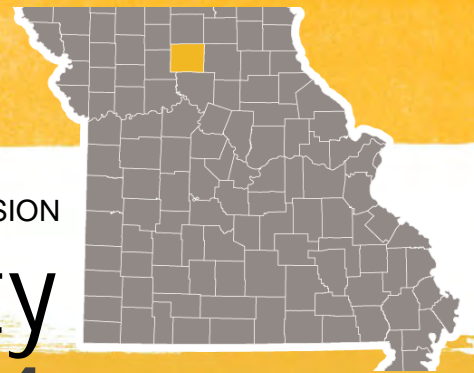


UNIVERSITY OF MISSOURI EXTENSION

# Linn County

# 2024 Annual Report



21262 Genoa Road  
Linneus, MO 64653  
660-895-5123

**SERVE  
MISSOURI.**

**DELIVER  
MIZZOU.**



**Extension**

*University of Missouri*

an equal opportunity/ADA institution



Office of Extension  
and Engagement  
*University of Missouri*

Vice Chancellor's Office  
108 Whitten Hall  
Columbia, MO 65211  
PHONE 573-882-2394  
EMAIL cchiggins@missouri.edu

December 2024

Dear county commissioners, elected leaders and friends of MU Extension and Engagement,

As we reflect on the past year, I want to express my deep gratitude for your support of MU Extension and for your partnership in enhancing the lives of Missourians.

Your support for MU Extension fuels Missouri's agriculture, strengthens families, prepares our youth and promotes the health, well-being and vitality of our communities. Over the past year, our programs have focused on addressing key needs throughout the state:

- **Expanding access to 4-H:** To make 4-H more accessible, we've introduced more in-school and after-school clubs, reducing barriers and creating opportunities for young Missourians to develop essential skills and leadership abilities.
- **Supporting agriculture and land stewardship:** We're addressing critical issues such as succession planning for family farms, rural mental health, agricultural business management and land stewardship. These initiatives are helping Missouri's farmers plan for the future and preserve the health of our land for future generations.
- **Advancing health initiatives:** Our team of community health field specialists, covering every region of the state, works directly with local leaders to assess health needs and bring UM System resources and expertise to these communities, supporting healthier lives and stronger communities.
- **Promoting economic development:** MU Extension is helping to create economic opportunities by working with individuals, supporting businesses in their growth and collaborating with communities to enhance local vibrancy. Through these efforts, we help bring new jobs, skills and possibilities to Missourians across the state.
- **Providing essential training:** Our continuing education programs prepare Missouri's firefighters and health care workers to meet the demands of their roles with the latest skills and knowledge, ensuring they are well-prepared to serve our communities.

As you read through this annual report, I hope you feel as proud as I do of the accomplishments we've achieved together. The dedication and professionalism of MU Extension's faculty and staff are inspiring, and I am grateful to work alongside them—and each of you—as we make Missouri a stronger, healthier and more vibrant place. Thank you for your continued support and partnership. Together, we are serving Missouri by delivering the University *for* Missouri.

Warm regards,

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

# Who we are

## Faculty and staff

Jennifer Allen  
Office Support

Connie Clawson  
Youth Program Associate

Tracie Moore  
Extension Engagement Specialist

Valerie Tate  
Field Specialist in Agronomy

Darla Campbell  
Field Specialist in Community Development

Zac Erwin  
Field Specialist in Livestock

Tennille Manson  
Nutrition Program Associate

Karen Poe  
Field Specialist in Nutrition & Health

Jennifer Schutter  
Field Specialist in Horticulture

Mary Sobba  
Field Specialist in Agricultural Business

Jeremiah Terrell  
Field Specialist in Human Development

Michael Krauch  
NE Regional Director



## Council members

Shawna Shiflett, Chairman

Joel Magnuson, Vice-chairman

Victoria Dickerson, Secretary

Josh Muck, Treasurer

Rich Crowe

Willie Ewigman

Burnie Hicks

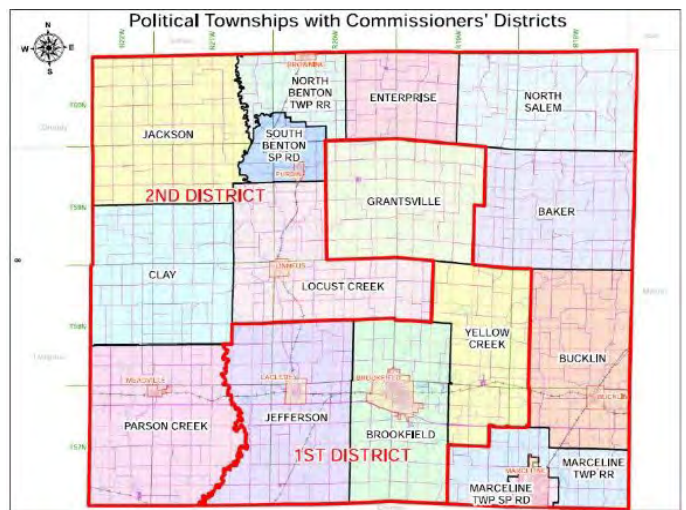
Eli Allen

Rebecca Coram

Brandi Wright

Hannah Kiel

Amanda Johnson



## County commissioners

Dick King  
Presiding Commissioner

Josh Muck  
Commissioner

Glen Murrain  
Commissioner

# Budget and more

## Appropriations budget

### Income

County Appropriations	35,000
<b>Total Income</b>	<b>35,000</b>

### Expenses

Salaries/Benefits	25,000
Travel	1,200
Telephone	1,000
Office Supplies/Service	3,000
Utilities	2,500
Insurance	1,200
Capital Repairs	800
<b>Total Expenses</b>	<b>34,700</b>

## Linn County Extension Council 4-H Scholarship

The Linn County Extension Council sponsors a scholarship each year to deserving Linn County 4-H seniors. In the past, the award was for those entering any secondary education program; for the second year the council chose to change the criteria to also include those entering a trade, where the purchase of tools, equipment or certain necessary supplies are needed.

### 2024 - Scholarship Recipients:

Nessa Montgomery	\$700
Mikaela Rojas	\$700
Hale Allen	\$300
Hank Parks	\$300

These scholarships are funded by donated items auctioned during the Premium Sale at the annual Linn County Youth Fair.

## Return on investment

University System	100,000
Donations	14,000
Program Revenue	4,087

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



## Local Support

Did you know you can donate directly to Linn 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.

# UM System County Impacts

2025 UM Systemwide Impact Data Sheets

## Linn County



University of Missouri System  
COLUMBIA | KANSAS CITY | ROLLA | ST. LOUIS

### UM System Footprint in the county in 2024



#### FY24 county students

##### 53 students

- 45 Undergraduates
- 8 Graduate and professional students
- 40 Full-time students
- 13 Part-time students



#### County employees and retirees

##### 31 people employed by UM

- 21 Campuses
- 10 MU Health Care (includes additional employees gained via the recent integration of Capital Region Medical Center)

14 UM retirees and beneficiaries

UM salary and retirement income: \$1.6 million

UM state tax revenue: \$45,628

UM federal tax revenue: \$221,228



#### County alumni

##### Selected school alumni

- 24 Nursing
- 26 Health Professions
- 6 Dentistry
- 5 Pharmacy
- 6 Veterinary Medicine
- 102 Agriculture
- 29 Engineering
- 9 Law

##### Alumni teaching K-12

- 30 teachers
- 15.1% of all district teachers
- 2 principals and administrators
- 16.7% of all district principals and administrators



#### County breakdown

##### MU

- 39 students
- 283 alumni
- 20 employees

##### UMKC

- 3 students
- 38 alumni
- 0 employees

##### Missouri S&T

- 10 students
- 16 alumni
- 1 employee

##### UMSL

- 1 student
- 8 alumni
- 0 employees



#### County properties and offices

Cornett Research Farm

MU Extension in: Linn County



County population: 11,850



#### County services provided

##### Health care (FY24)

- 1,627 in-state patients seen at MU Health Care, with \$810,459 of uncompensated care
- 3 in-state patients seen at UMKC School of Dentistry with a statewide average of \$52.57 per patient in uncompensated care
- MU Health Care's Missouri Telehealth Network recorded 403 visits to 230 patients having ZIP codes associated with the county

##### Extension (2023)

- 2,236 Total educational contacts from MU Extension to residents of the county, including:
- 1,220 contacts related to productive farming, better gardening, and managing natural resources
- 367 contacts related to healthy eating and aging, strengthening families, personal finance, or youth development
- 64 contacts related to starting businesses, developing community leaders, or renewing the local economy

# UM System County Impacts

2025 UM Systemwide Impact Data Sheets

## Linn County



University of Missouri System

COLUMBIA | KANSAS CITY | ROLLA | ST. LOUIS

### UM System Statewide Footprint

#### Economic and Community Development Highlights

- In FY23, Business Development Specialists worked with small businesses and entrepreneurs statewide to create or retain 98,527 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 FY18 and FY23, UM System brought Missouri more than \$1.58 billion in federal and private research funds, funded primarily from outside the state, but spent within the state.



In FY24, UM System was issued 29 patents and filed 69 new U.S. patent applications.

- In FY24, the UM System awarded 707 design and construction project contracts throughout Missouri, for a total investment of \$287.3 million in the state.



In FY24, to improve access to medical and health related services, MU Health Care's Missouri Telehealth Network's Show-Me ECHO program provided 16,687 hrs of case-based instruction to 3,113 learners located in 105 of 114 Missouri counties and the city of St. Louis.

#### Education and Training Provided



40,542 police, fire fighters, and medical professionals attending continuing education (2023)



Agriculture and natural resource programs served 369,077 farmers and related businesses (2023)



210,577 youth and stakeholder educational contacts in 4-H clubs, schools, camps and other programs (2023)

#### Education Highlights

##### FY24 Financial Aid Awards

In FY24, 69.7% of the UM System's 79,014 students received financial aid totaling \$1.048 billion

MU		UMKC	
28,608	\$583.6M	11,518	\$228.5M
students receiving financial aid	financial aid awarded	students receiving financial aid	financial aid awarded
Missouri S&T		UMSL	
6,720	\$127.7M	8,256	\$107.8M
students receiving financial aid	financial aid awarded	students receiving financial aid	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), 484 K-12 school districts (830,000 students) and 134 public libraries (serving nearly 3 million Missourians) in 2023.

- UM System awarded 50.5% of the 31,689 Bachelor's or higher degrees awarded by Missouri four-year public institutions in 2023-24.
- UM System awarded 35.0% of the 1,776 research doctorates and 26.8% of the 3,796 professional doctorates awarded by Missouri public and not-for-profit private institutions in 2023-24.
- In FY24, UM System's \$30.7 million in National Science Foundation (NSF) grants represented 96.9% of all NSF grants made to Missouri public colleges and universities.
- In 2024, over 12,400 Missourians accessed mobroadband.org, part of the UM System Broadband Initiative which helped the statewide build-out of high-speed internet infrastructure.

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

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 2024, 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



# Missouri Grand Challenges: Local Solutions



LINN 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: Labor Market

### Average Earnings per Job

Average earnings per job can reflect the type of economy, skill of employees, and availability of jobs and workers in an area. Average earnings is calculated by dividing total full-time and part-time employment by total earnings. Earnings is the sum of three components of personal income--wages and salaries, supplements to wages and salaries, and proprietors' income. Full-time and part-time jobs are counted at equal weight. Both employment for wages and salaries and proprietors employment are included, but the employment of unpaid family workers and volunteers is not included. Average earnings per job is a measure of the wages paid at jobs in the county not the earnings of people who live in the county. The dollar figures shown are not adjusted for inflation.

#### 2022 Average Earnings (\$)

**\$43,422**

Linn



Missouri

\$62,528 😞

Data Source: US Department of Commerce, [US Bureau of Economic Analysis Regional Economic Accounts](#), 2007-2022.

### Labor Force Participation

The labor force participation rate is a measure of an economy's active workforce and includes people who are employed and those seeking employment. According to the 2015 – 2019 American Community Survey, of the 9,436 persons of working age in the report area, 61.10% are included in the labor force. This rate falls short of the Missouri labor force participation rate of 63.12%.

#### Labor Force Participation Rate

**61.1%**

Linn

Missouri

63.12%

Data Source: US Census Bureau, [American Community Survey](#), 2019-23.

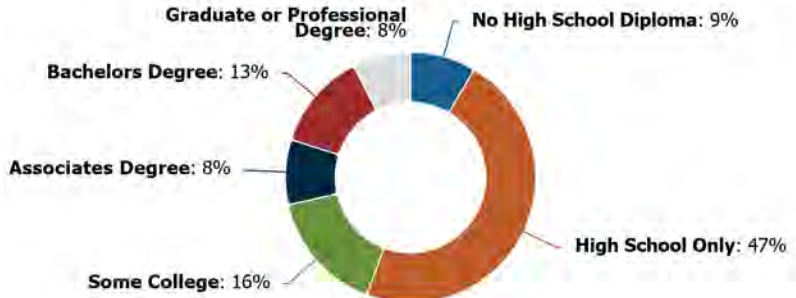


## CHALLENGE 2: Educational Access and Excellence: *Educational Attainment*

### 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, 15.8% of adults have at least some college education and 21% of adults have an associate's level degree or higher. However, 47.2% stopped their formal educational attainment after completing high school, and 8.5% of adults did not complete high school.



#### No High School Diploma

8.52%

Missouri 8.41%

Linn

Data Source: US Census Bureau, [American Community Survey](#), 2019-23.

Data Source: US Census Bureau, [American Community Survey](#), 2019-23.



## CHALLENGE 3: Healthy Futures: *Healthy Weight*

### Obesity (Adult)

This indicator reports the number and percentage of adults aged 20 and older self-report having a Body Mass Index (BMI) greater than 30.0 (obese). Respondents were considered obese if their Body Mass Index (BMI) was 30 or greater. Body mass index (weight [kg]/height [m]<sup>2</sup>) was derived from self-report of height and weight. Excess weight may indicate an unhealthy lifestyle and puts individuals at risk for further health issues.

*Note: In 2021, the CDC updated the methodology used to produce estimates for this indicator. Estimated values for prior years (2004 - 2017) have been updated in this platform to allow comparison across years. Use caution when comparing with saved assessments generated prior to November 10, 2021.*

#### Percentage of Adults Obese, 2016

29.6%

Missouri 33%

Linn



Data Source: Centers for Disease Control and Prevention, [National Center for Chronic Disease Prevention and Health Promotion](#), 2021.

### Physical Inactivity

Within the report area, 1,617 or 16.8% of adults aged 20 and older self-report no active leisure time, based on the question: "During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?" This indicator is relevant because current behaviors are determinants of future health and this indicator may illustrate a cause of significant health issues, such as obesity and poor cardiovascular health.

*Note: In 2021, the CDC updated the methodology used to produce estimates for this indicator. Estimated values for prior years (2004 - 2017) have been updated in this platform to allow comparison across years. Use caution when comparing with saved assessments generated prior to November 10, 2021.*

#### Adults Age 20+ with No Leisure Time Physical Activity, Percent

16.8%

Missouri 21.4%

Linn

Data Source: Centers for Disease Control and Prevention, [National Center for Chronic Disease Prevention and Health Promotion](#), 2021.

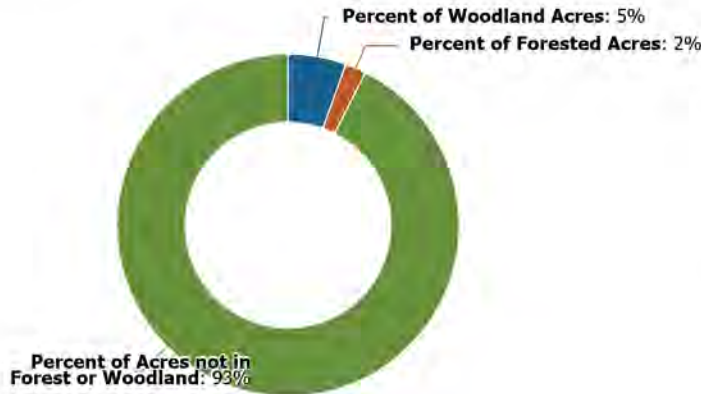




## CHALLENGE 4: Agricultural Growth & Stewardship: *Resource Management*

### 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.

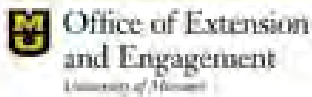
#### Percent of Operations Utilizing Rotational Grazing

# 11.7%

Missouri 16.46%

Linn

Data Source: US Department of Agriculture, National Agricultural Statistics Service, [Census of Agriculture](#), 2022.



For more data, visit [data.extension.missouri.edu](http://data.extension.missouri.edu)

### Linn County State Fair Farm Family



Each year, the Linn county MU Extension, in cooperation with the Missouri Farm Bureau selects a family to represent them at the Missouri State Fair. We select a family actively engaged in agriculture, supporters of MU Extension, active in their community through leadership roles in organizations, support youth in areas such as 4-H and FFA and are respected by their neighbors and community. The Jeff and Kristy Sparks family was selected to represent Linn County for 2024.



# 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.



### **Missouri 4-H Agriculture and STEM programs**

employ hands-on activities that foster problem-solving, creativity, critical thinking and exploration in engineering and technology. Agriculture programming emphasizes biology, environmental science, agri-science, veterinary science and engaging activities such as animal care and agronomy. STEM programs delve into computer science, robotics, aerospace, physics, chemistry and veterinary science.



### **4-H's Leadership and Civic Engagement programs**

foster understanding, confidence and decision-making skills to empower youths to become informed and active young citizens. 4-H civic engagement initiatives prepare young people to become future leaders by engaging them in programs where they have voice and influence.



## Legend



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence

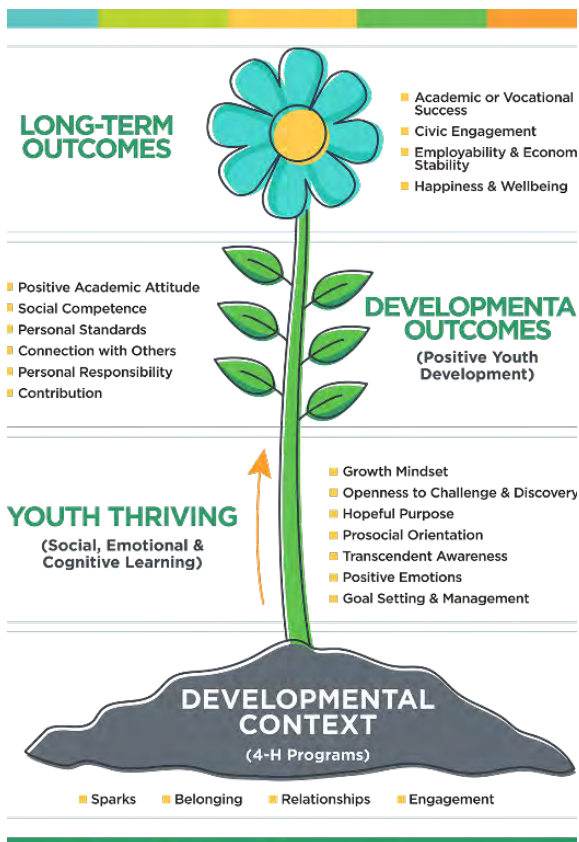


Health & Well-Being

### Local Impact

#### 4-H Members

4-H programs are also grounded in the belief that youth learn best by doing. Through hands-on projects like science, health, agriculture, and civic engagement in a positive environment, youth receive guidance from adult mentors and are encouraged to take on proactive leadership roles. Youth have the opportunity to concentrate on one focus area, or they can try a variety of programs throughout their 4-H experience. Linn County served youth through 6 community clubs.



- Over 100, 4-H members were engaged in science related projects and experiences.
- Collectively youth participated in 3157 hours of community club work in Linn County.
- Over 226 hours of community service projects were completed by 4-H members and volunteers during the 2023-2024 4-H Year.

4-H Clubs offer in-depth educational experiences in which members learn life skills such as decision making, public speaking, and working with others. Members learn by doing under this guidance of adult volunteers, who lead a wide variety of projects that support 4-H members in finding their SPARK. Club and project leaders also involve youth and teens in community service, leadership opportunities, and educational trips. 4-H project work and related educational experiences help youth explore interests in citizenship, communication, and leadership.

# Linn County

## Missouri 4-H

### Local Impact

4-H members have demonstrated learning through the following activities:

- 37 youth participated in a total of 10 different events during the 2024 Linn County 4-H Achievement (Major Events Day) event
- 8 members participated in the Northeast Region Energizer held in the spring of 2024 in Palmyra and 6 members and attended the Northeast Region 4-H Round held in Macon in the fall.
- 1603 exhibits at the 2024 Linn County Fair from 195 4-H and FFA members, who are also supported through youth programming.
- Linn County youth exhibited over 52 exhibits in the 4-H Building and numerous livestock shows of the Missouri State Fair.
- 11 state level recognition forms were completed by members. These forms provide members with a vital step in the Experiential Learning Model. Members reflect on the things they have done and learned throughout the 4-H year and how they can apply what they have learned in the upcoming year.
- 7 members participated in the State 4-H Teen Conference, which offered youth a fantastic opportunity to experience being developing leaders in 4-H. This event provides a safe and enjoyable campus experience where youth can enhance their skills and forge new friendships.
- 9 youth from Linn County Participated in skill development contests on the State level including State Livestock Judging, State Fashion Revue, State Poultry Day and State Public Speaking. Participation in these events helps youth to develop confidence and practice their decision making and public speaking skills through competitions tied to project areas they are passionate about.
- 18 youth from Linn County participated in the State Shoot events and 5 youth from Linn County represented Missouri on the state teams at the National 4-H Shoot.
- 26 youth participated in MOVE Across Missouri, where youth and adults are encouraged to track their physical activity and fitness in their daily life, learning about healthy lifestyles.

### Top 10 Project Areas in Linn County



1. Arts and Crafts
2. Photography
3. Swine
4. Beef
5. Woodworking
6. Poultry
7. Archery
8. Sheep
9. Foods
10. Horse Riding

### Local Impact

#### 4-H School Enrichment- Embryology

- There were 135 students from 7 classrooms who participated in the Hatching Chicks in the Classroom program in 2024.
- Students participated in over 24 hours of learning with the “Chick It Out” program.

During the Embryology program, students learn about the 21-day development occurring within a fertilized, incubated egg that can result in the hatching of a chick. Students identify the parts of an egg and discover what each part provides for the developing chick. Students learn how to tell if an egg is raw or boiled and explore the strength of the egg’s shell providing protection to the developing chicks. Students review the necessity of hand washing due to potential contamination caused by salmonella in poultry and poultry products. Students often gain experience with death and disabilities. Throughout the experience, students are charged with rotating the eggs three times a day and are responsible for checking to make sure the incubator has water and is maintaining the correct temperature. Once the chicks hatch, the students care for them, providing feed, water, warmth, and a calm environment.

#### Impacts of Programming



Students practice life skills including decision making and responsibility, helping them to develop qualities that will shape their development into adults. Students are provided with the opportunity for a practical experience that connects with the core subjects of communication arts, math, science, and health. Youth with hands-on experience with science are more likely to pursue science-related careers, which are critical to our county, state, national, and global economy. Students are conscious of the need to practice proper hand washing techniques to prevent the spread of illness and disease. Students also learn compassion and develop an understanding of how to accept individuals with disabilities, as well as how disabilities can be compensated for.

#### 4-H SNAC Clubs

4-H Student Nutrition Advisory Council (SNAC) clubs are offered in a variety of settings including before school, during school, afterschool, and in other community settings helping youth build knowledge about nutrition and fitness. Youth participate in a leadership project where they are encouraged to become an ambassador of Healthy Living in their communities by designing and implementing a leadership project that will improve education and the fitness of others. Across the state, youth have developed creative ways to advocate for healthy living. In 2024, Missouri saw the establishment of 121 SNAC Clubs, engaging 2,543 youth and reaching over 7,330 others through their leadership initiatives.

In Linn County, SNAC efforts reached 26 youth and leadership projects completed included Buddy bag rep.

# Linn County

Missouri 4-H

## Local Impact





# MU EXTENSION **Serves MISSOURI and Delivers MIZZOU**

through credible statewide programs

## **Agriculture and Environment**



### Show-Me-Select Replacement Heifer Program

The Show-Me-Select program focuses on increased adoption rate by farmers in Missouri of management practices that offer potential to improve long-term reproductive efficiency of their herds and resulting profitability. Also focusing on increasing marketing opportunities for and adding value to Missouri-raised heifers with the creation of reliable sources of quality replacement heifers in terms of genetics and management.

In 2024, 24 heifers were enrolled from Linn County in the Missouri Show-Me-Select Replacement heifer program. Show-Me-Select producers sell heifers in sanctioned Show-Me-Select Heifer Sales held annually at Kirksville Livestock, LLC and F & T Livestock in Palmyra, MO. SMS producers also sell in other public auctions and private treaty. In 2024, 801 Show-Me-Select heifers, totaling \$2,724,285, sold through SMS sales for an average price per head of \$3,401. Analyzing data from these sales show that Show-Me-Select tagged heifers when compared to those that do not carry the Trademarked tag, realize a 284-dollar increase in value. That equates to an added value of \$227,484 returned to participating producers in Northeast Missouri. Several area producers purchased heifers at these sales.



Auctioneer, Dan Sullivan, looks for bidders at the 24th Annual Harold and Marvis Trump Bred heifer auction. Carthage, IL.



Show-Me-Select Sale in Kirksville (Photo courtesy of Zac Erwin)

### Legend



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being



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



Jim Gerrish, independent grazing lands educator from Idaho, addressed several forage topics at the Symposium.



Governor-Elect, Mike Kehoe addresses the Friday evening crowd at the 25th Missouri Livestock Symposium.



Dr. Ron Hanson, Professor Emeritus with the University of Nebraska, was the afternoon keynote speaker at the 25th Missouri Livestock Symposium. His topic was Empowering Families for Passing on Their Missouri Farm With Success.

**25th Annual Missouri Livestock Symposium**

The Missouri Livestock Symposium (MLS) started in 2000 as a means of providing the latest research and best management practices to area livestock producers and landowners. The MLS has evolved into an annual educational program attracting hundreds of livestock producers from across the Midwest and is considered a source for professional development by area agricultural educators and professionals. The MLS involves a 20 member all volunteer planning committee contributing approximately 672 hours annually to planning and another 293 hours for event implementation.

The Missouri Livestock Symposium features a true multi-disciplinary and cross-agency approach to program planning with a diverse committee consisting of producers, Extension specialists, University researchers and governmental liaisons. The inclusion of diverse backgrounds and people strengthen the program direction and overall program delivery.

Strong attendance noted for the 2024 Livestock Symposium. Keynote speaker, Cassandra Fish, Beef Market Analyst headlined the event as she spoke about “How the Industry has Changed.”

Many notable topics and speakers were featured on Saturday December 7th as livestock producers looked for answers and interaction with experts in livestock production.

**Legend**



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being





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

## Feedlot School

Currently 82% of beef calves raised in Missouri are fed and harvested out of state; expanding the state's feeding capacity will have a significant economic impact. It is estimated that every head of cattle fed in Missouri will add \$1,140 per head to farm revenue. Feedlot School is a statewide initiative designed to help cattle producers capture post-weaning growth potential. The curriculum includes topics such as competitive advantages, feedlot performance expectations, health management, diet formulation, budgeting, marketing, and feeding technologies. Participants gain practical tools to apply changes on their farms and enhance post-weaning growth and performance. Feedlot School also includes opportunities to engage with processing industry representatives and tour local farms in Missouri where cattle finishing is actively practiced.

In 2024, the largest Feedlot School to date was August 29-30 in Kirksville, MO. Two producers attended from Linn County.



Feedlot Tour of new construction feeding barn in Adair County



Feedlot School participants listen to University of Missouri Extension Livestock Specialist, Zac Erwin.

Evaluation results revealed that 96% of attendees currently feed or plan to start feeding cattle in Missouri. A majority of participants also reported intentions to take these actions:

- 62% of attendees plan to build a feedlot with a shelter.
  - 80% of attendees plan to increase on-farm feeding capacity.
  - 64% of attendees plan to start feeding cull cows.
- Roughly 44% of attendees plan to adopt working with a consulting feedlot nutritionist.

Participant Comments:

- Well run-informative-learned some new things.
- Very helpful to continue our education.
- Overall a great school.
- Excellent Class!! Instructors were all great and really kept my attention. Slides seemed to work well and going to real feedlots was awesome.
- Got a lot of Value out of the school, will recommend to other producers.
- Very Good class overall. Great experience.

## Legend



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being



Heather Conrow  
Livestock Specialist  
State 4-H Animal Science Educator

# Linn County

## Agriculture and Environment

### Local Impact

*Objective: "To provide objective and quantitative carcass data through ultrasound on livestock for the purpose of genetic improvement for carcass traits."*

Real-time ultrasound uses high frequency sound waves to "see inside" while the animal is still alive. This technology allows for a fast and objective prediction of the carcass composition of the market animal.

Carcass traits are moderately heritable and are a good indicator of lean and fat in live animals. Ultrasound allows county fairs to have a carcass class without having to harvest the animals.

Benefits of using real-time ultrasound includes:

- ❖ Objective prediction of carcass lean (muscle) and fat in live animals
- ❖ Objective measure of percent intramuscular fat (marbling) on live cattle
- ❖ Eliminates the expense and time required by progeny testing for carcass merit



*"Think of the animal as a Christmas present. The fancy wrapping and pretty bows is the 'show' or how good they look. The real present is the meat we eat inside. Ultrasound allows us to see inside at the gift without unwrapping the present."*

### 2024 Ultrasound by the Numbers

- ❖ Over **5,700** miles traveled
- ❖ **273** head of cattle scanned
- ❖ **568** pigs scanned
- ❖ **164** head of sheep scanned
- ❖ **83** head of goats scanned
- ❖ Fat-free lean gain has improved from **0.31** kilograms per day to **0.375** kilograms per day in swine
- ❖ Loin eye area has increased from **8.0** to **8.3** square inches in swine
- ❖ Back fat has decreased from **0.9** to **0.79** inches in swine





# Linn County

## Agriculture and Environment

### Profiles and Stories

Ge • net • ics (/jə'nediks/) the science of genes and how traits are passed on from one generation to the next

*Objectives: "Obtain a basic understanding of genetics. Distinguish genotype and phenotype. Define dominant and recessive alleles and how they are represented."*

Genetic Lockboxes are an innovative and interactive means to educate the public about genetics. Participants exercise communication techniques as they work together to solve the puzzles. The puzzles are designed to make participants think through and apply problem-solving skills to genetic concepts. Participants will struggle, make mistakes, and rely on teammates. Through a partnership with Ellis Fischel Cancer Center, the Genetic Lockbox has gone statewide with **64 boxes** located across the state. Teachers, 4-H volunteers, FFA advisors, Boy and Girl Scout leaders, etc. can reserve box(s) free of charge. It comes with all the puzzles, hint cards, answer sheets, and a 25-page Facilitator's Guide.



*Crack the codes to open the locks to get the \*prize\* in the box.*

### Fun Facts

- ❖ If all DNA strands in all the cells of **ONE** person were stretched out, it would reach to the sun and back more than **600** times
- ❖ Scientists can never clone a dinosaur because DNA has a half-life of **521** years
- ❖ Humans are **80%** genetically similar to cows
- ❖ Bone marrow transplant patients end up with **2** different DNA profiles
- ❖ All humans receive **3** feet of DNA from Dad and **3** feet from Mom
- ❖ Heart, eye, and brain cells never replicate; therefore, they can never be replaced if damaged
- ❖ Less than **2%** of our DNA codes for proteins - the rest is called "junk DNA," but is still useful
- ❖ A mouse uses more DNA from its father than its mother
- ❖ Almost all tortoiseshell cats are female, only **ONE** in **3,000** calico cats is male



Learn More





Heather Conrow  
Livestock Specialist  
State 4-H Animal Science Educator

# Linn County

## Agriculture and Environment

### Profiles and Stories

#### Pixels & Pearls of Production

*Objective: "To provide a leadership and hands-on training opportunity for women in Missouri involved in livestock production."*

Women in agriculture have long played a pivotal role, particularly in the management and care of livestock. Their contributions are often undervalued, yet their expertise and knowledge are indispensable to the sustainability and productivity of agricultural systems worldwide.

Women in agriculture not only tend to the daily needs of livestock, ensuring their health and well-being, but also bring innovation and resilience to farming practices. Their involvement is crucial in advancing food security, enhancing biodiversity, and fostering sustainable development.

By empowering women through access to resources, education, and equal opportunities, we can bolster the agricultural sector, leading to a more equitable and prosperous future for all.



#### Program Outcomes & Impacts

Participants increased their knowledge on the following topics with the percent increase following:

- ❖ Beef genetics on the farm: **107%**
- ❖ Backyard laying hen management: **55%**
- ❖ Forages and pasture management: **73%**
- ❖ Farm headaches: **52%**





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



**The Missouri Master Gardener program**

enables people of all ages to get in-depth horticultural training and then apply what they've learned to improve their communities and educate others about gardening.



**In 2023, almost 4,000 Missouri Extension Master Gardeners completed over 149,000 VOLUNTEER HOURS throughout the state.**



**The Missouri Integrated Pest Management Program (IPM)**, funded by USDA grants, has been an important extension program for more than 30 years. Mizzou IPM distributes articles, pest monitoring data and publications on how to improve the application of integrated pest management strategies and systems in crops. In addition, the new Soybean Growth Monitoring Report is released through IPM every two weeks during the growing season.

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



**Missouri Grazing Schools** teach management-intensive grazing by dividing large fields into smaller paddocks and systematically rotating livestock among them. Producers who attend the 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.**

**Legend**



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



## **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. The program brings in the power of animal genomics through an enhanced DNA-option, Show-Me-PLUS.



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



MU Extension Specialists quickly respond to **emergencies and disasters** across the state. If a disease outbreak occurs in livestock, specialists are there. If a natural disaster such as flooding occurs, specialists are there. Missouri farmers can count on MU Extension to guide them through emerging issues with knowledge and expertise.



MISSOURI AGRICULTURE,  
FOOD AND FORESTRY  
INNOVATION CENTER

## **The Missouri Agriculture, Food and Forestry Innovation Center**

(MAFFIC) provides dedicated technical assistance to help value-added agricultural producers launch or expand their businesses. Through personalized support in marketing, product development, business planning and financial analysis, MAFFIC business counselors equip producers with the knowledge and tools needed for success. Each year, these free services reach more than 150 producers, driving innovation and growth in Missouri agriculture.

### Legend



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# Linn County

## Agriculture and Environment

### Local Impact



JEREMIAH TERRELL, M.ED.

PROGRAM AREA: HUMAN DEVELOPMENT & FAMILY SCIENCE

**PROGRAM: BUILDING STRONG FAMILIES** The Building Strong Families: Challenges and Choices program helps families find their strengths, build on those strengths, and learn skills to create stronger families, improve relationships, and increase positive communication. This program had 71 contacts in Linn County and was done in partnership with 9<sup>th</sup> Circuit Treatment Court.

Participants reported the following after attending:

- I learned how to take more time with each individual child.
- I realized that each member of my family has a role and responsibility and brings value to the family.
- I learned about how to manage my stress level and how to have a family council.
- I am aware that there are age-appropriate discipline strategies and plan to use them.

Valerie Tate, Field Specialist in Agronomy, presented a class on pollinators to children at the Brookfield Public Library as part of their Summer Reading Program.



### Local Impact

## Private Pesticide Applicator Training

The private pesticide applicator license issued by the Missouri Department of Agriculture is required for producers wanting to purchase and apply restricted use pesticides. Restricted-use pesticides are classified as such because without additional training they pose a risk to people, animals, or the environment. Agricultural producers needing to obtain or renew certification of this license must take this pesticide safety training every five years. They must be 18 years of age and directly involved in the production of agricultural commodities to obtain this license.

During the training, participants learn about safe handling of pesticides, proper mixing, calibration techniques, environmental ramifications of improper mixing or careless application, chemical breakdown of pesticides in the environment, what records are needed, pesticide formulations, personal protective wear and how to clean it, pesticide storage, common Missouri pests, and integrated pest management (IPM) techniques.

During 2024, 22 agricultural producers in Linn County were trained and licensed to purchase and apply restricted use pesticides.



## Soil Testing

Soil testing is a valuable tool for farmers. It is a process used to estimate the ability of the soil to support plant growth. Samples submitted to the University of Missouri Soil Testing Lab are analyzed for pH and nutrients including phosphorus, potassium, calcium and magnesium. Soil can also be tested for micronutrients including sulfur, zinc, manganese, iron and copper.

The objectives of the MU Soil Testing Lab are: to help farmers make effective use of fertilizer to increase their financial returns; benefit society with improved environment and water quality through efficient use of fertilizer on farms, lawns and gardens; and to ensure public and private labs are providing reliable and quality soil test results to the citizens of Missouri.

University of Missouri Soil Testing Lab ensures Missouri farmers are efficiently using the plant nutrients which are applied to agricultural fields by providing unbiased, research-based fertilizer and limestone recommendations based on soil fertility analysis. This is a cost-effective way to determine if adequate fertilizer is being applied in order to obtain the yield goals set by the farmer. It also ensures the farmer is not applying excess fertilizer, which is not only costly, but can be damaging to the environment. In 2024, the MU Soil Testing Lab analyzed 27 soil samples from Linn County.



Profiles and Stories

Cornett Farm  
2024 Farm Safety Day



Valerie Tate talked to the students about grain bin safety as part of the Cornett Farm 2024 Farm Safety Day.

# Linn County

Agriculture and Environment

Profiles and Stories

## Cornett Farm

### 2024 Farm Safety Day



Weather Safety Station



PTO Safety Station



Hunter Ed/Gun Safety Station



Emergency Vehicle Station



Lawnmower Safety Station

# Linn County

## Agriculture and Environment

### Profiles and Stories

#### Cornett Farm 2024 Farm Safety Day



Electrical Safety Station



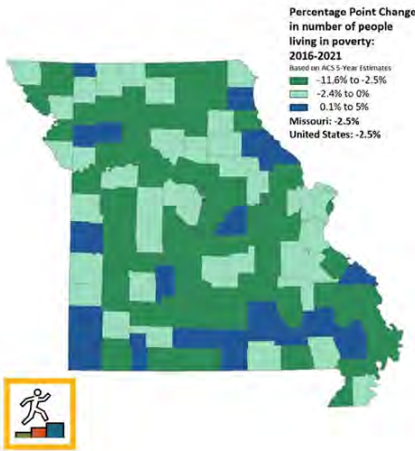
First Aid and CPR Station

#### Poisonous and Harmful Plants Station





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



The **Missouri Economy Indicators (MEI)** series explores business, industry and workforce topics that affect Missouri's economy. The data is shared through newsletters and on social media. MU Extension faculty and staff receive talking points and collateral to share with local stakeholders.

**In 2022, MEI published 15 issues, and MEI online resources were accessed MORE THAN 5,000 TIMES. Two out of five MEI newsletter recipients reported using the information to help guide policy or decision-making in their work.**



**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.**

## AMERICA'S SBDC MISSOURI CLIENT HIGHLIGHT



LOGS  
— OF —  
GLORY

The **Missouri Small Business Development Centers** (SBDC) provide professional training and customized one-on-one counseling to small businesses across the state. Working with the Missouri SBDC helps business owners make confident decisions.

**FY2020-2022, Missouri SBDC ASSISTED 878 STARTUPS and helped Missouri small businesses earn more than \$440 MILLION.**

### Legend



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### Local Impact

#### Extension Tax Schools

University of Missouri Extension ag economics department and ag business specialists worked together to coordinate one summer and three fall tax schools. The summer school was in person and live online. Fall schools were in Columbia and Springfield and one online school. The schools were designed for those who prepare taxes including enrolled agents, tax preparers, CPAs, individuals, and attorneys.

The training included updates on legislation, rulings and cases, individual taxpayer issues, agricultural and natural resources topics, ethics, trusts and estates, agriculture and natural resource tax issues, business tax issues, business entity tax issues, IRS issues, related party issues, real estate rental activity issues, limited liability company issues, and international tax issues. The schools were approved for 8 and 16 hours of continuing education credit by the IRS, Missouri Bar and for CFP continuing education. Total continuing education hours reported to IRS for the schools was 3,776 hours.

The teaching teams included CPAs, a former IRS stakeholder liaison, an IRS certified retired ag economics professor, an attorney, a certified financial planner, Missouri Department of Revenue and extension ag business specialists.

The evaluations had many positive comments and helpful suggestions. Planning is underway to offer trainings in 2025. Local county residents benefit when local tax preparers have the opportunity to gain knowledge, which benefits their clients and communities. The tax schools are a program of the ag business and policy program of MU Extension, coordinated by Mary Sobba with help from a team of ag business specialists throughout the state.

The resources for the schools included the IRS, the National Income Tax Workbook from the Land Grant University Tax Education Foundation, and materials written by the instructors.

The 2024 school attendance totaled three hundred fifty people. The participants were from throughout Missouri. There were two Linn county participants who attended tax school.





MU EXTENSION **Serves MISSOURI and Delivers MIZZOU**  
 through credible statewide programs  
**Community and Professional Health Education**



The **Diabetes Prevention Program** is recognized as "Full Plus," the highest status given by the CDC and is provided by licensed lifestyle coaches to prevent type 2 diabetes. Through lifestyle changes participants can achieve sustainable weight loss, increase in physical activity and learn coping skills to manage stress.

**More than 1 IN 3 PARTICIPANTS**  
 have reached the  
**5 - 7% WEIGHT LOSS GOAL.**



**Rural Immersion Program** is an opportunity for medical students interested in rural practice to gain experience in the rewards and challenges of working and living in a rural community, examining rural health disparities and quality of life concerns within a specific region. Group activities and meetings with community leaders in business, government, education, health care and natural resources give students a preview of life in a rural area. The 2024 program was hosted by Union, Mo. and the 2025 host city will be Hayti, Mo.

**All of the 2024 participants agreed that the Rural Immersion Program significantly contributed to them FORMING INSIGHTS on the suitability of living and working in a rural community, both personally and professionally.**



**Strengthening Families Program: for Parents and Youth 10-14,** is a seven-session series for parents or caregivers and their young teens to attend together to improve family communication, resolve conflict and improve parental skills.

**A research study conducted by the Partnerships in Prevention Science Institute found a RETURN OF \$9.60 for every dollar spent implementing the Strengthening Families Program.**

**Legend**



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being



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



Established in 2002, the **Fire Officer Certificate Program** is designed for those who wish to further their professional development without the time and expense of traditional college classes. This program has been developed and evaluated to ensure it provides structured curriculum delivery and academic rigor. The program requires completion of 288 hours of instruction within three years.



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 **Missouri Extension Disaster Education Network** provides education and technical assistance to individuals and families, local governments, schools and organizations so they can prepare for and respond to natural and man-made disasters. Because of the unique relationship it maintains with each community, MU Extension is a key resource for the public, emergency services and public officials.



## Legend



Agricultural Growth & Stewardship



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Health & Well-Being



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



**Building Strong Families**

Studies show that people with strong family bonds tend to have lower stress levels. Building Strong Families helps families deal with disagreements, manage stress and show their love for one another.



**Home Food Preservation**

*Preserve the season's bounty - deliciously and safely.*

Learn safe techniques for pressure canning, boiling water bath canning, steam canning, dehydration and freezing.

Understand the importance of using safe preservation and storage methods to avoid cross-contamination and foodborne illnesses.

**"This course made me more self-sufficient and improved my family's access to quality food."**



**Show-Me Nutrition**

*Programming for preschool through junior high*

An engaging way to demonstrate the benefits of food safety, nutrition and physical activity. Meets Missouri's Show-Me Health and Physical Education standards and the state's School Wellness Policy.

**"We have struggled with our daughter's picky eating for years and have tried so many techniques to try and get her to eat new foods. Your influence on her has worked magic this year. She has come home so excited about trying new foods and has now become not only willing but excited to try new things."**

**Parent of a Show-Me Nutrition participant**

**Legend**



Agricultural Growth & Stewardship



Economic Opportunity



Educational Access & Excellence



Health & Well-Being