

Best Management Practices

Management Activities for Rural or Private Lands

Initiative supported by:



The Missourians for Monarchs Habitat Initiative is a partnership between producers, federal, state and local conservation organizations to sustain habitat for monarch butterflies and pollinators through voluntary citizen involvement. The collaborative agrees to create at least an additional 19,000 acres of pollinator habitat annually for the next 20 years.

Learn how you can benefit monarch butterflies & pollinators not only on agricultural land, but also at home, school & other sites: moformonarchs.org

Photo courtesy of: Mark Ramsey



Following these BMP's can help improve your property for monarchs, pollinators and other grassland dependent wildlife like quail and grassland songbirds while improving water quality and holding soil in place. If you would like to discuss your plans with a resource professional, please contact your local Private Lands Services biologist with the

Missouri Department of Conservation:

<https://mdc.mo.gov/regional-contacts?county=103&=Go>

Your local county **Natural Resources Conservation Service Field Office:**

<https://www.nrcs.usda.gov/wps/portal/nrcs/site/mo/home/>

Your local **U.S. Fish and Wildlife Service Missouri Private Lands Office:**

<https://www.fws.gov/midwest/partners/index.html>;

Your local **Soil and Water Conservation District Office:** <https://mosoilandwater.land/> for assistance from a resource professional.

3. **Herbicide Suppression to manage for milkweed and pollinator habitat**

- **Selection of chemical depends on several factors** including effectiveness against target species, non target species effects, toxicological risk and off site movement capabilities of the chosen chemistry. Always Follow Labels on Herbicides!
- **Use grass selective herbicides** to release preferred broadleaf plants including milkweed and nectar species. Spot spraying grass selective herbicides around individual milkweed plants or a colony of plants can help expand the number of milkweed plants on the landscape.
- When conducting herbicide suppression practices (particularly for government programs) the goal is to set back vegetation and not necessarily eliminate the species from the stand, but to release more preferred annual species and legumes. Use suppression rates according to label.



Photo courtesy of: MDC

- Timing for conducting herbicide suppression on cool season grass is March 15th to May 15th or during the fall from October 1st to December 1st.
- Timing for conducting herbicide suppression for warm season grass such as big bluestem and other natives is May 15th to September 15th.
- Consider spraying 1/3 of the acres each year in 25 to 75 ft wide strips to create a mosaic of habitat types within the field.
- If you must use broad spectrum herbicides in or surrounding pollinator habitat, limit their use to only control invasive or noxious weeds in your pollinator habitat.
- Utilize Drift reduction nozzles when necessary to reduce herbicide drift into unwanted areas including pollinator plots.
- Limit overspray and lower booms and pressure rates during herbicide applications to reduce drifts- Droplegs are a good option as well... https://beecare.bayer.com/bilder/upload/dynamicContentFull/BEENOW/BEENOW_GB_dropleg_higher-protectioniwrsi02d.pdf
- Check the wind speed is less than 5 mph, that nozzles are as close to the crop as possible, and appropriate nozzles are being used and properly cleaned - particularly important with older equipment.
- Consider using a flushing bar when spraying to help wildlife escape equipment.
- For more general information on herbicide suppression see the following website. https://efotg.sc.egov.usda.gov/references/public/MO/JS-MO647Herbicide_Application_for_Plant-Succession_Management_10_10_17.pdf

93% of Missouri is held in private ownership and most of those acres are owned and operated by farmers and ranchers that depend on the land they own to make a living. Landowners inherently want to leave their farms in better shape than they found them and are willing to help promote multiple land uses when they are sustainable and do not cause economic losses that would endanger their operation. The Missourians for Monarchs Collaborative understands this important issue and the following is a list of Best Management Practices (BMP's) that can help integrate pollinator habitat into a successful farming operation. Missourians for Monarchs also realizes that not all these BMP's will work for every operation, but it is our intent to offer multiple practices to help farmers and ranchers reach their management objectives for pollinators with minimal effect on farm profitability.



Photo courtesy of: Jim Hudgins/USFWS

**Recommendations for Management Activities:
(Disking, burning, spraying, mowing, etc.)**

Management actions should occur prior to arrival of most of the migrating monarchs (March 15th) or after most adults begin the fall migration (October 1st) when most 3rd and 4th generation monarchs have departed from the upper Midwest and Great Lakes states for their fall migration. For more information on managing for monarchs go to the following website. https://efotg.sc.egov.usda.gov/references/public/MO/Monarch_Habitat_Information_Sheet_10_30_17.pdf
Managing the entire patch can severely impact monarchs. Therefore, manage no more than 1/3 of the monarch habitat each year over a three year period.

1. **Prescribed Burning-** Monarch habitat may also be managed through periodic burning. Low intensity (faster burning, cooler) prescribed burns can allow germination of seed bearing annuals, increase plant species diversity, control unwanted woody vegetation, and create bare soil for native pollinator nest sites.
- **Timing of Burn to promote Monarch habitat:**
 - Early or late in the day is preferred.
 - Fall (October-Early November) burns tend to favor monarch and pollinator habitat.



Photo courtesy of: Brent Vandeloecht

- **Avoid burns when monitoring of milkweeds indicates monarch larvae or eggs are present on site.**
 - Burning the entire patch can severely impact monarchs. Therefore, manage no more than 1/3 of the monarch habitat each year over a three year period with fire. For more general information on prescribed burning go to the following website. https://efotg.sc.egov.usda.gov/references/public/MO/PrescribedBurn_InfoSheet_4_08.pdf
- When **burning and using cattle as a grazing tool**, consider the following...
 - Burning helps reduce thatch and, depending upon timing, can encourage broadleaved plants in cool season grass. Prescribed burning in late spring may temporarily increase forb diversity and suppress invading cool-season grasses which are great for pollinators, but it will not eradicate invasive cool season species.
 - Prescribed burns should be implemented in a manner that minimizes possible negative impacts on native wildlife, plants, soils, and streams.

- Landowners should attend a state-sponsored prescribed burning workshop and have a burn plan prior to implementing fire management. <https://mdc.mo.gov/regional-contacts?county=All>
- Landowners who do not wish to burn may use temporary fencing to focus grazing impact and create benefits similar to patch-burn grazing.

The following prescribed burn quick reference table provides management-focused prescribed burn timing guidance for cool and warm season forages.

Management Objective	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Stimulate cool-season grass												
Seedbed preparation for legumes												
Stimulate germination of legumes												
Set back cool-season grasses												
Stimulate legumes and weeds in VSG stands												
Seedbed preparation for interseeding legumes or forbs into VSG stands												
Thicken poor stands of native grass												
Control woody invasion												
Stimulate native forb growth in VSG												
Set back VSG dominance												

Cool-season grass activity Warm-season grass activity



Photo courtesy of: MDC

2. **Mechanical Management** includes mowing or light disking.
- **Recommended Timing** for Fall mechanical disturbance (October – early November) is preferred when nectaring flowers have died back or are dormant. Disturbance at this time will also minimize disruption to nesting bumble bees and other beneficial insects.
 - Recommendations applicable to both disking and mowing:
 - **Reduce speed to 8 mph** or less to allow wildlife time to escape.
 - **Use a flushing bar** where possible to move wildlife out of the mowing path. An example of a flush bar can be viewed in our Grazing BMP document.
 - **Avoid disturbance at night** when nesting and roosting birds and pollinators are less likely to flush.
 - **Mowing**
 - Use a rotary or flail mower to evenly distribute grass clippings. Do not swath, as the windrows will smother preferred seeding's. Clippings may also be baled and removed.
 - Mow no lower than 12 inches to minimize mortality and leave adequate residual cover.

- When mowing, avoid cutting the milkweed colonies and plants if possible, so learn to identify milkweed species in your area. <https://monarchjointventure.org/images/uploads/documents/MilkweedFactSheetFINAL.pdf>
- **Light Disking/Harrowing**
 - Light disking or harrowing (2-4” deep) of existing stands can increase the amount of open ground and encourage a diverse plant community of annuals and perennials including common milkweed. For more information on disking for wildlife see the following website. https://efotg.sc.egov.usda.gov/references/public/MO/JS-MO647Disking_for_Early_Successional_Habitat_10_10_17.pdf



Photo courtesy of: Brent Vandeloecht