



# MDA Update on Cover Crops

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# Agency Statutory Authority

## MN Fertilizer, Soil Amendment and Plant Amendment Law (18C)

- 18C.111 MDA - “is the lead state agency for the regulation of fertilizer, including storage, handling, distribution, use, and disposal of fertilizer.”



# Agency Statutory Authority

*(continued)*

## MN Groundwater Protection Act (103H)

- MDA is the lead agency for agricultural chemicals including nitrates in groundwater from inorganic fertilizer
- MDA has authority to regulate the use of fertilizer to protect groundwater





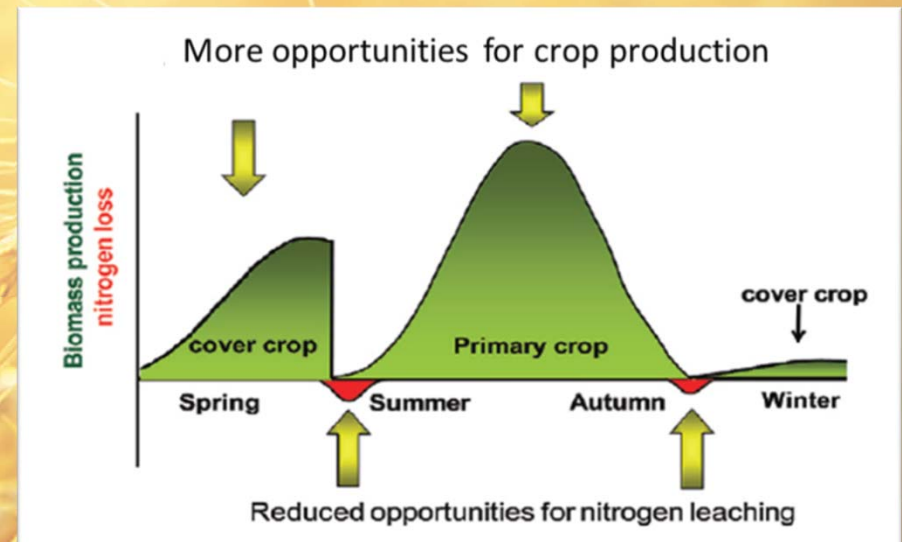
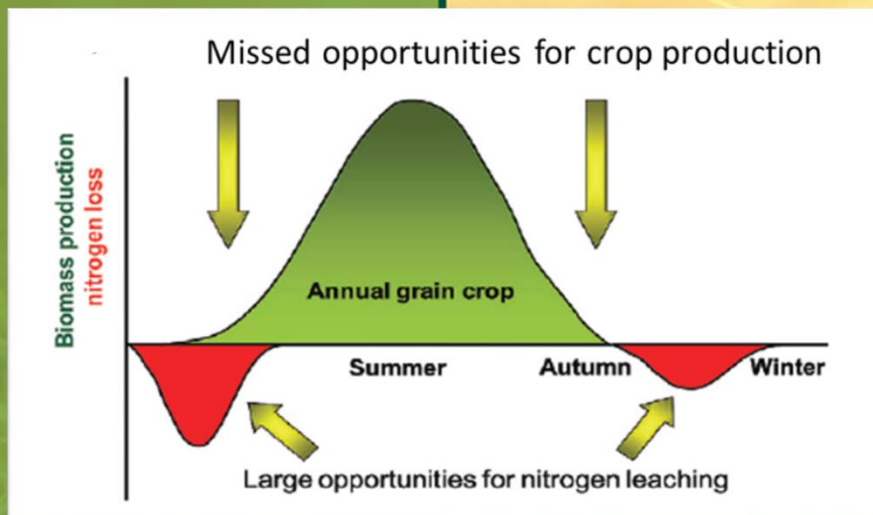
# Why the increased interest?

- Increasing stress on gw resources
  - Row crops tend to have higher nitrate leaching losses
  - Significant losses of legumes/grasses including alfalfa, clover & pasture lands
- “Alternative Management Tool”

# Why the increased interest?

*(continued)*

- CCs listed as a solution in MPCA's Nutrient Reduction Strategy
- CCs offer an expanded window of crop water and nutrient use



Heggenstaller et al. 2008. Productivity and nutrient dynamics in bioenergy double-cropping systems. *Agron. J.* 100: 1740-1748.



# Multiple Benefits

- Expanding window of water use (could reduce peak tile flow or runoff)
- Scavenge residual soil nitrogen
- Increase soil health & reduce erosion
- Provide habitat for pollinating insects







# Why isn't MN covered with cover crops?





# Clean Water Fund Research

- Proper implementation of BMP & more precise information on nonpoint contributions to impaired waters.
- Implementing cover crops into conventional cash grain cropping systems to capture nitrogen, reduce runoff and expand the window of crop water use.







# Sustainable Ag Demo Grants

- Practices that promote environmental stewardship & conservation of resources while improving profitability & quality of life.
- Priority to farmer initiated projects.
- Includes cover crop use to increase N uptake, reduce erosion, or control pests.

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# Specialty Crops Block Grant

- Enhance the competitiveness of specialty crops
- MDA 2014 funding priorities included “practices that encourage conservation and environmental stewardship”

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# MDA Funded Cover Crop Projects

- Oat & barley following sweet corn & peas (2004)
- Aerial rye seeding demonstrations (2008)
- Grazing rye cover crop (2011)
- Rye application research (2012)
- Role of CCs on preventing N loss to surface and ground water







# Winter Rye for Improved Water Quality

Table 2. Effect of rye cover on total surface runoff, sediment loss, nitrate-nitrogen loss and phosphorus loss- presented as a percentage of the fallow control

Winter Rye Establishment Method	Total Surface Runoff		Sediment Loss		Nitrate-Nitrogen Loss		Phosphorus Loss	
	Fall	Spring	Fall	Spring	Fall	Spring	Fall	Spring
	%		%		%		%	
Fallow (No Rye)	100	100	100	100	100	100	100	100
Aerial	21	1	22	1	19	1	14	1
Airflow	4	3	9	3	4	4	1	2
Broadcast	37	3	33	2	36	3	17	2



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# Future Research & Demonstration Sites

How do we create a sustainable market?

- Cover crop seed placement/timing is critical
- Establishment into existing crop prior to harvest
- Explore other cover crops
- Improve water & nutrient retention



# QUESTIONS?

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