



# **ASAP Resource Guide**

**A guide of technical and financial assistance resources  
for Missouri's agricultural producers**

**2017**

*A program of the*  
**Missouri Department of  
Agriculture**

**Sustainable. Responsible. This is Missouri Ag.**



# Foreword and Acknowledgements

The Missouri Department of Agriculture and Missouri farmers and ranchers recognize that consumers want to know more about where their food comes from and how it's produced.

Consumers are agriculture's most important stakeholder. Consumer confidence in Missouri's agricultural products and their source is vital.

Many of Missouri's producers already use **efficient** and **sustainable** practices in their operation. The Missouri Department of Agriculture and Missouri producers must continue to promote efficient and sustainable agriculture stewardship practices by **understanding**, **implementing**, and **communicating their success** with the public.

This guide is an introduction to the resources that are readily available for producers interested in improving the agricultural stewardship practices on their farm operation. These resources provide technical and/or financial assistance for implementing conservation practices.

The Missouri Department of Agriculture would like to thank you, the Missouri agricultural producer, for the concerted efforts you make every day. Much of what we have today would not have been possible without you.

# Agricultural Stewardship Assurance Program Overview

## Program Description

The Missouri Agricultural Stewardship Assurance Program (ASAP) is a certification program that champions Missouri farmers who are responsible stewards of the land, provide safe food for consumers, practice environmental stewardship and use science-based technology for growing safe and dependable feed, fuel or fiber in a social and economic manner.

## Program Goals:

1. **Increase consumer confidence and acceptance** of agriculture and its producers
2. **Provide producers with additional global marketing** opportunities
3. **Educate** about the importance of environmental stewardship
4. **Encourage** efficient and sustainable practices in producers' operations

## Producer Benefits:

Producers who are ASAP certified benefit by:

- Obtaining a third-party certification confirming their dedication to environmental stewardship
- Gaining access to domestic and international markets they may not have had access to previously
- Building consumer confidence by ensuring they are good stewards of the land by implementing sustainable environmental practices

The Missouri Department of Agriculture awards ASAP certifications to all Missouri producers with operations that meet program requirements. Producers are eligible to receive certification in multiple program categories.

## Program Categories:

1. Cropland
2. Energy
3. Farmstead
4. Forestry
5. Grassland
6. Livestock
7. Specialty Crop (*A resource guide addressing specialty crop assistance is under development*)

## **Application Process:**

Missouri producers seeking ASAP certification can find the application online at <https://asap.farm/get-verified/> or contact the Missouri Department of Agriculture at (573) 751-2539 to receive an application by mail. For each of the categories producers wish to be certified in, producers must select one of the following for each question (if applicable):

- Fully Implemented: The landowner has implemented the practice on all of his/her operation.
- Partially Implemented: The landowner has adopted practices, but still has areas that could be addressed and improved.
- Not Implemented: The Landowner does not currently implement the practice on his/her operation.
- Not Applicable

Producers who print or receive an application by mail should return the completed application to:

Missouri Department of Agriculture  
ATTN: ASAP  
PO Box 630  
Jefferson City, MO 65102

## **Verification Process:**

Once the Missouri Department of Agriculture receives an application, a representative will review the application and contact the producer to schedule a farm visit. The farm visit includes a evaluation of the farm and questions about the operation. Typical farm visits take two to three hours depending on the ASAP Application request. At the conclusion of the farm visit, the department representative will provide a preliminary finding. The Missouri Department of Agriculture will follow up with an official letter for operations meeting the program certification requirements.

If approved, the Missouri Department of Agriculture will provide the operation with official ASAP signage, an electronic media package and an official letter of certification.

## **Questions about ASAP:**

For any questions about the ASAP program contact the department at (573) 751-2539.

## **Best Management Practices:**

The term Best Management Practices (BMP) was coined nearly 35 years ago, as a way to describe a set of production/management practices or a combination of practices that, if implemented, are effective in conserving and improving natural resources, farm processes and safety and animal health and well-being.

Throughout the guide, each category lists specific BMPs designed to assist producers meet program requirements. Most of the BMPs referenced in the guide are available through government agencies. In most cases, these agencies provide technical and financial assistance.

### **Those agencies are:**

- United States Department of Agriculture (USDA)
- Missouri Department of Natural Resources Soil and Water Conservation Program (DNR Soil and Water Conservation Program)
- Missouri Soil and Water Conservation Districts
- Missouri Department of Conservation (MDC)
- Missouri Department of Agriculture (MDA)
- University of Missouri Extension (MU Extension)

Assistance from most agencies is available locally. Local USDA Service Centers are the best place to find assistance from USDA, DNR Soil and Water Conservation Program and MDC Private Lands. Practices listed under the DNR Soil and Water Conservation Program are administered locally by, and in partnership with, Soil and Water Conservation Districts. Additional assistance from MDC is available through regional offices. The programs available through the Missouri Department of Agriculture can be accessed by contacting the Missouri Department of Agriculture's state office. MU Extension assistance is available through the local University of Missouri Extension office.

Additional resources for local assistance are provided within this guide.

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# Grassland Certification

Responsible stewardship of Missouri grassland is a key factor in the future of Missouri agriculture. Based on data from the National Agricultural Statistics Service, more than nine million acres of Missouri farmland is dedicated to pastureland for animal agriculture.

According to the University of Missouri, forage-livestock enterprises annually contribute more than \$12 billion to Missouri's economy and provide direct income for more than 200,000 citizens. According to national statistics for 2017, Missouri has the third largest cow-calf herd (more than 4 million cows and calves), the second largest number of beef producers, the seventh largest number of dairy farms and is the second largest producer of grass hay. The ASAP Grassland Certification focuses on the management and environmental factors that contribute to a sustainable forage- livestock industry.

## Criteria for Grassland Certification

- Landowner follows a grazing plan that results in improved desired species composition and vigor of plant communities, improved quantity and quality of forage, improved water quality, improved soil health and reduced erosion.
- Pastures are well-managed with all areas vegetative.
- Livestock are excluded from actual contact with streams or watercourses with the exception of controlled access or crossings.
- Landowner stocking rates are appropriate to support forage vigor.
- Landowner soil tested each field within the last five years.
- Winter feeding areas are located in areas that minimize runoff.
- Landowner follows soil test recommendations for application of fertilizer.
- Hay is fed in alternating areas within pastures to distribute manure.
- Pesticides are applied in accordance with labels and by persons appropriately trained, licensed and/or supervised by someone with the proper credentials.
- Landowner actively controls noxious weeds on property.
- Landowner actively controls woody (non-herbaceous or succulent) plants in grasslands, including those that are invasive and noxious.

# Grassland Certification- Grazing Management

This category of certification emphasizes the need for a planned grazing system. Implementation of a properly planned grazing management system maximizes the production of high quality forages while reducing the loss of nutrients and soil, resulting in reduced erosion and improved water quality. The Grassland Certification section emphasizes the need for a grazing management plan that includes factors such as: forage/pasture management, streams and sensitive areas protection and appropriate stocking rates.

## Best Management Practices Grazing Management

### Natural Resources Conservation Service (NRCS)

- **Access Control**: The temporary or permanent exclusion of animals, people, vehicles and/or equipment from an area. ([bit.ly/nrcs\\_code472](http://bit.ly/nrcs_code472) )
- **Fence**: This practice facilitates the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles. Fencing materials, type and design of fence installed shall be of a high quality and durability. ([bit.ly/nrcs\\_code382](http://bit.ly/nrcs_code382))
- **Stream Crossing**: This practice assists in the establishment of a stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment or vehicles. ([bit.ly/nrcs\\_code578](http://bit.ly/nrcs_code578))
- **Livestock Pipeline**: This practice assists in the establishment of a pipeline and appurtenances installed to convey water for livestock or wildlife. ([bit.ly/nrcs\\_code516](http://bit.ly/nrcs_code516) )
- **Forage and Biomass Planting**: This practice assists in establishing adapted and/or compatible species, varieties, or cultivars of herbaceous species suitable for pasture, hay or biomass production. ([bit.ly/nrcs\\_code512](http://bit.ly/nrcs_code512) )
- **Heavy Use Area Protection**: This practice assists in the stabilization of areas frequently and intensively used by people, animals or vehicles by establishing vegetative cover, surfacing with suitable materials and/or installing needed structures. ([bit.ly/nrcs\\_code561](http://bit.ly/nrcs_code561) )
- **Herbaceous Weed Control**: This practice assists in the removal or control of herbaceous weeds including invasive, noxious and prohibited plants. ([bit.ly/nrcs\\_code315](http://bit.ly/nrcs_code315) )
- **Integrated Pest Management (IPM)**: This practice assists in the establishment of a site-specific combination of pest prevention, pest avoidance, pest monitoring and pest suppression strategies. ([bit.ly/nrcs\\_code595](http://bit.ly/nrcs_code595) )
- **Nutrient Management**: This practice assists in managing the amount (rate), source, placement (method of application) and timing of plant nutrients and soil amendments. ([bit.ly/nrcs\\_code590](http://bit.ly/nrcs_code590) )
- **Prescribed Burning**: This practice assists in the planning and use of controlled fire to a predetermined area. ([bit.ly/nrcs\\_code338](http://bit.ly/nrcs_code338) )

- **Prescribed Grazing:** This practice assists in managing the harvest of vegetation with grazing and/or browsing animals. ([bit.ly/nrcs\\_code528](http://bit.ly/nrcs_code528) )
- **Pond:** This practice assists in the construction of a water impoundment made by constructing an embankment or by excavating a pit or dugout. In this standard, ponds constructed by the first method are referred to as embankment ponds, and those constructed by the second method are referred to as excavated ponds. Ponds constructed by both the excavation and the embankment methods are classified as embankment ponds if the depth of water impounded against the embankment at the auxiliary spillway elevation is three feet or more. ([bit.ly/nrcs\\_code378](http://bit.ly/nrcs_code378) )
- **Watering Facility:** This practice assists in installing permanent or portable device to provide an adequate amount and quality of drinking water for livestock and/or wildlife. ([bit.ly/nrcs\\_code614](http://bit.ly/nrcs_code614) )

### **Missouri Department of Natural Resources - Soil & Water Conservation Program**

- **Permanent Vegetative Cover Establishment:** This practice improves the vegetative cover on pastures by introducing legumes into the grass base using no-till technology. Improves the plant community health and protects the soil by reducing erosion and prevents water pollution. ([bit.ly/dnr\\_DSP02](http://bit.ly/dnr_DSP02))
- **Grazing System Water Development:** This practice provides assistance on livestock water source development (well, pond and/or connection to a public water supply) for a planned grazing system. ([bit.ly/dnr\\_DSP31](http://bit.ly/dnr_DSP31))
- **Grazing System Water Distribution:** This practice provides assistance on the components needed for water distribution from a water source (DSP 3.1) for livestock watering in a planned grazing system. Water distribution includes pipeline and watering tanks, for each grazing area. ([bit.ly/dnr\\_dsp32](http://bit.ly/dnr_dsp32))
- **Grazing System Fence:** This practice provides assistance on fencing for a rotational grazing system. Cost-share can be used to fence out streams in any paddock within the grazing system. ([bit.ly/dnr\\_DSP33](http://bit.ly/dnr_DSP33))
- **Grazing System Seed:** This practice provides assistance on the inter-seeding of legumes in an established grass pasture grazing system to improve plant health and diversity and protect soil from erosion. ([bit.ly/dnr\\_DSP34](http://bit.ly/dnr_DSP34))
- **Grazing System Lime:** This practice provides assistance for lime application on existing systems that meet NRCS standards and specifications for a Prescribed Grazing or Rotational Grazing System. ([bit.ly/dnr\\_DSP35](http://bit.ly/dnr_DSP35))
- **Stream Protection:** This practice provides assistance to exclude livestock from stream corridors to allow revegetation with grasses and trees on the streambank. This will reduce excess amounts of sediment, organic material, nutrients and pesticides in surface runoff

and reduce excess nutrients and other chemicals in groundwater, with a secondary benefit of stabilizing streambanks. ([bit.ly/dnr\\_WQ10](http://bit.ly/dnr_WQ10))

- **Livestock Exclusion**: This practice assists with installation of exclusion fence around existing ponds, woodlands, sinkholes, streams or sensitive areas where vegetation, soil condition and water quality are in need of protection from livestock. ([bit.ly/dnr\\_N472](http://bit.ly/dnr_N472))

## **Missouri Department of Conservation**

- **Herbaceous Vegetation Management**: These practices assist landowners in removing or reducing undesirable vegetation, establishing wildlife-friendly legumes, perennial cool or warm season grasses, native grasses or native forbs to enhance wildlife habitat, improve grazing land diversity, improve water quality, or reduce sedimentation. Eligibility is determined by the Missouri Department of Conservation (MDC) planner based on regional priorities.
- **Chemical Control and Conversion**
  - **Herbaceous Invasive Control**: This practice provides assistance for the control and eradication of invasive plant species.
  - **Grassland Conversion**: The practice provides assistance for approved chemical eradication (chemicals and application) of fescue and brome.
- **Grass and Forb Establishment**: This practice provides assistance for all components of establishment including approved seed mixtures, fertilizer/lime application, seeding and seed bed preparation.
- **Vegetative Cover Establishment**: This practice provides assistance for the successful establishment of perennial herbaceous vegetation (including seed, seeding, fertilizing and/or liming) to stabilize highly erodible or critically eroding areas.
- **Alternative Watering System**: This practice provides assistance to limit or exclude livestock from streams, streamside management zones, spring branches and ponds to improve water quality by providing an alternative water source. The practice is intended to focus on sites along streams where livestock have free access to the stream and streamside management zone and the stream provides the primary or sole source of water. Components include the following:
  - Mechanical Watering Systems
  - Waterline Through Existing Structure
  - Pond Reconditioning
  - Pond Construction
  - Spring Development
  - Limited Access
- **Reinforced Stream Crossing**: This practice provides assistance to establish armored stream crossings for livestock, vehicles, farming and timber harvesting equipment and limited access points for livestock watering. The practice applies to stream channels that have down-cut and/or lengthened such that channel depth, bed material and bank angles

prohibit easy and safe access across the stream channel. The practice can only be used on first and second order streams.

- **Fencing:** This practice provides assistance to exclude livestock to protect sensitive, natural communities and to attain specific resource management objectives. The focus will be on areas where livestock should be excluded (or managed) to improve water quality or protect riparian buffers, woodlands, critical habitats, highly erosive areas, karst features or unique natural communities. The areas for which practice may be applied are:
  - Sinkholes
  - Woodlands
  - Riparian Areas
  - Tree Plantings

## Educational Resources for Grazing Management

- **Management Intensive Grazing Schools**  
Grazing schools provide two days of educational sessions, tours and demonstrations on the various aspects of the establishment and management of a management intensive grazing system. The schools provide farmers with a better understanding of forages and grazing systems and will qualify them to participate in state cost share programs. They are coordinated and taught by the Missouri Forage and Grassland Council, MU Extension, NRCS and SWCD faculty and staff.
- **MU Extension**
  - **MU Publications and Guides:**
    - **M157 Missouri Grazing Manual:** This manual is designed to acquaint readers with the principles on which successful grazing management is based. Readers will find in-depth discussion of the day-to-day practical concerns of grazing management. Included are strategies for improving the quality of pastures and extending the grazing season, soil fertility management and nutrient cycling, water availability and distribution, design and construction of fences, calculation of carrying capacity of pastures, pasture-based sheep production, enhancing wildlife habitat and more. ([bit.ly/muex\\_m157](http://bit.ly/muex_m157))
    - **M158 Summer Grazing in Missouri - Pasture Management and Beef Production:** This manual should be helpful to anyone considering summer pasture improvements in Missouri. It identifies specific challenges in summer grazing systems and assimilates options that Missouri beef producers could consider practical and affordable. ([bit.ly/muex\\_m158](http://bit.ly/muex_m158))
    - **M168 Dairy Grazing Manual:** This manual and the Dairy Grazing Publication Series cover operating and managing a pasture-based dairy. These publications offer dairy producers a better understanding of management-intensive grazing and insight into various factors that affect the profitability of a pasture-based operation. Although the text often refers

to conditions in Missouri, many of the principles and concepts described may apply to operations throughout the United States. ([bit.ly/muex\\_pub614](https://bit.ly/muex_pub614))

## Technical Assistance for Grazing Management

For financial, technical and compliance assistance or for implementation and planning advice, contact any of the following organizations:

### Natural Resources Conservation Service (NRCS)

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_sclocator](https://bit.ly/usda_sclocator) to locate your county Natural Resources Conservation office.

### Soil & Water Conservation Districts (SWCD)

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](https://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### MU Extension

- Visit [bit.ly/muex\\_offices](https://bit.ly/muex_offices) to locate a specialist or your county Extension office.

### Missouri Department of Conservation (MDC)

- Conservation Headquarters:  
2901 W. Truman Blvd.  
Jefferson City, MO 65109  
(573) 751-4115
- Visit [mdc.mo.gov/regional-contacts](https://mdc.mo.gov/regional-contacts) to locate the MDC office in your region, or your county contact.

### Missouri Department of Agriculture

- State Office:  
P.O. Box 630  
1616 Missouri Blvd  
Jefferson City, MO 65102  
(573) 751-4211  
[aginfo@mda.mo.gov](mailto:aginfo@mda.mo.gov)

## Financial Resources for Grazing Management

### Natural Resources Conservation Service (NRCS)

- EQIP (Environmental Quality Incentives Program): EQIP provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation and improved wildlife habitat. ([bit.ly/nrcs\\_eqip](http://bit.ly/nrcs_eqip))

### Farm Service Agency (FSA)

- Conservation Reserve Program (CRP): The CRP program encourages farmers to plant and maintain long-term, resource-conserving seed mixes on highly erodible cropland or environmentally sensitive land to improve soil, water quality and wildlife resources. ([bit.ly/fsa\\_crp](http://bit.ly/fsa_crp))

### Missouri Department of Conservation

- Use this website to learn best management practices, new opportunities and funding opportunities. ([mdc.mo.gov/](http://mdc.mo.gov/))

### Missouri Department of Natural Resources- Soil & Water Conservation Program

- Use this website to learn best management practices, new opportunities and funding opportunities. ([dnr.mo.gov/env/swcp/](http://dnr.mo.gov/env/swcp/))

### Missouri Department of Agriculture - Missouri Agricultural and Small Business Development Authority (MASBDA)

- Bridge Loan Program: A program used for a short term loan by Missouri producers who have been approved by USDA-NRCS, through the USDA-NRCS Environmental Quality Incentives Program (EQIP) or the Soil and Water Conservation Program/District (SWCD). ([bit.ly/masbda\\_blp](http://bit.ly/masbda_blp))

## Grassland Certification- Nutrient Management

A key component of any sustainable livestock operation should include a nutrient management plan. The development of a plan requires knowledge of the nutrient status of the soil, the nutrient needs of the forages being grown and the source of the nutrients supplied (e.g. manure or chemical fertilizer). With this information, decisions can be made to assure correct nutrient applications, sound management of animal waste and regular testing to quantify nutrient needs.

## Educational Resources for Nutrient Management

- MU Extension
  - MU Publications and Guides:
    - MU Guide G9215 - Soil Sampling Pastures: Provides information on creating a sampling plan, including how to take and submit samples. ([bit.ly/muex\\_pubG9215](http://bit.ly/muex_pubG9215))

- MU Guide G9112 - Interpreting Missouri Soil Test Reports: Provides information on understanding your soil test report rendering the results more useful when making nutrient management decisions. ([bit.ly/muex\\_G9112](http://bit.ly/muex_G9112))
  - Soil and Plant Testing Laboratory: Analyzes soil for nutrient content and fertility status and provides recommendations for economical, environmentally safe and balanced fertilizer and lime applications. MU Extension and numerous private labs are certified to conduct soil tests. ([bit.ly/muex\\_plantlab](http://bit.ly/muex_plantlab))
  - Accredited Soil Test Labs: A list of current accredited soil testing labs in the region. ([bit.ly/muex\\_soillabs](http://bit.ly/muex_soillabs))
- NOTE: Some SWCD & NRCS cost share practices require the test and the cost is a reimbursable expense.

## Technical Assistance for Nutrient Management

For financial, technical and compliance assistance, interpretation of soil analysis reports, or for implementation and planning advice, contact any of the following organizations:

### Natural Resources Conservation Service (NRCS)

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_slocator](http://bit.ly/usda_slocator) to locate your county Natural Resources Conservation office.

### Soil & Water Conservation Districts (SWCD)

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### University of Missouri

- MU Extension
  - Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.
- College of Agriculture, Food, and Natural Resources (CAFNR)
  - Soil Health Assessment Center:  
3600 New Haven Rd.  
University of Missouri  
Columbia, MO 65201-9608  
(573) 882-3704  
[cafnr.missouri.edu/soil-health/](http://cafnr.missouri.edu/soil-health/)

- Soil and Plant Testing Laboratories  
23 Mumford Hall  
University of Missouri  
Columbia, MO 65211  
(573) 882-6623
- Delta Research Center  
P.O. Box 160  
Portageville, MO 63873  
(573) 379-5431
- <http://soilplantlab.missouri.edu/soil/>

## **Grassland Certification - Noxious Weed & Brush Management**

Weeds and woody plants can reduce the quantity and the stand life of desirable forage plants in pastures and hayfields. These unwanted plants are competing for the available nutrients and can diminish the quality of the forage available for livestock grazing. Certain weed species are potentially poisonous to grazing animals and some are designated by law as noxious and must be controlled. This certification category addresses the requirements related to safe pesticide application and certification, and the importance of establishing procedures/guidelines for weed and bush control – especially as it relates to noxious and invasive species.

## **Educational Resources for Noxious Weed & Brush Management**

### **MU Extension**

- MU Weed Science Website: Provides information covering numerous topics related to weed science, weed id, and herbicide injury. ([bit.ly/muex\\_weedscience](http://bit.ly/muex_weedscience))
- MU Weed ID Guide: An online plant identification system. ([weedid.missouri.edu/](http://weedid.missouri.edu/))
- MU Publications and Guides:
  - MU Guide IMP1014 - Noxious Weeds of Missouri: Highlights invasive and noxious weeds of Missouri. Control recommendations are made for each noxious weed. ([bit.ly/2muex\\_ipm1014](http://bit.ly/2muex_ipm1014))
  - MU Guide IMP1015 - Thistles and Thistle-like Plants of Missouri: An overview of thistles and thistle-like plants in Missouri. ([bit.ly/muex\\_ipm1015](http://bit.ly/muex_ipm1015))
  - MU Guide IMP1010: Biological and Integrated Control of Musk Thistle in Missouri: An overview of Milk Thistle in Missouri. ([bit.ly/muex\\_ipm1010](http://bit.ly/muex_ipm1010))

- NOTE: Visit the Integrated Pest Management website to view all IPM publications available. Publications cover general IPM, field and crops and horticultural. ([bit.ly/asap\\_ipm](http://bit.ly/asap_ipm))

## **Technical Assistance for Noxious Weed & Brush Management**

For assistance planning, implementation, financial, troubleshooting, compliance concerns, interpreting soil analysis reports contact any of these organizations:

### **Natural Resources Conservation Service (NRCS)**

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_slocator](http://bit.ly/usda_slocator) to locate your county Natural Resources Conservation office.

### **Soil & Water Conservation Districts (SWCD)**

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### **University of Missouri**

- MU Extension
  - Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.

### **Missouri Department of Agriculture**

- State Office:  
P.O. Box 630  
1616 Missouri Blvd  
Jefferson City, MO 65102  
(573) 751-4211  
[aginfo@mda.mo.gov](mailto:aginfo@mda.mo.gov)
- Missouri Pesticide Use Act: Establishes requirements for licensing of applicators, dealers, technicians and operators, and guidelines for approving applicator training programs. ([bit.ly/pesticide\\_use\\_act](http://bit.ly/pesticide_use_act))

The University of Missouri offers training on an annual basis. There are six (6) different pesticide certification licenses. The most common for farmers and ranchers is the Private Applicator license. ([http://bit.ly/pesticide\\_licensing](http://bit.ly/pesticide_licensing))

- Noxious Weed Control: The Missouri Department of Agriculture designates what weeds are to be considered noxious in Missouri. Currently, the department has designated 12 weeds as noxious. The department will provide assistance to landowners regarding chemical, mechanical and biological control of noxious weed species. The county prosecutor enforces the state statute. The following are some key resources:
- Visit [bit.ly/mo\\_noxiousweeds](http://bit.ly/mo_noxiousweeds) to view Missouri's current list of noxious weeds.
- Visit [bit.ly/molegislation\\_263](http://bit.ly/molegislation_263) to view Missouri's current state statute covering insects pests and weeds.

### **Missouri Department of Conservation (MDC)**

- Conservation Headquarters:  
2901 W. Truman Blvd.  
Jefferson City, MO 65109  
(573) 751-4115
- Visit [mdc.mo.gov/regional-contacts](http://mdc.mo.gov/regional-contacts) to locate the MDC office in your region, or your county contact.

### **University of Missouri**

- College of Agriculture, Food, and Natural Resources (CAFNR)
  - Plant Sciences:  
52 Agriculture Lab  
University of Missouri  
Columbia, MO 65211  
(573) 882-4039  
[plantsciences.missouri.edu/](http://plantsciences.missouri.edu/)

# Livestock Certification

Missouri has a diverse livestock production sector. Livestock and livestock products are responsible for a little over half of Missouri's agricultural production. Missouri is a leading state in the production of beef cattle (#9 overall, second in cow/calf production), hogs (#7) and turkeys (#3) with beef cattle and hogs providing the bulk of the income in this sector. Dairy, turkeys, chickens, sheep and goats are important to the state. Given the diversity of production, ASAP's cropland category focuses on stewardship criteria/practices that proactively protects animal health and conserve the state's environment and natural resources regardless of the livestock being produced.

## Criteria for Livestock Certification

- Livestock antibiotics, anti-microbials and pesticides are used in accordance with label, including withdrawal prior to marketing.
- An efficient and effective herd health management plan has been developed and implemented.
- Livestock waste is stored greater than 300 feet from a private well or surface water.
- Waste is stored in an area that prevents direct precipitation and surface runoff.
- Clean surface water is diverted from waste storage areas.
- Livestock waste is applied to crop/pastureland in accordance with a nutrient management plan.
- Disposal of dead animals is done according to recommended guidelines.
- Vegetative buffer practices are utilized to protect water quality in sensitive areas adjacent to receiving water courses, sinkholes, streams and impoundments.
- Livestock are managed to prevent uncontrolled access to streams, sink holes and other sensitive areas.

## Livestock Certification- Health Management

This certification category focuses on producers' development and implementation of an animal/herd health plan, including the proper use and compliance with withdrawal periods for antibiotics, antimicrobials and pesticides. The implementation of the following nationally recognized assurance programs will assist producers in meeting the section's criteria:

- Pork Quality Assurance Plus: (National Pork Board)  
<http://www.pork.org/pqa-plus-certification/>

- Beef Quality Assurance: (Missouri Cattlemen’s Association)  
<http://mocattle.com/bqa.aspx>
- Dairy Beef Quality Assurance:  
<http://www.bqa.org/programs/dairy-bqa>
- National Dairy FARM Program: (National Milk Producers Federation & Dairy Management Inc.)  
<http://www.nationaldairyfarm.com/>

## Resources for Livestock Certification- Health Management

### Missouri Department of Agriculture

- Animal Health: The Missouri Department of Agriculture’s Animal Health Division, under the direction of the state veterinarian, is responsible for controlling, eradicating and testing for livestock diseases in Missouri. This is accomplished through testing, vaccinations and regulatory programs involving all species as provided under the Diseased Animal Law. The Animal Health Division assists on topics such as agri-security, disease control and proper deceased animal disposal.
  - Additional information including regulatory requirements can be found at:  
<http://agriculture.mo.gov/animals/health/>
- Fescue Tolerance Coupon Program: The Missouri Department of Agriculture Ag Business Development Division has funds available to assist Missouri beef cattle producers with the cost of testing 18,430 replacement heifers and bulls for toxic fescue endophyte tolerance. The Fescue Tolerance Coupon Program is funded through a Beef Initiative Grant sponsored by the Missouri Agricultural Foundation. ([bit.ly/mda\\_FTCP](http://bit.ly/mda_FTCP))

### Missouri Department of Agriculture

- State Office:  
P.O. Box 630  
1616 Missouri Blvd  
Jefferson City, MO 65102  
(573) 751-4211  
[Animal.Health@mda.mo.gov](mailto:Animal.Health@mda.mo.gov)  
[aginfo@mda.mo.gov](mailto:aginfo@mda.mo.gov)
- Additional information including regulatory requirements can be found at:  
<http://agriculture.mo.gov/animals/health/>

## Livestock Certification- Waste Management

This section of the livestock certification category emphasizes the responsibility to design and install an animal waste system that prevents the degradation of air, soil and water resources in rural areas, and protects public health and safety. Systems may include waste storage ponds,

lagoons, structures, fencing, composting facilities, manure transfer, waste utilization, nutrient management and other activities related to animal waste. Missouri Department of Natural Resources rules related to permitting, construction and operation can be found at 10 CSR 20-6.010 (DNR, Division 20.Clean Water Commission, Chapter 6.Permits) ([bit.ly/dnr\\_cwc6](http://bit.ly/dnr_cwc6))

## Waste Management Best Management Practices

### Natural Resources Conservation Service (NRCS)

- **EQIP (Environmental Quality Incentives Program)**: EQIP provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation and improved wildlife habitat. ([bit.ly/nrcs\\_eqip](http://bit.ly/nrcs_eqip))
- **Waste Storage Facility**: This practice supports the planning, design and construction of waste storage facilities that will comply with federal, state and local laws and regulations. As defined in the code, these are agricultural waste storage impoundments or containments made by constructing an embankment, excavating a pit or dugout or by fabricating a structure for the purpose to storing manure, agricultural by-products, wastewater and contaminated runoff provide the agricultural operation management flexibility for waste utilization. ([bit.ly/nrcs\\_code313](http://bit.ly/nrcs_code313))
- **Waste Treatment Lagoon**: A waste treatment lagoon is an impoundment made by excavation or earth fill to provide storage for biological treatment of animal or other agriculture waste. The purpose of this practice is to store and biologically treat organic waste, reduce pollution and protect water quality. The three general types of waste treatment lagoons are:
  - Anaerobic—Requires less surface area than naturally aerobic lagoons, but may give off offensive odors.
  - Naturally aerobic—Require more surface area, but are relatively odor free.
  - Mechanically aerated—Comparable in size to anaerobic lagoons, but require energy for aeration.
  - Visit [bit.ly/nrcs\\_code359](http://bit.ly/nrcs_code359) to learn more about waste treatment lagoons.
- **Solid/Liquid Waste Separation Facility**: A solid/liquid waste separation facility is a filtration or screening device, settling tank, settling basin or settling channel used to separate a portion of solids from a liquid waste stream. This practice applies where solid/liquid separation will:
  - Remove solids from the liquid waste stream and allow further treatment processes to be applied to the separated materials.
  - Reduce problems associated with solids accumulation in liquid storage facilities.
  - Reduce solids in stored liquids so liquids can be recycled for other uses.

- Reduce solids in stored liquids to better facilitate land application of liquids for irrigation.
  - Assist with partitioning nutrients in the waste stream to improve nutrient management.
  - Visit [bit.ly/nrcs\\_code632](http://bit.ly/nrcs_code632) to learn more about solid/liquid waste separation facility.
- **Waste Transfer**: Waste transfer is a system using structures, pipes or conduits installed to convey waste or waste byproducts from the agricultural production site to storage, treatment or application. The purpose of the practice is to transfer animal waste, bedding material, spilled feed, process wastewater and other residues associated with animal production to a treatment facility or to agricultural land for application. ([bit.ly/nrcs\\_code632](http://bit.ly/nrcs_code632))
  - **Nutrient Management**: Nutrient management involves developing and implementing a plan to manage the amount, placement and timing of plant nutrients to obtain optimum yields and minimize the risk of surface and groundwater pollution. Nutrient management may be used on any area of land where plant nutrients are applied to enhance yields and maintain or improve chemical and biological condition of the soil. The source of plant nutrients may be from organic waste, commercial fertilizer, legumes or crop residue. The objective is to apply the proper amount of nutrients at the proper time to achieve the desired yield and minimize entry of nutrients into surface or groundwater supplies. The amount and timing of nutrients is based on soil testing, planned yield and growing season of target plants. ([bit.ly/nrcs\\_code590](http://bit.ly/nrcs_code590))
  - **Waste Facility Closure**: Waste facility closure is the process of removing the long-term accumulation of sludge, floating matter and wastewater from waste impoundments (animal waste lagoons on storage ponds) in an environmentally safe manner. ([bit.ly/nrcs\\_code360](http://bit.ly/nrcs_code360))

### **Missouri Department of Natural Resources- Soil & Water Conservation Program**

- **Waste Management System**: These practices assists producers in establishing a system to collect, control and manage agricultural waste, manure and litter from livestock production operations to protect water and air quality and provide plant nutrients on agricultural land:
  - Beef: ([bit.ly/dnr\\_n312be](http://bit.ly/dnr_n312be) )
  - Dairy: ([bit.ly/dnr\\_N312da](http://bit.ly/dnr_N312da))
  - Poultry: ([bit.ly/dnr\\_N312pu](http://bit.ly/dnr_N312pu))
  - Swine: ([bit.ly/dnr\\_N312sw](http://bit.ly/dnr_N312sw))
- **Nutrient Management**: This practice provides an incentive to encourage the development and adoption of a Nutrient Management Plan, including new management techniques and/or technologies for applying manure and fertilizer. The practice applies to lands

where plant nutrients (commercial fertilizers and/or manure) have been improperly applied and the landowner is utilizing a new approach in the application of nutrients. The land must be eroding at or below tolerable soil loss levels. ([bit.ly/dnr\\_n590](http://bit.ly/dnr_n590))

## Educational Resources for Waste Management

### Missouri Department of Natural Resources

- DNR Publications and Guides:
  - Water Protection Program Publication 2351: A fact sheet entitled “Animal Feeding Operation Permits and Regulations in Missouri.” The fact sheet provides an overview of federal and state regulations relating to AFOs and Concentrated Animal Feeding Operations (CAFO) in Missouri. It also describes the different permits that can be required and an outline of the permit application process. ([bit.ly/dnrpub\\_2351](http://bit.ly/dnrpub_2351))
  - Water Protection Fact Sheet 915 - Guide to Animal Feeding Operations: The publication contains information on Missouri’s regulatory requirements related to receiving a permit for concentrated animal feeding operations. ([bit.ly/dnrpub\\_915](http://bit.ly/dnrpub_915))
  - Solid Waste Management Program Publication 2438 - Concentrated Animal Feeding Operation Application Instructions for Form 780-1953: The publication includes information on recordkeeping and reporting requirements.
  - Water Protection Program FORM W: Concentrated Animal Feeding Operation (CAFO) Operating Permit Application ([bit.ly/dnr\\_formw](http://bit.ly/dnr_formw))
  - Manual 121 Design Guidelines for Animal Waste Management for Concentrated Animal Feeding Operations PUB1008: The manual and technical assistance can be obtained by contacting the DNR-NPDES Permits and Engineering Section Animal Waste Unit at (573) 751-6825 or by fax at (573) 522-9920. This unit primarily handles permits and letters of approval for agricultural activities such as animal feeding operations and agricultural chemical storage.

### MU Extension

- MU Publications and Guides:
  - MU Guide EQ 219 - Separation Distances for Livestock Manure Management Systems: This publication gives the recommended guidelines for separation distances for livestock manure management systems. ([bit.ly/muex\\_pubEQ219](http://bit.ly/muex_pubEQ219))
  - MU Guide EQ 301 - Dairy Manure Management Systems in Missouri: This publication provides an overview of the different manure management systems generally used with dairy systems. ([bit.ly/muex\\_pub301](http://bit.ly/muex_pub301))
  - MU Guide WQ307 - Fertilizer Nutrients in Dairy Manure: This publication provides basic information on the estimated nutrient makeup of dairy manure for planning purposes. ([bit.ly/muex\\_pubWQ307](http://bit.ly/muex_pubWQ307))

- MU Guide WQ310 - Spreading Dairy Waste With Lab Analysis and Soil Test: Proper application of manure prevents environmental concerns and provides producers with nutrient savings for pasture and row crops. This publication discusses managing manure as a fertilizer. ([bit.ly/muex\\_pubWQ310](http://bit.ly/muex_pubWQ310))
- MU Guide WQ314 - Basic Requirements for Flushing Dairies: This publication looks at design and purpose of flush gutters for dairy operations. ([bit.ly/muex\\_pubWQ314](http://bit.ly/muex_pubWQ314))
- MU Guide WQ315 - Tip Tanks for Dairy Flushing: This publication identifies and explains different tip tanks for dairy manure management. ([bit.ly/muex\\_pubWQ315](http://bit.ly/muex_pubWQ315))
- MU Guide WQ317 - Pipeline/Valve Systems for Flushing Dairies: This publication shows the flush water release device for flushing dairies. ([bit.ly/muex\\_pubWQ317](http://bit.ly/muex_pubWQ317))
- MU Guide WQ324 - Solids Removal From Livestock Manure Lagoons: Proper mixing of lagoons before spreading is important for preventing solids buildup inside the lagoon. This publication discusses how to properly mix a lagoon and what equipment is needed. ([bit.ly/muex\\_pubWQ324](http://bit.ly/muex_pubWQ324))
- MU Guide EQ 350 - Swine Manure Management Systems in Missouri: This publication looks at the different types of swine manure and the nutrient value of manure from different storage systems. ([bit.ly/muex\\_pubEQ350](http://bit.ly/muex_pubEQ350))
- MU Guide EQ 352 - Swine Manure Management in Hoop Structures: This guide discusses using dry bedding as an alternative to traditional liquid manure systems from swine production. The guide covers bedding material rates, nutrient levels and equipment needs. ([bit.ly/muex\\_pubEQ352](http://bit.ly/muex_pubEQ352))
- MU Guide EQ 377 - Beef Manure Management Systems in Missouri: This guide describes the issues of solid, semisolid, slurry and lagoon manure associated with beef cattle production. ([bit.ly/muex\\_pubEQ377](http://bit.ly/muex_pubEQ377))
- MU Guide EQ 382 - Sizing Soil and Plant Filter for Conservative Manure Management: This publication helps estimate the recommended soil-plant filter for manure management. ([bit.ly/muex\\_pubEQ382](http://bit.ly/muex_pubEQ382))
- MU GuideEQ385 - Picket Dam Storage for Cattle Manure: This publication shows the basic design and reasoning behind using a picket dam for separating solids and liquids. ([bit.ly/muex\\_pubEQ385](http://bit.ly/muex_pubEQ385))
- MU Guide EQ 387 - Anaerobic Lagoons for Storage/Treatment of Livestock Manure: This publication identifies advantages of using an anaerobic lagoon for manure storage and estimates size and design. ([bit.ly/muex\\_pubEQ387](http://bit.ly/muex_pubEQ387))
- Nutrient Management Planner: A web-based nutrient management tool that assists in determining land needs for manure application. ([nmplanner.missouri.edu/tools/index.asp](http://nmplanner.missouri.edu/tools/index.asp))

- Missouri Dairy Resource Guide -Manure Management: Electronic resource will help the user determine and implement the best strategy concerning on-farm manure management. These topics include nutrient management planning, economics of manure, regulatory issues, records and the use of energy recovery from manure. ([agebb.missouri.edu/dairy/manure/](http://agebb.missouri.edu/dairy/manure/))

## Technical Assistance for Waste Management

For financial, technical and compliance assistance, or for implementation and planning advice, contact any of the following organizations:

### Natural Resources Conservation Service (NRCS)

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_sclocator](http://bit.ly/usda_sclocator) to locate your county Natural Resources Conservation office.

### Soil & Water Conservation Districts (SWCD)

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### MU Extension

- Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.

## Financial Resources for Waste Management

### Missouri Department of Agriculture- Missouri Agricultural and Small Business Development Authority (MASBDA)

- Single-Purpose Animal Facilities Loan Guarantee Program: A program that provides a 50 percent first-loss guarantee on loans up to \$250,000 that lenders make to independent livestock producers to finance breeding or feeder livestock, earthworms, land, buildings, facilities, equipment, machinery and animal waste systems used to produce poultry, swine, beef cattle, dairy cattle (and other livestock) and earthworms. ([bit.ly/masbda\\_spaf](http://bit.ly/masbda_spaf))
- Bridge Loan Program: A program used for a short term loan by Missouri producers who have been approved by USDA-NRCS, through the USDA-NRCS Environmental Quality Incentives Program (EQIP) or the Soil and Water Conservation Program/District (SWCD). ([bit.ly/masbda\\_blp](http://bit.ly/masbda_blp))

# Livestock Certification- Livestock Mortality Management

This section of the livestock certification category relates to the proper disposal of dead animals in such a way as to comply with the requirements of Missouri Revised Statute Chapter 269 - Disposal of Dead Animals. The statute establishes the legal requirements related to the disposal of dead animals. This permitting and manner for on-site burials, when hide removal is authorized, composting, incineration, the authority of the state veterinarian to enter premises in emergency situations or when nuisance exists, court order requiring disposal, limitation on veto power of decisions and disposal plants. ([bit.ly/code269](http://bit.ly/code269))

## Educational Resources for Livestock Mortality Management

### Missouri Department of Natural Resources

- DNR Publications and Guides:
  - Water Protection Program Publication 1259 - Animal Production Mortalities Emergency Procedures: This fact sheet contains guidance about handling high mortality of animals due to unusual events such as floods, tornados or other natural disasters as well as power outages, fires, spread of disease or other events that cause a high number of mortalities at animal production facilities.

### MU Extension

- MU Publications and Guides:
  - MU Guide WQ351- Composting Dead Swine: The Missouri Dead Animal Law requires that a dead animal carcass be properly disposed of within 24 hours. In Missouri, there are five acceptable methods of carcass disposal. ([bit.ly/muex\\_pubWQ351](http://bit.ly/muex_pubWQ351))
  - Missouri Dairy Resource Guide Manure Management: This electronic resource has a section on regulatory requirements and composting. (<http://agebb.missouri.edu/dairy/manure/>)
  - MU Guide WQ216- Dead Animal Disposal Laws in Missouri: The disposal of dead animals is regulated as a solid waste by the Missouri Department of Natural Resources' (DNR) Solid Waste Management program and by the Missouri Department of Agriculture's Division of Animal Health. ([bit.ly/muex\\_pubWQ216](http://bit.ly/muex_pubWQ216))

## Technical Assistance for Livestock Mortality Management

For assistance planning, implementation, financial, troubleshooting, compliance concerns, interpreting soil analysis reports contact any of these organizations:

### Natural Resources Conservation Service (NRCS)

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359

- Visit [bit.ly/usda\\_sclocator](http://bit.ly/usda_sclocator) to locate your county Natural Resources Conservation office.

### **Soil & Water Conservation Districts (SWCD)**

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)

- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### **University of Missouri**

- MU Extension
  - Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.

### **Missouri Department of Agriculture**

- State Office:  
P.O. Box 630  
1616 Missouri Blvd  
Jefferson City, MO 65102  
(573) 751-4211  
[aginfo@mda.mo.gov](mailto:aginfo@mda.mo.gov)

### **Missouri Department of Natural Resources**

- State Office:  
PO Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65102  
(573) 751-3443  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)

## **Financial Resources for Livestock Mortality Management**

### **Missouri Department of Agriculture - Missouri Agricultural and Small Business Development Authority (MASBDA)**

- Animal Waste Treatment System Loan: The purpose of the loan program is to finance animal waste treatment systems for independent livestock and poultry producers at below conventional interest rates. Loan proceeds may be used to finance 100% of the cost of an eligible animal waste treatment system (less the amount of grants from any other state or federal agency). ([bit.ly/mabda\\_awtloan](http://bit.ly/mabda_awtloan))

### **Natural Resources Conservation Service (NRCS)**

- Animal Mortality Facility: This practice assists producers to establish an on-farm facility for the treatment or disposal of livestock and poultry carcasses. ([bit.ly/nrcs\\_code316](http://bit.ly/nrcs_code316))

- Composting Facility: This practice provides assistance to establish a structure or device to contain and facilitate the controlled aerobic decomposition of manure or other organic material by micro-organisms into a biologically stable organic material that is suitable for use as a soil amendment. ([bit.ly/nrcs\\_code317](http://bit.ly/nrcs_code317))

### **Missouri Department of Natural Resources- Soil & Water Conservation Program**

- Incinerator: This practice provides assistance to producers to acquire an incinerator to safely dispose of livestock and poultry carcasses to reduce pollution of water and soil resources and to control disease. ([bit.ly/nrcs\\_316](http://bit.ly/nrcs_316))
- Composting Facility: This practice assists producers in construction and use of a composting facility to utilize natural decomposition to break down animal waste to be used to improve soil fertility and crop production. ([bit.ly/dnr\\_N317](http://bit.ly/dnr_N317))

## **Livestock Certification- Management of Sensitive Areas**

This section of the livestock certification emphasizes the responsibility of managing sensitive areas. Sensitive areas are places that have special environmental attributes that deserve special attention. These areas are crucial to the maintenance of productive and diverse plant and wildlife populations.

### **Educational Resources for Management of Sensitive Areas**

#### **Missouri Department of Natural Resources**

- Management of Sensitive Areas: Alternative watering sources for livestock to protect streams and ponds, and improve water quality, forest health and grazing systems. Options may include solar pumps, wells, hydraulic ram pumps, waterline through existing pond, pond reconditioning, pond construction, spring development or controlled stream access. This typically accompanies other practices such as livestock exclusion as part of a prescribed grazing system.
- Visit [http://bit.ly/dnr\\_sensitiveareas](http://bit.ly/dnr_sensitiveareas) to learn more about management of sensitive areas.

#### **MU Center for Agroforestry**

- Center for Agroforestry Publications and Guides
  - Establishing and Managing Riparian Forest Buffers AF1009L: This guide is intended to assist farmers to design and manage the interactive agroforestry practice of Riparian Forest Buffers. Properly applied on a landscape, the riparian forest buffer can enhance and diversify farm income opportunities, improve the environment and create wildlife habitat. ([bit.ly/agroforestry\\_AF1009](http://bit.ly/agroforestry_AF1009))

## Technical Assistance for Management of Sensitive Areas

For assistance planning, implementation, financial, troubleshooting, compliance concerns, interpreting soil analysis reports contact any of these organizations:

### Natural Resources Conservation Service (NRCS)

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_slocator](http://bit.ly/usda_slocator) to locate your county Natural Resources Conservation office.

### Soil & Water Conservation Districts (SWCD)

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### University of Missouri

- MU Extension
  - Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.

### Missouri Department of Agriculture

- State Office:  
P.O. Box 630  
1616 Missouri Blvd  
Jefferson City, MO 65102  
(573) 751-4211  
[aginfo@mda.mo.gov](mailto:aginfo@mda.mo.gov)

### Missouri Department of Natural Resources

- State Office:  
PO Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65102  
(573) 751-3443  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)

### Missouri Department of Conservation (MDC)

- Conservation Headquarters:  
2901 W. Truman Blvd.  
Jefferson City, MO 65109  
(573) 751-4115

- Visit [mdc.mo.gov/regional-contacts](http://mdc.mo.gov/regional-contacts) to locate the MDC office in your region, or your county contact.

## Financial Resources for Management of Sensitive Areas

### Natural Resources Conservation Service (NRCS)

- **Critical Area Planting:** This practice provides assistance in establishing permanent vegetation on sites that have or are expected to have high erosion rates and on sites that have physical, chemical or biological conditions that prevent the establishment of vegetation with normal practices. ([bit.ly/nrcs\\_code342](http://bit.ly/nrcs_code342))
- **Access Control:** This practice provides assistance to limit livestock to access in designated areas of a stream or pond for purposes of livestock water. ([bit.ly/nrcs\\_code472](http://bit.ly/nrcs_code472))
- **Fence:** This practice facilitates the accomplishment of conservation objectives by providing a means to control movement of animals and people, including vehicles. Fencing materials, type and design of fence installed shall be of a high quality and durability. Materials shall meet NEH material specification 591. ([bit.ly/nrcs\\_code382](http://bit.ly/nrcs_code382))
- **Stream Crossing:** This practice assists in establishing a stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment or vehicles. ([bit.ly/nrcs\\_code578](http://bit.ly/nrcs_code578))

### Missouri Department of Natural Resources- Soil & Water Conservation Program

- **Permanent Vegetative Cover - Critical Area:** Confined Animal Feedlot: This practice assists with establishment of permanent vegetative cover on small critical areas associated to animal confinement areas. ([bit.ly/dnr\\_DSL111](http://bit.ly/dnr_DSL111))
- **Riparian Forest Buffer:** This practice protects soil and shallow groundwater from contamination by sediments, chemicals, nutrients, pesticides or organic matter and stream banks from erosion by planting woody species along the stream course and protecting the buffer area from trampling and grazing. ([bit.ly/dnr\\_N391](http://bit.ly/dnr_N391))
- **Stream Protection:** This practice excludes livestock from stream corridors to allow re-vegetation with grasses and trees on the stream bank. This also provides a filter to trap sediments, chemicals and nutrients. ([bit.ly/dnr\\_WQ10](http://bit.ly/dnr_WQ10))
- **Livestock Exclusion:** This practice assists with installation of exclusion fence around existing ponds, woodlands, sinkholes, streams or sensitive areas where vegetation, soil condition and water quality are in need of protection from livestock. ([bit.ly/dnr\\_N472](http://bit.ly/dnr_N472))

### Missouri Department of Conservation

- **Streambank Restoration:** This practice protects stream banks from accelerated erosion by providing adequate stream bank vegetation, improving water quality, and enhancing fish and wildlife habitat. NOTE: This practice is available only in priority areas as determined by the Missouri Department of Conservation Fisheries Division staff. All necessary federal

and state permits are required before project installation. If approved, some the cost-share practices available are:

- Engineering for Rock Projects
  - Rock Blankets
  - Rock Weirs or Log Barbs
  - Tree Revetments
  - Stream Bank Regeneration
- **Alternative Watering System**: This practice limits or excludes livestock from the stream, streamside management zone, spring branches and ponds to improve water quality by providing an alternative water source. The practice is intended to focus on sites along streams where livestock have free access to the stream and streamside management zone and the stream provides the primary or sole source of water. Components that might be eligible for cost share are:
    - Mechanical Watering Systems
    - Waterline Through Existing Structure
    - Pond Reconditioning
    - Pond Construction
    - Spring Development
    - Limited Access
  - **Reinforced Stream Crossing**: This practice establishes armored stream crossings for livestock, vehicles, farming and timber harvesting equipment and limited access points for livestock watering. The practice applies to stream channels that have down-cut and/or lengthened such that channel depth, bed material and bank angles prohibit easy and safe access across the stream channel. The practice can only be used on first and second order streams.
  - **Fencing**: The practice excludes livestock and protects sensitive natural communities in attaining specific resource management objectives. The Missouri Department of Conservation planner, based on regional priorities, determines where this practice shall be applied. The focus is on areas where livestock should be excluded (or managed) to improve water quality or protect riparian buffers, woodlands, critical habitats, highly erosive areas, karst features or unique natural communities. The areas for which practice may be applied are:
    - Sinkholes
    - Woodlands
    - Riparian Areas
    - Tree Plantings

### **Farm Service Agency (FSA)**

- **Conservation Reserve Program (CRP)**: The CRP program encourages farmers to plant and maintain long-term, resource-conserving seed mixes on highly erodible cropland or environmentally sensitive land to improve soil, water quality and wildlife resources. ([bit.ly/fsa\\_crp](http://bit.ly/fsa_crp))

# Forestry Certification

Approximately one-third of Missouri is covered by forest land. Missouri ranks seventh out of the 20 northeastern states in the amount of forested acreage with 14 million acres. Private landowners own 85 percent of those 14 million acres. Harvesting and processing trees into wood products contributes about \$9 billion to Missouri's economy annually. The forestry certification category is intended to recognize landowners who sustainably manage their woods for wood, water, wildlife and recreation.

## Criteria for Forestry Certification

- Measures are taken to protect forest/woodland areas from damaging insects, diseases and grazing.
- Livestock are excluded from woodland areas.
- Timber stand improvement is exercised to increase production and improve forest health.
- An inventory or management plan has been developed by a qualified forester.
- A harvest plan was developed and reviewed with the timber buyer.
- Timber harvests are completed in accordance with property rights through documented ownership.
- Forest owner monitors forest product harvests and other management activities to ensure they conform to the management plan objectives.
- The harvest, utilization, removal and other management activities are conducted to ensure long-term sustainability.
- A certified forester is utilized to mark timber, ensuring a healthy stand of residual trees and recruitment of regeneration.
- Forest owner engages contractors that carry appropriate insurance and comply with federal, state and local safety and fair labor rules, regulations and standard practices.
- Forest owner minimizes road construction and other disturbances within riparian zones and wetlands.
- Proper design and implementation of best management practices on logging trails, stream crossings, log landings and other constructive measures during and after timber harvest is maintained.
- Trees are annually inspected for pests.
- Pesticides are applied in accordance with product labels.

- Forest owner makes practical efforts to control invasive species.

## Forestry Certification- General Management

Proper care and management of the private forest resource are important to the health of Missouri's economy and environment. A management plan provides the direction to improve the quality and productivity of this valuable natural resource. At the same time, it provides a positive environment for wildlife, recreation and tourism while also improving water quality and reducing soil erosion.

## Educational Resources for Forestry Certification- General Management

### MU Extension

- Missouri Woodland Steward: This interactive, short course is designed to assist private landowners identify what they want, describe what they have, introduce them to basic forest and wildlife management concepts and practices, help them begin to develop a plan through a collaborative process with other landowners attending the short course and introduce them to their local natural resource professional who will serve as a coach in preparing and implementing their plan. The short course will be a series of four, two-hour sessions that will be provided to University of Missouri Regional Extension Specialists in a DVD format. ([bit.ly/muex\\_snrcourse](http://bit.ly/muex_snrcourse))
- My Missouri Woods: contains information on topics such as, tree identification, soils, tree planting and care, tree health, harvesting, selling timber, best management practices, and where to find help. ([bit.ly/muex\\_mywoods](http://bit.ly/muex_mywoods))
- MU Publications and Guides:
  - MU Guide MX342 - Tree Diseases I: This guide discusses 18 common tree diseases, their characteristics and the type of damage they cause. The front of the guide features 18 full-color photos of damaged leaves and branches to show what symptoms to look for in each disease. ([bit.ly/muex\\_MX342](http://bit.ly/muex_MX342))
  - MU Guide MX343 - Tree Diseases II: This guide is a continuation of MU publication MX342, Tree Diseases I, and covers an additional 17 common tree diseases, their characteristics and the type of damage they cause. The front of the guide features 17 full-color photos of damaged leaves and branches, which can help in disease identification. ([bit.ly/muex\\_MX343](http://bit.ly/muex_MX343))
  - MU Guide MX344 - Tree Diseases III: This guide is a continuation of MU publications MX342, Tree Diseases I, and MX343, Tree Diseases II and covers 23 additional common tree diseases. It discusses the characteristics of each disease and the type of damage they cause. The front of the guide features 23 full-color photos of damaged leaves, branches and tree trunks to show what symptoms to look for in each disease and help with identification. ([bit.ly/muex\\_MX344](http://bit.ly/muex_MX344))

- MU Guide MX349 - Tree and Shrub Pests I: This guide discusses 14 common tree and shrub pests, their characteristics, and how to control them. The front of the guide features 14 full-color photos of the pests along with some of the damage they cause to trees and shrubs. ([bit.ly/muex\\_MX349](http://bit.ly/muex_MX349))
- MU Guide G5150 - Increase Woodland Products Through Timber Stand Improvement: This guide covers the timber stand improvement management practices that improve the vigor, productivity and quality of stands of trees. ([bit.ly/muex\\_G5150](http://bit.ly/muex_G5150))

## Missouri Department of Conservation

- MDC Publications and Guides:
  - Forest Management for Missouri Landowners: Publication with guidelines for assessing your Missouri woodlot's present condition and creating and maintaining a healthy forest that meets your objectives. ([bit.ly/mdc\\_forestmanagement](http://bit.ly/mdc_forestmanagement))
  - Tree and Forest Health: Publication focused on learning to identify and control or report common tree diseases and pests. ([bit.ly/mdc\\_forestcare](http://bit.ly/mdc_forestcare))
  - Invasive Tree Pests: Invasive tree pests are exotic insects and diseases that threaten the health of Missouri's beautiful trees and forests. ([bit.ly/mdc\\_disease\\_pests](http://bit.ly/mdc_disease_pests))

## Financial Resources for Forestry Certification- General Management

### Natural Resources Conservation Service (NRCS)

- Silvopasture Establishment: Silvopasture systems are specifically designed and managed to produce trees, forage and livestock on the same acreage. Silvopasture results when forage crops are deliberately introduced or enhanced in a timber production system, or timber crops are deliberately introduced or enhanced in a forage production system. Silvopasture practices are designed to produce a high-value timber component while providing short-term cash flow from the livestock component. The interactions among timber, forage and livestock are intensively managed to simultaneously produce useful timber products, quality forages and profitable livestock operations. ([bit.ly/nrcs\\_code381](http://bit.ly/nrcs_code381))
- Access Control: Access control includes temporary or permanent exclusion of animals, people, vehicles and/or equipment from an area. Controlling access is often used to protect, maintain or improve the quantity and quality of natural resources in an area. The purpose also includes aesthetic resources as well as human health and safety. Access control can play a role in establishing, protecting and maintaining vegetation, and is often essential to conserving the other natural resources. ([bit.ly/nrcs\\_code472](http://bit.ly/nrcs_code472))
- Forest Stand Improvement: Forest stand improvement involves the manipulation of forest species composition and structure by cutting or killing selected trees and understory vegetation. This practice applies to forestland where competing vegetation

interferes with the growth of preferred tree and understory species. Preferred plants are identified and retained to achieve the desired composition and structure of the forest stand. ([bit.ly/nrcs\\_code666](http://bit.ly/nrcs_code666))

- **Forest Trails and Landings:** This practice involves the creation and/or management of temporary or infrequently used routes, paths or cleared areas. Forest trails and landings are installed and/or maintained for infrequent access to conduct management activities such as forest stand improvement, pruning, fire suppression or harvest of forest products. The conservation objective is to allow suitable access while minimizing on-site and off-site damage to other natural resources. ([bit.ly/nrcs\\_code655](http://bit.ly/nrcs_code655))
- **Prescribed Burning:** This practice uses prescribed and managed burning as a tool to reach management goals. The practice can be applied for the following purposes: control of undesirable vegetation, preparing sites for planting or seeding, enhancing seed/seedling production, controlling plant diseases, removing slash and debris following forest management activities, reducing wildfire hazards, improving forage quantity and quality, facilitating distribution of grazing and browsing animals and improving and maintaining wildlife habitat. ([bit.ly/nrcs\\_code338](http://bit.ly/nrcs_code338))
- **Tree/Shrub Site Preparation:** This practice applies tree/shrub site preparation conservation practices to control undesirable vegetation, remove slash and debris or alter site conditions in order to provide optimum site conditions for planting or seeding of woody species, or to encourage natural regeneration of desirable trees and shrubs. ([bit.ly/nrcs\\_code490](http://bit.ly/nrcs_code490))
- **Tree and Shrub Establishment:** This practice assists in establishing trees and shrubs by planting or seeding. Tree/shrub establishment can be applied on any appropriately prepared site where woody plants can be grown. ([bit.ly/nrcs\\_code612](http://bit.ly/nrcs_code612))
- **Tree/Shrub Pruning:** Pruning is used to improve the health, appearance and value of trees or shrubs by removing damaged, unhealthy or unsightly portions of the plants. It can also be used to address safety concerns by cutting hazardous branches, or removing fuels that contribute to wildfire risk. Pruning can encourage growth of understory plants by getting sunlight to the forest floor. It may also be used to provide access to a forested stand for other management activities. Pruning is used on field windbreaks to manage drifting snow, spreading it more evenly over the adjacent fields to allow earlier cropping and improved moisture conditions. Windbreaks may also be pruned to manage odors or to provide air flow that reduces the likelihood of tree diseases. ([bit.ly/nrcs\\_code660](http://bit.ly/nrcs_code660))
- **Forest Management Plan:** A forest management plan is a site specific plan developed for a client, addressing one or more resource concerns on land where forestry- related conservation activities or practices will be planned and applied. The development of forest management plans is part of Environmental Quality Incentives Program (EQIP). ([bit.ly/cap\\_forestmanagement](http://bit.ly/cap_forestmanagement))

### **Department of Natural Resources- Soil & Water Conservation Program**

- **Livestock Exclusion:** This practice assists with installation of exclusion fence around existing ponds, woodlands, sinkholes, streams or sensitive areas where vegetation, soil condition and water quality are in need of protection from livestock. ([bit.ly/dnr\\_N472](http://bit.ly/dnr_N472))

- **Forest Plantation:** This practice protects the soil and encourages the conversion of marginal soils to less intensive use by planting trees and shrubs and excluding livestock. ([bit.ly/dnr\\_DFR04](http://bit.ly/dnr_DFR04))
- **Timber Harvest Plan:** This practice provides assistance for the proper design and construction of logging roads and stream crossings for timber harvest operations. ([bit.ly/dnr\\_C100](http://bit.ly/dnr_C100))
- **Restoration of Skid Trails, Logging Roads, Stream Crossings and Log Landings:** This practice is used to correct and control gully erosion resulting from improperly constructed logging roads and stream crossings following timber harvest. ([bit.ly/dnr\\_N655](http://bit.ly/dnr_N655))

### **Missouri Department of Conservation**

- **Forest and Woodland Improvement:** This practice provides assistance for landowners that will improve timber production, wildlife habitat and forest health. The practice can be applied to forest land where competing vegetation hinders development and stocking of preferred tree and understory species, or where some of the stand will be cut or killed for intended purposes.
- **Woody Invasive and Vine Control:** This practice provides assistance for areas where invasive woody or vine species limit site restoration or maintenance. This practice can be used in combination with other prescribed practices, such as burning, to achieve the desired plant community.
- **Tree and Shrub Establishment:** This practice provides assistance to establish trees and shrubs for the purposes of establishing forest, protecting watersheds, improving wildlife habitat, controlling erosion, reducing pollution or improving energy conservation on specific sites where establishing trees and/or shrubs (as determined by the planner in consultation with the landowner) will meet a specific conservation management objective.
- **Resource Inventory and Plan Development:** This practice provides funding to assist landowners and individuals desiring natural resource improvements with the preparation of their Forest Stewardship Plan/Forest Management Plan. The plan identifies objectives, management decisions, recommended resource improvements and is used to guide the implementation of those improvements.
- **Forest Harvest BMP Implementation, Forest Harvest Plan Development & Timber Marking:** This practice provides assistance to landowners and Certified Professional Timber Harvesters (loggers that completed the Professional Timber Harvester training.) to cover some of the costs associated with establishment of Best Management Practices (BMPs), to proactively prevent erosion through development of a forest harvest plan, and to promote sustainable forest management by involving a forester in tree selection (marking).

# Forestry Certification-Timber Sales & Management

Many landowners receive only a fraction of their timber's true value because they do not know what they have or how to sell it. Selling timber can be a rewarding experience if you understand the steps necessary. Engaging a professional forester to determine what to sell and the potential value of your product, is key in increasing your probability of a having a successful sale. The forester can help select what trees to be harvested, while at the same time maintaining your woodland in a vigorous, healthy and productive condition.

## Educational Resources for Timber Sales & Management

### MU Extension

- MU Publications and Guides:
  - MU Guide G5050 - How to Measure Trees and Logs: The guide describes the importance of engaging a professional forester to decide which trees are ready for market, as well as how to measure and mark the trees with paint spots at breast height and below stump height. If the trees are already cut, the guide outlines the need to scale the logs before they are sent to the mill. ([bit.ly/muex\\_g5050](http://bit.ly/muex_g5050))
  - MU Guide G5051 - Selling Timber - What the Landowner Needs to Know: The guide will explain the basic steps involved in selling timber. ([bit.ly/muex\\_G5051](http://bit.ly/muex_G5051))
  - MU Guide G5055 - Determining Timber Cost Basis: The guide discusses the importance of establishing and how to establish the cost basis of the original purchase price that was spent on the timber. ([bit.ly/muex\\_g5055](http://bit.ly/muex_g5055))
  - MU Guide G5057 - Basic Elements of a Timber Sale Contract: The guide covers the basic purpose of a contract to ensure that each party knows what it can expect from the other — in a format that makes the expectations enforceable in court. ([bit.ly/muex\\_g5057](http://bit.ly/muex_g5057))
  - MU Guide G5999 - Forestry Assistance for Landowners: The guide lists the agencies and organizations that can provide publications, technical advice, educational programs and financial assistance to manage woodlands. ([bit.ly/muex\\_g5999](http://bit.ly/muex_g5999))

### Missouri Department of Conservation

- Timber Management and Harvest: The website contains a link to the database of Missouri lumber mills, resources on timber management, price trends, sale basics and tax treatment. ([bit.ly/mdc\\_timbersales](http://bit.ly/mdc_timbersales))
- Missouri Forest Management Guidelines: This 2014 reference provides science-based guidance to help professional foresters, private land managers and forest landowners improve and sustain Missouri's forests. Numerous illustrated examples show how forest best management practices work and the laws that can influence forest management in Missouri. These voluntary guidelines were developed with input from five technical teams comprised of scientists as well as people working in the forestry profession. ([bit.ly/mdc\\_forestguidelines](http://bit.ly/mdc_forestguidelines))

## Technical Assistance for Timber Sales & Management

For assistance planning, implementation, financial, troubleshooting, compliance concerns, interpreting soil analysis reports contact any of these organizations:

### Natural Resources Conservation Service (NRCS)

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_slocator](http://bit.ly/usda_slocator) to locate your county Natural Resources Conservation office.

### Soil & Water Conservation Districts (SWCD)

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### MU Extension

- Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.

### Missouri Department of Agriculture

- State Office:  
P.O. Box 630  
1616 Missouri Blvd  
Jefferson City, MO 65102  
(573) 751-4211  
[aginfo@mda.mo.gov](mailto:aginfo@mda.mo.gov)

### Missouri Department of Natural Resources

- State Office:  
PO Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65102  
(573) 751-3443  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)

### Missouri Department of Conservation (MDC)

- Conservation Headquarters:  
2901 W. Truman Blvd.  
Jefferson City, MO 65109  
(573) 751-4115

- Visit [mdc.mo.gov/regional-contacts](http://mdc.mo.gov/regional-contacts) to locate the MDC office in your region, or your county contact.

### **Missouri Tree Farm Program**

- State Office:  
4207 Lindell Blvd, #301  
St. Louis, MO 63108  
(573) 418-6221  
[fwam.trees@gmail.com](mailto:fwam.trees@gmail.com)

### **Missouri Consulting Forester's Association**

- Visit <http://www.missouriforesters.com> to learn more about the Missouri Consulting Forester's Association.

## **Forestry Certification- Invasive Species and Forest Pests**

Many non-native, invasive insects and diseases pose serious threats to Missouri's forest resources and economy. State and federal agencies in Missouri have cooperated in the past to respond to threats posed by individual invasive pests such as the gypsy moth, emerald ash borer and thousand cankers disease. In response to the potential that the spread and establishment of these and other known and unknown invasive forest pests continues, the Missouri Departments of Agriculture, Natural Resources, and Conservation and the University of Missouri developed the Missouri Invasive Forest Pest Plan. The plan is intended to result in a consistent, coordinated and comprehensive approach to respond to future Missouri invasive forest pest threats. Key to the success of this plan will be vigilant landowners that annually inspect, report and control, where possible these risk to this valuable natural resource. A copy of the plan can be found at ([bit.ly/mdc\\_IFPP](http://bit.ly/mdc_IFPP))

## **Educational Resources for Invasive Species and Forest Pests**

### **MU Extension**

- MU Weed Science Website: Provides information covering numerous topics related to weed science, weed identification and herbicide injury. ([bit.ly/muex\\_weedscience](http://bit.ly/muex_weedscience))
- MU Weed ID Guide: Online plant identification system. ([weedid.missouri.edu/](http://weedid.missouri.edu/))
- Soil and Plant Testing Laboratory: Analyzes soil for nutrient content and fertility status and provides recommendations for economical, environmentally safe and balanced fertilizer and lime applications. MU Extension and numerous private labs are certified to conduct soil tests. ([bit.ly/muex\\_plantlab](http://bit.ly/muex_plantlab))
  - Accredited Soil Test Labs: A list of current accredited soil testing labs in the region. ([bit.ly/muex\\_soillabs](http://bit.ly/muex_soillabs))

- NOTE: Some SWCD & NRCS cost share practices require the test and the cost is a reimbursable expense.
- MU Publications and Guides:
  - MU Guide IMP1014 - Noxious Weeds of Missouri: Highlights invasive and noxious weeds of Missouri. Control recommendations are made for each noxious weed. ([bit.ly/2muex\\_ipm1014](http://bit.ly/2muex_ipm1014))
  - MU Guide IMP1015 - Thistles and Thistle-like Plants of Missouri: An overview of thistles and thistle-like plants in Missouri. ([bit.ly/muex\\_ipm1015](http://bit.ly/muex_ipm1015))
  - MU Guide IMP1010 - Biological and Integrated Control of Musk Thistle in Missouri: This guide provides an overview of milk thistle in Missouri. ([bit.ly/muex\\_ipm1010](http://bit.ly/muex_ipm1010))
  - NOTE: Visit the Integrated Pest Management website to view all IPM publications available. Publications cover general IPM, field and crops and horticultural. ([bit.ly/asap\\_ipm](http://bit.ly/asap_ipm))

### **Missouri Department of Conservation**

- Chemical Control and Conversion:
  - Herbaceous Invasive Control: This practice provides assistance for the control and eradication of invasive plant species.

## **Technical Assistance for Invasive Species and Forest Pests**

### **Natural Resources Conservation Service (NRCS)**

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_slocator](http://bit.ly/usda_slocator) to locate your county Natural Resources Conservation office.

### **Soil & Water Conservation Districts (SWCD)**

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

## **University of Missouri**

- MU Extension
  - Visit [bit.ly/muex\\_offices](https://bit.ly/muex_offices) to locate a specialist or your county Extension office.

## **Missouri Department of Conservation (MDC)**

- Conservation Headquarters:  
2901 W. Truman Blvd.  
Jefferson City, MO 65109  
(573) 751-4115
- Visit [mdc.mo.gov/regional-contacts](https://mdc.mo.gov/regional-contacts) to locate the MDC office in your region, or your county contact.

# Farmstead Certification

The farmstead is the first impression that others will have of your farming operation and the core of all operations. The challenge, especially during planting, haying and harvesting, is to have control measures in place to reduce the potential environmental and human exposure should an accident occur. The farmstead certification category criteria serve as an assessment of how well your farm/operation is prepared to protect your water sources and/or the environment have implemented preventative measures, including facilities that meet the codes, regulations, and BMPs for the handling, storage, and disposal of pesticides, fertilizer and petroleum based products.

## Criteria for Farmstead Certification

- The well casings, caps and controls are maintained with no damage, leaks or corrosion.
- All abandoned wells have been properly closed following the Missouri Department of Natural Resources' guidelines and the "Well Plugging Registration Record" has been filed with the Geological Survey Program.
- Back flow or back siphoning of fertilizer or pesticide mixtures into the water supply is prevented by installing an anti-backflow device and/or having an air gap maintained above the overflow of the tank.
- Non-bulk pesticides are stored indoors and at least 150 feet from private water well. If the landowner utilizes secondary containment, the minimum distance is 50 feet.
- Non-bulk pesticides are stored at least 200 feet from drains, streams, ponds or catch basins on the farmstead and not within the 100-year floodplain.
- Pesticides are stored in a secure place.
- Pesticides are stored on an impermeable surface.
- Pesticides are disposed of in accordance with product labels and by persons appropriately trained, licensed and/or supervised by someone with the proper credentials.
- Appropriate signage is used for pesticide storage. A "No Smoking" sign is also posted.
- Fertilizers are stored at least 150 feet from private water well. If the landowner utilizes secondary containment, the minimum distance is 50 feet.
- Fertilizers are stored at least 200 feet from drains, streams, ponds or catch basins on the farmstead, and not within the 100-year floodplain.
- Fertilizers are stored in a secure place.
- Fertilizers are stored on an impermeable surface.
- Appropriate signage is used for fertilizer storage. A "No Smoking" sign is posted.

- Petroleum is stored at least 150 feet from private water well. If the landowner utilizes secondary containment, the minimum distance is 50 feet.
- Petroleum is stored at least 200 feet from drains, streams, ponds, or catch basins on the farmstead.
- Petroleum is stored in a secure place.
- Petroleum is stored on an impermeable surface.
- Appropriate signage is used for petroleum storage. A “No Smoking” sign is also posted.
- Waste oil is recycled.
- Antifreeze is recycled or disposed of properly.
- Batteries are recycled.
- Paints, solvents and cleaners are properly disposed of.
- Unused metal is recycled.
- Unused tires are recycled.

## **Farmstead Certification- Drinking Well Water Condition**

Many Missouri farms depend on wells for their drinking water. Water obtained from the wells, if not properly protected may be at risk. The potential for well water to become contaminated with harmful microorganisms is greatest when they are located too close to flood zones, septic tanks, cesspools, animal agricultural sites, manure storage areas or drainage fields. Risks are greatly increased if the wells have not been constructed properly, or if the well casing has become cracked over time. However, if wells are properly sited, constructed and maintained, they can be a reliable source of contaminant-free water.

## **Educational Resources for Farmstead Certification- Drinking Well Water Condition**

### **Department of Natural Resources**

- Public Drinking Water Program: This portion of the website contains information regarding rules, laws and standards, monitoring efforts, permits and engineering, compliance and enforcement, financial assistance opportunities and more. ([bit.ly/dnr\\_N472](http://bit.ly/dnr_N472))

## Missouri Department of Health and Senior Services (MDHSS)

- MDHSS Website: This website contains a comprehensive list of topics and information regarding private water and private water supplies as well as private water testing. ([bit.ly/mdhss\\_privatewater](http://bit.ly/mdhss_privatewater))

## MU Extension

- MU Publications and Guides:
  - MU Guide WQ658 - Reducing the Risk of Groundwater Contamination by Site Evaluation: This publication discusses how farmstead practices such as pesticide handling or manure management affect groundwater, depending in part on the physical characteristics of your farmstead site (e.g. soil type, bedrock characteristics and distance to groundwater.) The publication focuses on a step-by-step process to evaluate the soils and geologic characteristics of your farmstead to protect the groundwater you and your family drink. ([bit.ly/muex\\_WQ658](http://bit.ly/muex_WQ658))
  - MU Guide WQ675 - Reducing the Risk of Groundwater Contamination by Improving Drinking Water Well Conditions: This guide covers a number of key topic and issues such as well location, separation distances, well construction, casing and well casing depth and height, well age, well types, managing and maintaining existing wells, better management of your existing well, backflow prevention, water testing, well maintenance, new wells, unused wells and additional resources. ([bit.ly/muex\\_WQ675](http://bit.ly/muex_WQ675))
  - MU Guide WQ675 - Reducing the Risk of Groundwater Contamination by Improving Drinking Water Well Conditions: This guide covers a number of key topic/issues such as well location, separation distances, well construction, casing and well casing depth and height, well age, well types, managing and maintaining existing wells, better management of your existing well, backflow prevention, water testing, well maintenance, new wells, unused wells and additional resources. ([bit.ly/muex\\_WQ675](http://bit.ly/muex_WQ675))
  - MU Guide EQM103F - Drinking Water Well Management: This fact sheet discusses the recommended assessment process that should be used related to well location, well condition and maintenance needs, water quality status and the identification of unused/abandoned wells. The fact sheet should be used with worksheet EQM103W to identify priority area and practices that may require prompt attention. ([bit.ly/muex\\_EQM103F](http://bit.ly/muex_EQM103F))
  - MU Guide EQM103W - Drinking Water Well Management: This worksheet (used in combination with EQM103F) walks the user through a three step assessment process related to well location, well condition and maintenance needs, water quality status and the identification of unused/abandoned wells. The assessment findings are used to develop a prioritized correction/improvement plan that also the development of a timeline during which corrections must be made. ([bit.ly/muex\\_EQM103W](http://bit.ly/muex_EQM103W))

- MU Guide WQ101 - Understanding Your Water Test Report: This publication has information for the user to help interpret water testing laboratory water test reports and to assist the user to decide what actions to take. ([bit.ly/muex\\_WQ101](http://bit.ly/muex_WQ101))

## **Farmstead Certification- Abandoned Wells**

It is estimated there may be as many as 250,000 to 300,000 one abandoned wells or cisterns in the state. There are two major hazards associated with abandoned wells and cisterns. The first hazard is someone falling into a dug well or cistern, which typically are 3 to 6 feet in diameter and 10 to 30 feet deep. The other hazard is the potential for the old well or cistern to be a source of contamination for the underground aquifer and neighboring wells.

It is the responsibility of landowners to plug any abandoned wells on their property. State regulations allow landowners to plug wells on their property as long as they do so in accordance with the Missouri Well Construction Rules. Wells that are plugged improperly leave aquifers susceptible to contamination and are safety risks. Missouri law (RSMo 256.600 to 256.640) requires that the plugging of abandoned wells be registered with Department of Revenue within 60 days of the work being completed.

## **Resources for Farmstead Certification - Abandoned Wells**

### **Natural Resources Conservation Service (NRCS)**

- Water Well Decommissioning: This practice provides assistance in sealing and permanent closure of inactive, abandoned or unusable water wells. ([bit.ly/nrcs\\_code351](http://bit.ly/nrcs_code351))
- Water Well: This practice is used to provide water for livestock, wildlife, irrigation, fire control and other agricultural uses. It applies to all types of agricultural land where the quality and quantity of underground water is appropriate for the intended purpose. This practice does not apply to wells constructed solely for domestic or public water supply. ([bit.ly/nrcs\\_code642](http://bit.ly/nrcs_code642))

### **Department of Natural Resources- Soil & Water Conservation Program**

- Well Decommissioning: This practice provides assistance in sealing and permanent closure of inactive, abandoned or unusable water wells. ([bit.ly/dnr\\_N351](http://bit.ly/dnr_N351))
- Wellhead Protection Section: This site contains links to a number of useful resources related to various aspects of identifying, plugging and registering these wells. ([bit.ly/dnr\\_wellprotection](http://bit.ly/dnr_wellprotection))
- Wellhead Protection Section - Plugging Your Abandoned Well: This two-page flyer covers the step-by-step process related to a plugged well and registering a plugged well. ([bit.ly/dnr\\_pub2281](http://bit.ly/dnr_pub2281))

# Farmstead Certification- Preventing Back Flow or Back Siphoning

Preventing contamination and pollution of water (drinking water, surface water and groundwater) is everyone's responsibility. Backflow occurs when water flows opposite to its normal direction and can lead to contamination of these water supplies. Two examples of when backflow can occur are when combining water with agricultural chemicals in a sprayer tank and when injecting chemicals into the irrigation system. These actions can result in chemical contamination of the source water. Installing a permanent anti-backflow device on the water supply line will prevent the potential for backflow of chemicals from the sprayer tank. Devices should include a double check valve or hose vacuum break valves.

## Resources for Farmstead Certification- Preventing Back Flow or Back Siphoning

### Department of Natural Resources: Division of Environmental Quality

- Backflow Protection: This site outlines information about backflow and actions necessary to prevent it. (<http://dnr.mo.gov/env/wpp/backflow/>)
- Backflow Prevention- Frequently Asked Questions, Pub2158: ([bit.ly/dnr\\_pub2158](http://bit.ly/dnr_pub2158))
- Basics of Backflow Prevention, Missouri Regulation 10 CSR 60-11.010, Pub 0393: This fact sheet reviews the revised regulation that places certain responsibilities on water suppliers to ensure that customer facilities identified as actual or potential backflow hazards are provided the necessary protection to prevent contaminants from entering the public water system.

### MU Extension

- MU Publications and Guides:
  - MU Guide WQ675 - Reducing the Risk of Groundwater Contamination by Improving Drinking Water Well Conditions: This guide covers a number of key topics and issues such as well location, separation distances, well construction, casing and well cap, casing depth and height, well age, well types, managing and maintaining existing wells, better management of your existing well, backflow prevention, water testing, well maintenance, new wells, unused wells and additional resources. ([bit.ly/muex\\_WQ675](http://bit.ly/muex_WQ675))

## Farmstead Certification- Pesticide & Fertilizer Storage

Pesticides and fertilizer products should always be kept in a secured storage area that is accessible only to those who are trained to use these products, such as licensed applicators, dealers, and distributors. An important issue of safe storage is the potential for human harm through exposure—accidental or otherwise—especially where children are concerned. Proper storage can also help prolong chemical shelf life and prevent accidents that could cause property

or environmental damage. Always consult the product label and/or safety data sheet (SDS) for specific storage information.

The secure storage of pesticides, fertilizer and application equipment is not only a good practice for safety reasons, but it also can help reduce the potential of vandalism or theft with possible misuse of products and, unfortunately, the potential for use by terrorists and saboteurs. This is particularly important for those products that are highly toxic, corrosive or explosive.

However, even products not considered acutely toxic could potentially cause panic if used to contaminate water sources or food commodities, sprayed over populated areas or otherwise misused.

## Resources for Farmstead Certification- Pesticide & Fertilizer Storage

### Natural Resources Conservation Service (NRCS)

- Agrichemical Handling Facility: This practice provides assistance to establish an agrichemical handling facility. The facility provides containment and isolation of spillage from on-farm agrichemical mixing, loading, unloading and rinsing operations to minimize pollution of, or harm to, the soil, water, air, plant, animal resources and humans. ([bit.ly/ncrs\\_code309](http://bit.ly/ncrs_code309))

### MU Extension

- MU Publications and Guides:
  - MU Guide IPM1013 - Pesticide Storage: The safe and proper storage of pesticide is a component of good management. A correctly designed and maintained pesticide storage site is essential. The purpose of this guide sheet is to address the guidelines that will help ensure the safe and environmentally friendly storage of pesticide products. ([bit.ly/muex\\_IPM2013](http://bit.ly/muex_IPM2013))
  - MU Guide WQ652 - Assessing the Risk of Groundwater Contamination From Pesticide Storage and Handling: This publication is a worksheet to be used in combination with WQ676 to assess the risk levels and areas that need to be addressed related to the farms' current pesticide storage facilities and handling practices. ([bit.ly/muex\\_WQ652](http://bit.ly/muex_WQ652))
  - MU Guide WQ676 - Reducing the Risk of Groundwater Contamination by Improving Pesticide Storage and Handling: This publication, examines five areas of farmstead pesticide management pesticide storage practices, mixing and loading practices, spill cleanup, container disposal practices and other management practices. ([bit.ly/muex\\_WQ676](http://bit.ly/muex_WQ676))
  - IPM Publications: Visit the Integrated Pest Management website to view all IPM publications available. Publications cover general IPM, field and crops and horticultural. ([bit.ly/asap\\_ipm](http://bit.ly/asap_ipm))

- MU Guide 1916: Pesticide Application Safety : This publication is to help pesticide applicators understand and appreciated potential dangers of pesticides related to pesticide application. ([bit.ly/muex\\_G01916](http://bit.ly/muex_G01916))
- MU Guide MWPS37 - Designing Facilities for Pesticide and Fertilizer Containment: This handbook is a compilation of the best information available at the time of publication regarding the design of facilities for pesticide and fertilizer containment. It includes information about facilities overview, site selection, functional system design, worker safety area, pesticide and fertilizer storages, secondary containment, mixing/loading facilities and equipment. ([bit.ly/2ebneyn](http://bit.ly/2ebneyn))

## **Technical Assistance for Farmstead Certification- Pesticide & Fertilizer Storage**

For assistance planning, implementation, financial, troubleshooting, compliance concerns, interpreting soil analysis reports contact any of these organizations:

### **Department of Natural Resources Pesticide Container Recycling**

- State Office:  
Hazardous Waste Program  
P.O. Box 176  
Jefferson City, MO 65102  
(800) 361-4827  
(573) 751-3176  
<http://dnr.mo.gov/contact/waste.htm>

### **Ag Container Recycling Council**

The Ag Container Recycling Council (ACRC) is an industry funded, not-for-profit organization that safely collects and recycles agricultural crop protection and animal health and specialty pest control product containers (jugs and drums).

- Main Office:  
223 South Main Street  
Lexington, VA 24450  
(877) 952-2272  
<http://www.acrecycle.org/Contact/>

## **Farmstead Certification- Petroleum Product Storage**

On any Missouri farms you will find a wide assortment of flammable fuels, solvents and other chemicals. While these materials are essential, mishandling and improper storage can increase the risk of serious fires, explosions and groundwater contamination. Given the amount of combustible materials found on a farm, it is extremely important to safely store, handle and secure all petroleum products to protect the environment, eliminate possible property damage and loss of life.

## Resources for Farmstead Certification- Petroleum Product Storage

### Department of Natural Resources- Department of Environmental Quality

- State Office:  
Tanks Compliance and Technology Unit  
Hazardous Waste Program  
P.O. Box 176  
Jefferson City, MO 65102  
(800) 361-4827  
(573) 751-3176  
<http://dnr.mo.gov/contact/waste.htm>  
([bit.ly/dnr\\_tankcompliance](http://bit.ly/dnr_tankcompliance))

### Missouri Department of Agriculture

- Petroleum/Propane/Anhydrous Ammonia Program: ([bit.ly/mda\\_petroleum](http://bit.ly/mda_petroleum))

### Natural Resources Conservation Service (NRCS)

- On-Farm Secondary Containment Facility: This practice assists in establishing an on-farm secondary containment facility. These facilities are designed to provide secondary containment of oil and petroleum products used on the farm. ([bit.ly/nrcs\\_code319](http://bit.ly/nrcs_code319))

## Farmstead Certification- Recycling Waste Products Annually

As mentioned, many of Missouri's farms have an assortment of waste products, some of which can be recycled. Given the amount of materials found on farms, it is necessary for the sustainability of agriculture and well-being of our environment that used and unnecessary materials be recycled.

## Resources for Farmstead Certification- Recycling Waste Products Annually

### Department of Natural Resources - Department of Environmental Quality

- Fact Sheets, Brochures and Other Publications: Visit this website to view information relevant to recycling and waste management. ([dnr.mo.gov/env/swmp/pubs-reports/publist.htm](http://dnr.mo.gov/env/swmp/pubs-reports/publist.htm))
- Recycling Drop-off Collection Services in Missouri Communities (By County): Use this list to locate recycling drop off facilities near you. ([bit.ly/dnr\\_recycling\\_dropoff](http://bit.ly/dnr_recycling_dropoff))
- Registered Electronics Recycling Businesses List: This site has a list of Missouri e-cycling businesses that recycle or refurbish electronic equipment. The list below contains only

Missouri businesses that have registered with the department's voluntary tiered registration program. ([bit.ly/dnr\\_erecycling](http://bit.ly/dnr_erecycling))

- **Scrap Tire and Illegal Dumping Unit:** The removal of scrap tires in Missouri is a priority for the Solid Waste Management Program's Scrap Tire Unit. The program works to protect and improve the environment by developing a scrap tire management system that creates economic incentives for the proper management of scrap tires in Missouri. ([bit.ly/dnr\\_scraptire](http://bit.ly/dnr_scraptire))
- **New Materials Management Directory:** This directory allows users to find local contractors, vendors and drop off locations offering recycling, reuse and disposal services. If you are a business or other organization involved in materials or waste management in Missouri, we encourage you to add your business and the services you provide to the directory. ([bit.ly/dnr\\_wastedirectory](http://bit.ly/dnr_wastedirectory))

# Energy Certification

From a stewardship standpoint, the efficient use and implementation of energy conservation practices on farms is just as important to sustainability and addressing environmental concerns as is soil conservation and water quality. Although some studies indicate that U.S. agriculture has almost doubled its average energy efficiency over the past 25 years, there are still opportunities to save more energy and money. Missouri farmers and ranchers can be the model for further reducing input costs, while maintaining production, protecting the state's soil and water resources, helping reduce the nation's dependence on fossil fuels, saving money and protecting the environment. This certification category focuses on some of the key criteria and practices associated with on-farm energy efficiency. If you haven't developed and implemented an energy efficiency program on your farm/ranch, use these criteria and the resources identified in this section to being the process. Some practices that should be included in that plan are:

- Implement a no-till system, which reduces fuel usage and protects the soil and water.
- Replace older motors with newer, high efficiency equipment (on irrigation systems, fans, feeding equipment, etc.) Studies have shown that high-efficiency motors can reduce energy consumption by three to eight percent.
- Develop and implement a regular equipment maintenance program. A worn fan motor belt can easily reduce output by 20 percent or more.
- Use prescribed grazing which can reduce fertilizer needs, as well as fuel cost to harvest, store and feed hay.
- Implement the use of precision agriculture and IPM scouting program, which can reduce pesticide use, fuel cost and more.

According to the American Council for an Energy Efficient Economy (ACEEE), the implementation of energy efficiency practices could conservatively result in a potential energy savings in the agricultural sector of as much as \$1 billion per year.

## Criteria for Energy Certification

- Landowner uses LED lighting in farm buildings to reduce energy costs.
- Landowner uses dimmers and motion sensors on their farm buildings' lights.
- Landowner changes equipment when necessary, properly maintains water pump and motor and closely monitors crop irrigation needs.
- Landowner follows an Irrigation Water Management Plan.
- Landowner utilizes energy-free or frost-free water fountains to reduce water heater costs in the winter.
- Landowner uses sufficient insulation and seals windows with caulking and weather stripping to reduce and minimize air infiltration.

- Landowner efficiently maintains and uses tractors and other farm equipment to optimize fuel use and reduce operating hours.
- Landowner follows a grazing plan, cycles nutrients through manure and cover crops and rotates crops to control pests.
- Landowner has a nutrient management plan, tests the soil, bands fertilizers and pesticides, and adopts precision agriculture.
- The landowner routinely utilizes a no-till system on the cropping acres.
- Landowner reduces energy inputs through the use of cover crops and manures, nitrogen-fixing crops in rotations, composting and integrated pest management (IPM).
- Landowner uses solar panels, windmills and/or wind turbines to generate electricity.

## **Energy Certification - Efficient Lighting Management**

Electric lighting consumes large amounts of energy. Enormous energy savings are possible using energy-efficient equipment, effective controls and careful design. Upgrading lighting fixtures will often give the best return on investment to reduce energy costs. Replacing older lamps with new energy-efficient lamps will reduce energy consumption and often improves the quality of the lighting.

## **Best Management Practices for Energy Certification- Efficient Lighting Management**

### **Department of Economic Development**

- Division of Energy Website: Use this website to learn about best management practices, new opportunities for efficient lighting management and funding opportunities. ([bit.ly/ded\\_energy](http://bit.ly/ded_energy))

### **Natural Resources Conservation Service (NRCS)**

- EQIP (Environmental Quality Incentives Program): EQIP provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation and improved wildlife habitat. ([bit.ly/nrcs\\_eqip](http://bit.ly/nrcs_eqip))

As part of EQIP, there is a national on-farm initiative specifically designed to provide financial assistance to address energy conservation through practice implementation and for development of an agricultural energy management plan (AgEMP). Some specific practices that might have implications under this section are:

- **Waste Recycling:** Waste recycling is the use of the by-products of agricultural production or the agricultural use of nonagricultural by-products. This practice may be used to prevent a resource problem or to provide a conservation benefit by processing and recycling a byproduct that would otherwise be wasted. Wastes are used or recycled in a manner that minimizes degradation of natural resources such as surface or groundwater. ([bit.ly/nrcs\\_code633](http://bit.ly/nrcs_code633) )
- **Lighting System Improvement:** This practice supports the complete replacement or retrofitting of one or more components of an existing agricultural lighting system. It applies to any agricultural facility with an existing lighting system and a completed lighting assessment that complies with the guidelines for a Type 2 on-farm energy audit for the major activity of lighting per ANSI/ASABE Standard S612. ([bit.ly/nrcs\\_code670](http://bit.ly/nrcs_code670) )

### **Association of Missouri Electric Cooperatives (AMEC)**

- **Energy Efficiency Programs:** Missouri electric cooperatives offer various services to members to improve energy efficiency in homes and businesses. Contact local electric cooperative to learn more about available programs.
- Visit <http://amec.coopwebbuilder2.com/content/our-co-ops> to locate your local electric cooperative office.

## **Educational Resources for Energy Certification- Efficient Lighting Management**

It is important to recognize that programs change over time. It is good practice to check with the U.S. Department of Energy to identify which programs are currently available in Missouri. ([programs.dsireusa.org/system/program?state=MO](http://programs.dsireusa.org/system/program?state=MO))

### **MU Extension**

- **Energy Audits:** MU Extension will provide reduced-cost energy audits for small businesses in rural areas and agricultural producers. Audits are available for the price of \$112.50 due to a REAP Energy Audit grant, which pays for the majority of the actual cost. The audits can be utilized for both EQIP and REAP grants.
- Visit ([bit.ly/muex\\_offices](http://bit.ly/muex_offices)) to locate a specialist or your county Extension office.

### **Department of Economic Development**

- **Division of Energy Website:** Use this website to learn best management practices, new opportunities for efficient lighting management and funding opportunities. ([bit.ly/ded\\_energy](http://bit.ly/ded_energy) )

## Financial Resources for Energy Certification- Efficient Lighting Management

### USDA Rural Development

- Rural Energy for America Program (REAP) Grants/Loans: This program provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses to purchase or install renewable energy systems or make energy efficiency improvements.
- State Office:  
USDA Rural Development  
601 Business Loop 70 W., Suite 235  
Columbia, MO 65203  
(573) 876-9321
- Visit [bit.ly/usda\\_RDlocator](http://bit.ly/usda_RDlocator) to locate the Rural Development office closest to you.

## Energy Certification- Efficient Water Management

Water efficiency means “doing more and better with less” by obtaining more value with the available resources, by reducing the resource consumption and reducing the environmental impact of water use for the production of food and fiber at every stage of the value chain and of water service provision.

## Educational Resources for Energy Certification- Efficient Water Management

### MU Extension

- MU Publications and Guides:
  - MU Guide G1979 - Energy Efficiency and Farm Water Systems: The publication focus on methods to increase energy efficiency as it relates to the farm water systems. Some of the methods discussed include system inspection related to operation, wiring, reducing friction loss with proper size piping, repairing leaks that result in excessive pumping and water heating costs. ([bit.ly/muex\\_pubG01979](http://bit.ly/muex_pubG01979))

## Financial Resources - Efficient Water Management

### Natural Resources Conservation Service (NRCS)

- Pumping Plant: This practice assists in the establishment of a facility that delivers water at a designed pressure and flow rate. It includes the required pump(s), associated power unit(s), plumbing, appurtenances and may include on-site fuel or energy source(s) and protective structures. ([bit.ly/nrcs\\_code533](http://bit.ly/nrcs_code533))

- Irrigation Water Management Plan: The Environmental Quality Incentive Program (EQIP) provides funding support through contracts with eligible producers to obtain services of certified Technical Service Provider (TSP's) for development of Irrigation Water Management Plans. The plan should address the economics of water use, energy consumption and crop yield. ([bit.ly/nrcs\\_MI-EQIP10-5](http://bit.ly/nrcs_MI-EQIP10-5))

### **Missouri Department of Natural Resources- Soil & Water Conservation Program**

- Irrigation System, Sprinkler: This practice provides assistance to upgrade sprinklers and nozzles on existing pivot irrigation systems to increase system efficiency. This will allow for efficient and uniform application of irrigation water to maintain adequate soil water for the desired level of plant growth and production without causing excessive water loss, erosion or water quality impairment. ([bit.ly/dnr\\_N442](http://bit.ly/dnr_N442) )
- Irrigation System, Tail Water Recovery: This practice provides assistance to collect and reuse irrigated run-off water to protect surface water and conserve agricultural pesticides and fertilizer. ([bit.ly/dnr\\_N447](http://bit.ly/dnr_N447))
- Irrigation Water Conveyance: This practice provides assistance to plan and locate pipelines to serve as an integral part of an irrigation water distribution or conveyance system designed to facilitate the conservation use and management of water resources. ([bit.ly/dnr\\_N430](http://bit.ly/dnr_N430))
- Grazing System Water Distribution: This practice provides assistance on the components needed for water distribution from a water source (DSP 3.1) for livestock watering in a planned grazing system. Water distribution includes pipeline and watering tanks, for each grazing area. ([bit.ly/dnr\\_DSP32](http://bit.ly/dnr_DSP32))

## **Energy Certification- Efficient Buildings**

Agricultural buildings are very important to the successful operation of Missouri farms and they deserve careful attention when it comes to managing energy expenses. The best time to incorporate energy efficiency that will yield the highest savings and the lowest operating costs is during the design and construction phase. Unfortunately, energy efficiency is often ignored when farm buildings are constructed. Energy-efficient building design involves the selection of appropriate energy-efficient materials and equipment and addresses the layout and orientation of the building in a way that is intrinsically energy efficient.

## **Best Management Practices for Energy Certification- Efficient Buildings**

### **Natural Resources Conservation Service (NRCS)**

- EQIP (Environmental Quality Incentives Program): EQIP provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground

and surface water, reduced soil erosion and sedimentation and improved wildlife habitat. ([bit.ly/nrcs\\_eqip](http://bit.ly/nrcs_eqip))

As part of EQIP, there is a national on-farm initiative specifically designed to provide financial assistance to address energy conservation through practice implementation and for development of an agricultural energy management plan (AgEMP). Some specific practices that might have implications under this section are:

- **Building Envelope Improvement**: This practice assists in modification or retrofitting of the building envelope of an existing agricultural structure to reduce energy use by regulating heat transfer. This could include practices such as vapor barriers, sealing cracks, insulation, etc. This practice applies to any agricultural facility which is climate controlled at least part of the time with a completed energy analysis that complies with the guidelines for a Type 2 on-farm energy audit. ([bit.ly/nrcs\\_code672](http://bit.ly/nrcs_code672))
- **Farmstead Energy Improvement**: This practice is applied as part of a conservation management system to reduce energy use. The practice entails developing and implementing farmstead improvements to increase energy efficiency measures which reduce on-farm energy use. Improvements may include replacing or retrofitting agricultural equipment systems and/or related components or devices. Farmstead energy improvement is used exclusively to implement recommendations for components of a current energy audit performed in accordance with ANSI/ASABE Standard S-612, Performing On- Farm Energy Audits. ([bit.ly/nrcs\\_code374](http://bit.ly/nrcs_code374))

### **Association of Missouri Electric Cooperatives (AMEC)**

- **Energy Efficiency Programs**: Missouri electric cooperatives offer various services to members to improve energy efficiency in homes and businesses. Contact local electric cooperative to learn more about available programs.
- Visit <http://amec.coopwebbuilder2.com/content/our-co-opsto> to locate your local electric cooperative office.

## **Educational Resources for Energy Certification- Efficient Buildings**

### **MU Extension**

- **MU Publications and Guides**:
  - **MU Guide 1978 - Energy Conservation and Efficiency in Farm Shops**: Energy losses in farm shops resemble those in homes, but we often ignore these losses. The farm shop is usually not heated to as high of temperature as the home and not as constantly, but energy savings in the shop are attainable with some conservation and efficiency practices. ([bit.ly/muex\\_pubG1978](http://bit.ly/muex_pubG1978))
  - **Farm Shop Energy Efficiency Checklist**: The checklist can be used to identify areas that need to be addressed to reduce energy loss and should result in energy savings. ([bit.ly/muex\\_farmchecklist](http://bit.ly/muex_farmchecklist))

- MU Guide 1972 - Saving Energy with Passive Systems: One of the first ways solar energy was used in agriculture was to modify climatic extremes in cold livestock housing by using passive techniques. Passive techniques are extremely cost-effective because they generally add little or nothing to the cost of the structure. This guide has information on designing and locating a building to make the best use of the sun and also on storing energy in such passive systems. ([bit.ly/muex\\_pubG1972](http://bit.ly/muex_pubG1972) )
- MU Guide 1971 - Active Solar Collectors for Farm Buildings: Concentrating collectors gather the sun's rays from a relatively large area and focus them on a point. If you have ever used a magnifying glass to focus the sun's rays to start a fire, you have used a concentrating collector. In the field of solar collection, parabolic (bowl-shaped) mirrors are generally used instead of a magnifying glass. ([bit.ly/muex\\_pubG1971](http://bit.ly/muex_pubG1971))
- MU Guide 1976 - Top Money-Saving Practices on Missouri Dairy Farms: The dairy industry continues to be an important component of Missouri's economy. Dairy operations use a substantial amount of energy to move and cool milk. However, substantial energy and monetary savings can be realized by implementing energy-efficient measures recommended in an energy audit. ([bit.ly/muex\\_pubG1976](http://bit.ly/muex_pubG1976))
- MU Guide 1977 - Top Money-Saving Practices on Missouri Poultry Farms: The poultry industry continues to be an important component of Missouri's economy, with the 2007 census reporting \$1,676,632,000 in sales. Poultry operations are highly efficient environments in which temperature, humidity and lighting are closely monitored to raise high-quality birds. Because birds are raised in such a closely monitored environment, these operations are also large consumers of propane and electricity. However, implementing energy-efficient measures recommended in an energy audit can help poultry operations realize substantial energy and monetary savings. ([bit.ly/muex\\_pubG1977](http://bit.ly/muex_pubG1977))

## **Energy Certification- Efficient Machinery Use**

According to the American Council for an Energy Efficient Economy (ACEEE), an extremely conservative estimate of potential energy savings in the agricultural sector is \$1 billion per year. The largest savings are available in the motor system (especially irrigation pumping), onsite transportation, and lighting energy end-uses. Just these three potential savings amount to 10 percent of total agricultural energy expenses.

## **Educational Resources for Energy Certification- Efficient Machinery Use**

### **MU Extension**

- MU Publications and Guides:
  - MU Guide 1230 - How to Select Lubricating Oil for Farm Engines: This publication discusses the potential fuel economy obtained by using engine oils that are labeled Energy Conserving or Energy Conserving II. ([bit.ly/muex\\_pubG1230](http://bit.ly/muex_pubG1230))

## **Energy Certification- Efficient Farming Techniques**

In the United States, agricultural operations are highly dependent on machinery, chemicals, and other inputs which reduce labor costs and enable efficiency. Energy use is closely tied to the efficiency of these operations. A comprehensive analysis of the particular ways in which energy is used in agriculture, and an equally comprehensive analysis of the relative efficiencies of these various uses, is therefore warranted for the benefit of farmers and the consumers of their products. New technologies such as no-till and new practices like the use of cover crops will not only reduce soil and water loss but also reduce energy use.

### **Technical Assistance related to Energy**

For assistance planning, implementation, financial, troubleshooting, compliance concerns, contact any of these organizations:

#### **Natural Resources Conservation Service (NRCS)**

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_sclocator](http://bit.ly/usda_sclocator) to locate your county Natural Resources Conservation office.

#### **MU Extension**

- Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.

#### **Department of Economic Development – Energy Program**

- State Office:  
P.O. Box 1766  
301 W. High Street  
Jefferson City, MO 65102  
(573) 751-2254  
[energy@ded.mo.gov](mailto:energy@ded.mo.gov)

#### **Association of Missouri Electric Cooperatives (AMEC)**

- Visit <http://amec.coopwebbuilder2.com/content/our-co-ops> to locate your local electric cooperative office.

# Cropland Certification

Missouri is a very diverse crop producing state. Production in Missouri consists of typical Midwest crops such as: corn, soybeans and wheat as well as rice, cotton, tobacco and other traditionally Southern crops. Given the diversity of production, ASAP's cropland certification category focuses on stewardship criteria and practices that proactively protect and conserve the state's natural resources regardless of the crop being produced.

## Criteria for Cropland Certification

- Landowner uses at least a two-crop rotation, consisting of at least one cool season crop and one warm season crop.
- Landowner soil tests each field every four years.
- Landowner optimizes nutrient utilization using the right rate, source, time and placement of nutrient applications.
- Landowner uses variable rate and/or precision agriculture practices when applying nutrients.
- Landowner utilizes an irrigation water management plan to determine and control the volume, frequency and application rate of irrigation water in a planned, efficient manner.
- Landowner annually plants cover crops on more than 50% of cultivated acres for vegetative cover between primary crops when weather conditions permit.
- The producer practices good agricultural practices in the handling and transporting of the product grown.
- Landowner keeps records for the inputs utilized for each field.
- Pesticides are applied in accordance with product labels and by persons appropriately trained, licensed and/or supervised by someone with the proper credentials.
- Landowner actively controls noxious weeds on property.
- Landowner uses practices in sensitive areas to protect surface waters from contaminants. Buffers can include filter strips, grass waterways, riparian areas and field borders.
- Landowner utilizes variable rate technology for the application of fertilizer.
- Landowner uses GPS technology in his/her cropping system.
- Landowner utilizes crop and other plant residue on the soil surface year round, while limiting the soil-disturbing activities used to grow and harvest crops in systems.

- The landowner routinely utilizes a no-till system on the cropping acres, limiting soil disturbance, reducing erosion and increasing soil health.
- Farm operator plants annual crops following the contour to help prevent erosion.
- Landowner implements soil conservation practices such as terraces, diversions, grade stabilization structures and/or water and sediment control basins to control and prevent erosion.

## Best Management Practices for Cropland Certification

### Natural Resources Conservation Service (NRCS)

- Terrace System: This practice reduces the erosive force of water by placing embankments to slow water runoff and increase water absorption on cropland that is experiencing significant erosion. ([bit.ly/nrcs\\_code600](http://bit.ly/nrcs_code600))
- Diversion: This practice controls erosion and reduces or prevents pollution of land, water or air from agricultural nonpoint sources by directing rainwater to less sloping areas of the landscape and allowing it to dissipate or run off at a lower velocity, which encourages infiltration into the soil. ([bit.ly/nrcs\\_code348](http://bit.ly/nrcs_code348))
- Vegetative Barrier: This practice establishes a permanent vegetative cover on small critical areas such as gullies and steep banks to reduce erosion and protect water quality. ([bit.ly/nrcs\\_code601](http://bit.ly/nrcs_code601))
- No-Till System: This practice is an incentive payment to encourage farmers to use conservation no-till to reduce erosion on land that is experiencing significant erosion. ([bit.ly/nrcs\\_code329](http://bit.ly/nrcs_code329))
- Irrigation Reservoir: This practice controls erosion and protects water quality by constructing ponds to catch sediment and prevent it from leaving fields on land that is experiencing significant active erosion. ([bit.ly/nrcs\\_code436](http://bit.ly/nrcs_code436))
- Water and Sediment Control Basin: This practice temporarily retains water to control the release of runoff water and settle out the soil particles and nutrients. This practice is applicable to areas on farms where runoff of substantial amounts of sediment or runoff containing pesticides or fertilizers constitutes a significant pollution hazard. ([bit.ly/nrcs\\_code638](http://bit.ly/nrcs_code638))
- Grassed Waterway: This practice prevents or reduces existing erosion and pollution of water or land from agricultural nonpoint sources by using sod-forming grasses to protect soil within waterways to efficiently transport rainfall. ([bit.ly/nrcs\\_code412](http://bit.ly/nrcs_code412))
- Contour Buffer Strips: This practice reduces erosion and water pollution by establishing strips of permanent vegetative cover between crops, around hill slopes and alternated downhill slopes. ([bit.ly/nrcs\\_code332](http://bit.ly/nrcs_code332))

- **Nutrient Management**: This practice provides an incentive to encourage the development and adoption of a Nutrient Management Plan, including new management techniques and/or technologies for applying manure and fertilizer. The practice applies to lands where plant nutrients (commercial fertilizers and/or manure) have been improperly applied and the landowner is utilizing a new approach in the application of nutrients. The land must be eroding at or below tolerable soil loss levels. ([bit.ly/nrcs\\_code590](http://bit.ly/nrcs_code590))
- **Pest Management**: This practice provides assistance to minimize entry of chemical contaminants in ground and surface water by following a pest management plan. The pest management plan will assist the operator in determining whether, when, and how an application of pesticides (herbicide, fungicide, insecticide) should occur for the crop. The practice applies to cropland/hay land/pastureland where pesticides have been inappropriately managed. ([bit.ly/nrcs\\_code595](http://bit.ly/nrcs_code595))
- **Windbreak/Shelterbelt Establishment**: This practice reduces the impacts of wind erosion and improves irrigation efficiency in cropland by establishing trees and shrubs at the edges of crop fields minimizing the impact of wind. ([bit.ly/nrcs\\_code380](http://bit.ly/nrcs_code380))
- **Drop Pipe**: This practice stabilizes the grade, and controls erosion in natural or artificial channels. This reduces runoff and sedimentation entering drainage systems. NOTE: This practice is limited to Bollinger, Butler, Cape Girardeau, Dunklin, Mississippi, New Madrid, Pemiscot, Ripley, Scott and Stoddard counties. ([http://bit.ly/dnr\\_n410](http://bit.ly/dnr_n410))
- **Contour Farming**: Contour farming is generally used on sloping land where tillage, planting and cultivation are used to grow annual crops. In a properly designed contour farming system, the tillage furrows intercept runoff and allow more moisture to infiltrate into the soil. Contour farming is most effective on slopes between two and ten percent. ([bit.ly/nrcs\\_code330](http://bit.ly/nrcs_code330))
- **Cover Crop**: Cover crops are a crop of grass, small grain, legume or combination of these. Cover crops are established for seasonal soil protection and soil improvement. This practice is used to control erosion, add fertility and organic material to the soil, improve soil tilth, increase infiltration and aeration and improve overall soil health. The practice is also beneficial to pollinating insects in some cases. ([bit.ly/nrcs\\_code340](http://bit.ly/nrcs_code340))
- **Strip Cropping**: This practice is used on cropland and certain recreation and wildlife lands where field crops are grown. The crops are arranged so that a strip of grass or close-growing crop is alternated with a clean tilled strip or a strip with less protective cover. Generally, the strip widths are equal across the field. On sloping land, strip cropping is intended to reduce soil erosion caused by both water and wind, and improve water quality. ([bit.ly/nrcs\\_code585](http://bit.ly/nrcs_code585))
- **Mulching**: Mulching is applying a protective cover of plant residues or other suitable material not produced on the site, to the soil surface. Mulching is used to help control soil erosion, protect crops, conserve moisture, moderate soil temperature, prevent soil compaction and crusting, reduce runoff and suppress competition of weeds. The practice is used on sites subject to erosion and high runoff rates. These are sites that need the additional protection from material brought in from off the site. ([bit.ly/nrcs\\_mulch](http://bit.ly/nrcs_mulch))

- **Conservation Cover**: This practice establishes and maintains permanent vegetative cover. It applies on all lands needing permanent herbaceous vegetative cover. ([bit.ly/nrcs\\_code327](https://bit.ly/nrcs_code327))
- **Conservation Crop Rotation**: This practice applies to all cropland where annually planted crops makeup one-third of the crop sequence. ([bit.ly/nrcs\\_code328](https://bit.ly/nrcs_code328))
- **Residue and Tillage Management- No-Till**: This practice provides assistance to reduce soil disturbance by the use of no-till crop planting methods to increase soil-organic matter, reduce soil loss and improve organic matter. ([bit.ly/nrcs\\_code329](https://bit.ly/nrcs_code329))
- **Residue and Tillage Management- Reduced Till**: This practice includes tillage methods commonly referred to as mulch tillage or conservation tillage where the soil surface is disturbed by tillage operations such as chisel plowing, field cultivating, tandem disking or vertical tillage. ([bit.ly/nrcs\\_code345](https://bit.ly/nrcs_code345))
- **Nutrient Management**: This practice helps producers with management of the amount (rate), source, placement (method of application) and timing of plant nutrients and soil amendments. ([bit.ly/nrcs\\_code590](https://bit.ly/nrcs_code590))
- **Pest Management**: Pest management is utilizing environmentally sensitive prevention, avoidance, monitoring and suppression strategies to manage weeds, insects, diseases, animals and other organisms that directly or indirectly cause damage or annoyance. ([bit.ly/nrcs\\_code595](https://bit.ly/nrcs_code595))
- NOTE: Visit [bit.ly/nrcs\\_practices](https://bit.ly/nrcs_practices) to find more technical NRCS guides, and contact your local office to find state specific information.

### **Missouri Department of Natural Resources - Soil & Water Conservation Program**

- **Permanent Vegetative Cover Establishment**: This practice establishes a permanent vegetative cover to stabilize soil on land that is experiencing significant erosion. ([bit.ly/dnr\\_DSL01](https://bit.ly/dnr_DSL01))
- **Permanent Vegetative Cover Improvement**: This practice improves plant health and diversity by introducing legumes into established grass communities to protect soil on land that is experiencing significant erosion. ([bit.ly/dnr\\_DSL02](https://bit.ly/dnr_DSL02))
- **Terrace System**: This practice reduces the erosive force of water by placing embankments to slow water runoff and increase water absorption on cropland that is experiencing significant erosion. ([bit.ly/dnr\\_DSL04](https://bit.ly/dnr_DSL04))
- **Terrance System with Tile**: This practice reduces erosion with the placement of embankments on slopes to reduce the slope length and use underground piping to more quickly remove erosive water to a stable outlet from tracts that have experienced significant erosion. ([bit.ly/dnr\\_DSL44](https://bit.ly/dnr_DSL44))

- **Diversion**: This practice controls erosion and reduces or prevents pollution of land, water or air from agricultural nonpoint sources by directing rainwater to less sloping areas of the landscape and allowing it to dissipate or run off at a lower velocity, which encourages infiltration into the soil. ([bit.ly/dnr\\_DSL05](http://bit.ly/dnr_DSL05))
- **Permanent Vegetative Cover – Critical Area**: This practice establishes a permanent vegetative cover on small critical areas such as gullies and steep banks to reduce erosion and protect water quality. ([bit.ly/dnr\\_DSL11](http://bit.ly/dnr_DSL11))
- **Permanent Vegetative Cover – Critical Area: Confined Animal Feed Lot**: This practice establishes a permanent vegetative cover on small critical areas associated to animal confinement areas. ([bit.ly/dnr\\_DSL111](http://bit.ly/dnr_DSL111))
- **No-Till System**: This practice is an incentive payment to encourage farmers to use conservation no-till to reduce erosion on land that is experiencing significant erosion. ([bit.ly/dnr\\_DSL15](http://bit.ly/dnr_DSL15))
- **Water Impoundment Reservoir**: This practice controls erosion and protects water quality by constructing ponds to catch sediment and prevent it from leaving fields on land that is experiencing significant active erosion. ([bit.ly/dnr\\_DWC01](http://bit.ly/dnr_DWC01))
- **Sediment Retention, Erosion or Water Control Structure**: This practice temporarily retains water to control the release of runoff water and settle out the soil particles and nutrients. This practice is applicable to areas on farms where runoff of substantial amounts of sediment or runoff containing pesticides or fertilizers constitutes a significant pollution hazard. ([bit.ly/dnr\\_DWP01](http://bit.ly/dnr_DWP01))
- **Sod Waterway**: This practice prevents or reduces existing erosion and pollution of water or land from agricultural nonpoint sources by using sod-forming grasses to protect soil within waterways to efficiently transport rainfall. ([bit.ly/dnr\\_DWP03](http://bit.ly/dnr_DWP03))
- **Contour Buffer Strips**: This practice reduces erosion and water pollution by establishing strips of permanent vegetative cover between crops, around hill slopes and alternated downhill slopes. ([bit.ly/dnr\\_N332](http://bit.ly/dnr_N332))
- **Nutrient Management**: This practice provides an incentive to encourage the development and adoption of a Nutrient Management Plan, including new management techniques and/or technologies for applying manure and fertilizer. The practice applies to lands where plant nutrients (commercial fertilizers and/or manure) have been improperly applied and the landowner is utilizing a new approach in the application of nutrients. The land must be eroding at or below tolerable soil loss levels. ([bit.ly/dnr\\_n590](http://bit.ly/dnr_n590))
- **Pest Management**: This practice provides assistance to minimize entry of chemical contaminants in ground and surface water by following a pest management plan. The pest management plan will assist the operator in determining whether, when and how an application of pesticides (herbicide, fungicide, insecticide) should occur for the crop. The practice applies to cropland/hay land/pastureland where pesticides have been inappropriately managed. ([bit.ly/dnr\\_n595](http://bit.ly/dnr_n595))

- **Cover Crops:** This practice assists producers to establish cover crops to improve water quality and soil health and improve biodiversity and habitat for wildlife. ([bit.ly/dnr\\_n340](http://bit.ly/dnr_n340))
- **Windbreak/Shelterbelt Establishment:** This practice reduces the impacts of wind erosion and improves irrigation efficiency in cropland by establishing trees and shrubs at the edges of crop fields minimizing the impact of wind. ([bit.ly/dnr\\_n380](http://bit.ly/dnr_n380))
- **Drop Pipe:** This practice stabilizes the grade and controls erosion in natural or artificial channels. This reduces runoff and sedimentation entering drainage systems.
  - NOTE – This practices is limited to Bollinger, Butler, Cape Girardeau, Dunklin, Mississippi, New Madrid, Pemiscot, Ripley, Scott and Stoddard Counties. ([http://bit.ly/dnr\\_n410](http://bit.ly/dnr_n410))
- **Contour Strip Cropping:** Implementing crop and vegetation rotations through systematic arrangements of equal-width strips across fields will result in the reduction of soil erosion and water pollution. ([bit.ly/dnr\\_n585](http://bit.ly/dnr_n585))
- NOTE: Visit [bit.ly/dnr\\_practices](http://bit.ly/dnr_practices) to find more information on practices from the DNR.)

### **Missouri Department of Conservation**

- **MDC 700.E Cover Crops for Wildlife - Supplemental Cost-Share on DNR N340 Cover Crops Practices:** The practice is intended to be used in conjunction with the DNR's Soil and Water Programs Practice - N340 Cover Crops. The practices is intended to introduce the cover crop practice to landowners, who have not implemented cover crops as part of their agricultural operation, and to demonstrate the soil health benefits of cover crops while also providing and demonstrating a secondary benefit to wildlife species. The practice is available statewide and eligibility is determined by the MDC planner
- For additional assistance in determine practice eligibility, requirements and cost share, contact your local MDC contact, [mdc.mo.gov/regional-contacts](http://mdc.mo.gov/regional-contacts)

## **Educational Resources for Cropland Best Management Practices**

### **MU Extension**

- **Precision Agriculture Online Course:** An online opportunity for producers wanting to learn how to how to adopt and manage the technologies associated with precision agriculture to improve profitability and efficiencies, as well as protect the environment on their farming operation or agribusiness. ([bit.ly/muex\\_paoo](http://bit.ly/muex_paoo))
- **Farm Management Apps:** A list of apps with specific agricultural purposes for producers who want to incorporate their smart devices into their operation. ([bit.ly/muex\\_farmapps](http://bit.ly/muex_farmapps))
- **Soil and Plant Testing Laboratory:** Analyzes soil for nutrient content and fertility status and provides recommendations for economical, environmentally safe and balanced

fertilizer and lime applications. MU Extension and numerous private labs are certified to conduct soil tests. ([bit.ly/muex\\_plantlab](http://bit.ly/muex_plantlab))

- Accredited Soil Test Labs: A list of current accredited soil testing labs in the region. ([bit.ly/muex\\_soillabs](http://bit.ly/muex_soillabs))
- NOTE: Some SWCD & NRCS cost share practices require the test and the cost is a reimbursable expense.)
- MU Publications and Guides
  - MU Guide G9215 - Soil Sampling Pastures: Provides information on creating a sampling plan including how to take and submit samples. ([bit.ly/muex\\_pubG9215](http://bit.ly/muex_pubG9215))
  - MU Guide G9112 - Interpreting Missouri Soil Test Reports: Provides information on understanding your soil test report, making the results more useful when making nutrient management decisions. ([bit.ly/muex\\_G9112](http://bit.ly/muex_G9112))

## Technical Assistance for Cropland Best Management Practices

For assistance planning, implementation, financial, troubleshooting, compliance concerns, interpreting soil analysis reports contact any of these organizations:

### Natural Resources Conservation Service (NRCS)

- State Office:  
601 Business Loop 70 W., Suite 250  
Columbia, MO 65203  
(573) 876-9359
- Visit [bit.ly/usda\\_sclocator](http://bit.ly/usda_sclocator) to locate your county Natural Resources Conservation office.

### Soil & Water Conservation Districts (SWCD)

- State Office:  
P.O. Box 176  
1101 Riverside Dr.  
Jefferson City, MO 65101  
(573) 751-4932  
[contact@dnr.mo.gov](mailto:contact@dnr.mo.gov)
- Visit [swcd.mo.gov/](http://swcd.mo.gov/) to locate your county Soil & Water Conservation office.

### University of Missouri

- MU Extension
  - Visit [bit.ly/muex\\_offices](http://bit.ly/muex_offices) to locate a specialist or your county Extension office.

- College of Agriculture, Food, and Natural Resources (CAFNR)
  - Soil Health Assessment Center:  
3600 New Haven Rd.  
University of Missouri  
Columbia, MO 65201-9608  
(573) 882-3704  
[cafnr.missouri.edu/soil-health/](http://cafnr.missouri.edu/soil-health/)

### **Farm Service Agency (FSA)**

- State Office:  
601 Business Loop 70 W.; Suite 225  
Columbia, MO 65203
- Visit [bit.ly/fsa\\_offices](http://bit.ly/fsa_offices) to locate your county FSA office.

### **Missouri Department of Conservation (MDC)**

- Conservation Headquarters:  
2901 W. Truman Blvd.  
Jefferson City, MO 65109  
(573) 751-4115
- Visit [mdc.mo.gov/regional-contacts](http://mdc.mo.gov/regional-contacts) to locate the MDC office in your region, or your county contact.

## **Financial Resources for Cropland Best Management Practices**

### **Natural Resources Conservation Service (NRCS)**

- EQIP (Environmental Quality Incentives Program): EQIP provides financial and technical assistance to agricultural producers to address natural resource concerns and deliver environmental benefits such as improved water and air quality, conserved ground and surface water, reduced soil erosion and sedimentation and improved wildlife habitat. ([bit.ly/nrcs\\_eqip](http://bit.ly/nrcs_eqip))

### **Farm Service Agency (FSA)**

- Conservation Reserve Program (CRP): The CRP program encourages farmers to plant and maintain long-term resource-conserving seed mixes on highly erodible cropland or environmentally sensitive land to improve soil, water quality and wildlife resources. ([bit.ly/fsa\\_crp](http://bit.ly/fsa_crp))

### **Missouri Department of Agriculture**

- (RCPP) Regional Conservation Partnership Program – Cover Crops for Soil Health and Water Quality: The RCPP Cover Crops for Soil Health and Water Quality is a partnership program between the Missouri Department of Agriculture, NRCS and 11 other industry partners across Missouri. The program's goal is to encourage adoption of cover crops on cropland considered to be Highly Erodible Land (HEL) and/or has organic matter content less than 2 percent. Landowners can learn more about the program at

<http://agriculture.mo.gov/abd/financial/cover-crops.php>. The program is administered by NRCS

- Visit [bit.ly/usda\\_sclocator](http://bit.ly/usda_sclocator) to locate your county Natural Resources Conservation office.

### **Missouri Department of Natural Resources - Soil & Water Conservation Program**

- The Missouri Soil and Water Conservation Program: Assists farmers and landowners with soil and water conservation by providing partial reimbursement for a number management practices. These voluntary practices are designed to address areas such as grazing, irrigation, woodland, pest and nutrient management, animal waste, ground and surface water and soil erosion. ([dnr.mo.gov/env/swcp/](http://dnr.mo.gov/env/swcp/))

### **Missouri Department of Agriculture- Missouri Agricultural and Small Business Development Authority (MASBDA)**

- Bridge Loan Program: A program used for a short term loan by Missouri producers who have been approved by USDA-NRCS, through the USDA-NRCS Environmental Quality Incentives Program (EQIP) or the Soil and Water Conservation Program/District (SWCD). ([bit.ly/masbda\\_blp](http://bit.ly/masbda_blp))

# **Missouri Agricultural and Small Business Development Authority (MASBDA)**

MASBDA's purpose is to promote the development of agriculture and small business and to reduce, control and prevent environmental damage in Missouri by providing additional sources of financing in cooperation with local lenders. The authority accomplishes this by issuing agricultural development bonds, tax-exempt small issue bonds, guarantees on loans to livestock producers and direct loans for animal waste treatment systems. Additionally, the authority administers tax credit programs and grant programs related to new generation cooperatives and value-added agricultural projects, breeding livestock and increased beef production.

MASBDA

P.O. Box 630 Jefferson City, MO 65102-0630

Telephone: (573) 751-2129

Fax: (573) 522-2416

E-mail: [masbda@mda.mo.gov](mailto:masbda@mda.mo.gov)

Website: <http://agriculture.mo.gov/abd/financial/>