.**

Working with the Missouri SBDC helps business owners make confident decisions. **In Callaway County this resulted in \$34,674.00 sales increase and \$630,875 in capitalization in FY2023.**



Missourians from all walks of life celebrated the **2023 Missouri Good Neighbor Week**, Sept. 28 to Oct. 4, by completing and reporting neighboring acts and nominating others as the most engaged neighbors in their counties.

In 2023, the goal was to document 15,000 acts of neighboring. That goal was surpassed with 19,752 Missourians being positively affected during MISSOURI GOOD NEIGHBOR WEEK.



Strategic Doing is a one-day workshop that guides community stakeholders through an inclusive, problem-solving approach to developing high-impact projects to address local development issues.

The city of Risco, Mo., lacked retail options for food. Risco's Strategic Doing workshop and follow-up activities resulted in a GROCERY STORE OPENING in the community.

Legend



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being

Callaway County

Business and Community

Local Impact

Farmers' Markets Provide Price Data to Support New And Existing Producers

Darla Campbell

The Missouri Department of Agriculture partnered with University of Missouri Extension to collect farmers' market price data on crops present at Missouri farmers' markets June-October of 2023. Six MU Extension Specialists collected data while providing production, marketing, and financial resources to producers around the state. There was a total of 63 different markets visited in 2023 with 2246 prices collected.

I made 14 market visits to 12 different markets mostly in Northeast Missouri. These markets were in Kirksville, Unionville, Brookfield, Milan, La Plata, Louisiana, Hannibal, Palmyra, Mexio, Booneville, and Columbia.

(Adair-13; Audrain-15; Boone-25; Callaway-3; Cole-9; Cooper-17; Knox-1; Lewis-2; Lincoln-4; Linn-3; Macon-7; Marion-12; Monroe-2; Pike-3; Putnam-13; Ralls-8; Randolph-1; Schuyler-2; St. Charles-2; Sullivan-5; and Illinois-1)



Collecting Farmer's Market Price Data

Callaway County

Business and Community

Local Impact

Farm Tax Workshops

MU Extension hosted and taught Farm Tax Workshops for farm businesses and farm and ranch families. The content included farming: hobby vs. business, employee vs, independent contractor, weather related sales, sale or trade of business property, legislative update, 1099s, expiration of key income tax provisions, tax issues arising from the death of a farmer, and depreciating and expensing farm assets.

The workshops were designed to convey information in a concise manner using information from the IRS and the Land Grant University Tax Education Foundation. The purpose of the classes is to get relevant and helpful information to farmers so they can make decisions and be better prepared to work with their professional tax preparer.

The workshops were a combination of in person classrooms and online via Zoom, with a total of seventy-seven participants across the state and one participant from Callaway County.

Most participants completed an optional post survey. Seventy-five percent reported they had a better understanding of drought issues. Seventy-five percent said they understand the difference between 1099-MISC and 1099-NEC, Eighty-one percent are aware of depreciation methods, Ninety-four percent understand legislation is scheduled to expire. Ninety-four percent recognize year end planning is important.

Many participants planned to take some action before the end of the year. Some of the planned actions included: reviewing farm records (88%), meeting with tax preparer and communicate with family members (31%). Plan to communicate with family members about tax issues (69%) and sixty-nine percent plan to review resources before purchasing begins in 2024.

Farm tax education workshops benefit individuals by increasing their understanding and knowledge, leading to more informed decisions and management of taxes. Better knowledge also leads to improved communications with their tax preparers and accountants. The result is researched and timely purchases of farm expenses, optimizing income tax scenarios and improved profitability over time. Money saved in income taxes stays local and is spent in local businesses up and down main street, making a more vibrant and sustainable rural economy.

Callaway County

Business and Community

Local Profiles and Stories

Agriculture Lender Seminars *Darla Campbell and Mary Sobba*

Eighty-three lenders from 25 Missouri counties and Illinois attended this year's seminars in Mexico and Brookfield. Lenders learned about crop and livestock outlook, agriculture policy, rental rates & land values, MU budgets, input costs, USDA Farm Service Agency, and Missouri Agricultural and Small Business Development Authority (MASBDA) programs. Lenders in attendance manage 6,007 farm loans totaling \$115,500,000.

By attending University of Missouri's Agricultural Lenders' seminars, lenders gain knowledge to help their clients make better decisions based on objective education and resources. More information and better decisions benefit their portfolio of producers, landowners, and ag-businesses through enhanced understanding of enterprise budgets, market expectations, and other decision influencing factors affecting families' and businesses' financial health.

(Adair-4; Audrain-8; Boone-4; Callaway-4; Carroll-3; Chariton-4; Clark-6; Cole-1; Grundy-1; Lewis-5; Lincoln-6; Linn-5; Livingston-2; Macon-3; Marion-1; Moniteau-1; Monroe-9; Pike-3; Putnam-1; Randolph-1; Ralls-1; Schuyler-1; Shelby-6; Sullivan-1; Warren-1; and Illinois-1)

Note: A few counties had attendees in multiple ag lender seminars so the total attendees for those counties are: Boone – 8, Cole – 8 and Moniteau - 3





MU EXTENSION **Serves MISSOURI and Delivers MIZZOU**
 through credible statewide programs
First Responder Education



The programming from the **MU Fire and Rescue Training Institute** (FRTI) is available to all qualified fire and emergency first responders. Seventy percent of courses are held at the local departments or agencies. With most of the state's fire service personnel considered volunteer or part-time, this local access and flexibility assures training opportunities for all firefighters and emergency responders.



The **Law Enforcement Training Institute** (LETI) offers advanced training on a wide variety of topics, including defensive tactics, firearms, use of force and de-escalation. LETI offers customized programs for all required continuing education areas of concentration.



The Law Enforcement Training Institute (LETI) has provided basic and advanced training for law enforcement since 1948. LETI's **Basic Peace Officer Academy** exceeds the 600 hours of training required for licensure in Missouri. From 2019 through 2023, the basic academy has licensed almost 300 peace officers, more than any other academy in the state. During that time, all but one graduate became employed by a law enforcement agency. LETI graduates come from around the state and return to their communities to serve and protect.

Legend



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being

Callaway County

First Responder Education

Local Impact

Law Enforcement Training Institute (LETI)

graduated 9 law enforcement officers from Callaway County for the Class A-certified 600-hour basic training academy. The Fulton Police Department had 6 graduates and the Callaway County Sheriff's Office had 3 graduates. This is a progressive and fast-paced academy that earned the graduates not only their peace officer certification, but certification in 12 other topic areas. They received real-life, hands-on training – from how to protect themselves, to taking notes, and conducting an arrest.

Fire and Rescue Training Institute conducted 536 classes with a total enrollment of 9,825 students for fiscal year 2023 reaching students in all 114 Missouri counties. Callaway County had 136 Firefighters enrolled in a variety of the courses offered. MU FRTI delivered 70% of all training at the local level in 77 of the 114 counties in Missouri and in 24 other states using their field extension program. This program has a fleet of 16 training support and equipment trailers that range from small cargo trailers to semi-tractor trailers for transport of specialized fire training props and equipment. Every hour of instruction received, and every emergency first responder trained translates directly into safer firefighters and safer communities.

TYPES OF TRAINING

- Aircraft Rescue and Fire Fighting
- Industrial Fire and Rescue
- Fire Inspection and Investigation
- Fire Instructor
- Fire Officer
- Fire Suppression and Safety
- Firefighter Testing and Evaluation
- Driver/Operator
- Emergency Management
- Emergency Medical Services
- Hazardous Materials/WMD
- National Incident Management System
- Technical Rescue

SERVICES

- Subsidized training at no-cost
- Low cost fee or tuition-based training
- Student records and transcripts
- State and national accreditation/recognition
- Liaison with other organizations/associations
- Curriculum development
- Technical advising

TRAINING AVAILABILITY

- Field extension, local delivery
- On-campus
- Registered programs
- Fire schools and conferences



MU EXTENSION **Serves MISSOURI and Delivers MIZZOU** through credible statewide programs **Health and Human Sciences**



Mental Health First Aid equips people to recognize and respond to signs of mental illness and substance use disorders.

The youth version of the program is designed to support adolescents ages 12-17 facing mental health or addiction challenges, while the adult version focuses on adults age 18 and older. Participants learn how to offer initial assistance and guide individuals toward the care they need.

**In Missouri, approximately
1 MILLION ADULTS and 72,000 ADOLESCENTS
suffer from MENTAL HEALTH ISSUES.***

*Missouri Department of Mental Health 2020 Status Report



Studies show that people with strong family bonds tend to have lower stress levels.

Building Strong Families helps families amplify their strengths, tackle challenges and make confident, informed decisions to build resilient family units.



A Matter of Balance helps older adults overcome their fear of falling, increase their activity levels and reduce their risk of falls. In eight classes, participants learn fall-prevention strategies, develop personal prevention plans, acquire balance-improving exercises and make lifestyle changes to minimize their fear of falling.

“I have cleaned my house of clutter for safety, put non-slip stickers on my tub floor, I’m getting much more regular exercise and I’m feeling stronger.”

Legend



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being

Callaway County

Health and Human Sciences

Profiles and Stories



Through MU Extension's Farm and Ranch Stress programs and five different field-tested workshops, rural participants are equipped with tools to improve their mental health, are connected to valuable mental health resources, and participants gain access to free one-on-one telepsychology sessions.

Tina Edholm taught **Mental Health First Aid** 15 times to 229 participants from 47 counties in Missouri, including Boone, Callaway, Cole, Howard, Pettis, and Saline. She attended multiple community events to share 988 resources and resiliency information.

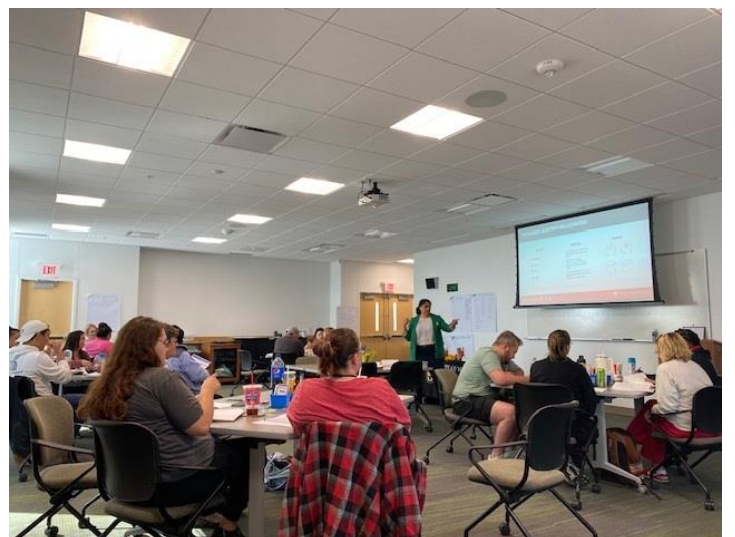
Teen Mental Health First Aid (tMHFA)

offered across six 45-minute sessions to 10th graders during Health at Iberia High School during Spring 2022 and 2023. Course outcomes included:

- **18 out of 52** teens requested a mental health check-in from a mental health professional.
- "More people experience mental health challenges than you think. There's nothing to be ashamed of when seeking help." - tMHFA participant, 2023

These results were presented as a poster at Extension and Engagement Week. Tina will be offering tMHFA at Pilot Grove C-4 School District (Cooper County) as well as Iberia High School (Miller County) during the Spring 2024 semester.

Mental/Behavioral Health & Suicide Prevention		
	MHFA Youth and Adult	MHFA Teen
People Served	229	51
Value of Mental & Behavioral Health Programs	\$170	\$170
Total Value of Mental & Behavioral Health Programs	\$38,930	\$8,670



Callaway County

Health and Human Sciences

Local Impact

Childcare Team Highlights: A Year of Impact!

In 2023, our Human Development and Family Science childcare team trained 397 providers, delivering 794 clock hours across Missouri through engaging virtual sessions. "The environment felt very welcoming, and it was exciting," said one participant. Another mentioned, "I thought it was a great training session and very interesting and inclusive." Tina's dedication shone as she engaged with 305 participants on their certification journey across Boone, Callaway, Cole, and beyond.



Matter of Balance

In 2023, the Matter of Balance program, a crucial element of the University of Missouri Extension's commitment to healthy aging, achieved significant milestones under Tina's guidance. She conducted three courses in Boone and Saline counties, with 29 participants completing the program. Through goal-setting, fall risk reduction, and basic exercises, participants experienced fewer falls, enhancing their ability to maintain independent lives in the familiarity of their homes. This not only contributes to the active engagement of seniors in work and community life but also markedly reduces the burden on our local healthcare system.

Building Stronger Families in Missouri

Human Development and Family Science Specialists virtually extended parenting education across the state in 2023. The team successfully served 91 parents, accumulating a total of 740 hours, directly impacting over 181 Missouri children.

The impact extended beyond knowledge as participants actively applied their learnings:

- **Communication Skills:** 100% worked to improve their communication skills to be more constructive and positive.
- **Relationship Building:** 59% made intentional choices to build or repair relationships.
- **Family Stress Reduction:** 50% made intentional choices that reduced family stress.

Tina Edholm played a vital role by teaching or moderating nine virtual sessions and two eight-hour in-person sessions. In 2023, 22 participants from Cooper, Callaway, and Howard counties attended, earning a total of 160 hours of parenting education.

Boost Your Brain & Memory

The program identifies healthy practices that can help you remember things better, be more organized, pay closer attention, and reduce your stress. Boost Your Brain & Memory was offered at the Cooper County Extension office. Eight participants completed the course. Comments from the course included the following:

- "Very positive group - all wanted to achieve and learn additional positive experiences." - Anonymous BYBM participant, Cooper County, 2023
- "This was an excellent course! Well-presented and full of useful ideas and information. Also very much enjoyed this instructor like everyone else who practiced too." - Anonymous BYBM participant, Cooper County, 2023

Callaway County

Health and Human Sciences

Profiles and Stories



Heather Warren shared this success story demonstrating local impact:

I am teaching Getting Healthy Through Gardening at the Fulton Community Supervision Center. This program is all adult women, we hold classes once a week for 6 weeks.

While working with the Supervision Center most of my participants have no experience with gardening. We always incorporate cooking, food safety, and taste tests when we do gardening classes. The other day while out in the garden I had two ladies tell me how much they enjoy working with the plants in the garden. They stated, "it's like therapy for me, we need this to clear our minds and to give us something productive to learn and do." It's a skill that most of them plan to implement when they return home. Not only are they learning a life skill, but they are getting hands on experience preparing their fresh vegetables from the garden in the kitchen.



Callaway County

Health and Human Sciences

Local Impact

The Supplemental Nutrition Assistance Program Education (SNAP-Education or SNAP-Ed) brought \$10,874,798 in federal funds to Missouri. During FY2023, Missouri's SNAP-Ed program reached over 78,000 Missourians through direct classroom education. Each person participated in an average of 6 hours of education totaling over 15,000 hours. In addition, an additional 760,135 persons participated in indirect education. Direct and indirect education resulted in over 1.8 million total contacts with Missourians.

Participants in SNAP-Ed learn the importance of making healthier meals and snack choices, eating breakfast more often, are more willing to try new foods, increase their physical activity, and make healthier food choices. Those who practice healthy eating and are physically active are more likely to contribute to a healthy labor force and enjoy a high quality of life throughout the lifespan. This vital programming effort also reduces healthcare costs over the participant's lifetime, saving taxpayer money in reduced public healthcare benefits and insurance premiums.

A total of 274 Direct Education participants were from Callaway County.

Our Nutrition Program Associates (NPAs) are also continuing to provide information about the SNAP benefits program and offer assistance with SNAP benefits applications.

We look forward to more programming opportunities in Callaway County and continued progress in helping to improve the lives of Missouri families.

Thank you,

The East Central Family Nutrition Education Program

Nancy Keim, Associate Director
Deborah Raaf, Program Manager
Becky Fuchs, Office Support
