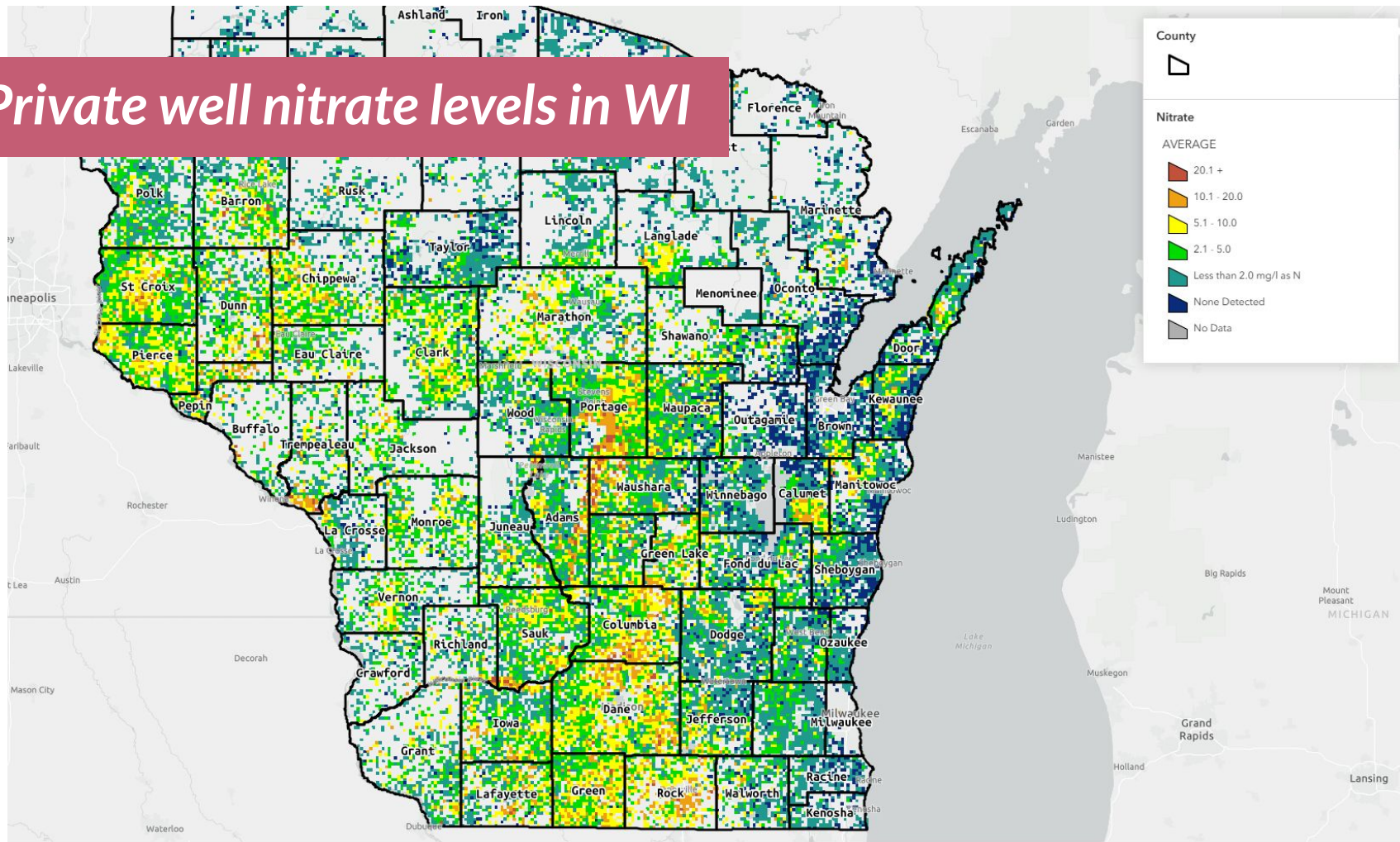


Winter barley trials

a new but familiar crop to regionalize grain chain



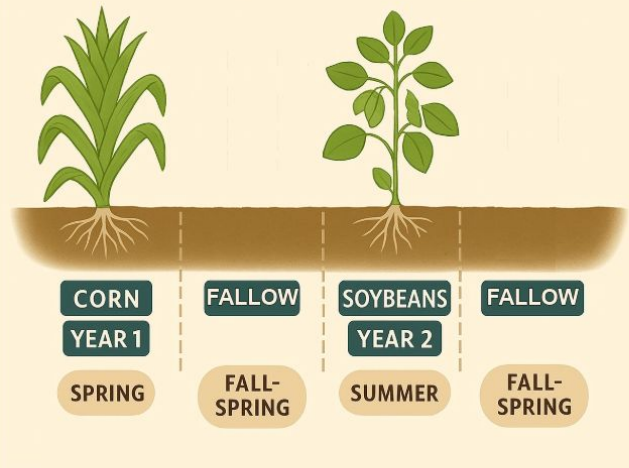
Private well nitrate levels in WI



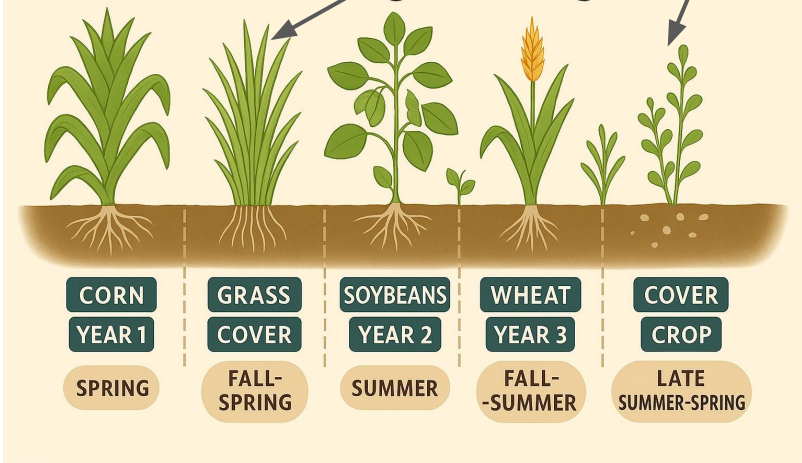
*Living roots in the ground reduce nitrate leaching,
how do we drive a win-win adoption that benefits
farmers?*

How do we make
money from these?

Common Crop Rotation Agriculture



Continuous Living Cover Agriculture



Local research to increase adoption of continuous living cover



Winter barley, a not-so-new winter annual crop for WI



Winter camelina, a new cover crop to drive adoption before corn



How much nitrogen can we grow with multispecies mixes?

Okay that is great and all, but why barley?



Objective

Does winter malting barley have potential as a new crop for WI?

NEEDS FOR FARMERS

- Low input
- Fit into existing crop rotations
- Not insurmountable market access
- Profitable price point

NEEDS FOR BREW/DISTILLING INDUSTRY

- QUALITY, QUALITY, QUALITY
- Consistent supply
- Affordable
- ???

Bonus! A flexible crop that can be used as forage or feed or for malt that has water quality benefits

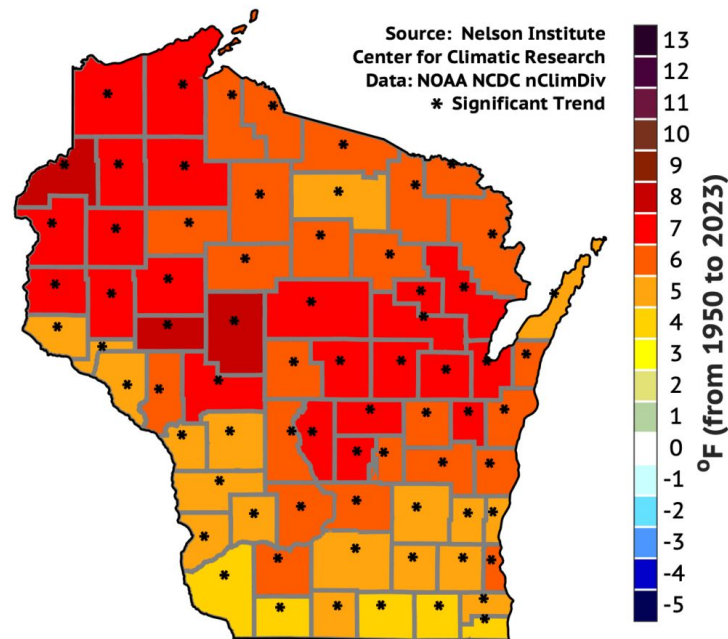
Winter survivability historically an issue

Absolutely! But...

- Warmer winters
- New breeding efforts for feed and malting
 - MN Equinox



Historical Change in DJF TMIN
from 1950 to 2023



Planting date trials

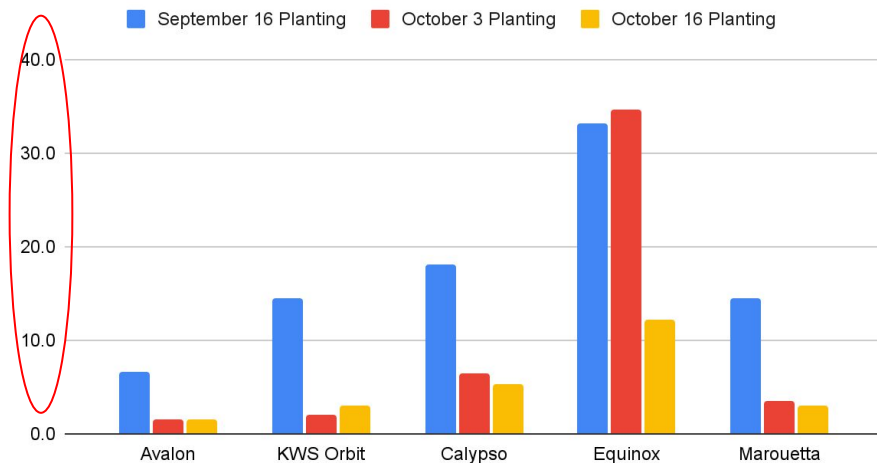
- Supported by American Malting Barley Assoc.
- Spooner Ag Station and Rock County Farm
- Five varieties
 - MN Equinox (feed, 6 row)
 - KWS Orbit (feed, 6 row) 2024,
 - Hirondella (malt/feed, 6 row) 2025
 - Avalon (malting, 2 row)
 - Marouetta (malting, 6 row)
 - LCS Calypso (malting, 2 row)
- Planted three dates
 - September 16 (post-corn silage)
 - October 3 (post-early soybean)
 - October 16 (post-full season soybean)
- Analyzing
 - Winter survival
 - Forage yield and quality (boot)
 - Grain yield, feed, and malt quality



30 ft	B 213	E 214	A 215	C 413	D 414	B 415
	10 ft alley			10 ft alley		
30 ft	C 210	D 211	C 212	D 410	A 411	E 412
	10 ft alley			10 ft alley		
	D 107	C 108	E 109	A 407	B 408	C 409
	10 ft alley			10 ft alley		
	A 104	A 105	B 106	B 404	E 405	D 406
	10 ft alley			10 ft alley		
	E 101	B 102	D 103	E 401	C 402	A 403
	T1	T3	T2	T3	T1	T2
	Replicate 2			Replicate 4		
30 ft	D 113	C 114	B 115	C 313	E 314	B 315
	10 ft alley			10 ft alley		
30 ft	E 110	B 111	A 112	E 310	D 311	A 312

First-year results

% Winter Survival by Variety



Planting Date	Yield (bu/ac)	Moisture (%)	Test weight (lb/bu)
September 16 Planting	123.9	13.9	45.2
October 3 Planting	129.4	14.3	42.9



May 2, Equinox, 9/16 Planting



June 4, Hybrid Rye (L), Equinox (R)



June 19, 9/16 vs. 10/3 Planting



July 8, harvest, a week late

First-year quality results

In a nutshell, met several quality parameters (plumpness, DP, color) but struggled a bit in:

1) protein and 2) beta glucan

- Not a malting variety
- Likely high background nitrogen could be bumping protein
- Cool weather during barley tillering increases beta glucan, cool spring in 2025 could have been a culprit here as well, but WI barley beta glucan typically higher

Variety	Planting timing	Nitrogen rate	Barley Protein(%)	S/T(%)	DP(°ASBC)	Alpha-amylase (20°DU)	Beta-glucan (ppm)	FAN(ppm)
MN Equinox	Sept. 16	0	12.6	50.1	133.8	71.3	354.3	214.3
MN Equinox	Sept. 16	60	13.0	50.3	133.8	69.1	372.8	198.8
MN Equinox	Oct. 3	0	13.5	51.1	148.3	71.0	361.8	212.5
MN Equinox	Oct. 3	60	14.7	50.3	163.5	76.6	378.0	221.5
CONRAD MALT CHECK			11.9	52.8	112	100.9	212	226
Adjunct Brewing 2 Row			<13.0%	40-47%	>140	>50	<100	>210
All Malt Brewing & Distilling 2 Row			<12.0%	38-45%	110-150	40-70	<100	140-190
Grain Distillers 2 Row			11.5-14.0%	>48%	>75	>75		>250

Bridging the gap



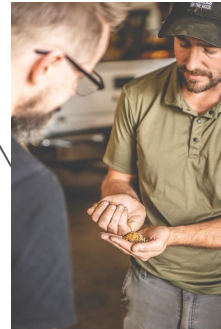
Regional grain
network



Brewers



Farmers



Maltsters



Future research

Agronomics

- Glycosidic nitrile (GN) 0 or null barley?
 - 'Top Shelf' in 2026?

Evaluation

- Work with Meristem Malt to harvest five varieties of barley from first two plantings
- Evaluate which varieties are best from a brewing perspective



Great winter survival from all 5 varieties in 2026

Value chain and obstacles

- Bottleneck is middle to small-scale malting
 - Briess, largest maltster in WI, 71,500 ton capacity
 - Meristem, fifth ton capacity
- Obstacles
 - Quality, especially DON and to a lesser extent protein and beta glucans*
 - Necessitates a frame shift
 - Brewers not accepting/understanding product variability at local/small scale
 - Winterkill still an issue, creates supply chain uncertainty



Hybrid rye vs. winter barley winter survival 5.2.25

Opportunities

- Equipment, infrastructure, know-how (generally) are all there from production standpoint
- Consistently off quality parameters in WI barley can be rectified in malting and brewing
- How can we make a WI style beer to showcase the attributes of the barley grown here rather than forcing WI barley into an German or Czech-shaped hole?
- Breweries boasting of WI connections





Extension

UNIVERSITY OF WISCONSIN
DANE COUNTY

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