

Hennepin County Landowner Guide

for
Conserving
Natural
Resources

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This guide is intended to help landowners care for their land and the natural resources on their property. The guide recommends practices that can be implemented to protect and enhance natural systems. Each section also suggests resources and publications that offer additional, more specific information for each subject area.

This guide provides information regarding natural areas such as prairies, wetlands, water resources and woodlands. Information about the control of noxious weeds and invasive plants, management of pastures and livestock, maintenance of private wells and septic systems, care of wildlife habitat, and management of household wastes is also included. By promoting environmental stewardship, we hope to preserve and enhance the environment in Hennepin County for current and future generations.

This resource was produced by Hennepin County Environmental Services in partnership with the University of Minnesota Extension Service of Hennepin County.

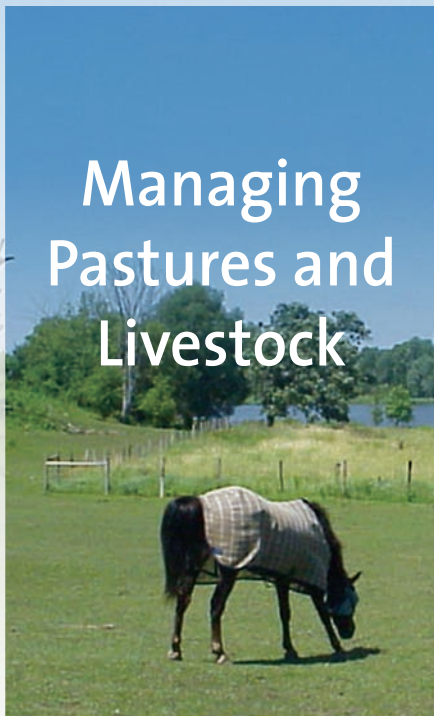


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Managing Pastures and Livestock



By establishing proper pasture layout, implementing certain grazing techniques and properly managing manure, landowners can ensure the health of their land and prevent the pollution of nearby water resources.

Protect water resources

Bodies of water can become polluted by runoff from rainwater or snow carrying nutrients, animal waste, bacteria and agricultural chemicals. Landowners that have livestock, including horses, cattle, sheep and goats, can implement several techniques to prevent runoff carrying pollutants from reaching water resources. If water becomes polluted on a person's property, action can be taken to clean it up before the water leaves the property.

Prevent water pollution

Landowners can take action to prevent water pollution, decrease erosion and reduce the formation of mud. Reducing mud is safer for animals and more convenient for owners. Preventative measures are important because it is much less expensive to prevent water from getting dirty than it is to clean it up.

- Locate buildings, livestock holding areas, manure and high traffic areas out of swales and natural water flows. Placing these areas on top of a hill is better than in a valley because less water flows through the area.
- Use clean water diversions such as berms, rain gutters, waterways and drain tile to move clean water around livestock and manure storage areas and bare soil.
- Store and dispose of manure to reduce its contact with stormwater.



A clean water diversion carries clean water around potential contaminants like bare soil and manure.

Clean up dirty water

Even after diverting as much clean water from high traffic areas as possible, some water will inevitably run through areas of bare soil and manure. Several techniques can be used to clean up dirty water.

Livestock exclusion – Fence animals out of creeks, streams, wetlands, ditches and wooded areas. If your animals need access to drinking water, create a stabilized access point to a body of water or run water pipes to your pastures.

Vegetative filter strip – Filter strips act as a buffer along the edge of bodies of water. Filter strips can clean up dirty water by slowing it and allowing sediment to drop out or the water to soak into the ground before reaching a body of water. Filter strips are commonly 30 to 50 feet wide, although the appropriate width for a given area depends on the slope steepness and soil type. Plants in filter strips should be 8 to 10 inches in height. To ensure that the filter strip will continue to absorb nutrients, plants should be mown, grazed or harvested down to 4 to 6 inches a few times a year.

Clean up dirty water, continued on next page

Settling basin – In a settling basin or collection pond, nutrients and sediment settle to the bottom so water leaving the pond is cleaner. Engineering assistance is required to ensure proper basin design, size and location. Contact Hennepin County or the Natural Resources Conservation Service (NRCS) for assistance.

Maintain healthy soils

Maintaining healthy soils will help you produce more forage for your animals and help protect water quality.

Avoid compacting soils – Growth of plant roots is limited in compacted soil. To prevent soil from becoming compacted, keep animals and vehicles off the soil when it is wet.

Limit the number of animals on sandy soils – Sandy soils can support the least amount of plant growth because they hold the least amount of water. Sandy soils are also more prone to erosion. The number of animals on sandy soils should be limited to prevent overgrazing and erosion.

Increase organic matter in the soil and encourage plant growth –

Increasing organic matter improves the water retention of sandy soils, increases water movement through clay soils, and provides nutrients for plants. You can increase organic matter by preventing overgrazing of pastures, amending the soil with compost and appropriately applying manure.

Control or reduce erosion – The top layer of soil often has more organic material than deeper soil. The top layer of soil is also the first to erode. If the topsoil erodes, the land will become less productive. You can prevent erosion by establishing vegetation on bare soil and properly managing pastures.

Maintain healthy pastures

Proper pasture management helps protect water quality as well as produce more forage for animals. Managing pastures has more to do with promoting the growth of desired forage plants than managing animals. To maintain the health of plants and encourage growth, plants need time to recover after being grazed. Resting plants helps them to create and store energy. Take the following steps to maintain the health of your pastures.

Establish proper pasture layout – The University of Minnesota Extension offers technical assistance to landowners for pasture layout and design.

Determine the appropriate stocking rate – The stocking rate is the number of animals that a given area of land can support without overgrazing. As a rule of thumb, you need at least two acres of good upland area for one animal unit of livestock. One animal unit is 1,000 pounds. For example, 10 sheep that weigh 100 pounds each would equal one animal unit. Stocking rates will vary depending on soil type, precipitation and pasture management practices.

Use rotational grazing – In a rotational grazing system, pastures are divided into smaller paddocks and animals are rotated through the paddocks. Graze one paddock until the vegetation is four inches tall, and then move the animals to another paddock. This helps prevent overgrazing and allows pastures to rest.

Give pastures a break – A three to four week rest period helps pastures recover after grazing.

Build a dry lot or sacrifice area – Dry lots are used to maintain the health of your other pastures. They should be located out of waterways, and the amount of water flowing through the dry lot should be minimized. Put animals in the dry lot when:

- The ground is wet. This occurs during the spring thaw, heavy rains and extended periods of wet weather. By putting animals in the dry lot, other pastures will be protected from the compaction of soil and removal of vegetation by hooves.
- The pastures are too short. The minimum grazing height for most pasture grasses is four inches.



Build a dry lot or sacrifice area to protect the health of your other pastures.

Control weeds – Encouraging the growth of desirable plants can help control weeds. When healthy forage plants flourish, they become more competitive and help keep weed populations down. Herbicides are available to address large infestations of most weed species.

Manage manure

Manure can be spread on fields, composted or hauled off-site. Manure is an excellent soil amendment, but too much of it can result in runoff that causes serious problems in bodies of water. One goal of proper manure management is to keep nutrients from the manure in the soil and out of the water. Proper manure management will also help control flies and maintain good relations with neighbors. For assistance with manure management, contact the University of Minnesota Extension or the NRCS. Take the following steps to manage manure.

Write a manure management plan –

The plan should include:

- Estimates of annual animal manure production and annual nutrient production.
- Plans for collecting, handling and storing manure.
- Emergency action plan that quickly deals with accidental manure spills or other environmental emergencies.

The NRCS has a manure management planner available at wmc.ar.nrcs.usda.gov/technical/WQ/mmp.html.

Add composted manure to your soil

– Spreading composted manure will supply soil with valuable nutrients and organic material. The composted manure should be spread at rates that the plants can absorb within a year or so. The University of Minnesota Extension can help you learn how to compost manure and determine how much composted manure your soil can absorb.

Avoid spreading manure that contains a large amount of bedding

– Spreading fresh manure that contains large amounts of bedding is not recommended for fields where hay or crops are grown. Bedding contains large amounts of carbon that can bind to nutrients in soil, making the nutrients unavailable for vegetation. Manure containing a lot of bedding can be composted and then spread.

Find someone to use your extra manure

– If you do not have enough land to spread all of the manure produced, manure can be hauled away and used off-site. Neighbors that are gardeners or farmers may be able to use your extra manure as a soil additive or fertilizer. You can also pay a hauler to take the manure. Find out where the hauler is taking the manure, and make sure that it is being used appropriately.

Have a good storage facility – Make your manure storage facility large enough to handle the maximum number of animals that you may have on your property. Locate facilities out of drainage areas.

Follow local regulations and Minnesota Pollution Control Agency (MPCA) guidelines for storing manure. The MPCA guidelines can be seen at www.pca.state.mn.us/publications/wq-f8-06.pdf.



For more information

- *Applying Manure in Sensitive Areas*
Minnesota Pollution Control Agency,
St. Paul, Minnesota. 2005.
- *Grazing Systems Planning Guide*
Blanchet, Kevin, Howard Moeching and
Jodi DeJong-Hughes.
University of Minnesota Extension,
St. Paul, Minnesota. 2003.
- *On-Farm Composting Handbook*
Midwest Plan Services, Ames, Iowa. 1992.



Resources

Resources

- Hennepin County Environmental Services
www.hennepin.us/naturalresources
612-348-3777
Hennepin County provides a variety of information and technical assistance for managing your land.
- University of Minnesota Extension – Hennepin County
www.extension.umn.edu/county/hennepin
612-596-2110
The University of Minnesota Extension provides outreach for the University of Minnesota and delivers educational programs and technical assistance on a variety of land management topics.
- Minnesota Department of Agriculture
www.mda.state.mn.us
651-201-6000
- Minnesota Department of Natural Resources (DNR)
www.dnr.state.mn.us
651-296-6157
- USDA – Natural Resources Conservation Service (NRCS)
www.mn.nrcs.usda.gov
763-241-1150, ext. 3
- Minnesota's bookstore
www.minnesotasbookstore.com
Minnesota's bookstore sells a variety of publications from Minnesota state agencies including many of the publications listed in this guide.
- Midwest Plan Services
www.mwps.org
Midwest Plan Services, based out of Iowa State University, sells a variety of low-cost agricultural publications.

Books & publications

- *A Quick Reference Guide for Earth Friendly Home Landscaping*
Hennepin County Environmental Services.
www.hennepin.us/sustainablelandscaping
- *Beyond the suburbs – A landowner's guide to conservation management*
Preece, Kathleen. Minnesota Department of Natural Resources, St. Paul, Minnesota. 2001.
- *Guide to Rural Living*
University of Minnesota Extension, St. Paul, Minnesota. 2001.
www.extension.umn.//ruralliving
- *Living on Acreages*
Carroll, Natalie and Don Jones.
Midwest Plan Services, Ames, Iowa. 2006.
- *Small Scale/Small Field Conservation*
NRCS, Washington, D.C.
landcare.sc.egov.usda.gov



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