Welcome to *The Current*, the North Central Region Water Network's Speed Networking Webinar Series

Mandatory State Nutrient Management Programs: 2PM CT

1. Submit your questions for presenters via the chat box. The chat box is accessible via the purple collaborate panel in the lower right corner of the webinar screen.
2. There will be a dedicated Q & A session following the last presentation.
3. A phone-in option can be accessed by opening the Session menu in the upper left area of the webinar screen and selecting "Use your phone for audio".

This session will be recorded and available at northcentralwater.org and learn.extension.org.

Today's Presenters:

- **Chrissy Kaminski**, Program Manager, Pesticide Safety Education Program, Ohio State University Extension
- **Luke Stuewe**, Pesticide and Fertilizer Management Division, Minnesota Department of Agriculture
- **Greg Klinger**, Extension Educator of Agriculture Water Quality Protection, Minnesota Water Resource Center

Follow @northcentralh2o and #TheCurrent on Twitter for live tweets!

NORTH CENTRAL REGION WATER NETWORK

Chrissy Kaminski

Chrissy Kaminski started with the program in 2014 and works with the commercial applicator programming and recertification conferences. She has a background in assessing impacts of development projects to water resources and has experience as a science content editor for educational textbooks. Chrissy has a M.S. in evolution, ecology, and organismal biology from The Ohio State University and a B.S. in environmental biology from University of Dayton.

Ohio Nutrient Management: Agricultural Fertilizer Applicator Certificate

Chrissy Kaminski
Program Manager, Pesticide Safety Education Program, Ohio State University Extension

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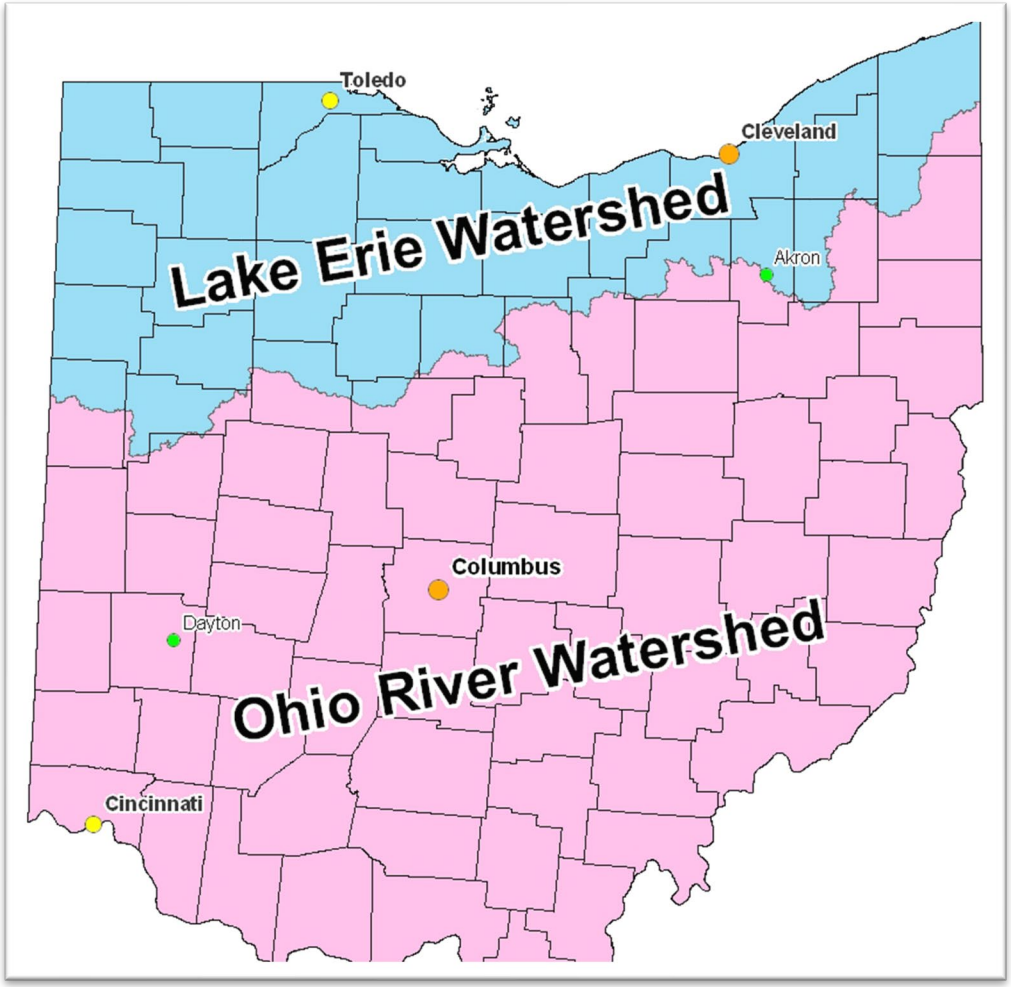
Ohio Watersheds



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Toxic Algae Bloom Leaves 500,000 Without Drinking Water in Ohio

By Circle of Blue | Aug. 03, 2014 02:15PM EST

CLIMATE

News

2019 Lake Erie harmful algal bloom twice as severe as last year's

Updated Nov 04, 2019; Posted

Lake Erie turning green as toxic algae bloom expands

PUBLIC HEALTH

Algae Toxins In Drinking Water Sickened People In 2 Outbreaks

November 9, 2017 · 4:16 PM ET

The New York Times

Tap Water Ban for Toledo Residents

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Why an Agricultural Nutrient Law?

- Agricultural runoff
- Teach farmers best management practices
- Reduce nutrient loads

Photos Credit: Justin Chaffin

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Ohio Agricultural Fertilizer Applicator Certification

- Implemented in 2014
  - Fully 2017
- Regulated through Ohio Department of Agriculture
- Apply fertilizer to 50 acres or more for agricultural production

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The Ohio State University
College of Food, Agricultural, and Environmental Sciences

Ohio Agricultural Fertilizer Applicator Certification

Includes

- Nitrogen, phosphorus, potassium, other plant nutrients
- Manure from concentrated animal feeding facilities

Exempt

- Lawn and Landscape fertilization
- Continuing Crop Advisors and Certified Livestock Managers
- Manure
- Lime and limestone
- Growing forage for own livestock

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Ohio Recordkeeping Requirements

- Name
- Date (mm/dd/yyyy)
- Location
- Acres
- Rate
- Analysis
- Application Method
- Soil Conditions
- Air Temp and Precipitation
  - Surface App: Was Ground Frozen? Y/N
- Weather Forecast

→Within 24 hours of application

→ Kept three years

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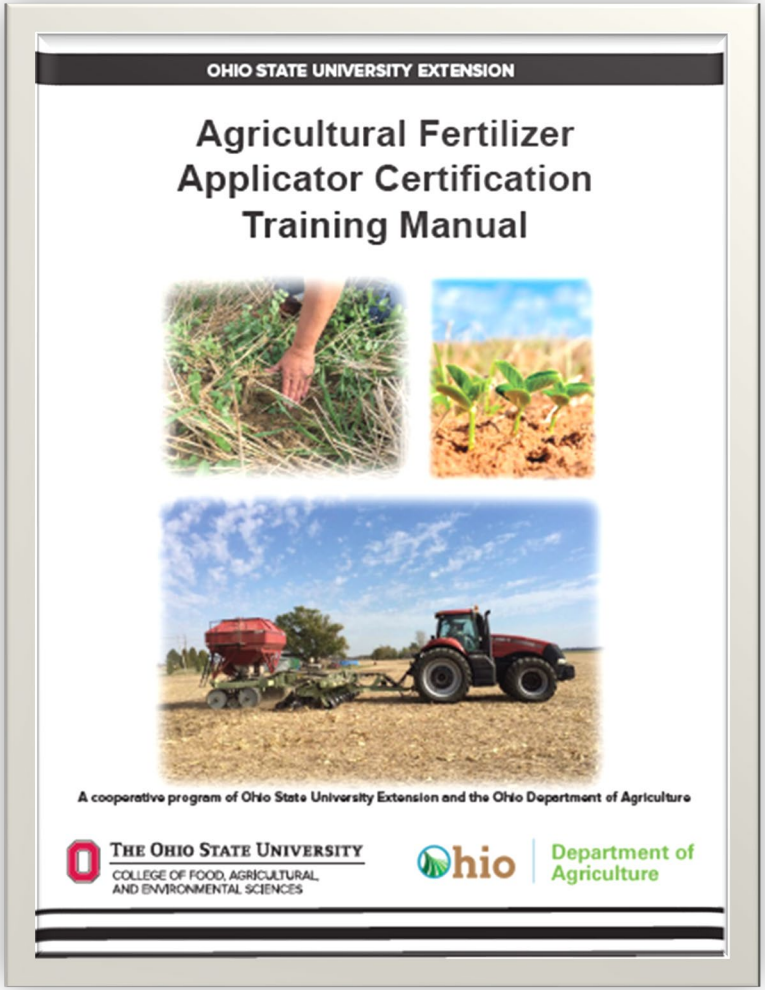
Ohio Agricultural Fertilizer Applicator Certification

Becoming Certified

- Three hour training
- Exam

Continuing Certification

- One hour of continuing education every three years
- Retake test



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Fertilizer Applicator Certification Training (FACT)

Dr. Elizabeth Hawkins

Greg LaBarge

Harold Watters

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FACT Training

- 4 Rs (Right Rate, Right Source, Right Time, Right Place)
- Voluntary nutrient management plans
- Soil sampling
- Tri-State recommendations (N-P-K)

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FACT Training

Three Hour Trainings	Total Certified
2014: 11	2017 – 17,255
2015: 140	
2016: 93	2020 – 15,397
2017: 124	

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Lake Erie Western Basin Watershed

- 2015
- Regulates Nitrogen and Phosphorus
  - Includes manure

Cannot Apply Fertilizer When:

- Soil is snow covered; ground is frozen
- Top two inches of soil saturated
- Granular fertilizer and forecast >50% precipitation
  - Unless injected or incorporated

Exceptions:

- Injected into the ground
- Incorporated with in 24 hours
- Applied on a growing crop

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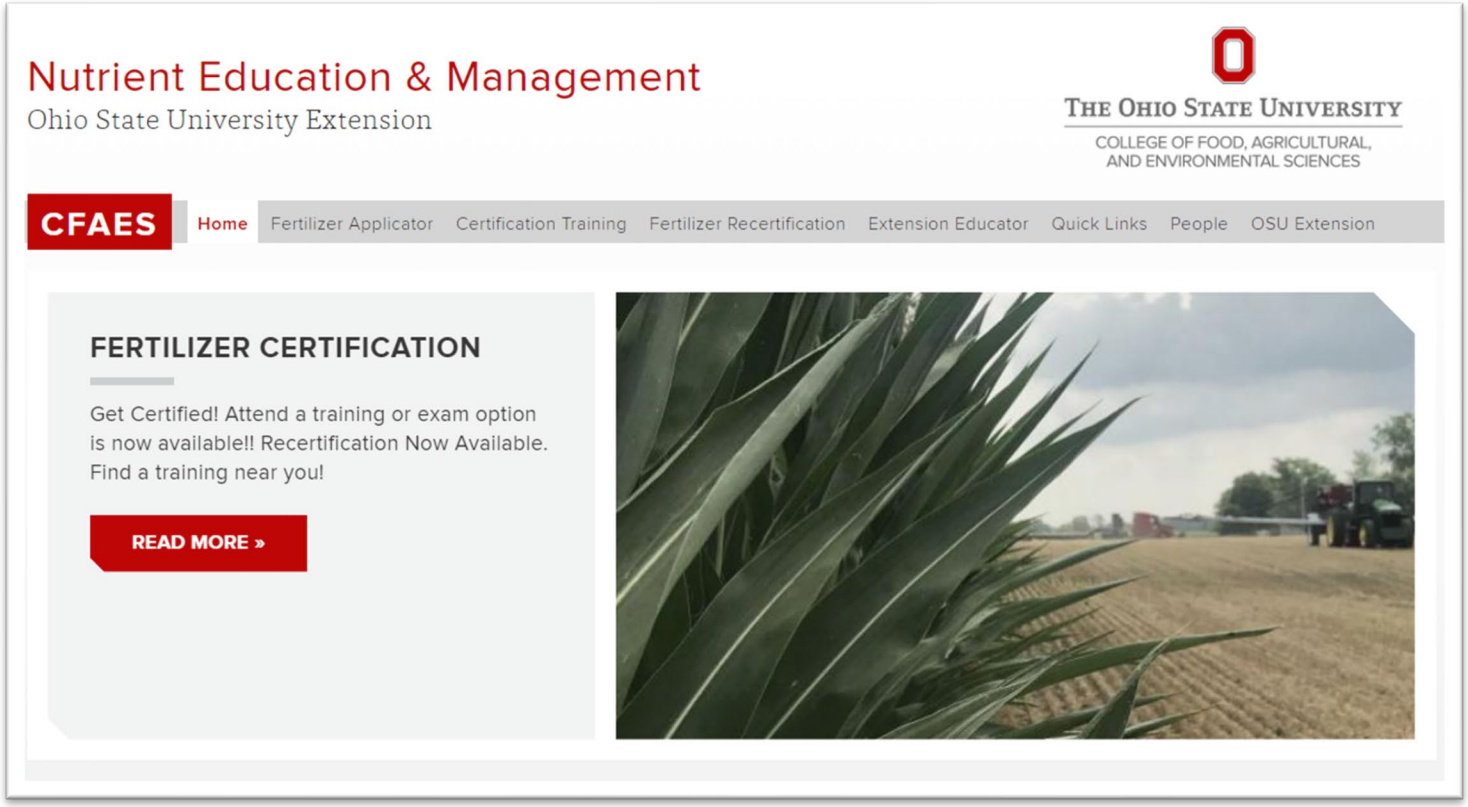
Fertilizer: nutrienteducation.osu.edu
Other: pested.osu.edu



Chrissy Kaminski – Kaminski.218@osu.edu

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Luke Stuewe

Luke Stuewe works for the MN Department of Agriculture and is based in Detroit Lakes, MN. He supervises regional staff in the Fertilizer Management Unit throughout Central and Southwestern MN. The staff in this unit work primarily on activities related to the demonstration and promotion of nitrogen fertilizer best management practices. A primary focus for this unit is the coordination of local ag stakeholder groups convened to help implement the state's Nitrogen Fertilizer Management Plan and Groundwater Protection Rule.

Minnesota Nitrogen Fertilizer Management Plan & Groundwater Protection Rule

"The Current" | North Central Regional Water Network
October 14, 2020

Nitrate Leaching from Fertilizer

- A very challenging problem
- Under row crop production in vulnerable soils, nitrate leaching will occur
- Losses may vary significantly between years due to weather
- May be long lag times (*years)* between changes in practices and changes in groundwater quality
- Enormous variability *between* and *within* aquifers

There is no simple solution

Chapter 103H.001
Degradation Prevention Goal

Under the *Groundwater Protection Act (103H)*

It is the goal of the state that groundwater be maintained in its natural condition, free from any degradation caused by human activities.

It is recognized that from some human activities this degradation prevention goal cannot be practicably achieved.

Where not currently practicable, the development of methods and technology is encouraged.

Nitrogen Fertilizer Management Plan (NFMP)

- It is the state's blueprint for minimizing groundwater impacts from the use of nitrogen fertilizer
- First developed in 1990 as an outcome of the 1989 Groundwater Protection Act
- Has voluntary and regulatory components
- Revised in 2015 after extensive public input
  - Advisory committee of farmers, agronomists, commodity groups, and environmental organizations; 6 public listening sessions across the state; and a public comment period. Process occurred in 2010-2015.

Key Goals of the Nitrogen Fertilizer Management Plan

- To encourage and promote science based practices to reduce nitrate in groundwater while maintaining farm profitability
- To target areas vulnerable to groundwater contamination
- To work with local farmers and agronomists to address local areas with elevated nitrate in groundwater

Emphasis is placed on prevention

Groundwater Protection Rule

Developed with extensive public input:

- Summer 2017 – released for informal comment
  - 17 listening sessions across the state with ≈ 1,500 attendees
  - Received more than 800 written comments
- MDA made significant changes to the proposed rule based on the comments
- Revised rule published for formal comment April 2018
- Became law in June 2019

Groundwater Protection Rule

- The rule applies to the use of nitrogen fertilizer
- It does not regulate manure
- It focuses on protecting groundwater in areas vulnerable to groundwater contamination
- There are two distinct parts of the rule:
  - Fall application restrictions in vulnerable areas; and,
  - Responding to public wells with high nitrate

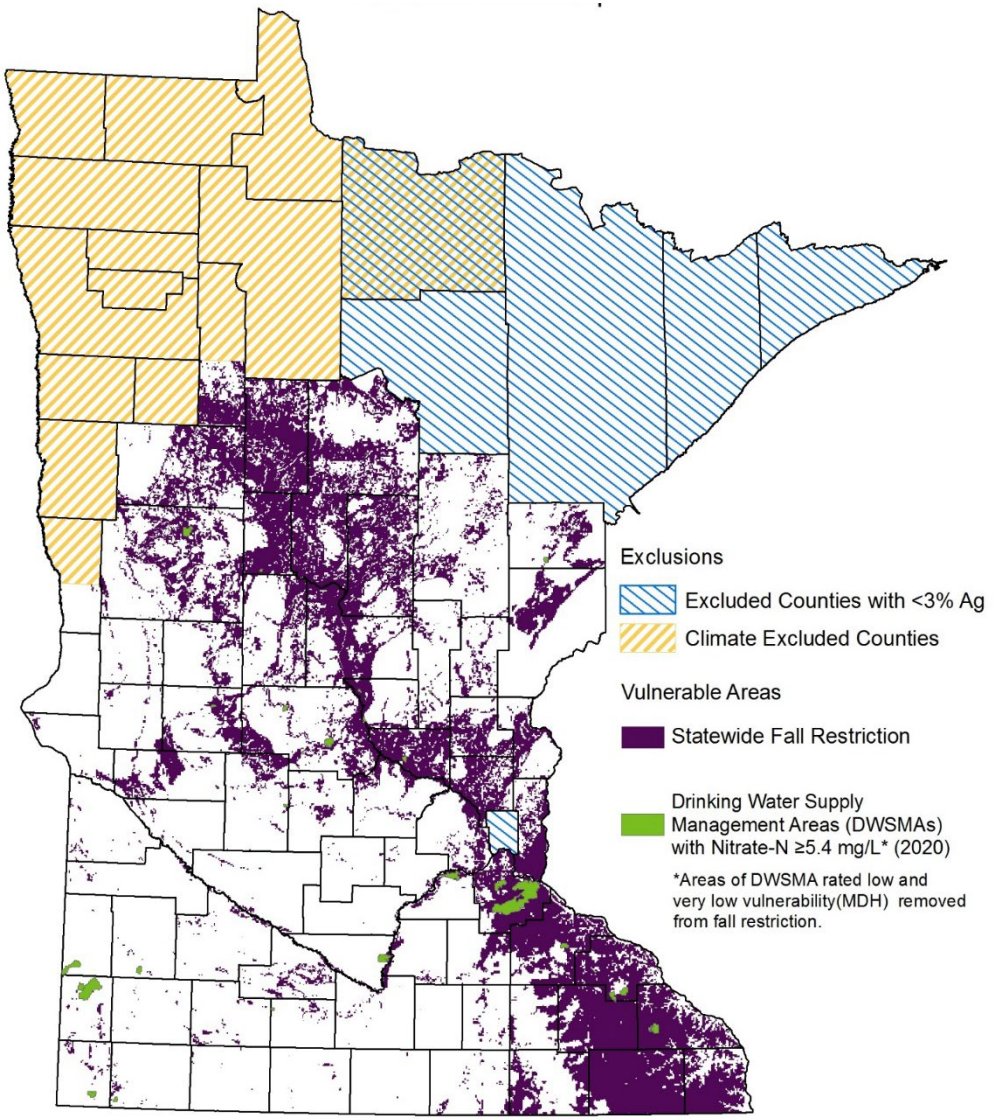
Part One: Restrictions on Fall applications of Nitrogen Fertilizer

Part One restricts nitrogen fertilizer application in the fall and on frozen soil in:

1) areas with vulnerable groundwater, or

2) protection areas around public wells with high nitrate - called DWSMAs (the green areas)

Estimated 2.6 million acres or 12.6% of cropland



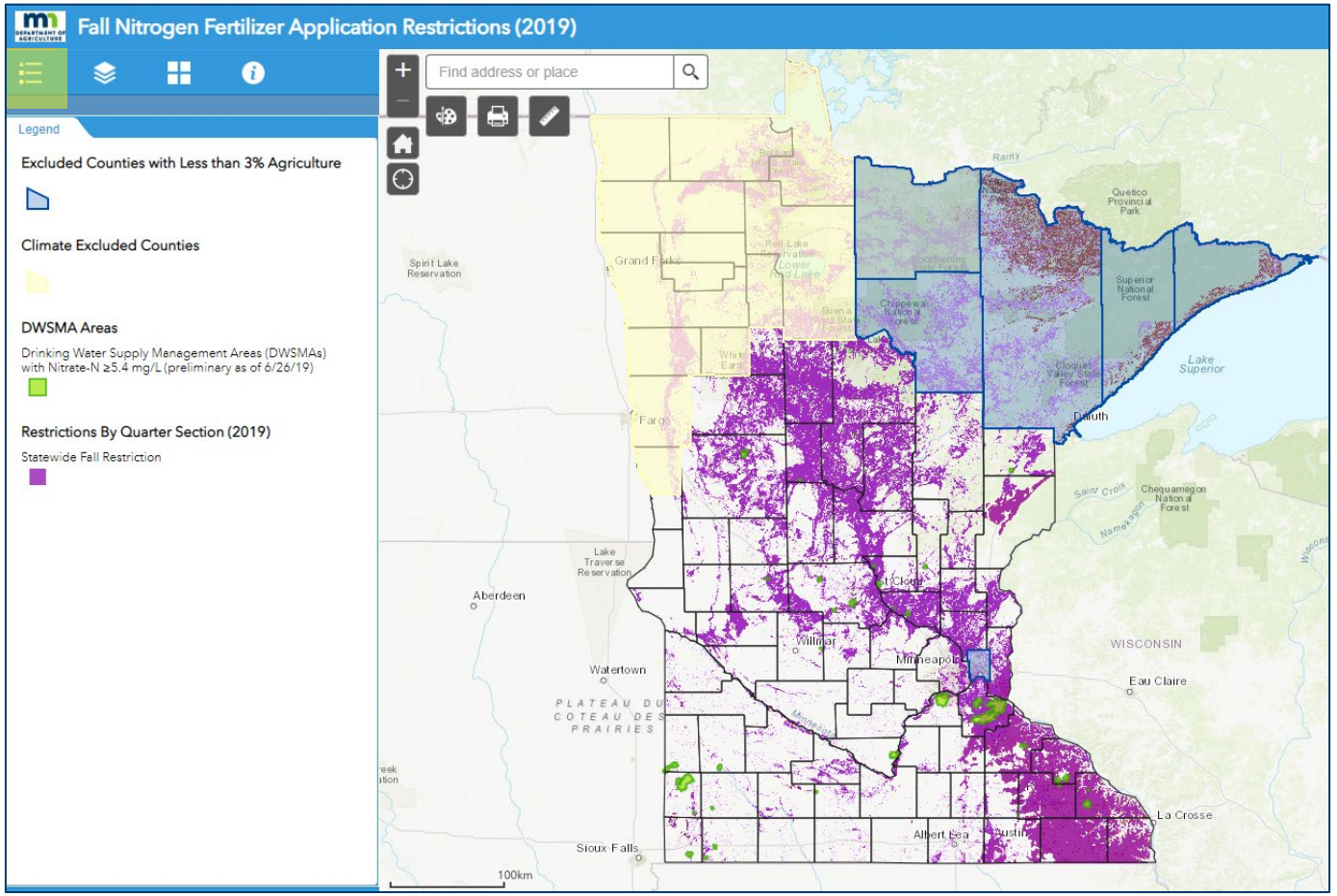
Part One: Vulnerable Groundwater Areas

- Vulnerable groundwater areas includes areas with: coarse textured soils, shallow bedrock, or karst geology
- Determined by quarter-section
- If 50% or more of a quarter-section is vulnerable, fall application will not be allowed in the entire quarter-section
- The MDA website has a zoomable interactive vulnerable area map

Interactive Map Online

Map home page

Initial layers in the legend

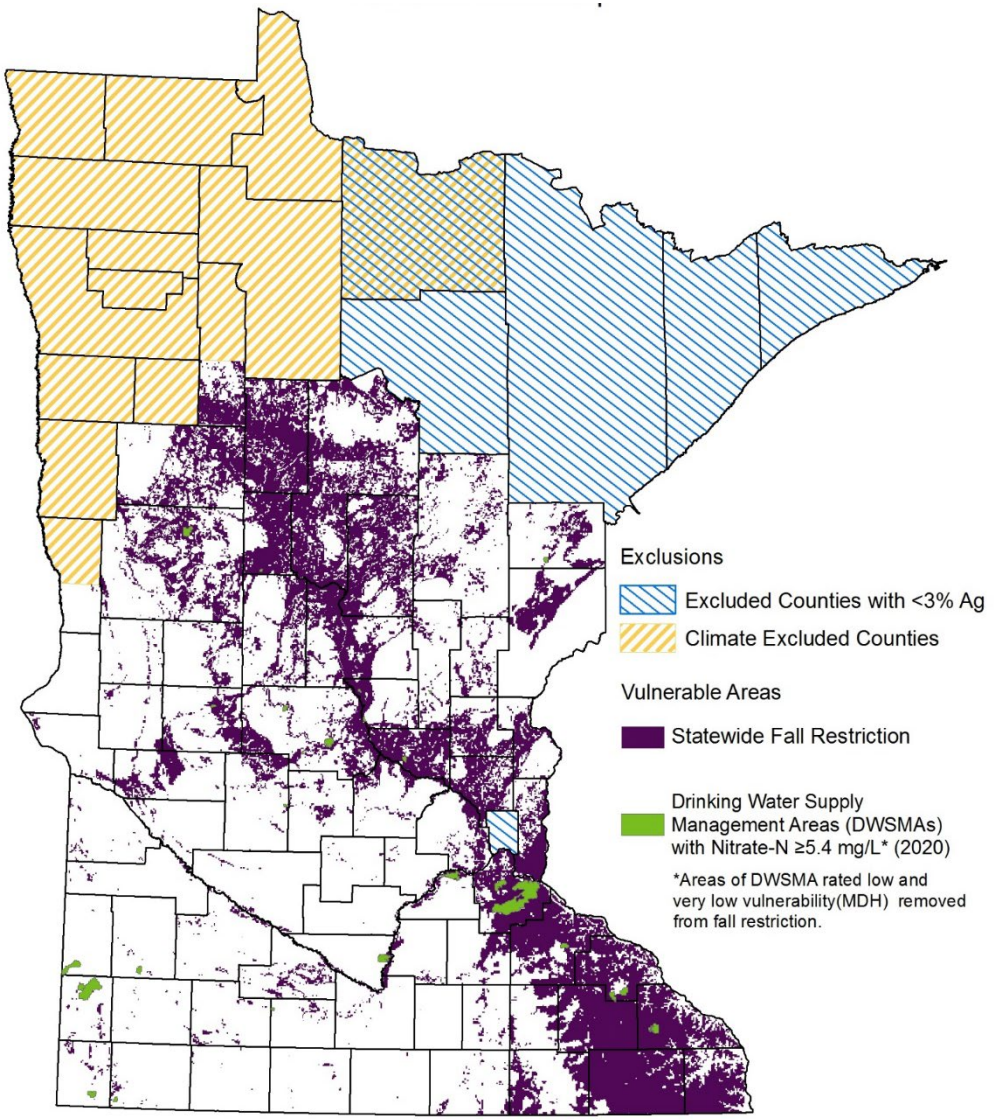


www.mda.state.mn.us/vulnerableareamap

Part One Exclusions

Exclusions to fall application restrictions for:

- Counties with low leaching potential based on precipitation and evapotranspiration rates and a short planting season; and,
- Counties where less than 3% of the land is used for cropland



Part One Exceptions

Exceptions for specific crops including:

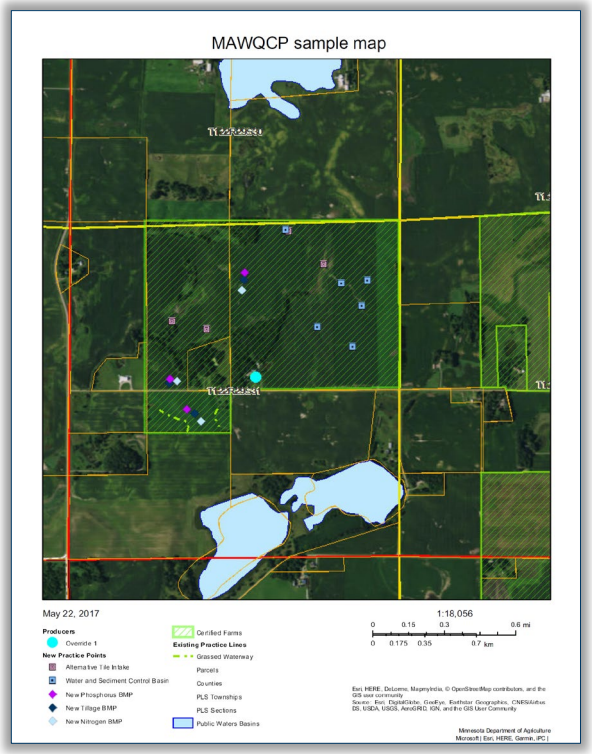
- winter grains
- pasture fertilization
- perennial crops
- grass seed
- cultivated wild rice
- cover crops for reducing the application of soil fumigants in a potato rotation
- must follow U of M rate guidelines

Part One Exceptions

Exceptions for:

- Applying ammoniated polyphosphate (MAP and DAP) or micronutrient formulations, you can apply up to 40 pounds of nitrogen per acre in the fall
- Fields that have very low phosphorus soil test levels are not subject to the 40 pounds per acre total nitrogen rate
- When land applying MDA approved agricultural chemical contaminated media
- For academic research and demonstration sites up to 20 acres, or larger with MDA approval

Minnesota Agricultural Water Quality Certification Program



- Certification = deemed to be in compliance with the rule

- MAWQCP offers producers:
  - Recognition
  - Financial/Technical assistance
  - Regulatory certainty
  - Branding/Marketing opportunity
  - Check-up/Validation for growers

- Whole-farm planning for water quality; risk assessment of every parcel, every crop

- Pairs producers with professionals to develop **site-specific** solutions for risks to water quality

Enforcement

- The responsible party is “the owner, operator or agent in charge of cropland”
- Enforcement will be complaint driven
- The MDA approach is to conduct education and compliance assistance before moving to financial penalties
- Penalty amount is situation specific based on several factors including: willfulness of violation; gravity of damages; history of past violations; and, economic benefit

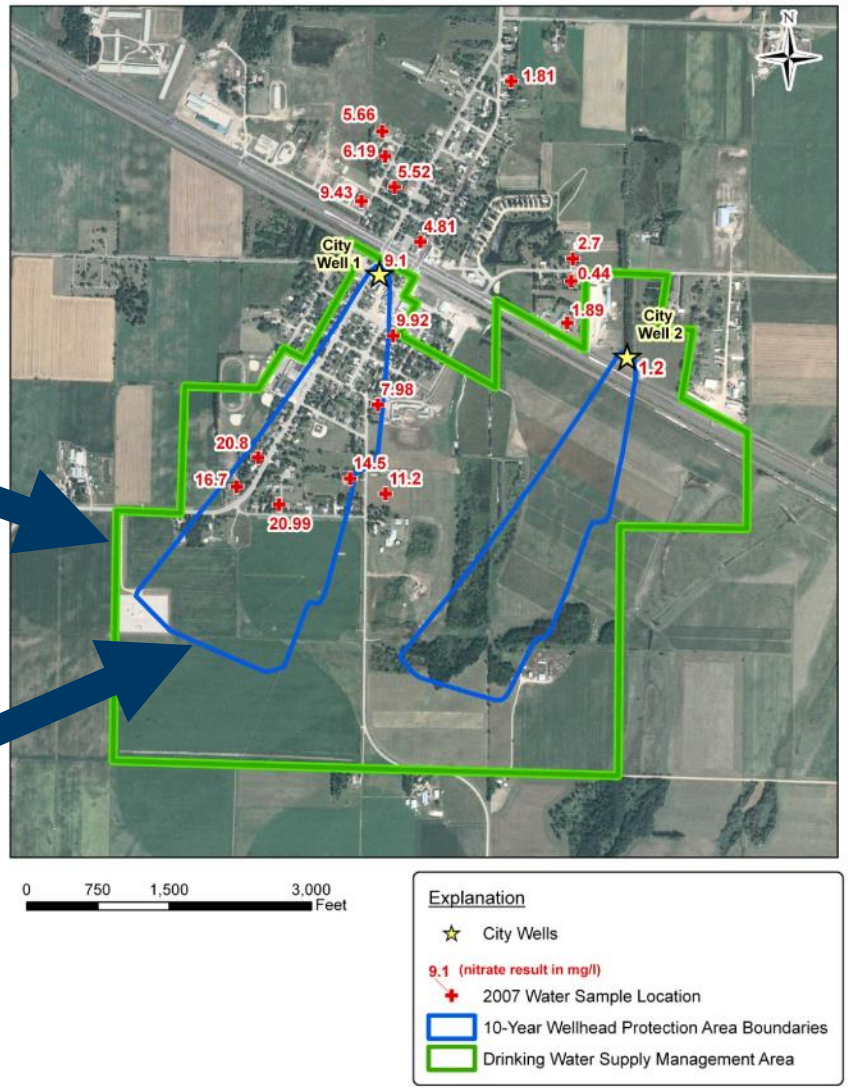
Part Two of the Groundwater Protection Rule

Part Two applies only to Drinking Water Supply Management Areas (DWSMAs) for public water supply wells that have high nitrate levels

What is a Drinking Water Supply Management Area (DWSMA)?

Drinking Water Supply Management Area (DWSMA)

10 year time of travel boundary



Key Goals of Part Two of the Rule

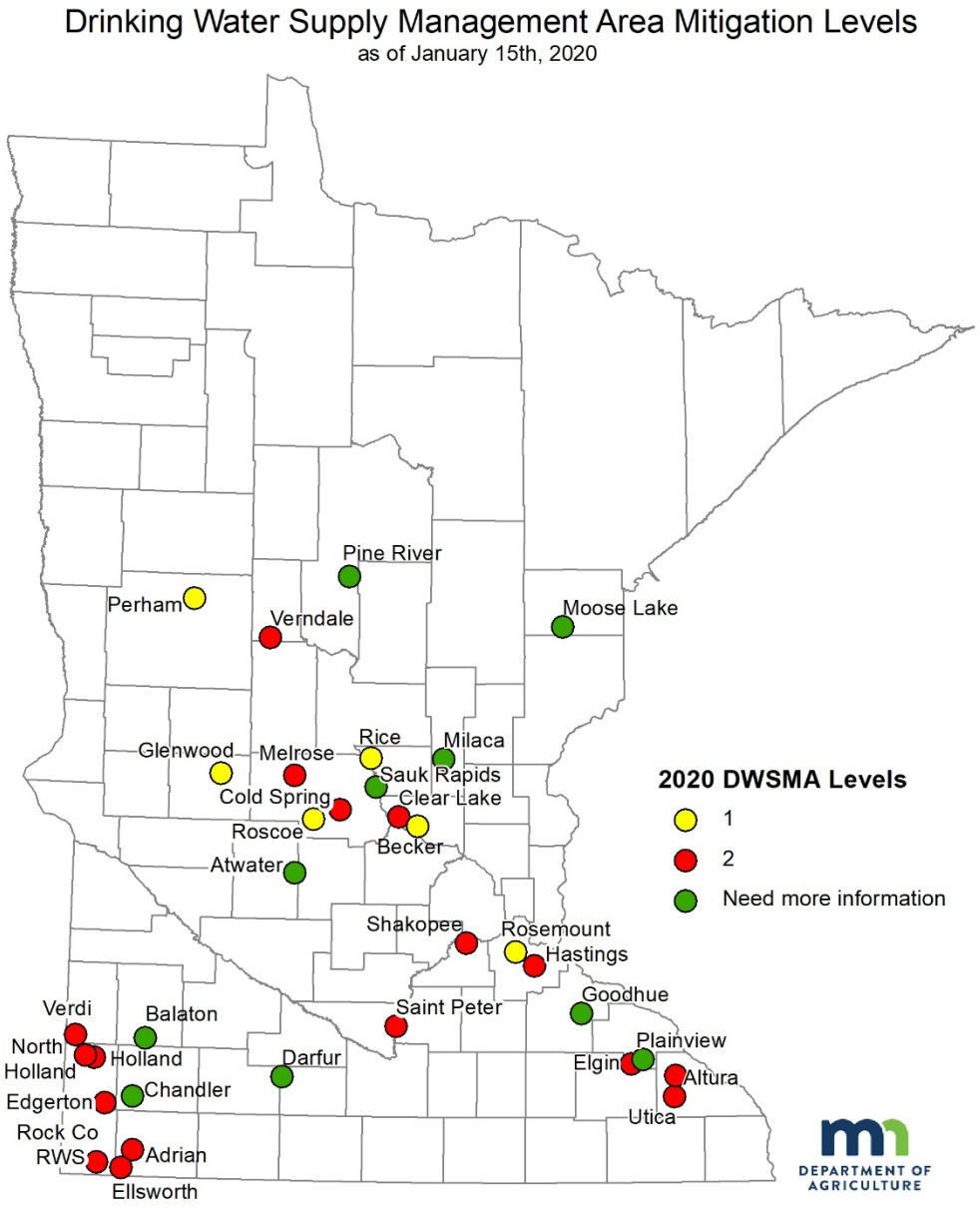
- To take action before a public water system exceeds the health standard of 10 mg/L nitrate-N (nitrate-nitrogen)
- To work with local farmers and agronomists to implement practices that can reduce the nitrate levels
- To encourage Alternative Management Tools (AMTs) which are variety of practices that can greatly reduce nitrate such as vegetative cover
- High priority for state implementation funding
- Based on the mitigation process in the NFMP

Part Two: Mitigation Efforts in DWSMAs with Elevated Levels of Nitrate

- Two levels are voluntary based on water quality, two are regulatory
- Always starts with one of the voluntary levels
- Work with a Local Advisory Team to identify appropriate nitrogen fertilizer Best Management Practices (BMPs)
- Becomes regulatory only if BMPs are not voluntarily adopted or if nitrate contamination increases

Mitigation Levels

- Initial levels determined January 15, 2020
- Level 1 (5.4-7.99 mg/L)
- Level 2 (≥8 mg/L or projected to exceed 10 mg/L in 10 years)
- Need More Information
- Fall restrictions apply in all 33 DWSMAs on map



Local Advisory Teams

For level 2 DWSMAs MDA will form a local advisory team with local farmers and agronomists and others to consider and recommend appropriate practices

The practices need to be adopted on 80% of the cropland acres in the DWSMA or the area could move to a regulatory level.

The goal is to work with local farmers and agronomists to promote science-based and economically viable practices to reduce nitrate in groundwater

Alternative Management Tools (AMTs)

A major goal of this approach is to promote practices that go beyond the fertilizer BMPs. These are called AMTs.

- Increased low nitrogen vegetative cover (perennial crops, forages, and cover crops)
- Taking targeted land out of production
- Methods to reduce or manage nitrogen precisely – precision Ag, new hybrids, management software, inhibitors
- Approved AMTs can substitute for BMPs

Thank you!

For more information visit:
www.mda.state.mn.us/nfr

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Greg Klinger

Greg Klinger works as an Extension Educator in Agricultural Water Quality Protection for the University of Minnesota. His work focuses on how farm nutrient management practices can impact water quality, from fields to streams and underground aquifers. One part of his role is to serve as a technical adviser on nitrogen fertilizer best management practices for agricultural stakeholder groups involved with Minnesota's Groundwater Protection Rule.

The role of nitrogen BMPs in groundwater protection

GREGORY KLINGER, EXTENSION EDUCATOR, AGRICULTURAL WATER QUALITY PROTECTION

What impacts nitrate levels coming from agricultural land?

- Cropping system
- Weather

- Nitrogen management/BMPs

- Edge-of-field/in-stream practices

What impacts nitrate levels coming from agricultural land?

Controllable?

- Cropping system
- Weather

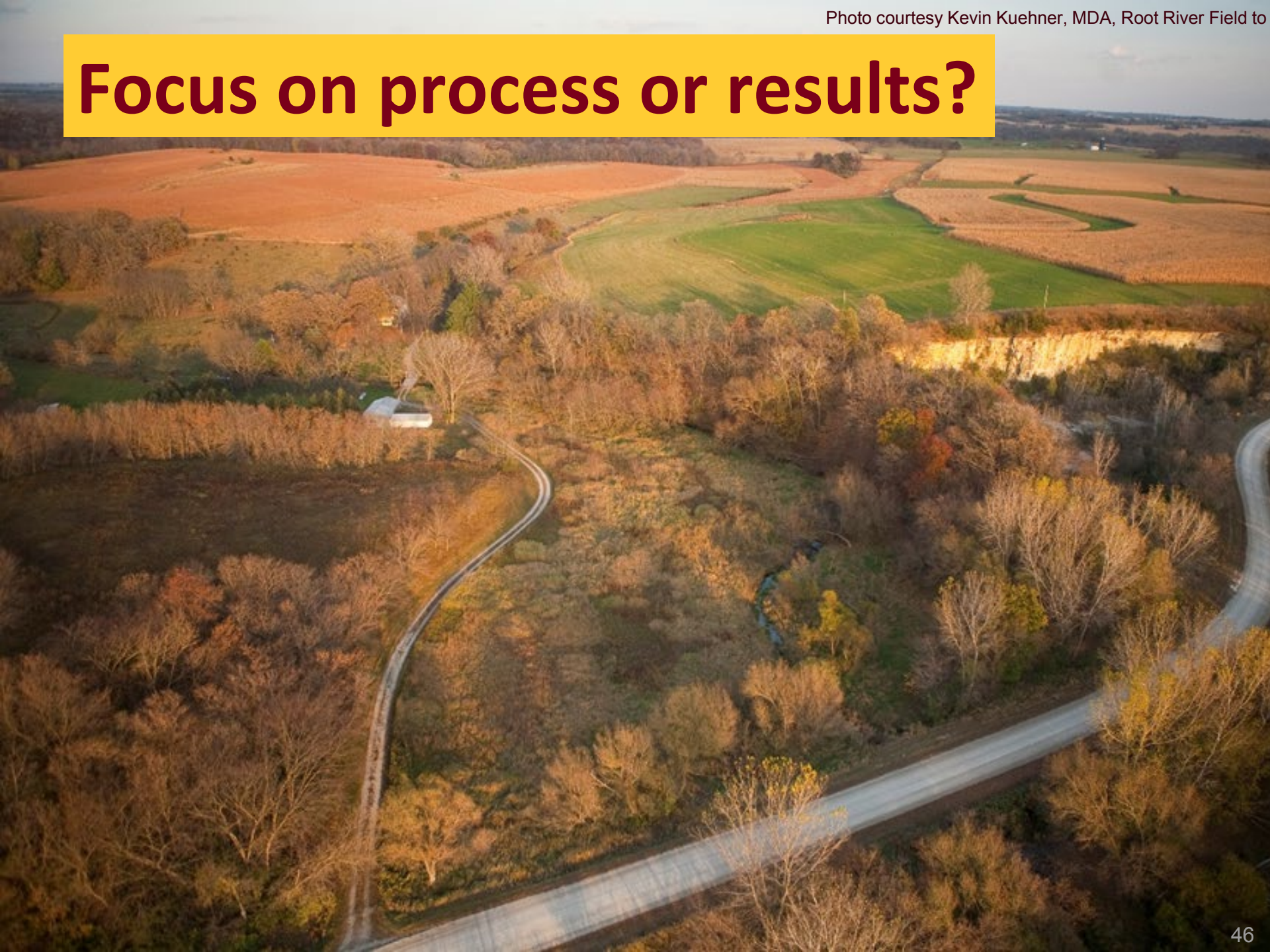
Not controllable

Not always applicable

- Nitrogen management/BMPs
- Edge-of-field/in-stream practices

How do nitrogen BMPs impact nitrate in groundwater?

- Fertilizer rate
- Fertilizer application timing
- Fertilizer form
- Fertilizer placement



Focus on process or results?

Question and Answer Session

We will draw initial questions and comments from those submitted via the chat box during the presentations.

Today's Speakers

Chrissy Kaminski – kaminski.218@osu.edu
Luke Stuewe – luke.stuewe@state.mn.us
Greg Klinger – gklinger@umn.edu

Thank you for participating in today's *The Current*!

Visit our website, northcentralwater.org, to access the recording and our webinar archive!

Be sure to register for the upcoming webinar from the North Central Climate Collaborative:

Animal Agriculture in a Changing Climate

Monday, October 26th at 1pm CT

https://northcentralclimate.org/webinars/