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USDA Dairy Forage Research Center

Michael Fields Agricultural Institute

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2022 SOIL HEALTH COLLABORATIVE REPORT

Building Knowledge About Wisconsin's Cover Crops

A FARMER CITIZEN SCIENCE PROJECT

This citizen science effort began in 2020 to address the need for locally relevant information on cover crop selection and establishment in Wisconsin. In 2020, 2021, and 2022, farmers shared cover crop data from 99 farm fields across Wisconsin. Project information is being aggregated to gain a long-term, regional understanding of the successes and challenges of adopting cover crops into diverse cropping systems, to improve decision support tools like SnapPlus, and guide practical cover crop recommendations for Wisconsin's diverse climatic, soil, and cropping systems.

Project Highlights 2022

- Fifty-eight farmer participants across 28 Wisconsin counties; more than 40% reported at least 7 years of experience planting cover crops
- Participants reported planting 22 different cover crop species, with cereal rye the most common, followed by radish, crimson clover, oats, and red clover
- Fifty-five percent of farmers planted multispecies mixes (3 species or more)
- Eighty-six perce t of farmers drilled their cover crop; wheat was the most common previous cash crop followed by corn silage
- Despite drier than normal growing conditions in 2022, cover crop biomass production following winter wheat was comparable to previous years
- Sixty-four percent of participants were interested in expanding their farm's cover cropped acres; the most cited barrier to adoption was lack of remaining growing season after crop harvest
- Personal experience, agronomists, and producer-led networks were identified as the most important sources of cover cropping information

Who participated?

For our third season in fall 2022, we had 58 farmers in 28 counties helping fill in informational gaps about cover cropping practices (Figure 1). Due to more focused, on-the-ground recruiting in the east central part of the state, 46% of our participants were located in the east central climate division, representing 8 of our 28 counties.

An invitation to participate was sent out via email to extension agricultural educators, producer-led groups, land and water conservation county offices, and others. Participating producers completed an online form with questions regarding their cover cropping experience and practices, including crops planted, dates, seeding rates, fertility management and tillage. The form also includes questions about key sources of information and motivations to cover crop.

An in-person visit in the fall to collect a biomass sample from each participant provided project staff an opportunity to visually assess the state of cover crops on different farms around the state, and in several cases to talk with participants. For each participating farmer, we randomly sampled aboveground fall cover crop biomass from three 0.5-m2 quadrats in a selected field. Within each quadrat, we used a gas-powered hedge trimmer to cut plants at the soil surface. Any weeds present were not separated from the samples. Samples were then dried at 49°C (120°F) for 2 weeks and weighed. New for 2022, we also collected a 2 foot square sample for nutrient and forage analysis. We provided participants with $100 honorarium for the survey, as well as biomass and forage quality analysis results.

2022 RESULTS

Soil Fertility, Cover Crop Agronomics, and Costs

Dominant soil textures, for participant farms in our survey included silt loam (29), clay loam (7), sandy clay loam (4), sandy loam (4), not sure (3), loam (2), sand (2), loamy sand (1) and clay (1). Conservation tillage/no-till was used by 73% of participants to establish the proceeding cash crop, 17% used reduced tillage, and 10% used mulch-till/vertical till, (**Table 1**). Most farmers used a drill to establish their cover crop (86%). Two farms broadcasted and then incorporated cover crop seed; two farms broadcasted and then rolled the field, and one farm broadcasted with no incorporation of the cover crop. Interseeding was used on two farms—one used early broadcast interseeding and the second, a late aerial seeding application. We know many many Wisconsin producers successfully interseed cover crops, especially in corn silage systems. Therefore, the lack of representation in our results may be due to limited geographical representation.

For fertility, 62% of participants applied manure either prior (21 sites) to or following (15 sites) cover crop seeding (**Table 2**). Manure application rates ranged from 4,000-20,000 gallons of liquid manure and 1-15 tons per acre of box manure. Nearly all manure application fields were planted to a diverse cover crop mixture.

As we saw in previous years, wheat was the most common crop planted prior to cover crops, established on 21 (36%) of 58 fields (**Table 1**, **Figure 2**). Other previous crops included corn silage (15 fields), corn for grain (8 fields), soybeans (5 fields), as well as vegetables (3 fields), winter rye (2 fields), other forage (2 fields), barley (1 field), and alfalfa (1 field). Geographically there was little correlation between the previous crop and cover crop rotation. Corn silage was the most common crop following cover crops in southwestern Wisconsin, while in Eastern Wisconsin corn silage and wheat were equally likely crops planted before cover crops (**Figure 1**).

Like previous years, winter cereal rye was the dominant cover crop species planted, established on 22% of fields. Multispecies mixes were planted on 55% of fields; while other popular cover crops were radish, crimson clover, oats, and red clover (**Table 2**). Fifty-one percent of these cover crops were established in dry soil conditions. Winter cereal rye is a popular cover crop choice due to multiple factors: the ability for the cover crop to over winter in Wisconsin's variable and challenging winter environment; availability of seed; existing knowledge about small grain production that easily translates to growing winter rye as a cover crop; cost of seed; and ease of spring termination.

Cover crop planting costs per acre (using the Wisconsin Custom Rate Guide) were estimated by our respondents to be between $10 and $75 for cover crop seed and $8 and $60 for cover crop seeding. Seeding rates were highly variable. Planting and seed costs vary greatly depending on cover crop species selected (multispecies mixes can be much more expensive), equipment availability, and equipment combination used for establishment (tillage + drill vs. no-till drill, etc.).

Nutrient and Forage Analysis Data

New for 2022, samples were submitted for nutrient and forage analysis. The overall goal of this data was to start building a Wisconsin-based dataset for future analysis. The forage quality from 2022 samples varied widely, dependent on environmental conditions, plant available nutrients in the soil, cover crop species, seeding rate, and planting date. Many of the sites provided relatively good forage quality (RFQ values of 160+) although limited biomass was produced (less than 1 ton of dry biomass per acre before a killing frost).

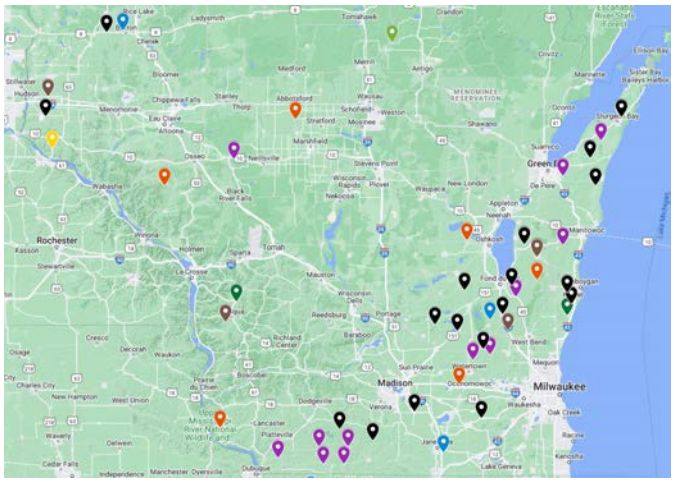
Table 1.

County	Previous crop	Cover crop (multi-species mix= 3 or more species)	Seeding method	Planting date	CC biomass ton DM/ac	Date collected	Precipitation (in)	GDU	CC Termination
Barron	wheat	cereal (winter) rye, hairy vetch	drilled	8/31	0.55	11/9/22	5.02	993	plant green, herbicide
	vegetable crop	multispecies mix	drilled	9/5	--	biomass not collected	--	--	plant green, herbicide
Brown	corn silage	multispecies mix	drilled	9/29	--	biomass not collected	--	--	harvest for forage, plant green, herbicide
Calumet	corn for grain	cereal (winter) rye	drilled	10/11	2.05	11/8/22	3.2	280	plant green, herbicide
	corn silage	cereal (winter) rye	drilled	9/30	1.54	11/8/22	3.25	411	harvest for forage
	corn for grain	Dutch white clover	drilled	4/15	1.36	11/8/22	25.17	4411	frost/winterkill - little to no spring CC growth
	wheat	field/forage pea, oats	drilled	10/1	--	biomass not collected	--	--	harvest for forage
	wheat	multispecies mix	drilled	8/15	1.31	11/8/22	9	1567	plant green, herbicide
	wheat	oats and 3 lb of radish	drilled	8/8	0.97	11/8/22	11.16	1748	frost/winterkill - little to no spring CC growth
Clark	corn silage	annual ryegrass	broadcast, roll the field	10/30	0.29	11/15/22	1.72	118	plant green, herbicide
Dane	wheat	annual ryegrass, red clover	drilled	8/25	--	biomass not collected	--	--	early spring, herbicide appl (14+ days prior to crop est.)
Dodge	corn silage	cereal (winter) rye	drilled	10/3	1.09	11/11/22	3.9	410	graze spring, plant green, herbicide
	vegetable crop	cereal (winter) rye	drilled	7/30	0.42	11/11/22	13.97	2034	plant green, herbicide
	wheat	multispecies mix	drilled	8/5	0.22	11/17/22	13.39	1851	early spring, herbicide appl (14+ days prior to crop est.)
	corn silage	multispecies mix	drilled	10/21	0.2	11/11/22	2.88	265	plant green, herbicide
	wheat	multispecies mix	drilled	8/15	0.59	11/11/22	11.97	1560	harvest for forage
	wheat	multispecies mix	drilled	8/3	0.52	11/11/22	13.94	1917	early spring, herbicide appl (14+ days prior to crop est.)
	wheat	multispecies mix	drilled	7/31	0.28	11/11/22	11.92	2032	plant green, herbicide
Door	corn silage	cereal (winter) rye, triticale	drilled	10/20	--	biomass not collected	--	--	harvest for forage
	wheat	multispecies mix	drilled	8/30	--	biomass not collected	--	--	plant green, herbicide
Fond du Lac	corn silage	cereal (winter) rye	drilled	9/20	0.39	11/11/22	3.58	637	plant green, herbicide
	soybeans	cereal (winter) rye	drilled	10/22	0.31	11/8/22	2.36	239	early spring, herbicide appl (14+ days prior to crop est.)
	corn silage	multispecies mix	drilled	10/12	0.36	11/11/22	3.14	334	plant green, herbicide
	wheat	multispecies mix	drilled	8/4	0.49	11/8/22	9.55	1955	plant green, herbicide
	wheat	multispecies mix	drilled	8/15	0.6	11/11/22	8.55	1658	plant green, herbicide

County	Previous crop	Cover crop (multi-species mix= 3 or more species)	Seeding method	Planting date	CC biomass ton DM/ac	Date collected	Precipitation (in)	GDU	CC Termination
Grant	corn for grain	annual ryegrass	drilled	9/1	--	biomass not collected	--	--	harvest for forage
Green	corn silage	multispecies mix	drilled	7/15	2.5	11/29/22	16.51	2638	frost/winterkill - little to no spring CC growth
	wheat	multispecies mix	drilled	8/5	1.81	11/29/22	13.67	1985	plant green, herbicide
Jefferson	corn for grain	cereal (winter) rye	drilled	10/15	0.28	11/11/22	3.02	302	plant green, herbicide
	wheat	multispecies mix	drilled	7/25	0.52	11/11/22	15.51	2292	plant green, herbicide
Kewaunee	corn silage	cereal (winter) rye	drilled	1-Oct	--	biomass not collected	--	--	early spring, herbicide appl (14+ days prior to crop est.)
	alfalfa	multispecies mix	drilled	8/30	--	biomass not collected	--	--	plant green, herbicide
	soybeans	multispecies mix	drilled	8/14	--	biomass not collected	--	--	plant green, herbicide
	wheat	multispecies mix	drilled	5-Sep	--	biomass not collected	--	--	early spring, herbicide appl (14+ days prior to crop est.)
	wheat	multispecies mix	drilled	8/22	--	biomass not collected	--	--	plant green, herbicide
	winter Rye	multispecies mix	drilled	8/20	--	biomass not collected	--	--	frost/winterkill - little to no spring CC growth
Lafayette	corn silage	cereal (winter) rye	broadcast, no incorporation	9/20	--	biomass not collected	--	--	plant green, herbicide
	corn silage	cereal (winter) rye	drilled	9/15	--	biomass not collected	--	--	plant green, herbicide
	corn silage	multispecies mix	drilled	7/20	--	biomass not collected	--	--	plant green, herbicide
	wheat	multispecies mix	drilled	8/22	0.94	11/29/22	8.29	1472	early spring, herbicide appl (14+ days prior to crop est.)
	corn silage	winter (cereal) rye	broadcast + incorporation	10/10	--	biomass not collected	--	--	early spring, herbicide appl (14+ days prior to crop est.)
Lincoln	barley	multispecies mix	drilled	8/18	0.42	11/7/22	5.91	1200	frost/winterkill - little to no spring CC growth
Manitowoc	corn silage	barley, wheat (winter)	broadcast + incorporation	9/15	0.6	11/9/22	3.52	646	plant green, herbicide
Marathon	corn for grain	red clover	drilled	5/24	0.32	11/8/22	20.71	3616	harvest for forage
Pierce	wheat	multispecies mix	drilled	8/20	1.45	11/9/22	5.82	1340	early spring, herbicide appl (14+ days prior to crop est.)
	rye	multispecies mix	drilled	8/1	1.9	11/9/22	9.73	1876	graze fall, frost/winterkill - little to no spring CC growth, plant green, herbicide

County	Previous crop	Cover crop (multi-species mix= 3 or more species)	Seeding method	Planting date	CC biomass ton DM/ac	Date collected	Precipitation (in)	GDU	CC Termination
Rock	vegetable crop	oats	broadcast then rolled	9/10	0.41	11/11/22	9.91	931	frost/winterkill - little to no spring CC growth
Sheboygan	corn for grain	annual ryegrass	drilled	10/25	0.54	11/8/22	2.09	147	plant green, herbicide
	sorghum-sudan-grass or forage sorghum	multispecies mix	drilled	9/27	0.43	11/9/22	2.75	401	harvest for forage
	wheat	multispecies mix	drilled	8/2	1.37	11/9/22	8.46	1888	plant green, herbicide
	wheat	multispecies mix	drilled	8/20	0.4	11/9/22	7.21	1379	frost/winterkill - little to no spring CC growth, early spring, herbicide appl (14+ days prior to crop est.)
	wheat	multispecies mix	drilled	8/5	0.85	11/9/22	8.36	1795	plant green, herbicide
St Croix	soybeans	cereal (winter) rye	drilled	10/15	--	biomass not collected	--	--	plant green, herbicide
Trempealeau	corn for grain	multispecies mix	early interseeded -- broadcast	6/3	0.25	11/8/22	17.91	3537	graze fall, frost/winter-kill - little to no spring CC growth, plant green, herbicide
Vernon	soybeans	cereal (winter) rye	late interseeded -- aerial	9/23	--	biomass not collected	--	--	plant green, herbicide
	other forage	multispecies mix	drilled	10/6	--	biomass not collected	--	--	graze spring
Washington	soybeans	multispecies mix	drilled	10/22	--	biomass not collected	--	--	frost/winterkill - little to no spring CC growth, harvest for forage, plant green, herbicide
Winnebago	corn for grain	wheat (winter)	drilled	10/20	--	biomass not collected	--	--	early spring, herbicide appl (14+ days prior to crop est.)

Figure 1. In 2022, 58 farmers in 28 counties participated in the study. Locations are color coded according to previously planted cash crop: light green=barley; orange=corn for grain; dark green=forage; purple=corn silage; yellow=rye; turquoise=vegetable crop; black=wheat.



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Barriers, Motivations, and Sources of Cover Crop Information

Participants had a range of levels of experience working with cover crops, with the largest group (39%) having 4-6 years experience and 32% having at least 7 years experience. The majority of our participants (66% of 57 respondents) would like to expand the number of acres they plant to cover crops, with another 25% (14) reporting they were already planting all their acres to cover crops. We asked about "main barriers" to expansion and received 40 comments with the main barrier being the growing season in Wisconsin is too short to accommodate fall cover crops after a late harvest (**Figure 3**). The majority of our participants (70%) indicated adequate information regarding the selecting, planting, and managing of cover crops, although those with more than 7 years of cover crop experience were more evenly divided on whether or not they lacked information, with several of them sharing comments such as, "always learning."

We also inquired about sources of cover cropping information. Personal experience, agronomists, and producer-led networks gained the most votes for "most" and "more" important (**Figure 4**). Online sources such as YouTube were listed in the comments section by several respondents. Asked about where they go for nutrient management recommendations, respondents again emphasized agronomists/CCAs, and personal experience as "most important." UW Extension was mentioned by over 20 respondents as "important." People also commented on the importance of SnapPlus, regional agricultural groups, and soil tests.

The top six primary motivations for cover cropping, with 58 respondents, were: reduce runoff and erosion, improve soil structure, increase organic matter, improve water quality, increase resilience to weather extremes, and grow nitrogen credits. In the comments section respondents also mentioned biodiversity and wildlife habitat and grazing.

Asked to choose from a list of influences on decisions to plant a cover crop, respondent's top two "very influential" choices were "cost reduction for the next cash crop (due to N credits, weed suppression, etc)," and "more agronomist support with cover cropping." "Availability of cost sharing," and "additional extension or agency personnel in your county with cover crop expertise," were top selections for "influential".

Other influential factors regarding the decision to plant a cover crop were "crop insurance breaks for cover cropping (40% of respondents), "fewer acres to manage" (57%); and "negotiating with absentee landowners (75%), with 12% responding that not having to negotiate with an absentee landowner would be "very influential" in planting cover crops.

We tested a new question this year: "What would it take for you to quit planting covers crops?" Thirty-four percent of respondents commented that they would not quit growing cover crops, or only on retirement; 25% identified cost, for example of seeds or fuel and with 15% specified cost and "inaccessibility" of seed as reasons they might potentially quit planting cover crops.

On Farm Experimentation with Cover Crops

As in the past, respondents shared some of their experiments in our comments sections, including:

- *We interseeded pole beans into silage corn in alternating passes...also interseeded a multispecies mix into alternate rows.*
- *Tried interseeding alfalfa into V3 corn, unmodified no till drill, no damage to corn stand. Survival of alfalfa spotty, seems related to corn stand, that is probably light penetration through the corn canopy.*

Table 2.

County	Manure applied post or prior to seeding cover crops	Application rate	Cover crop seeding method	lbs/acre, cover crop species	Cover crop planting date	Estimated cover crop seed cost per acre ($)
Barron	pre planting	3 tons/acre	drilled	94 multispecies mix	9/5	30
	no	--	drilled	42 cereal (winter) rye; 25 hairy vetch	8/31	75
	no	--	drilled	80-120 multispecies mix	9/29	35
Calumet	pre planting & post planting	4,000 gallons/acre	drilled	60 oats, 30 peas	10/1	32
	no	--	drilled	50 cereal (winter) rye	10/11	14
	no	--	drilled	60 cereal (winter) rye	9/30	30
	no	--	drilled	5 Dutch white clover	4/15	15
	pre planting	15,000 gallons/acre	drilled	47 oats - 3 Raddish	8/8	20
	post planting	12,000 gallons/acre	drilled	70 multispecies mix	8/15	50
Clark, Jackson	pre planting	22,000 gallons/acre	broadcast, roll the field	800 annual rye grass	10/30	10
Dane	pre planting	15 tons/acre	drilled	50 annual rye grass 60 red clover	8/25	19
Dodge	pre planting & post planting	7,000 gallons/acre	drilled	100 multispecies mix	10/21	52
	post planting	6 tons/acre	drilled	multispecies mix	8/15	50
	post planting	93 tons/acre	drilled	90 cereal (winter) rye	10/3	32
	no	--	drilled	8 annual rye grass, 2 radish	8/3	0
	no	--	drilled	60 cereal (winter) rye, 60 oats	7/30	10
	no	--	drilled	40 multispecies mix	8/5	75
Dodge & Columbia	no	--	drilled	11 multispecies mix	7/31	21.5
Door	pre planting	20,000 gallons/acre	drilled	41 multispecies mix	8/30	15
	post planting	9,000 gallons/acre	drilled	110 cereal (winter) rye	10/20	30
Fond du Lac	pre planting	12,000 gallons/acre	drilled	30 multipsecies mix	10/12	32
	post planting	10,000 gallons/acre	drilled	45 cereal (winter) rye	9/20	17
	post planting	8 tons/acre	drilled	34 multispecies mix	8/4	50
	no	--	drilled	40 cereal (winter) rye	10/22	11
	no	--	drilled	32.7 multispecies mix	8/15	30
Grant	pre planting	6 tons/acre	drilled	83 annual rye grass	9/1	20
Green	post planting	2 tons/acre	drilled	40 multispecies mix	7/15	85
	no	--	drilled	30 multispecies mix	8/5	35
Jefferson	no	--	drilled	60 cereal (winter) rye	10/15	12
	post planting	1 tons/acre	drilled	25 multispecies mix	7/25	30
Kewaunee	pre planting & post planting	6,500 gallons/acre	drilled	40 multispecies mix	8/30	30
	pre planting	6,000 gallons/acre	drilled	? multispecies mix	9/5	30
	no	--	drilled	37 multispecies mix	8/20	39.75
Kewaunee, Door	pre planting	8,000 gallons/acre	drilled	50 cereal (winter) rye	10/1	20
	no	--	drilled	37 multispecies mix	8/14	32

County	Manure applied post or prior to seeding cover crops	Application rate	Cover crop seeding method	lbs/acre, cover crop species	Cover crop planting date	Estimated cover crop seed cost per acre ($)
Kewaunee, Door, Manitowoc, Brown	pre planting & post planting	10 tons/acre	drilled	25 multispecies mix	8/22	32
Lafayette	pre planting & post planting -- surface applied composted manure following straw harvest ahead of no-till cover crop planting	15 tons/acre	drilled	37 multispecies mix	7/20	45
	pre planting	15,000 gallons/acre	broadcast + incorporation	75 cereal (winter) rye	10/10	25
	pre planting	2 tons/acre	drilled	35 multispecies mix	8/22	45
	post planting	7,000 gallons/acre	broadcast, no incorporation	75 cereal (winter) rye	9/20	25
	post planting	8,000 gallons/acre	drilled	60 cereal (winter) rye	9/15	20
Lincoln, Langlade	post planting	3,000 gallons/acre	drilled	20 multispecies mix	8/18	30
Manitowoc	pre planting	13,000 gallons/acre	broadcast + incorporation	45 barley, 45 wheat (winter)	9/15	12
Marathon	no	--	drilled	7 red clover	5/24	35
Pierce	post planting	4 tons/acre	drilled	30 multispecies mix	8/1	40
	no	--	drilled	49 multispecies mix	8/20	20
Rock	pre planting	9,000 gallons/acre	broadcast then rolled	40 oats	9/10	12
Sheboygan	post planting	8,000 gallons/acre	drilled	125 multispecies mix	9/27	40
	post planting	11,000 gallons/acre	drilled	20 multispecies mix	8/5	20
	no	--	drilled	40 annual ryegrass	10/25	18
	no	--	drilled	18.2 multispecies mix	8/2	45
	no	--	drilled	55 multispecies mix	8/20	18
St. Croix	no	--	drilled	75 cereal (winter) rye	10/15	15
Trempealeau Buffalo	pre planting & post planting	7 tons/acre	early interseeded -- broadcast	26 multispecies mix	6/3	40
Vernon	pre planting & post planting	10 tons/acre	drilled	75 cereal (winter) rye	10/6	27
	no	--	late interseeded -- aerial	30 cereal (winter) rye	9/23	10
Washington, Dodge	pre planting	6 tons/acre	drilled	30 multispecies mix	10/22	12
Winnebago	post planting	5 tons/acre	drilled	35 wheat (winter)	10/20	25

Figure 2. Crop planted previous to cover crop planting in 2022 (58 responses).

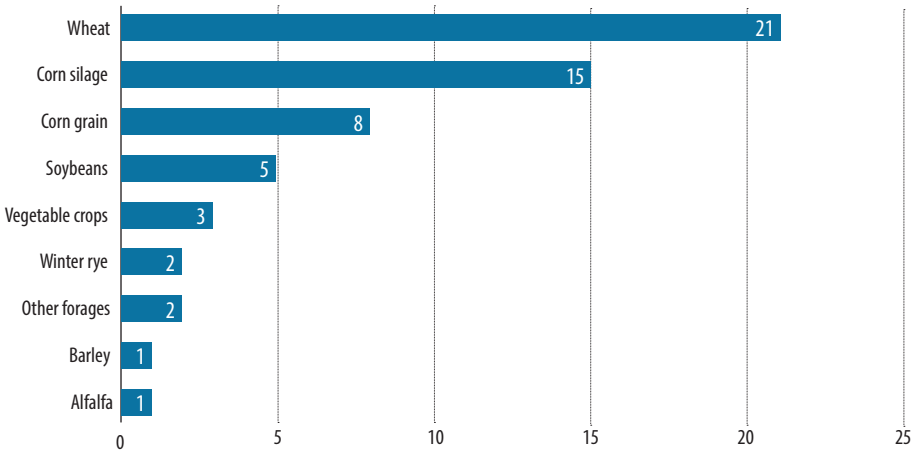


Figure 3. Barriers to expanding cover cropped acres (36 comments).

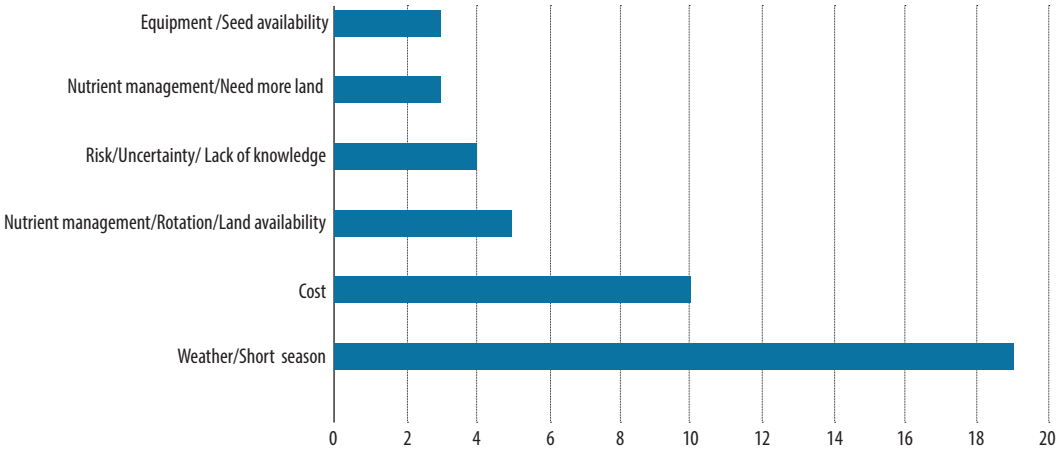
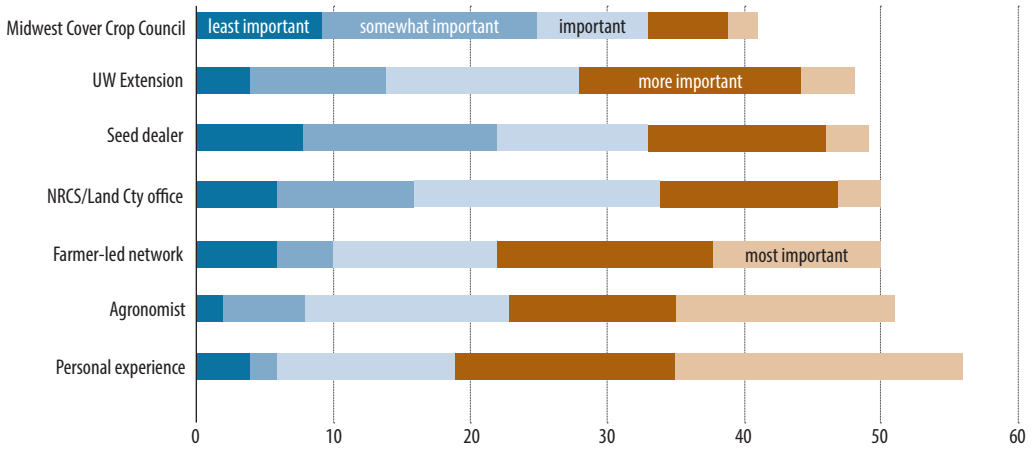


Figure 4. Ranked importance of seven trusted information of cover cropping information, 2022.



- *Cold spring in 2022, rye took a very long time to begin growing. It wasn't until the first week of May that it even looked like any survived the winter. I let it grow an extra week while I planted other fields. The neighbor harvested the oats/rye forage in late fall. I plan on not doing that again.*
- *[The cover crops in] this field struggled to establish last fall due to cold temperatures.*
- *Will be investing in a no-till drill.*
- *This was the first field [we cover cropped.] We no-tilled new seeding into a cereal rye cover and it worked great.*
- *It was hard to get the seed to flow at the rate I wanted.*
- *Drill was not set correctly and part of a different field was seeded at a double rate. So I have three different rate trials, 0 lbs/ac, 67 lbs/ac, and 134 lbs/ac.*

DISCUSSION

The 2022 crop planting was slightly delayed with less-than-ideal temperatures in early May slowing progress. We had 36 of our 58 respondents (62%) successfully share a biomass sample (**Table 1**). At least 3 participants reported their cover crop did not emerge or grow enough to be harvested, but we are unsure why the remaining 19 farms did not provide a biomass sample. Below normal precipitation and temperatures throughout the growing season contributed to slower cover crop development. However, overall cover crop yields for those who did participate were average to above average compared to historical project data. Average biomass production in 2022 was 0.79 tons or 0.09 tons greater than 2021. In 2022, the biomass ranged from 0.2 tons for a multispecies cover crop mix following silage corn (Dodge County, planted 10/21/23) to 2.5 tons for a multispecies cover crop mix following wheat (Lafayette County planted 7/15/22). Due to delayed cash crop progress and dry fall conditions, crop harvest and cover crop planting were delayed. In some cases, cover crops emerged much later than anticipated, and only after timely rains in late September. The survey team received numerous comments regarding the challenges of establishing a cover crop following corn grain and soybean crops in 2022, with several dropping out of the biomass collection portion because the cover crop had not emerged yet in mid-November.

Like previous years, wheat was the most common cash crop prior to cover crop planting and winter cereal rye was the most popular cover crop. Multispecies mixes, or planting at least three cover crop species often containing a grass, brassica, and legume species has become a more common practice by farms participating in our project. These species were predominantly planted with a drill (86%), compared to 60% drill seeded in 2021.

The forage analysis of collected cover crop biomass provided our first insight into possible cover crop forage quality for fall grazing and forage harvest. The first year of data shows a fair number of fields produced good quality forage that could be grazed or harvested. The amount of biomass produced was limited in many cases, however, limiting harvest potential.

The cover crop nutrient content is highly variable, dependent upon many factors including environmental conditions, plant available nutrients in the soil, cover crop species, seeding rate, and planting date. There is limited scientific research on using cover crop biomass nutrient values to adjust fertilizer applications. This work is the starting point for assessing the impact of cover crops on nutrient cycling and retention. Until significantly more research is done, soil sampling remains the standard for nutrient recommendations in Wisconsin.

ADDITIONAL RESOURCES

Farmers can find useful information on soil health and cover crops among the UW Nutrient and Pest Management Program's many publications, including:

- **Nutrient Management Fast Facts**
- **Herbicide Rotation Restrictions for Cover and Forage Cropping Systems**
- **Cover Crop Selection Card for Northern Wisconsin**
- **Cover Crop Selection Card for Southern Wisconsin**

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We are preparing to launch our fourth year of this citizen science effort. Online registration is open at the link below (or scan the QR code):
https://cias.wisc.edu/our-work/farming-systems/cover-crops/ccrop/

Or if you have general feedback on cover cropping in Wisconsin, please reach out to Daniel H. Smith at dhsmith@wisc.edu, or call 608-219-5170.

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