

Clean Water with Perennials

Minnesotans overwhelming support protecting the lakes, rivers and streams that define our way of life.

40% of Minnesota's waters are impaired.

They don't meet basic health standards for drinking, swimming or fishing.¹

The two primary pollutants posing problems here and downstream are:

- 1) Nitrogen** – Too much nitrogen in drinking water (more than the 10-milligrams-per-liter limit) can have negative impacts on health, including Blue Baby Syndrome in infants younger than 6 months old.² *

While nitrogen is imperative for life, too much in our water fosters the growth of excessive algae blooms that suffocate plant and animal life – creating dead zones in our lakes and rivers in Minnesota and ultimately where the Mississippi River empties into the Gulf of Mexico.

- 2) Phosphorus** – As with nitrogen, too much phosphorus fosters the growth of excessive algae blooms, including the toxic Blue-Green Algae that can be harmful to people and other wildlife.

72% of the surface-load nitrogen in our waters comes from cropland.³

To restore our waters and comply with the Clean Water Act of 1972, **Minnesota needs a 45% reduction in the nitrogen and phosphorus** present in our waters.

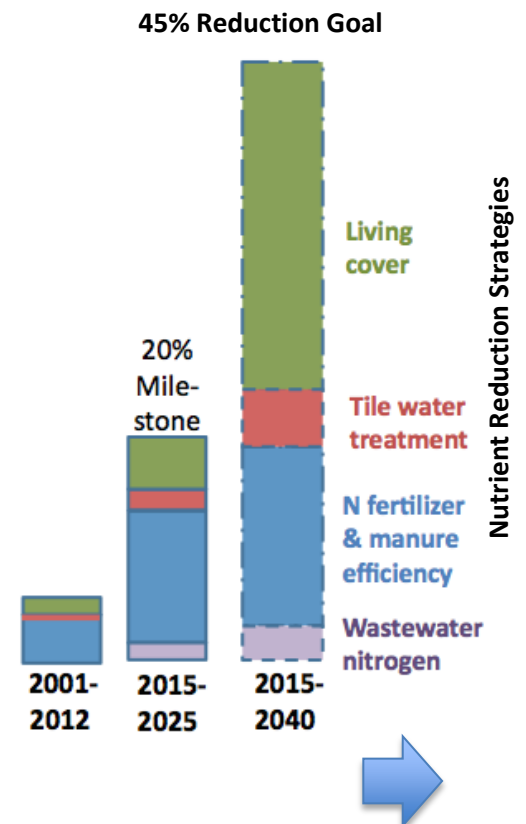
The best way to do this is to **keep water from flowing off the land by using continuous living cover – including perennials or a mix of annual crops through the seasons – on a significant portion of our agricultural fields.**

While other interventions can and do make small improvements, they are not significant enough to change the net effect of added agricultural nutrients on our water quality.

The only way to achieve this 45% reduction – and have clean water – is to increase the amount of continuous living cover we have across Minnesota.

Public policy can promote the next generation of agricultural systems that keep our lands working with continuous living cover in the landscape.

* For a list of communities affected by nitrate contamination please see the *Minnesota Drinking Water 2015 Annual Report for 2014* from the Minnesota Department of Health, p. 31 – 32.



¹ Minnesota's Impaired Waters List: www.pca.state.mn.us/water/minnesotas-impaired-waters-list

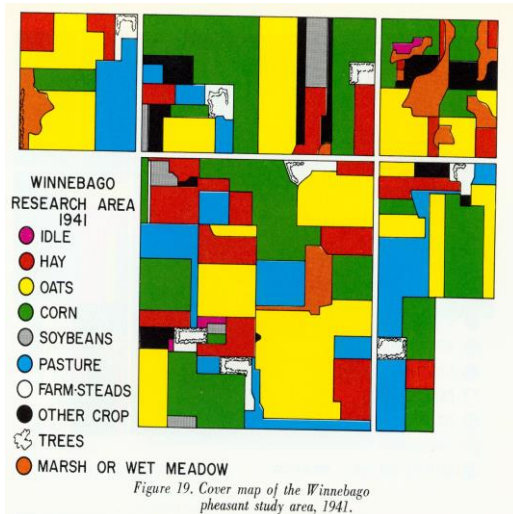
² Minnesota Drinking Water 2015: Annual Report for 2014. May 7, 2015. Minnesota Department of Health.

³ Nitrogen in Minnesota Surface Waters. June 2013. Minnesota Pollution Control Agency.

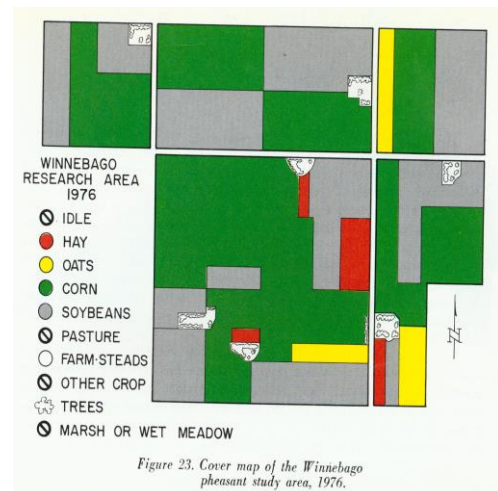
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The average Minnesota farm has lost significant diversity in recent decades.

Farm policy has rewarded production of row crops (corn and soybeans). What we've lost in the process are perennials and other living cover.



1941



1976

The annuals, like corn and soybeans, have short life cycles. When they die, they leave bare ground and no longer provide an active plant root system to help hold soil in place, absorb water or prevent run off.

Agricultural lands with only summer annuals spend most of the year bare, unprotected from wind and rain and subject to erosion.

In contrast, lands with perennials have extensive root systems that allow the plant to live continuously, even when they become dormant in the winter, providing year round soil cover.

Perennials are critical for healthy soil and clean water. They:



- Stabilize soil, preventing erosion
- Cycle nutrients, keeping them available for other plants
- Filter pollutants from leaving the fields
- Allow soil to hold water, making fields resilient to extreme weather
- Foster microbe diversity
- Store carbon

Establishing market-based incentives for both the production and use of perennial crops will be good for farmers, the land, Minnesota's rural economy and the health of our water.

Soil Scientist Jerry Glover holds a perennial wheatgrass plant's long roots.
Photo by Jim Richardson, National Geographic Creative.