

Conservation practices for farmers and landowners

Conservation practices used on farms are key to enhancing soil health, water quality and farm profits.





Introduction

Using conservation practices on farmland can benefit soil health and improve water quality. It can also ensure long-term health of your farmland. It can be hard to use practices on rented land. There is sometimes a disconnect between the landowner and renter that farms the land. The best way to bridge the gap is through conversation. Talking about how to adopt practices on land can help renters and landowner work together. This can help protect the legacy of the farmland. This resource guides renters and landowner on how to bring up conservation practices on rented lands. This is an important step to plan on the continued legacy of the land.

Conservation Practice Benefits Chart

Possible benefits → Conservation practices ↓	Reduce farm operations costs	Reduce fertilizer costs	Increase yields	Reduce soil degradation	Reduce soil compaction	Control erosion	Suppress weeds	Improve water retention & infiltration	Improve water quality	Conserve water
Cover crop		x		x	x	x	x	x	x	X
Harvestable cover		x		x	x	x	x	x	x	X
Strip till/no till	x			x	x	x		x	x	X
Grassed waterways	x		Δ	x		x		x	x	
Restoring land to prairie (temporary or permanent)	x	X		X	X	X	X	X	x	X
Soil nutrient testing	Δ	x								
Precision agriculture		x	Δ	x				x	x	X
Split rate nutrient application	x	X	Δ						x	
Nitrogen inhibitors		x							X	
Follow 4Rs of Nutrient Management (right rate, source, time, and place)	x	x							x	
Soil moisture sensors	Δ			X				x	x	X
Irrigation scheduling	X			X				x	x	X
Irrigation Management Assistant (IMA) Tool	X			X				X	X	X
Enroll in Minnesota Agricultural Water Quality Certification Program	Δ	Δ	x	Δ	Δ	Δ			x	



Explanation of practices



Cover crops: Cover crops are planted to enhance soil health and water quality between cash crops. In Dakota County, popular cover crops are winter cereal rye, oats, clover and tillage radish.

Harvestable covers: Crops grown on farmland that keep soil and water safe and can be harvested to make money. Examples of crops that can grow in the winter include, winter camelina, winter wheat and intermediate wheat grass, which help protect the soil during the cold months.

Strip till/no till: Strip and no till methods disturb the soil less than full-width tillage. This helps keep plant residue on the surface. In no-till, seeds are drilled directly into the soil, whereas strip-till prepares narrow strips of soil for planting.

Grassed waterways: Channels that are designed and planted with vegetation help direct water to a steady exit point. The roots of the plants play a crucial role in holding onto nutrients and soil.

Restoring land to prairie: Prairie restoration means changing farmland into historical prairie areas, either for a long time or a short time. This practice can help improve soil health, especially on less productive land.

Soil nutrient testing: Sampling soil on farms involves taking soil samples to send to a lab. The lab checks for important nutrients like nitrogen, phosphorus and potassium. This information helps farmers figure out the best way to manage the nutrients in their soil.

Precision agriculture: A farming approach that focuses on gathering and studying data to make farm work smarter and more efficient. One example of this is using technology to add different amounts of fertilizer based on specific needs in different areas of the field.

Split rate nutrient application: Applying the total fertilizer a crop requires in several smaller doses during the growing season, rather than all at once. This helps plants absorb nutrients when they need them and reduces nutrient waste.

Nitrogen inhibitors: A material that helps stop nitrogen from changing into forms that plants can't use. By using nitrogen inhibitors, plants can make better use of nitrogen over a longer period.

4Rs of nutrient management: A way to apply nutrients correctly. This helps farmers understand how to maintain nutrients in the soil by using the Right Source, at the Right Rate, at the Right Time and in the Right Place.

Soil moisture sensors: A tool that is used to measure or estimate the total amount of water in the soil. Data can be used to irrigate more efficiently.

Irrigation scheduling: Process of managing when and how much water to apply to farmland to maximize water efficiency.

Irrigation Management Assistant (IMA) tool: A free online tool developed to support growers in scheduling their irrigation needs.

Minnesota Agricultural Water Quality Certification

program: A program for farmers and landowners to choose water-saving practices on their land. Those who follow and keep up with approved farming methods will receive certification and gain regulatory assurance for 10 years.



Explanation of outcomes



Reduce farm operation costs: Farm operation costs can be lowered by using the best management practices in different ways. This can help make things more efficient and cut down on wasting expensive resources. Plus, by taking advantage of natural processes, farmers can boost their production.

Reduce fertilizer costs: Nutrient management and water conservation practices help use fertilizers more efficiently and lower nutrient waste, allowing crops to absorb more nutrients. This can greatly cut down on the costs of applying fertilizers.

Increase yields: Improving soil health and conserving water can lead to higher crop yields because better soil supports the growth of healthier plants.

Reduce soil degradation: Better quality soil helps crops by cycling nutrients, promoting healthy growth and using water more effectively than poor soils.

Reduce soil compaction: Improving soil compaction helps plants grow better roots, enhances water drainage and boosts air flow in the soil. These factors are crucial for healthy crops and can lead to greater harvests.

Control erosion: Managing soil erosion helps maintain crop yields by keeping fertile topsoil intact and preventing the loss of essential nutrients for plant growth. This leads to higher productivity and supports the long-term health of your land. Additionally, it decreases sediment runoff, which helps keep our water sources clean.

Suppress weeds: Weeds compete directly with crops for important resources such as sunlight, water and nutrients. Managing weeds in the soil is crucial for increasing crop profits.

Improve water retention and infiltration: Water retention helps keep water available for crops. This reduces the effects of drought, lowers irrigation costs and decreases soil erosion. Water infiltration enhances the movement of water through the soil, which helps prevent soil and nutrient loss. Both water retention and infiltration play a key role in how farmers manage their water resources during dry times.

Improve water quality: Agricultural practices can greatly impact water quality, both around the farm and further away. Enhancing water quality helps create a healthy environment for farms and communities, allowing everyone to prosper.

Conserve water: Saving water is crucial for maintaining a steady water supply for growing crops during future droughts.

Support biodiversity: Having a variety of plants and animals on a farm can help crops fight off pests and diseases better. It encourages natural pest control, which means farmers can spend less on pesticides. Plus, it helps with pollination and can make crop yields more consistent from year to year.

For more information

Reach out to the Dakota County Soil and Water Conservation District at swcd@co.dakota.mn.us or 651-480-7777





Steps to Starting a Conversation: Renter to Landowner

1. UNDERSTAND LANDOWNER PRIORITIES

- Learn the landowner's goals: Know what matters most to your landowner. Understand the priorities for their land. Does your landowner care about property value, profits and/or soil health, etc.?
- Know the benefits: Explore how conservation practices can accomplish your landowner's goals. Use the "Conservation Practice Benefits Chart" to see which practices are most likely to achieve goals. Landowners may be open to ideas to improve land, but do not know about some

conservation practices. For example, if your landowner cares most about stopping erosion and soil loss, discuss cover crops, conservation tillage. or structural practices such as grassed waterways. These are potential solutions.

2. FRAME THE CONVERSATION

- Focus on collaborating: Show how you both can use different skills to work together. These conservation goals can help both parties. It's important to continue a healthy renting relationship during the process.
- Highlight their role as the landowner: Show how this can help them preserve their land's legacy so they can farm for many years. You farm the land, but you value their advice and support when picking conservation practices for their land.

3. INTRODUCE CONSERVATION AS A SOLUTION

• Talk about challenges: Mention challenges that vou see firsthand while farming the land. Suggest conservation practices that could act as a solution.

For example: "I saw that soil in the fields is compact, which affects root growth of soybeans. We should consider planting tillage radish as a cover crop. Tillage radish breaks up the soil for the following planting season."

• Ask questions: Continue to ask questions to understand their opinion on conservation farming. Have they seen others use practices and/or heard of people's successes? Have they ever considered conservation practices as a way to improve their land?

4. PRESENT A PLAN

- Start small: Suggest starting with a small plot over 2 -3 growing seasons. Check the performance of the practice. Did it help achieve goals after it was tried?
- Check your current lease agreement: think about changing the rental lease, as needed. This can guide responsibilities and reduce risk for both parties. Reference the Dakota County "Farmland Lease Agreements" to show how landowners can add conservation practices into multi-year agreements.



5. PROPOSE USING EXTERNAL **SUPPORT**

- Look for technical help: Invite trusted experts from the Dakota County Soil and Water on how practices are doing after adoption. Conservation District (SWCD) to your site to For example, if you adopt the Irrigation provide advice. Professionals can assist landowners Management Assistant (IMA) Tool on your and renters find ways to better their land and reach irrigated cropland, share the data from the tool. their conservation goals. It shows water and cost savings throughout the growing season.
- Apply for financial help: Discuss options for grants, cost-share programs, or tax incentives available for conservation practices from local, state, and federal sources. Many resources help reduce the risk of adopting a new practice.

6. ADDRESS WORRIES

- **Respond to potential concerns:** Landowners may worry about land use changes. Some may reduce yields or increase initial costs. Show you landowner evidence of long-term practice benefits. For example, if your landowner worries that planting harvestable covers will reduce profits, show data about certain crops. Winter camelina and winter wheat can improve the farm. They can improve soil structure, and water and nutrient retention. This can increase row crop yields in the long-term. Farmers can harvest and sell these crops to increase income.
- Provide resources: Many trusted agencies like the Minnesota Department of Agriculture (MDA), Natural Resources Conservation Service (NRCS) and Dakota County SWCD have information for farmers. These include brochures, videos, and articles with practice benefits that can answer guestions. Share them with your landowner.
- Be flexible: Be willing to listen to ideas and compromise if your landowner has concerns.

7. MAINTAIN OPEN COMMUNICATION

- Provide updates: Keep your landowner informed
- Invite your landowner to events: Many field demonstrations and farm tours show farmers using conservation practices. Many of these events are with neighbors and/or other local farmers. This can increase trust in the process.

REFERENCES

This document was created with inspiration from the following existing resources:

- Conservation Conversations Part 1: How to Start the Discussion LINK
- (Iowa Corn Growers Association)
- Conservation Conversations Part 3: Engaging Your Landowner in Conservation Activities LINK (Iowa Corn Growers Association)
- Talking to Your Landowner About Conservation Practices LINK (Soil and Water Outcomes Fund)
 - Farmland Ownership and Rental: Managing for Stewardship **LINK** (Land Stewardship Project)
 - Landowners: Starting the Conversation with your Farmer LINK (Practical Landowner Services)

Steps to Starting a Conversation: Landowner to Renter

1. PREPARE FOR THE CONVERSATION

- Learn conservation practices: Pick conservation practices that better your land based on your goals. Learn how practices can lead to each benefit. Use the "Conservation Practice Benefits Chart" to see how each practice has different benefits. For example, if you want your renter to reduce nutrient losses, know which practices can do that. Split rate nutrient application, cover crops, and/or grassed waterways can be a good choice. Discuss how they would fit on the land.
- Know the renter's side: Know that the renter may face challenges. These include added costs, equipment needs, and new skills.
- Ask questions: List questions you want to ask your renter. Some helpful questions to start the conversation include:
- Have you tried practices like: changing crop rotations or making them longer? Cover crops? Using fewer synthetic fertilizers and pesticides? Attracting more pollinators? Increasing organic matter and microbial activity in soil? Irrigation management?
- How long should a lease agreement be to let you try different practices?
- Do you know about the Dakota County Soil and Water Conservation District (SWCD)?
- What are your biggest worries? (crop yields, soil erosion, soil compaction, storage, weeds, etc.)

2. FRAME THE CONVERSATION

 Focus on collaborating: Let your renter know that you would like conservation practices on your land. Let them know that you will provide support to help get them started.

For example, if equipment costs are a concern, look into rentals available at local co-ops, or government agencies. Share the risk by reducing rent. Or help with the costs of a new practice. See the "Farmland Lease Agreements" on how a lease can add risk sharing.

- Talk about shared benefits: Conservation practices can benefit the landowner and the renter. Show that bettering productivity, the land's legacy, and soil health can help everyone.
- Understand in their skills: Your renter knows your land. Ask for their thoughts when deciding on conservation practices to adopt. Learn what skills they have to adopt certain practices.

3. PRESENT A PLAN

• Start small: To help get your renter started, think about a pilot on a small plot and see how it went after 2-3 growing seasons.

For example, if you'd like to reduce weed growth. plant cover crops or harvestable covers on a small plot. Compare the weed growth on a plot with a practice and one without. Talk about how you would like to continue after seeing results.

• Try small changes: In large farms, it may be hard to adopt practices on the whole farm in the first year. Try gradual adoption over many years until the whole farm has practices. This reduces the risk of large-scale adoption and helps the renter learn as they go.



4. GIVE SUPPORT

- Share resources: Offer factsheets, workshops, or references for the renter to learn more on how to adopt conservation practices.
- Check your current lease agreement: Think about changing the rental lease. Reference the Dakota County "Farmland Lease Agreements" to show landowners can add conservation practices into multi-vear agreements. Try offering incentives for adopting practices to make the transition easier for the renter.

5. ENCOURAGE LEVERAGING **EXTERNAL SUPPORT**

- Look for technical help: Invite trusted experts from the SWCD to your site to provide advice. Professionals can assist landowners and renters find ways to better their land and reach conservation goals.
- Apply for financial help: Discuss grants, cost-share programs, or tax incentives from local, state, and federal sources. Many resources reduce the risk of adopting a new practice. Help your renter seek financial incentives that fit the goals of the land.

6. MAINTAIN OPEN COMMUNICATION

- Schedule check-ins: Provide opportunities for the renter to meet with you to discuss progress and ask questions. Listen to feedback as projects progress and be flexible. Identify a way to communicate and how often that works for both of you.
- **Recognize and reward successes:** Share the success stories of practice adoption with the community. Only do this if your renter is comfortable. Recognition can help future adoption and willingness to continue projects.

Conservation practices for farmers



Learn more

Farmers and landowners can get educational resources and technical assistance through the Dakota County Soil and Water Conservation District to assist with conservation planning and meeting farm operation goals.

For more information, call the SWCD at 651-480-7777 or email swcd@co.dakota.mn.us.

To learn more about the Dakota County Agricultural Chemical Reduction Effort (ACRE) plan, visit www.dakotacounty.us, search ACRE.

Scan here to learn how Dakota County farmers are adopting these practices:





Farmland Lease Agreements

The purpose of this document is to help landowners with a farmland lease agreement. Landowners should consider conservation agricultural practices that benefit soil health and water quality. This document is not intended to provide legal advice or specific provisions. Talk to your lawyer on what to include in your specific lease agreement.

Land Use Affects **Nutrient Loss**

Corn and soybeans are the dominant crops, but farming in Dakota County is diverse. According to the 2020 USDA Census of Agriculture, other farm crops include wheat, oats, dry edible beans, forage (e.g., hay), vegetables and fruit. Dakota County also has several nursery products such as sod, trees and other plants.

Crops harvested in the fall leave the soil bare until spring. This results in nutrient leaching, such as with corn and soybean cropping systems. This is because without crops to uptake nutrients, they get carried away in snowmelt, rainfall or irrigation water. Lost nutrients pollute the groundwater and surface waters. Nutrients lost are hard to regain back on your farmland. This is why soil health practices, such as cover crops, are a great option for many farmlands in Dakota County.

Dakota County has an Agricultural Chemical Reduction Effort (ACRE) Plan with conservation agriculture goals. Dakota County has a goal of increasing cover crop adoption to 40 percent and perennial crop adoption to 8 percent. Check out the ACRE Factsheet. You can help by including terms in your farmland lease agreements.

What conservation agricultural practices should I consider?

- 1. Review the Conservation Practice Benefits Chart. Identify what long-term outcomes you want for your land.
- 2. Have a conversation with your renter . Identify where your goals overlap, and what practices they are willing to put in place. Check out "Steps to Starting a Conversation" with your renter .
- 3. Have a conversation with local Soil and Water Conservation District (SWCD) staff. SWCD staff can provide conservation practice recommendations and guidance for your land.

Consider the below voluntary conservation practices:

- Cover Crops: Plant cover crops during off-season periods to reduce soil erosion, enhance soil health, and improve water retention. In Dakota County, plant cover crops no later than the approved practice standard to ensure sufficient establishment before winter. Examples include winter cereal rye, oats, clover and tillage radish.
- Harvestable Covers: Plant harvestable cover crops during off-season periods to reduce soil erosion, enhance soil health and improve water retention. In Dakota County, plant harvestable covers no later than the approved practice standard to ensure sufficient establishment before winter. Examples include winter camelina, winter wheat and intermediate wheat grass.
- Strip Till or No-Till Practices: Use strip-till or no-till farming methods to minimize soil disturbance, reduce erosion and enhance soil structure where possible.
- Nutrient Management: Apply fertilizers and other soil amendments in a manner that minimizes runoff and leaching, using best management practices. Lease terms may also address one or more of the following nutrient application methods:
- Soil Nutrient Testing: Conduct routine soil testing to determine nitrogen, phosphorus, potassium and other nutrient needs.
- Precision Agriculture: Use data to better inform nutrient application to include variable rate technology for fertilizer applications.
- Split Rate Nutrient Application: Conduct multiple applications throughout the growing season instead of all at once to minimize nutrient loss.
- Nitrogen Inhibitors: Utilize fertilizer with nitrogen inhibitors to allow for slow release of nitrogen to minimize nutrient loss.
- **4R's:** Follow the 4R's by applying nutrients from the Right Sources, at the Right Rate, at the Right Time and in the Right Place.
- Structural Practices: Maintain existing practices such as grassed waterways, water and sediment control basins and grade stabilization structures to maintain their effectiveness.

- Irrigation Management: Manage irrigation practices to avoid over-application of water, reduc runoff and prevent waterlogging. Manage irrigatic schedules based on crop needs, soil moisture leve and weather conditions. Utilize the following tools
- Soil Moisture Sensors: utilize soil moisture sensors to measure soil water needs.
- Irrigation Management Assistance (IMA) Tool: sign up for the free IMA online tool to determine irrigation scheduling needs.

How do farmers determine crop nutrient management needs?

All this information is already figured out and available to you and your renter . The University of Minnesota Extension has determined crop-specific nutrient needs for Minnesota crops. Nutrient guidelines are available for corn, soybean and other crops grown in Dakota County. Check out Crop-specific nutrient needs to learn more. Talk to your renter about how they follow these guidelines. Nutrient management maximizes profit while also protecting the environment. Following these guidelines aligns with the 4R's.

What is the IMA Tool?

The IMA tool provides irrigation scheduling recommendations. It uses information provided by the ag weather network and input from individual users, such as field specific soils information, weather service rainfall data and crop and irrigation system details. It reflects what is going on at each individual field. Its FREE and easy to use. You or your renter can sign up at: Sustainable Irrigation Management Assistant.

Laws, Regulations and Ordinances

Ensure compliance with all federal, state, and local laws, regulations and ordinances. This includes, but is not limited to, environmental, health and safety regulations. Below are a few such laws, regulations and ordinances that may apply to your farmland.



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Does the Groundwater Protection Rule apply to your farmland?

The Groundwater Protection Rule has two parts (see Minnesota Rule, Chapter 1573):

- 1. Part 1 prohibits fall application of nitrogen fertilizer in vulnerable groundwater areas. This rule applies to most of Dakota County with some exceptions in the western part of the county. See the Fall Nitrogen Fertilizer Application Restriction Map.
- 2. Part 2 protects public water supply wells with elevated nitrate.. The Hastings Drinking Water Supply Management Area (DWSMA) has an approved list of best management practices (BMPs). The list was developed by area farmers and the University of Minnesota Extension. See Hastings DWSMA resources. Consider encouraging (or requiring) your renter to follow the Hastings BMP list.

Do you have Shoreland and Floodplain requirements?

- Vegetative buffers are strips of land with permanent vegetation.. The MN buffer law requires buffers along rivers, streams and ditches classified as Public Waters. Buffers filter runoff, help with soil erosion, and protect water guality. Dakota County Ordinance 50 requires
- a 50-foot buffer on all Public Waters. Find out if there are requirements for your land on the DNR Buffer Map.

Does the Wetland Conservation Act (WCA) apply to your land?

The purpose of WCA is to protect water quantity, quality, and biological diversity of wetlands (Minnesota Rules, Chapter 8420). It requires prevention or minimization of impacts to wetlands.

WCA does not prevent the use of wetlands for pasture or cropland during periods of drought as long as:

- Dikes, ditches, tile lines or buildings are not constructed.
- Agricultural use does not result in the drainage of the wetlands.

The United States Department of Agriculture (USDA) Food Security Act requires compliance with the wetland conservation provisions. This includes, but is not limited to, agreeing to not:

- Produce agricultural commodities on "highly erodible land" without an adequate conservation system.
- Plant agricultural commodities on converted wetland.
- Convert a wetland to make agricultural commodity production possible.



Environmental Practices

Consider practices that protect your land. Reduce chemicals that negatively impact the land, wildlife, and your health:

- **Pesticide Use:** Use pesticides in accordance with Integrated Pest Management (IPM) principles, prioritizing non-chemical control methods and selecting pesticides with the least environmental impact.
- **Erosion Control:** Implement soil erosion control practices to comply with soil loss standards mandated by local, state and federal agencies. If tillage is used, till the soil in a manner that leaves as much crop residue on the soil surfaces as possible to prevent wind and water soil erosion.
- **Crop Residue:** Do not burn or remove any crop residue, including but not limited to cornstalks, corncobs, leaves, straw, stubble and stover.
- Waste Material: Do not bury or otherwise dispose of any physical material (except livestock wastes). Dispose of all unused chemical, such as herbicides, insecticides, petroleum products, oil, gasoline, etc., off-site in a manner approved by the Minnesota Pollution Control Agency.
- **Vegetation:** Do not cut live trees without written consent. Take proper care of existing trees, vines and shrubs .
- **Noxious Weeds:** Control noxious weeds and use diligence to prevent noxious weeds from going to seed on the Leased Premises.

OTHER CONSIDERATIONS

How long should I make the lease?

Longer leases, such as **three or more years**, allow your renter to make a long-term investment in your land. Longer leases allow renters to recoup time, energy and expenses. Think of it as a long-term investment on your property resulting in appreciation and steady income versus a short-term cash yield. The longer the lease term the greater stake the renter has in the farm.

What is a reasonable rental rate?

Rental rates may vary year to year depending upon commodity prices. Check out the University of Minnesota <u>Cropland Rental Rates</u> for more information.

To encourage adoption of conservation practices, you may need to share the risk. Check out the <u>Sustainable</u>

<u>Farm Leasing</u> quick reference guide for ideas on how to encourage your renter to adopt conservation agriculture practices through cost sharing.

Examples include:

- Full term rental rate adjustments for any practices that improve the land.
- Graduated rent change if there is a concern about an initial decrease in yield.
- One-time rent reduction to account for renter costs to improve the land.

I want to protect water, what else can I do?

The MDA has an <u>Agricultural Water Quality</u> <u>Certification Program</u> (MAWQCP). This is a voluntary opportunity for farmers and landowners to lead in conservation practices to protect our waters. Certified producers receive regulatory certainty, recognition and priority for technical assistance. Contact the SWCD for next steps on getting started at swcd@co.dakota.mn.us.

What government programs are available to me and my renter ?

There are a host of local, state and federal programs available that provide incentives for ag conservation programs. The SWCD can guide you through programs available. For more information contact swcd@co.dakota.mn.us.

Contact Info:

If you live in Dakota County, contact the SWCD at 651-480-7777 or email swcd@co.dakota.mn.us.

Learn how you can leave a legacy for future generations by protecting your land.

Other Resources:

The below are a list of resources to help landowners improve conservation practices on rented farmland:

- <u>Sustainable Farm Leasing (Drake)</u>
- Farm Leases (UMN Extension)
- Ag Lease 101 (UMN Extension)
- <u>Conservation Leases</u> (Land Stewardship Project)

