

# Putting Down Roots

## The opportunity for a more sustainable, prosperous Minnesota through Continuous Living Cover

Minnesota's waterways and watersheds provide drinking water to millions of people, and support billions of dollars in tourism annually. Yet today, **roughly half of our rivers, lakes and streams are considered impaired**, meaning they don't meet one or more basic water quality standards.

For example, excess nitrate **can make it unsafe to drink the water** that comes out of the tap. Elevated sediment **threatens recreation activities and wildlife habitat**.

**A first-of-its-kind report reveals a clear path to cleaner water that also benefits Minnesota's farmers: Continuous Living Cover.**



PHOTO BY DODD DEMAS FOR FMR

*Putting Down Roots: Analyzing the economic and environmental benefits of Continuous Living Cover for Minnesota's farmers, water and climate is a **landmark impact analysis** of the effectiveness of Continuous Living Cover (CLC) cropping systems. The 10-person project team, supported by more than 50 advisors, found that even modestly integrating these crops into the agricultural landscape can **cut nitrogen loss, reduce soil erosion, blunt greenhouse gas emissions and increase farm profitability**.*

Produced by Ecotone Analytics, Friends of the Mississippi River and the Forever Green Partnership, *Putting Down Roots* offers a clear-eyed assessment of CLC cropping systems, detailing the **significant beneficial impacts they can have on our waterways and rural economies**.

**[Access the full report](#)**

 [fmr.org/clc-report](https://fmr.org/clc-report)

# Minnesota's (bare) fields of opportunity

Minnesota is struggling to meet the goals it set to reduce **nitrates going into the Mississippi River (45% by 2050)** and **sediment in the river (~50% by 2030)**.

A big reason for this: There are **millions of acres of cropland** in Minnesota that are **left brown, barren and exposed to the elements for seven or eight months at a time, each and every year**. This recurring "big brown spot" allows pollutants to more easily flow into our rivers, streams and other waters.

## Minnesota's big brown spot



The brown shaded areas on this map show a lack of living vegetation during the winter months in Minnesota.

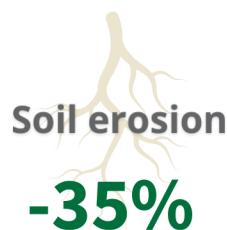
## What we need: Continuous Living Cover

**Continuous Living Cover means having live plants on cropland year-round, covering the big brown spot. Their roots anchor the soil, absorb excess nutrients and foster healthier ecosystems. CLC crops are also designed to complement conventional summer annuals. Many can be planted on acres that would otherwise remain bare from late fall into spring, opening up new revenue streams for farmers.**

The report found Minnesota can go from having live vegetative cover on the ground less than half of the year, to a landscape protected by living cover **most of the time**.



This change leads to **significant environmental and economic benefits:**<sup>†</sup>



<sup>†</sup> Figures shown are under a medium-adoption scenario. (*Putting Down Roots*, pg. 11.)

# Fueling a prosperous future

**CLC crops are designed specifically to be harvested – providing direct financial benefit to farmers.**

Conventional cover crops cost money to plant and typically don't provide a harvest. CLC crops, on the other hand, **provide a harvest and economic benefits for farmers.**

Businesses in Minnesota and nationwide are already using CLC crops such as Kernza in food products, from baked goods to breakfast staples to beer. Products made with hazelnuts, elderberries and hybrid winter rye are also on store shelves, with more crops to follow.

Other major drivers of demand for CLC crops include animal feed and forage, alternative proteins and biofuels. (*Putting Down Roots*, pg. 30.)



PHOTO BY DODD DEMAS FOR FMR

## Winter oilseeds and biofuels

PHOTO BY DODD DEMAS FOR FMR



Winter camelina planted in Minnesota in fall of 2023.

The report identified winter camelina and domesticated pennycress as powerful engines for a healthier environment and economy, forecasting up to 5.5 million acres of these winter annual oilseeds in Minnesota by 2050.

Both produce oil that can be converted into renewable diesel and jet fuel with significantly lower life cycle GHG emissions.

Research shows camelina-based jet fuel, compared to petroleum-based jet fuel, can reduce GHG emissions by more than 60%.

Companies from across the agriculture and energy sectors are making major investments to meet this demand for low-carbon fuels.

# Planting the seeds of opportunity



PHOTO BY DODD DEMAS FOR FMR

## Why Minnesota is uniquely positioned to make the most of this opportunity:

- Decreasing pollution here at the top of the Mississippi River watershed will improve water quality for all our downstream neighbors.
- We're home to the Forever Green Initiative, a world-class research institution developing cold-hardy CLC crop varieties.
- We have a vibrant ecosystem of renewable fuel producers and users.
- The state is one of the nation's leaders in agricultural production.

*Putting Down Roots* provides a realistic, practical and achievable path toward building a more sustainable, prosperous Minnesota. **Yet change doesn't happen overnight.**

**Minnesota must invest in its farmers, researchers and businesses** by providing the critical funding, technical assistance and supportive policies needed to build our state's long-term health and prosperity through the adoption of CLC cropping systems.



*Friends of the Mississippi River* is a nonprofit that works to protect and enhance the Mississippi River and its watershed. *Ecotone Analytics* is an impact analysis consultancy that does benefit-cost, data and strategy analysis for clients' social, economic and environmental impacts. The **Forever Green Partnership** is a multi-sector partnership working to to develop crops and markets that will increase Continuous Living Cover.

This project was made possible by the **Walton Family Foundation**. Funding was also provided from the **Clean Water Fund** as part of the Clean Water, Land, and Legacy Amendment.