

Forever Green Initiative



2023 Environmental and Economic Clusters of Opportunity (EECO) Implementation Program

HIGHLIGHTS

- *Crops included: Kernza® perennial grain, winter barley, hybrid winter rye, winter camelina*
- *Technical Assistance to growers*
- *Ecosystem Service payments \$20-50 per acre*
- *Risk Management payment of half the cost of production available in the event of crop or market failure*



Introduction

The Forever Green EECO Implementation Program supports the commercial success of early-adopter growers and the environmental benefits of new high-efficiency, continuous-living-cover crops and cropping systems in Minnesota. Kernza® perennial grain, winter camelina, winter barley, and hybrid winter rye are four of over a dozen new perennial and winter annual cropping systems being developed by the University of Minnesota's (UMN) Forever Green Initiative (FGI). These crops are intended to offer new economic opportunities to growers, new sustainable ingredients to industry, and critical ecosystem services to society.

The program includes financial and technical support for growers, as well as capacity-building resources for partners around the state. Implementation activities will focus on four areas of Minnesota that have vulnerable groundwater—southeast, west, northwest, and the Central Sands—which the program calls Environmental and Economic Clusters of Opportunity, or EECOs. Concentrating production and support for early production and supply chain activity in “clusters” around the state builds momentum, fosters innovation, achieves efficiencies, and develops community leadership.

The newly expanded program starting in Spring 2023 is offered in partnership by the University of Minnesota Forever Green Initiative and the Minnesota Department of Agriculture (MDA). The program began providing technical assistance in 2020 and financial support to growers in 2022, focusing on Kernza. It is now expanding to include winter camelina, winter hybrid rye, and winter barley as well. From this pilot program we will develop a model that can be used to support the launch of other continuous-living-cover crops and cropping systems being developed by the UMN Forever Green Initiative and others.

What are Continuous-Living-Cover Crops?

The UMN Forever Green Initiative is developing the next generation of perennial and winter-annual crops to keep Midwest farms in production year-round. These crops diversify farmland, provide pollinator habitat, protect soil health, and improve water quality, all while providing additional economic opportunities for farmers and communities.

Kernza is a perennial grain that has a long, dense root system that can greatly reduce nitrate leaching and deliver other environmental benefits to soil, water, and climate. Winter camelina, winter barley, and hybrid winter rye are winter annual “cash cover crops”. Winter camelina is a winter-hardy oilseed with a range of end-use applications, including renewable fuels, feed, food, bioplastic, and other industrial applications. Winter barley and hybrid winter rye are two fall-planted winter-hardy small grains offering opportunities primarily in feed, as well as brewing, malting, distilling, and milling.

How do you grow and market Kernza®?

In Minnesota, Kernza is planted in late summer (mid-August to early September) and harvested one year later (early to mid-August). Currently Kernza produces a commercially viable grain harvest for two to three years.

Kernza also produces a high volume of forage and UMN is strongly promoting Kernza as a dual-use crop for grain and forage. Kernza is still in an ‘early adopter’ phase, meaning best practices for growing, harvesting, and post-harvest handling are still developing.

The market for Kernza is also still developing. A producer-owned and -led cooperative, Perennial Promise Grower’s Coop, is based in MN and can assist members in marketing (perennialpromise.com/). A few small businesses, such as Perennial Pantry (perennial-pantry.com/), are able to directly purchase, clean, and process grain for use in their own products. Significant entrepreneurship is welcome and needed to grow the market for perennial grain.

All Kernza growers must be licensed by The Land Institute (TLI). UMN and TLI are working together closely on Kernza research and commercialization in Minnesota and nationally.

Growing Winter Annuals like Camelina, Barley, and Hybrid Rye in Minnesota & Early Market Insights

In the Upper Midwest, camelina is being developed as a winter annual “cash cover crop” that is planted in mid-to-late September ideally following a small grain such as spring wheat, or other short-season crops such as corn silage or spring pea. Camelina can then be relay-cropped with soybean the following spring. This system produces “three crops in two years” that can be harvested and marketed, along with offering the many water, soil, and climate benefits of full-season winter cover. Potential markets include renewable fuels and feed markets, but these markets are still in development. Likely the largest market for camelina in the short-term is reproduction for cover crop seed use for direct sale or via seed retailers. Please contact us if you need help connecting with markets.



Kernza



Winter Rye



Winter Barley



Winter Camelina



Winter barley and hybrid winter rye are two fall-planted winter hardy small grains that are also promising “cash cover crops” for growers, offering opportunities primarily in feed markets, but also others exist on a smaller scale such as milling & distilling. A new variety of winter barley, MN-Equinox, is the first facultative winter-hardy variety developed at the University of Minnesota. It is available at Albert Lea Seed (alseed.com/). Potential markets include feed & milling, but markets are limited at this time.

Hybrid winter rye has undergone extensive testing in feed markets, especially swine, showing great promise as an alternative feed ingredient that does not negatively influence animal growth or product attributes. Limited markets are available in distilling and milling. Hybrid winter rye genetics are proprietary and owned by KWS Cereals. Growers planting hybrid winter rye are required to sign a license agreement with KWS that specifies their end market which must be for feed, milling or distilling. Saving the harvest back and/or selling it for cover crop seed use is not an allowable market for this crop.

Resources for:

- **Kernza growers:** kernza.org/growers
- **Winter camelina grower guide:** z.umn.edu/WinCamGrowerGuide
- **Hybrid winter rye:** z.umn.edu/KWS-HybRye
- **Winter barley:** z.umn.edu/UMNWinterBarley

Eligible locations*

The pilot program targets four areas of Minnesota, plus all Tribal Nations, for expanded CLC production, including the following counties:

Western:

Becker
Big Stone
Chippewa
Clay
Douglas
Grant
Kittson
Lac qui Parle
Lincoln
Lyon
Mahnomen
Marshall
Murray
Nobles
Norman
Otter Tail
Pennington
Pipestone
Polk
Pope
Red Lake
Rock
Stevens
Swift
Traverse
Wilkin
Yellow Medicine

Northwest:

Lake of the
Woods
Roseau

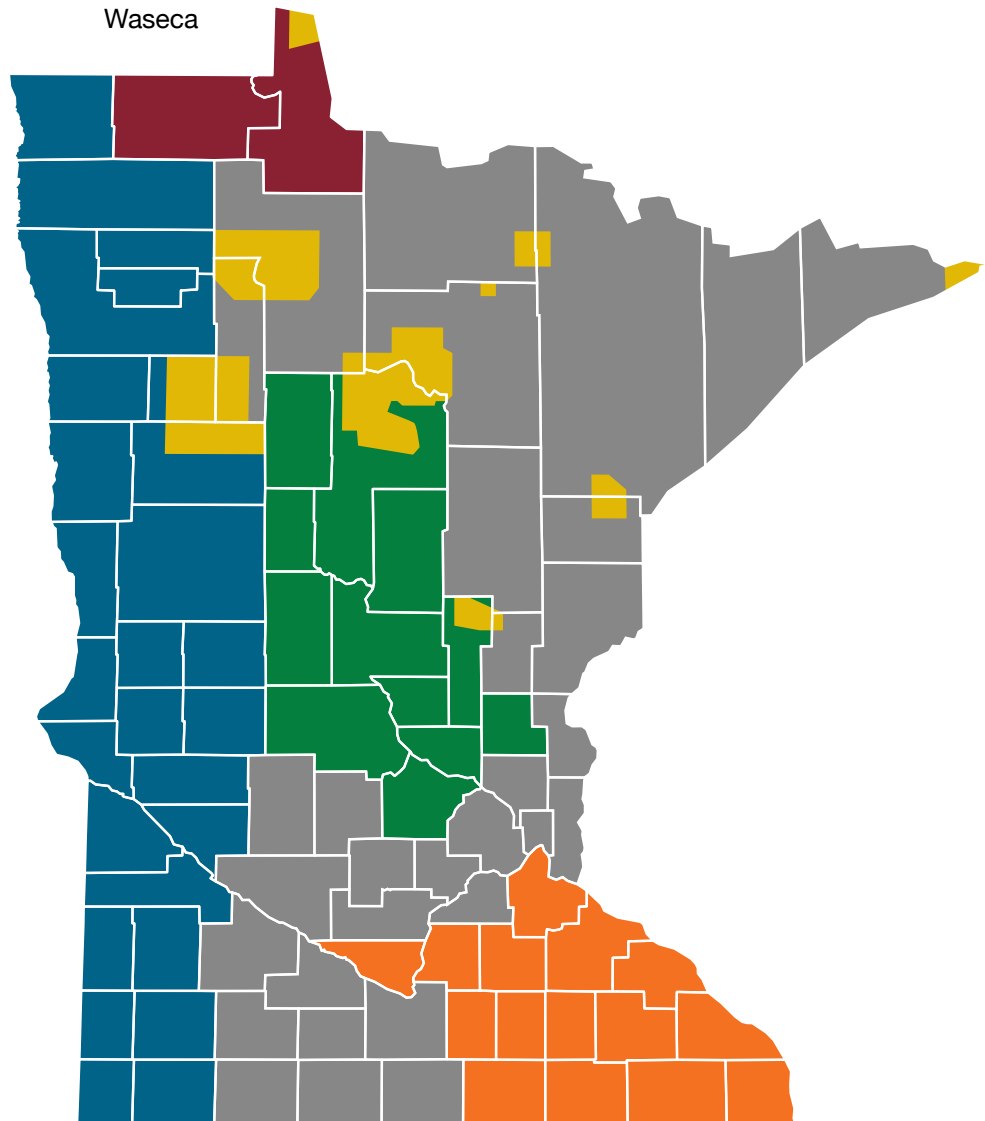
Central:
Benton
Cass
Crow Wing
Hubbard
Isanti
Mille Lacs
Morrison
Sherburne
Stearns
Todd
Wadena
Wright

Southeast:

Dakota
Dodge
Fillmore
Freeborn
Goodhue
Houston
Le Seur
Mower
Nicollet
Olmsted
Rice
Steele
Wabasha
Winona
Waseca

All Tribal Nations and Communities with enrolled acres within the boundaries of the State of Minnesota:

Bois Forte Band of Chippewa
Fond du Lac Band of Lake Superior Chippewa
Grand Portage Band of Lake Superior Chippewa
Leech Lake Band of Ojibwe
Lower Sioux Indian Community
Mille Lacs Band of Ojibwe
Prairie Island Indian Community
Red Lake Nation
Shakopee Mdewakanton Sioux Community
Upper Sioux Community
White Earth Nation



**Growers near but outside the boundaries of these counties will be evaluated on a case-by-case basis.*



Top priority will be given to commercial row crop acres located in Drinking Water Source Management Areas (DWSMAs) or Wellhead Protection Areas (WHPAs).

To see whether you farm in a DWSMA or WHPA, enter your address in the following map:
z.umn.edu/MN-DWSMA-map

Growers located in EECO counties but not in DWSMAs or WHPAs are still eligible. For those growers within DWSMAs or WHPAs, a 25% premium will be included in the ecosystem service payment.

Ecosystem service and risk-sharing payments for growers in the Implementation Program

The Forever Green EECO Implementation Program includes a de-risking payment program for enrolled growers including:

- **Ecosystem service payments range from \$25-50 per acre per year for perennials (Kernza) and \$20-40 per acre for winter annuals (winter barley, winter camelina, and hybrid winter rye),** based on field specific nitrate leaching reductions as modeled by the USDA Nutrient Tracking Tool (ntt.tiaer.tarleton.edu)
- **Economic risk payments up to 50% of the cost of production in the event of on-farm or market failure.** This is an outcomes-based and crop-specific payment triggered in the event of loss, much like insurance, though with no premium. Documentation of on-farm or market failure must be included in order to receive payout. If a crop succeeds in the market bringing in returns above the cost of production, there is no economic risk payout. Cost of production will be based on a standardized enterprise budget using publicly available county-specific average land rental rates.



Program enterprise budgets are forthcoming. Roughly, EECO program crop production costs are \$350/ac for Kernza, \$140/ac for camelina (as shoulder season crop does not include land costs), and \$510/ac for hybrid winter rye. Winter barley production costs are currently being assessed, though spring barley production costs of \$230 are used as an approximation.

The above two payments along with a potential DWSMA premium combine to provide financial support ranging from \$20-\$305 per acre. Again, payouts are field and outcome-specific.

Further details on the rationale for these ecosystem service and economic risk payments can be discussed with interested and enrolled growers upon request. Enrolled growers will need to comply with program requirements and technical production standards to remain eligible for ecosystem service and economic risk mitigation payments as described above.



Technical Assistance

Technical Assistance (TA) includes grower-to-grower, community-based, and university-based TA providers as well as written and recorded resources. This expansion of the EECO program now includes support from a full-time Perennial Grains and Winter Annuals Agronomy Specialist. Non-enrolled growers may access technical assistance support, but enrolled growers will be given priority. Modest additional support is available through the program for mobile grain drying units, grain testing services, targeted market research, and remote and in-person events.

For more information and to enroll:

Sienna Nesser

CLC Adoption Specialist
UMN Forever Green
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Matt Leavitt

Perennial Grains and Winter
Annuals Agronomy Specialist
UMN Forever Green
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Growers interested in talking with other growers about Kernza production and marketing:

Carmen Fernholz

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Alan Kraus

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alan@cleanriverpartners.org

Questions about EECO program design, management, or expansion can be directed to:

Colin Cureton

Director of Adoption and Scaling,
UMN Forever Green
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How do I enroll in the UMN Forever Green EECO Implementation Program?

To enroll, use this link (z.umn.edu/EnrollEECO) to fill out the EECO Grower Enrollment Form before planting an EECO eligible crop.

To enroll a Kernza field in this program, you must be a registered Kernza grower. Kernza stands will be eligible for program enrollment for each stand's first three years of production. Existing plantings will be eligible. Note that Kernza seed is still somewhat limited, markets are still in their early phase of development, and licensing guidelines remain strict. The first step is to apply to be a Kernza grower with TLI at z.umn.edu/KernzaGrowerApp

Additional terms and conditions

- Participating growers will be eligible to enroll up to 100 acres per crop in the program, and no more than 250 acres per total operation.
- Growers must commit to best efforts to follow a Practice Standard containing best management practices (BMPs) to receive financial assistance
- Field verification and certification by a UMN technical representative may be required.
- Prompt and cooperative responses and provision of documentation to EECO program staff is expected and much appreciated.
- New growers of hybrid winter rye will be prioritized.
- Kernza grower vetting and licensing priorities, this flier, and next steps for eligible growers to enroll in the Forever Green EECO Implementation Program are available on www.forevergreen.umn.edu.

DISCLAIMER: This pilot program is intended to share risk with early-adopter growers and deliver technical assistance, but enrolled growers will ultimately be responsible for the planting, management, harvest, and marketing of their crop. UMN, MDA, The Land Institute, KWS, and others are not grain buyers. Kernza, winter camelina, winter barley, and hybrid winter rye present a new opportunity, but best management practices, supply chains, and markets are still developing.

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