



CLC Value Chain Development (HF2720)

February 28, 2021

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UMN Forever Green Initiative

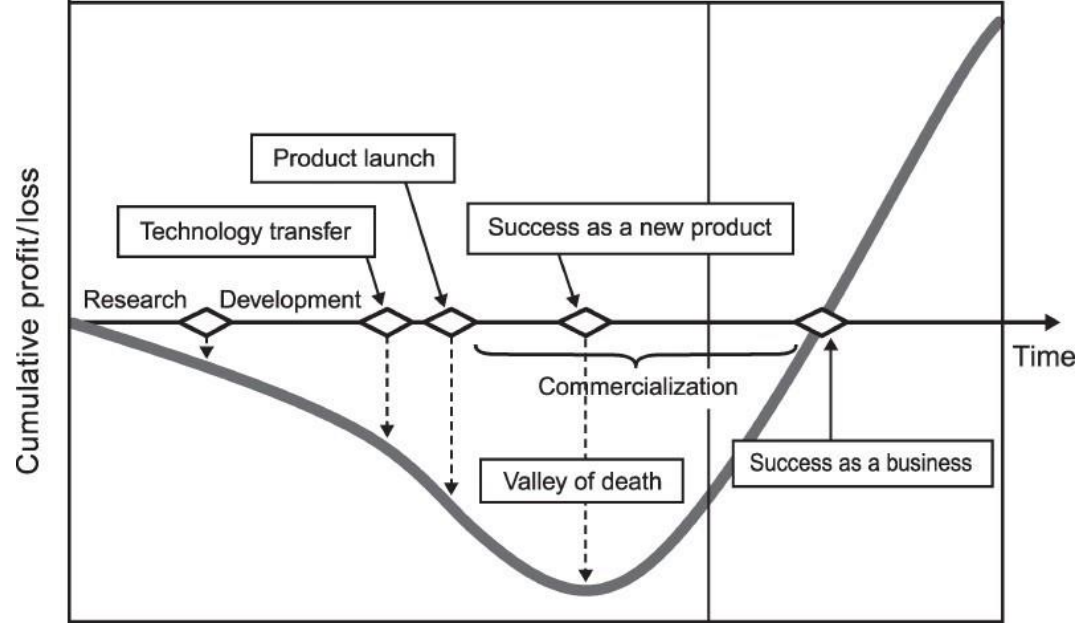
Both pictures taken in side-by-side fields 4/22/21.

UMN Forever Green (FG) Initiative

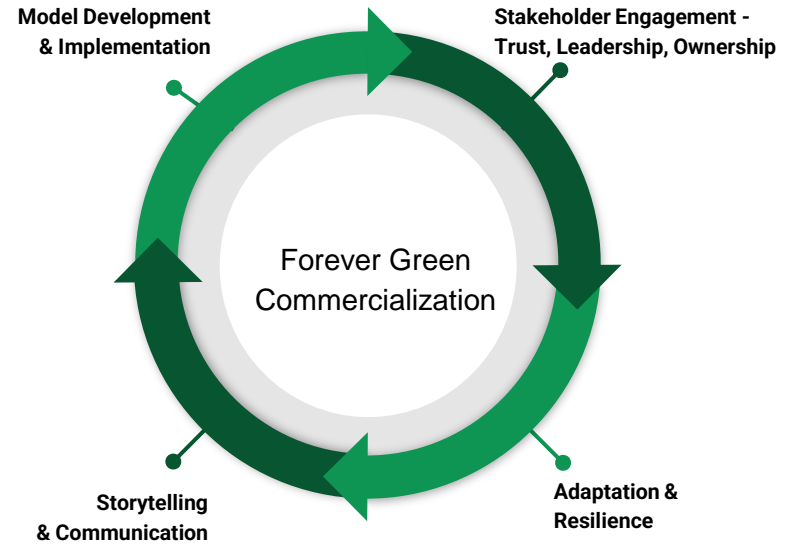
Develops profitable and sustainable continuous living cover (CLC) crops



Breeding * Agronomics * Food Science * Natural Resource Sciences * Economics



FG Commercialization Team:
 Supports launch and scaling
 of those crops on landscape
 and in market



CLC systems ready for value-chain investment



Kernza® Perennial Grain

- UMN released world's first Kernza® variety, MN-Clearwater
- 4,000 ac, half in Upper Midwest
- Producer coop formed (Perennial Promise)
- 3 seed companies, 4 processors
- 600,000 lbs harvested 2021
- Scaling: 50-100% every year, at least next 5 years



Regenerative poultry

- A regenerative silvopasture poultry system, raising poultry among perennials including:
 - Hazelnuts and elderberry
 - Perennial ground cover
- BIPOC led, growers and workers own and govern value-chain
- Enterprise system also includes: small grains, winter cover, grazing
- Scaling potential: 100-150k acres

Some CLC crops/systems developed by UMN, some by grassroots. Both are valued, warrant public investment.

CLC systems ready for value-chain investment



Winter camelina (WC)

- Relay-cropping can boost total oil yield per acre 50%
- High omega-3 and 6, vitamin E, low carbon products
- On +10k Upper Midwest cover crop ac.
- +100,000 ac being added out West, renewable diesel
- MN in touch with global camelina industry
- MBOLD, MN's largest food + ag companies, identified WC as a priority, in R&D, supporting pilot
- A dozen MN + IA growers piloting now



Elderberry

- Producer cooperative formed
- Region scaling production x5 in next 2 years
- High-value crop: 3k lbs/ac, \$2/lb
- USDA VAPG complete, SBCG and SCRI awarded
- Mid-scale elderberry processing hub is needed, feasible, profitable

Real crops, real products.



Making headway, long road ahead

Partnership...

Science research and commercialization efforts include farmers as partners, sharing insights into greater yields and increasing overall production knowledge. The University of Minnesota and The Land Institute coordinate with growers to support access to technical resources and markets, including launching the [Soybean Green Initiative](#) (Soybean Green Initiative) in 2019. The [Perennial Promise Growers Cooperative](#) was established, the first group for Kernza growers, helping coordinate market efforts and share production insights.

...from Farm to Plate & Pint

Innovative businesses have helped launch early Kernza products in Minnesota, consumers are already enjoying grains in local food. Paul (Paul) and his family have been growing from Blueberry Hill and others. Kernza grain, flour, and pasta are on the shelves of several retailers through Burlington-based [Greenleaf Foods](#), and can be found at a growing number of local grocery stores across Minnesota and the U.S. Food scientists at the University of Minnesota and elsewhere continue to experiment with Kernza, especially its bread making and cooking qualities, helping to make it an attractive ingredient for bakers and brewers.

Additional support for Kernza commercialization will come from the Kernza Stewardship Alliance. Founded on a collective shared interest of farmers, market partners, the broader marketplace, the policy arena, consumers, and researchers, the Kernza Stewardship Alliance is part of the USDA NIFA-funded [Soybean Green Initiative](#) Project.

Timeline critical for fall paper, Public and Program Supporting Perennial Farming Systems as Planned (Draft) Report

Green Leaf Blue Wheat is a vision for producing profitable agriculture in the Upper Midwest based on the strengthened and diversified grain portfolio that can be achieved by transitioning to perennial grain production. The vision is to produce a high yielding, high quality, and resilient perennial grain crop that can be grown in the Upper Midwest region. The vision is to produce a high yielding, high quality, and resilient perennial grain crop that can be grown in the Upper Midwest region.

perennialgrain.org

Forever Green Initiative

Winter Camelina
Co-designing commercialization pathways to scale up the cover crop Winter Camelina

MBOLD **Forever Green Initiative** **CFANS**

As part of an ongoing effort to commercialize winter camelina, we are seeking growers to plant several hundred acres of camelina production in fall 2022 as part of a regional open-air trial. Growers who are available to do this production for growers. This is part of a broader collaboration with researchers around the value chain to scale up camelina production, conduct product R&D to identify market opportunities, test supply chain efficiencies and to gain the base for planting next year.

PROGRAM DETAILS

TOTAL TARGETED ACREAGE: Priority 200 acres to start, leaving resources to expand further based on grower interest. Through 2024, 500 acres per year planting.

TRIAL LOCATIONS: A subset of 5-10 growers who are available. Targeted Economic and Environmental Clusters of Opportunity (EECOs) are most in line. Priority trials on Drilling (soybean) Management Areas (EMGAs) where possible, but other areas will be considered, including regions with priority to increasing production and profitability. Participating growers would ideally plant camelina after a short-season crop that leads to cash for spring wheat, peas, corn silage, hybrid corn, etc., and be planning on soybean in 2023. Camelinists would be planted this fall and winter and also engaged with on-farm in the Spring.

CHOICE OF FARMERS FOR PARTICIPATION (2022-2023): This payment amount is a combination of 1/3 of production costs for winter camelina through 2023 (\$100/acre) and 2/3 of a general estimate of yield (crop on the following soybean crop) of \$20/acre. This amount is negotiable and dependent on grower price plan. Accounting for crop break when you are ready to take management practices, the \$20/acre is not contingent on yield.

TECHNICAL SUPPORT: This 180-day on-farm advisory team will provide remote and in-field technical assistance.

The Washington Post
Renewing 200 in Dakota

Climate Solutions

A recipe for fighting climate change and feeding the world

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Perennial Promise Growers Cooperative

Clip: Season 5 Episode 12 | 5m 40s

[+ My list](#) [Watch Full Length](#)

The newly formed Perennial Promise Growers Cooperative has an eye towards marketing perennial crops — Kernza, a perennial grain, to start — that also provide ecosystem services.

Aired: 09/02/21 Rating: NR

New Minnesota co-op wants to profit from getting Kernza wheat in marketplace

Group of organic farmers join together to promote the perennial wheat that's proven itself in the field but not yet the marketplace.

By Patrick Condon Star Tribune | JULY 10, 2021 — 8:23AM

CLIMATE CHANGE AND CROPS
Climate Change and Crops

- 2020 Corn Yields: 178 Bushels per Acre
- Valued at \$9.87 Billion
- 2020 Soybean Yields: 5.6 Bushels per Acre
- Valued at \$5.48 Billion

Kernza's Perennial Promise

Minnesota Farmers See Potential in Kernza Wheat Grass as Crop, Environmental Benefit

7/22/2021 | 5:00 AM CDT
By Chris Clayton, DTN Ag Policy Editor
Connect with Chris
[@ChrisClaytonDTN](#)



BROWNS VALLEY, Minn. (DTN) — With 47 years of research and farm field days behind him at the University of Minnesota, Professor Don Wyse said a field day earlier this month with a group of farmers showing off the prospects of Kernza to food companies, seed dealers and state officials was a capstone event in his work.

"It was the most exciting field day I probably have experienced in my damn career," Wyse said.

Wyse leads the University of Minnesota's Forever Green program, focusing on various perennial crops and winter annuals, starting with basic genomics, breeding and agronomics, as well as ecosystem services, food science, commercialization and markets.

"I think for everyone, it was the first day that all of those pieces were laid out in one place, and people were pretty excited about seeing all of those pieces fit together," Wyse said.

More than 150 people came to the field day near Madison, Minnesota, to learn about Kernza, a perennial wheat grass first developed by the Land Institute in Salina, Kansas. Wes Jackson, who founded the Land Institute, began a breeding program to create a crop that would provide year-round cover and protection against soil erosion on the Kansas plains. But Wyse and other Minnesota researchers have adapted the crop to the Land of 10,000 Lakes and are developing Kernza as a potential strategy to address challenges such as water quality.

New Minnesota Crop: Perennial Flax, Kernza

Categories: News, WCCO-TV Top Story



New Lines of Winter Camelina Show Promise for Profitable Relay Cropping

By Dan Gammert posted on August 31, 2021 | Posted in Seeding & Planting, Cover Crops
University of Minnesota scientists are tweaking winter camelina lines to provide Northern Plains growers a profitable winter cover crop to supplement corn-soybean rotations.

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From 'Weed' to 'Worthwhile': Pennycress Makes Cover Cropping Viable

August 31, 2021
by Kevin Coss

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The University of Minnesota Forever Green Initiative is developing perennial flax and a wheatgrass called Kernza, explains Dr. Neil Anderson.