



Show-Me Select Replacement Heifers averaged \$1,392 at a recent Fruitland (Mo.) Livestock Auction.

University of Missouri Extension Agriculture and Natural Resources

Missouri is fortunate to have diverse natural and human resources, along with a sophisticated business base, from which to build a truly progressive 21st century agriculture and economy. The wide range of climate and topography and the availability of irrigation water in the state result in a considerable variability in crops produced.

Soybeans and corn are by far the dominant crops in Missouri, being particularly important in the northern half of the state and in the southeast (Bootheel). The Bootheel is the most intensively cropped area with its high percentage of tillable, level land, long growing season and plentiful irrigation water. Cotton and rice are predominant crops in some southeastern counties.

Forages are in high demand to meet the needs of the equine, beef and dairy sectors. Hay is the most widely produced crop in Missouri, which ranks third in total hay production. Hay is easily the major crop in the southwest and south-central districts, where tillable land is limited, while a major proportion of farms in the rest of the state also raise hay.

Missouri is the number two cow-calf producing state in the nation. Cow-calf production fits in with crop production on many farms across the state, but beef operations are of major importance in the central, southwest, and south-central regions. Swine production is also widespread, but especially concentrated in north-central and west-central Missouri. Broilers and turkeys are dominant in the southwestern counties. The grass-based dairy industry is growing in the southwest region of the state.

To address the diversity of Missouri's agriculture and natural resource industry, extension agriculture and natural resource (ANR) programs focus on:

- Developing human resources: Our ultimate goal is to improve the quality of life, including socioeconomic status, self-esteem, health and leadership abilities, for Missourians. This is accomplished by providing Missourians with educational opportunities and science-based information to understand and make informed decisions and policies concerning the issues and challenges of the new millennium.
- Managing, sustaining and using Missouri's production and natural resources: Food, fuel and fiber generation depend on the efficient and sustained use of soil, solar energy, water and

air. Missouri's ANR extension education programs and research efforts at the MU farms and centers are helping Missourians to adopt new and innovative production and marketing practices that will sustain and grow the economic viability of rural Missouri.

- Developing food and other agricultural products for value-added and new uses: ANR extension programs educate Missourians to use technology and value-added marketing alternatives to increase the market value of their food, fuel and fiber products.
- Enhancing environmental quality: Through education programming and research activities, the ANR extension program is improving the management, conservation and quality of Missouri natural resources—air, water and land—for not only the agricultural industry but all Missourians.
- Assessing social and economic changes: The ANR programs examine how present and future research, education and public policy in agriculture and natural resources affect Missouri agricultural industry and their communities.

Current Discipline-Based Programs

Missouri's agriculture and natural resource extension programs have operated under the overall themes of agricultural business management, integrated crop management/horticulture, livestock production systems, environmental quality, and natural resources. The following are the current named and major programs in each of several focus areas:

Agricultural Business Management—Profit Focused Agriculture, Value-Added Agriculture, NxLevel—Tilling the Soil, Annie's Project, Community Food Systems/Food Security

Integrated Crop Management/Horticulture—Biotechnology Education—MAGIC, Forage Production Systems, Management Intensive Grazing, Missouri Crop Management, Plant Protection for 21st Century, Private Pesticide Applicator Training, Commercial Pesticide Applicator Training, Precision Agriculture. (Horticulture) Home Horticulture and Environment

Master Gardeners, Garden N Grow, Missouri Grown—Vegetable Production



Water quality programs involving Extension and MU researchers evaluate the many ways citizens impact surface and groundwater in the state.

Livestock Production Systems—Dairy Heifer Development, Dairy Production Systems, Grass Based Dairy, Premier Beef, Show-Me-Select, MO-Pork, Pork Quality Assurance, Trucker Quality Assurance, Swine Welfare Assurance Program

Environmental Quality—Environmental Business Programs, Home and Farmstead Environmental/Energy Audits, Healthy Indoor Air, Healthy Homes, Individual Wastewater Systems, Onsite Sewage Systems for Real Estate Professionals, Nutrient Management Planning, Soil & Water Conservation, Watershed Planning, Management & Education

Natural Resources—Agroforestry for Farm Improvement, Missouri Woodland Stewart, Forestry First Responder School, Master Wildlifer, Master Naturalist

Other—Farming on 40 Acres, Safety, Health and Wellness, AgrAbility

Trend Impacting Missouri Agriculture & Natural Resources

Emerging National Trends Affecting Missouri Agriculture:

- Improved global economic performance and growth in population strengthen demand for food and agricultural products.
- Global agricultural market competition will continue to increase. U.S. exports will continue to increase and are projected to grow from \$56 billion in 2005 to \$78.6 billion in 2014. High-value exports (HVP) will continue to account for two-thirds of total U.S. exports. HVP export growth will be in animal and horticultural products.
- The meat export market will continue to rebuild slowly. Foreign meat production will increase and become competitive.
- Domestic demand will increase for meat, feeds, horticultural products, corn ethanol and soy diesel fuels, and food use of rice. Agricultural imports will increase from \$56 billion in 2005 to \$76 billion in 2014 with strong demand for horticultural product imports. Processed food imports will also increase. On average about 11% of disposable income is spent on food. Growing incomes and affluence are increasing the demand for more specialty foods (for example, organic, locally produced, or small family farm-sourced). Since expenditures for these food products are increasing at twice the rate as that for traditional foods there will be significant potential for producers to meet this demand.
- U.S. market prices and cash receipts rise. Farm equity will increase and government payment percentage will decrease.
- U.S. consumer food prices rise at less than the general inflation rate.
- Imports of agricultural fertilizers will continue to offset rising U.S. natural gas prices and costs of domestic production of nitrogen, but overall fertilizer prices will steadily increase.
- Damage and risk to agricultural production from exotic pests will continue to challenge traditional management practices.
- Recurrent extremes in changing climatic patterns will force producers to change seasonal plans with short notice and bring a diversity of options to their production portfolio to manage risk.
- GMO's will continue to offer new opportunities for producers and consumers, but social, environmental and economic factors must be managed in both the domestic and international markets.
- The economic value of environmental processes and outputs from natural ecosystems will steadily increase. For example, credits for carbon sequestration, to the point that this value will be of interest to both the landowner and producer, especially those with natural forest, grasslands, or other long-lived plantation operations. Environmental stewardship will essentially become a direct and valuable part of the agricultural economy as well as a being an important social value.
- Organic and natural food sales increased 9 percent in 2003 and now represent 6 percent of total store sales. Organic food sales are increasing at a compound annual rate of over 20 percent, compared with an annual growth rate of 2-3 percent in the rest of the food industry.

Missouri Agricultural Census Profile:

- Five percent of U.S. farms are in Missouri. Missouri is the second leading state in the number of farms. The number of Missouri farms is down 4% from 110,986 in 1997 to 106,797 in 2002. There is an average of one primary operator per farm; 90% of operators are male and 10% are female. The average age of primary operators is 56 years.
- Missouri farms occupy 68% of the state surface area. Land in farms is down 1% from 30.2 million acres in 1997 to 29.9 million acres in 2002. Average farm size is up 3% from 272 acres in 1997 to 280 acres in 2002.
- Market value of agricultural production is down 9% from \$5.5 billion in 1997 to \$4.9 billion in 2002. Crop sales accounted for \$1.9 billion in 2002 and livestock sales accounted for \$2.9 billion in 2002. Average market value per farm is down 5% from \$49,250 in 1997 to \$46,661 in 2002. Average net cash income per farm in 2002 was \$7,522.
- Government payments are up 25% from \$211 million in 1997 to \$264 million in 2002. Average payments per farm are up 7% from \$5,710 in 1997 to \$6,097 in 2002.

Missouri 2003 Agricultural Statistics Profile:

- Crops values were soybeans (\$1.1 billion), corn (\$756 million), cotton (\$342.3 million), nursery (\$222.3 million), wheat (\$162 million), forest saw logs (\$133 million), rice (\$68.1 million), sorghum (\$39.4 million), floriculture (\$37.5 million), vegetables (\$32 million), fruits (\$14.5 million), tobacco (\$5.5 million), and oats (\$2 million).
- Livestock values were meat animals (\$1.54 billion), poultry/eggs (\$820 million), dairy (\$230 million), and specialty animals/products (\$30 million).

Significant Trends Affecting Missouri's Natural Resources

- 75% of Missouri's 14 million acres of forest land are owned by private citizens;
- There are 350,000+ family-owned forests in Missouri; 33% part of the family farm, 67% not part of farm; of the 67% not part of the farm —70% part of primary residence
- Top five reasons for owning forest land (in order): aesthetics, part of farm/home, family legacy, wildlife, land investment

Laura Sweets, MU extension plant pathologist, describes the signs Asian soybean rust during a field day at the Bradford Research and Extension Center near Columbia.



- Less than 10% of privately held forestlands have a management plan or have sought professional advice
- Missouri forest products industry is a \$4.7 billion dollar industry
- Missouri has 450 primary and 700 secondary wood product manufacturing facilities, plus another 1,450 wood product related firms statewide
- 34,600 Missourians are employed in the forest industry with an estimated annual payroll of \$700 million
- 10,900 miles out of 22,194 permanent Missouri stream miles do not fully meet water quality standards. Approximately 1000 miles are impaired by heavy metals or toxic chemicals and 10,000 miles are impaired by habitat degradation.
- 95,000 acres out of 293,319 total lake acres are threatened by eutrophication and 131,000 acres are impaired by mercury, manganese or nutrients.
- Soil erosion and resulting sedimentation affects 35 percent of Missouri streams. Average soil erosion rates in Missouri are 5.6 tons per acre per year and rates are above acceptable levels on 5 million acres out of a total of 44.6 million acres.
- 44 percent of Missourians rely on groundwater as their source of drinking water. Approximately 8000 wells are dug each year with less than 70% being certified.
- 300,000 abandoned wells remain unplugged.

accessible education for:
economic viability
empowered individuals
strong families and communities
healthy environments

Significant Social Trends Affecting Missouri:

- Increasing rates of obesity resulting from unhealthy food choices and the growing rates of other chronic human diseases among Missouri citizens will slowly force changes in lifestyle patterns. The demand for foods and food distribution systems supporting and enabling healthier lives will continue to provide significant opportunities for the entire agricultural producer-to-consumer food chain.
- As the average age of farm operators continues to increase and generational changes in farm ownership occur along with new demands for agricultural production, there will be increasing opportunities for new operators from non-farm backgrounds to begin farming. There will be new demands for communities to train and support these new entries with financial, educational and other infrastructural requirements.
- The number of Missourians living outside of towns and cities is growing faster than the number of Missourians living in towns and cities. This will bring significant challenges to both farm and non-farm residents and county or regional government to reconcile the many demands that will be put on the rural environment. The solutions developed will become new models for the occupation of rural landscapes as traditional approaches will be compromised for co-existence.
- Rural tourism will continue to grow as part of Missouri's largest industry of tourism. Good economic and social opportunities will grow for those interested in addressing the demand. Community knowledge and sense of place will become an important economic value to add to the rural landscape.
- The quantity and quality of freshwater, air, soil, and Missouri's agricultural and natural ecosystems must be critically managed as more and more pressure is put on these resources by a spreading and growing population. There will be slow but increasing economic risk in ignoring the integrity and protection of these resources.
- Another unique and important opportunity for some agricultural producers and landowners is to use the rural landscape on both large and small scales for its therapeutic value in treating some physical and mental human diseases. Horticultural therapy, for example, is becoming widely recognized and supported as a useful tool in rehabilitation and other therapeutic programs. This relationship between humans and plants and animals is one that most farm residents take for granted.

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