2019

COVER CROP PLANTING REPORT

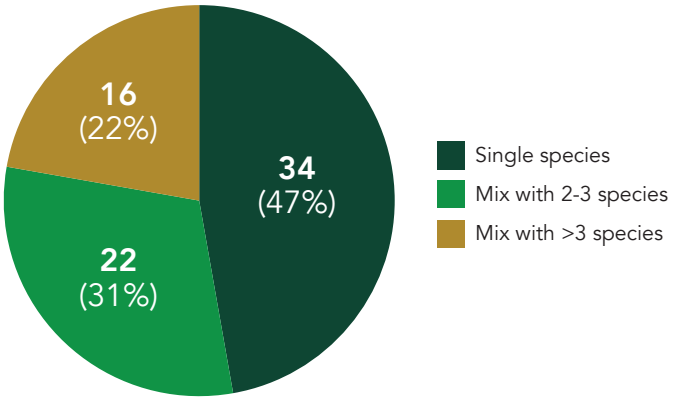
SOIL HEALTH PARTNERSHIP

The Soil Health Partnership conducted a cover crop survey with SHP farmer partners about their cover crop use on trial sites in the fall of 2019. The objective is to do this annually and use the data to further analyze how cover crops impact soil health, agronomic outcomes, and farmer profitability.

SPECIES

What are SHP farmers planting?

53% of farmers reported planting a cover crop mix of 2 or more species



Most common species in mixes

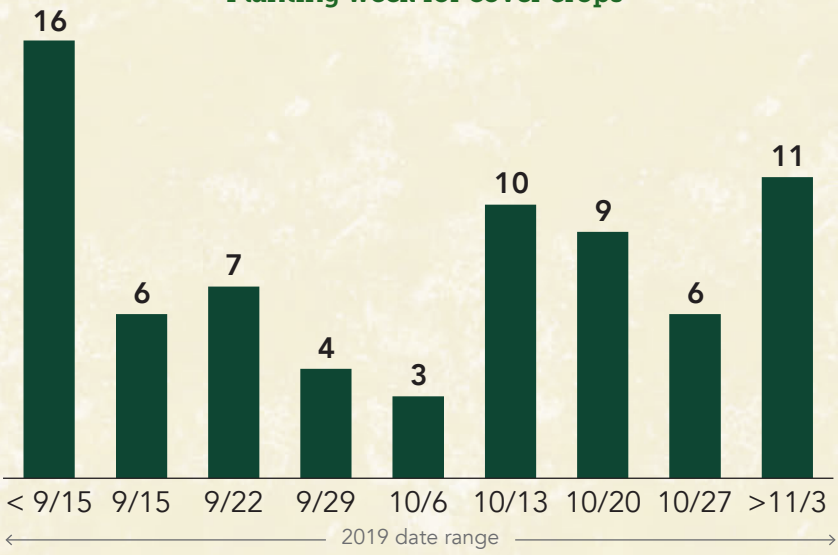
Species	% of mixes containing
Cereal rye	**50%**
Oats	**42%**
Rapeseed	**45%**
Radish	**37%**
Clover	**29%**
Peas	**21%**
Barley	**13%**
Annual ryegrass	**11%**

TIMING

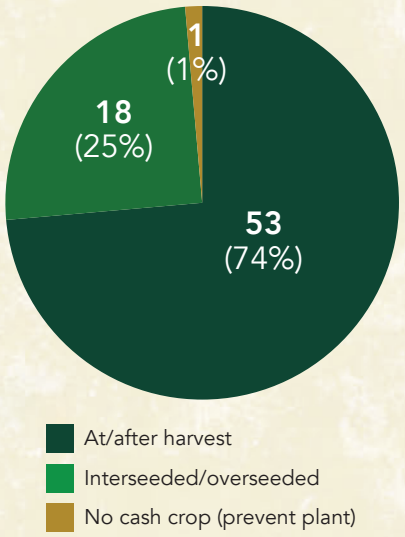
When did SHP farmers plant their cover crops?

More than half of farmers planted between September 15 and November 3, but almost 40% of farmers planted before or after these dates. Planting time depends on region, cash crop rotation, and species. Due to labor constraints or higher latitudes, 25% of farmers interseeded or overseeded cover crops into a standing cash crop. Of those planting a cover crop, 31% report contracting someone outside of their operation to plant it.

Planting week for cover crops



Cover crop planting in relation to cash crop harvest



COST

How much did SHP farmers spend to plant cover crops?

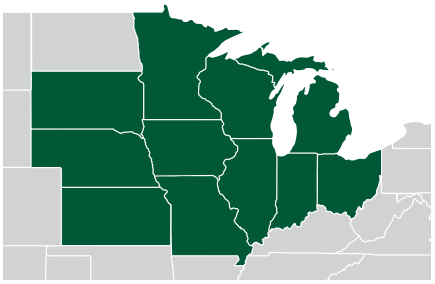
The median cost of cover crop seed was $15 per acre and for applying that cover crop seed was $12/acre. However, this varied according to the mix and seeding method.

Cover crop seed cost by mix diversity ($/acre)		Cover crop seeding cost by seeding method ($/acre)	
Single species	**$14.00**	Drilled (47% of farmers)	**$14.50**
Two- or three-way mix	**$16.66**	Broadcast (32% of farmers)	**$10.00**
Mix with > three species	**$22.50**	Aerial seeded (14% of farmers)	**$13.88**

Sample Size

Number of respondents:
82

States represented:
IA, IL, IN, KS, MN, MO, NE, OH, SD, WI, MI



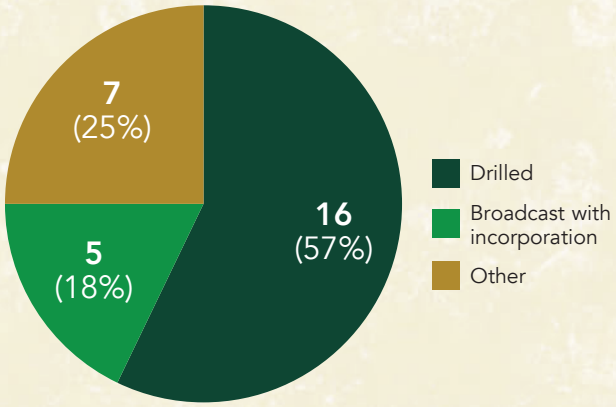
CEREAL RYE

Why do farmers plant cereal rye?

Almost half of all farmers planted a single-species cover crop. Of these, more than 4 in 5 farmers planted cereal rye.

- Produces a large amount of biomass which can keep soil in place, scavenge residual nitrogen, or provide weed- suppressing residue depending upon cover crop goals
- Winter hardy, with wide planting window
- Relatively easy to chemically terminate
- Seed is relatively cheap

Most farmers planting cereal rye as a single-species cover crop used a drill



Percent of farmers that planted cereal rye at or after harvest	**93%**
Average seeding rate	**48 lbs**/acre
Average cost of seed	**$12.97**/acre
Average cost of seeding	**$14.13**/acre

ENVIRONMENTAL BENEFITS

What are the environmental benefits of cover crops?

Depending upon the species and management practices used, growing a cover crop can:

- Reduce erosion by keeping living roots in the soil and keeping the soil covered. This can improve water quality by reducing sediment and nutrient loading in surface water.
- Improve soil water storage and water infiltration, which can reduce erosion and buffer the effects of extreme weather events such as droughts and floods.
- Reduce nutrient loss and improve water quality by scavenging residual nitrogen.
- Improve soil fertility and nutrient cycling, which can reduce the need for fertilizer inputs.
- Suppress weeds, which can reduce the need for herbicides.
- Add organic material to the soil, which holds the potential to store carbon in the soil.

What are the environmental benefits of cereal rye?

- Cereal rye is effective at scavenging nitrogen, which can reduce nitrate leaching thereby improving ground and surface water quality. Some studies have shown that cereal rye can capture more than half of the residual N that might have otherwise leached from soil, and others have estimated that it can scavenge 25-50 lbs. N per acre (Clark, 2007).
- Cereal rye also holds the potential to reduce phosphorus loading. The Iowa Nutrient Reduction Strategy estimates that a rye cover crop reduces P loading by 29% and nitrate concentration by 31% (Lawrence and Benning, 2019).
- In a 2017 study, researchers at Purdue University found that using a cereal rye cover crop in a no-till corn/soybean rotation increased aggregate stability after four years (Rorick and Kladivko, 2017). Increased aggregate stability is tied to benefits such as better water infiltration, and reduced crusting and erosion.

Additional data is being collected this year to see how the cover crops developed and the impact on agronomic outcomes for the 2020 cash crop.

Cereal rye can capture more than half of the residual N that might have otherwise leached from soil.

June 2020 © Soil Health Partnership

For more information:

A. Clark, editor. 2007. Managing cover crops profitably. 3rd ed. Sustainable Agriculture Network, Beltsville, MD.

Basche, A.D. and DeLonge, M.S., 2019. Comparing infiltration rates in soils managed with conventional and alternative farming methods: A meta-analysis. PloS one, 14(9).

Lawrence, J, and J. Benning. 2019. Reducing Nutrient Loss: Science Shows What Works. Iowa State University Extension Publication SP 435A.

Rorick, J. D., and E. J. Kladivko. 2017. Cereal rye cover crop effects on soil carbon and physical properties in southeastern Indiana. Journal of Soil and Water Conservation 72(3): 260-265.

SOIL HEALTH PARTNERSHIP

The Soil Health Partnership promotes the adoption of soil health practices for economic and environmental benefit.

Learn more about the Soil Health Partnership by visiting **soilhealthpartnership.org** or contacting **soilhealth@ncga.com**

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