

# Midwest Cover Crop Council Missouri Annual Report

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## MU-CAFNR Soil Health Assessment Center <https://cafnr.missouri.edu/soil-health/>

The soil health assessment center continues to collaborate with the Missouri Department of Natural Resources cover crop cost share program. Producers participating in the program also submit soil samples for soil health testing from fields where they are doing the cover crop cost share practice. Submitted samples continue to increase each year with increased use of the cover crop cost share practice.

- 2016                    1310 samples
- 2017                    1780 samples
- 2018                    2573 samples

## Soil and Water Conservation District (SWCD) Cover Crop Cost Share Practice

For the past thirty years, Missouri has had a statewide sales tax for soil conservation practices administered by the Missouri Department of Natural Resources. This tax allows over 30 million dollars to be devoted to soil conservation practices yearly. Typical practices have been terracing, waterways, grazing systems and riparian buffers. Beginning in 2015 cover crops became a cost share practice. For fiscal year 2018 over 160,000 acres has been planted to cover crops with over five million dollars of state cost share devoted to cover crops.

## University of Missouri Strip Trial Program

<http://striptrial.missouri.edu/>

University of Missouri Extension through funding from the Missouri Soybean Association and the Missouri Corn Growers began an on-farm strip trial program. The focus of the strip trial program is to do field research related to environmental issues. These include:

- Comparing cereal rye, wheat and no cover crop in after corn or soybeans.
- Comparing termination timing of cereal rye or wheat prior to corn or soybeans.
- Nitrogen timing trials.

**Cover crop comparison trials: No-cover control vs. Winter wheat vs. Cereal rye**

Note: For the P value, the smaller the number the more likely the difference is real. Statistical significance is <0.10.

Crop	Year	County	Soil Type	Termination Date	Grain Planting Date	NoNitrogen Application Date	Nitrogen Application Rate (lbs/A)	Grain Yields			P value
								No-cover control	Winter Wheat	Cereal Rye	
							lbs N/A	Bushels /A			
Corn	2016	Lincoln	Silt Loam	3/28/2016	4/17/2016			217	198	187	<0.01
Corn	2016	Lincoln	Silt Loam	3/28/2016	4/17/2016			208	206	188	0.02
Corn	2017	Lincoln	Silt Loam	4/12/2017	4/22/2017	11/16/16 5/10/17	130 / 40	180	178	171	0.15
Corn	2017	Holt	Silt Loam	4/11/2017	4/22/2017			240	235	239	0.54
Corn	2017	Lincoln	Silt Loam	4/12/2017	5/29/2017	2/15/17 6/14/17	143 / 50	193	200	205	0.54
Corn	2017	Boone	Silt Loam	4/11/2017	5/10/2017			124	112	104	0.17
Corn	2017	Scott	Silt Loam	4/19/2017	4/19/2017			109	88	91	<0.01
Corn	2017	Andrew	Silt Loam	4/22/2017	4/24/2017	3/05/2017	168	192	155	143	<0.01
Milo	2017	Franklin	Silt Loam	4/13/2017	4/13/2017	6/22/17	100	171	146	146	<0.01
Means								182	167	164	

Crop	Year	County	Soil Type	Termination Date	Grain Planting Date	Grain yield			P value
						No-cover control	Winter Wheat	Cereal Rye	
Soybean	2016	Holt	Silt Loam	4/11/16	5/6/2016	61	64	59	0.46
Soybean	2016	Holt	Silt Loam	3/29/2016	5/25/2016	64	67	67	0.75
Soybean	2016	Cooper	Silt Loam	5/11/2016	5/11/2016	66.3	64.4	62.6	0.35
Soybean	2017	Lincoln	Silt Loam	4/12/2017	5/15/2017	62.8	60.7	63.1	0.21
Soybean	2017	Lincoln	Silt Loam	4/12/2017	5/15/2017	60.2	58.3	60.5	0.64
Soybean	2017	Montgomery	Silt Loam		5/16/2017	63.2	55.9	51.3	<0.01
						63	62	61	

1-29-2018



Individual sites are using the producer’s production practices and should be considered case studies.

<http://striptrial.missouri.edu/>

## Research Centers with ongoing cover crop work

Bradford Research Center- Central Missouri, Dr. Bill Wiebold, “The Effects of Cover Crops on Continuous Corn and Soybean Cropping Systems”

Graves-Chapple Research Center, NW Missouri, Wayne Flanary, Jim Crawford

Greenly Memorial Research Center, NE Missouri, Kelly Nelson

Goodwater Creek Experimental Watershed, Central Missouri, ARS Facility, Newel Kitchen, Ken Sudduth

## Elsberry Plant Materials Center Cover Crop Variety Trials

[https://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterials/contact/directory/?cid=stelp\\_rdb1042887#mo](https://www.nrcs.usda.gov/wps/portal/nrcs/detail/plantmaterials/contact/directory/?cid=stelp_rdb1042887#mo)

A multiple year study to compare growth variability of different cover crop varieties. Each plot is planted in 10 ft. X 20 ft. plots replicated four times.

## Data Collected Includes

- Germination
- Winter Hardiness
- Aboveground Biomass



# Species and Varieties tested...

<b>Black Oats</b> <ul style="list-style-type: none"><li>- Cosaque</li><li>- Soil Saver</li></ul> 	<b>Balansa Clover</b> <ul style="list-style-type: none"><li>- Fixation</li><li>- Frontier</li></ul> 	<b>Hairy Vetch</b> <ul style="list-style-type: none"><li>- Groff</li><li>- Lana</li><li>- Purple Prosperity</li><li>- TNT</li><li>- Valana</li><li>- Wildcat</li></ul> 
<b>Cereal Rye</b> <ul style="list-style-type: none"><li>- Aroostook</li><li>- BatesRS4</li><li>- Brasetto</li><li>- Elbon</li><li>- FL401</li><li>- Guardian</li><li>- Hazlet</li><li>- Maton</li><li>- Matonll</li><li>- Merced</li><li>- Oklon</li><li>- Prima</li><li>- Rymin</li><li>- Wheeler</li><li>- Wintergrazer70</li><li>- WrensAbruzzi</li></ul> 	<b>Crimson Clover</b> <ul style="list-style-type: none"><li>- AU Robin</li><li>- AU Sunrise</li><li>- AU Sunup</li><li>- Contea</li><li>- Dixie</li><li>- Kentucky Pride</li></ul> 	<b>Winter Pea</b> <ul style="list-style-type: none"><li>- Arvicca 4010</li><li>- Dunn</li><li>- Frost Master</li><li>- Lynx</li><li>- Maxum</li><li>- Survivor15</li><li>- Whistler</li><li>- Windham</li></ul> 
	<b>Red Clover</b> <ul style="list-style-type: none"><li>- Cinammon Plus</li><li>- Cyclonell</li><li>- Dynamite</li><li>- Freedom</li><li>- Kenland</li><li>- Starfire</li><li>- Starfirell</li></ul>	<b>Daikon Radish</b> <ul style="list-style-type: none"><li>- Defender</li><li>- Driller</li><li>- Eco-Till</li><li>- Groundhog</li><li>- Lunch</li><li>- Nitro</li><li>- Sodbuster Blend</li><li>- Tillage</li></ul> 

 Conservation Service  
nrms.usda.gov/

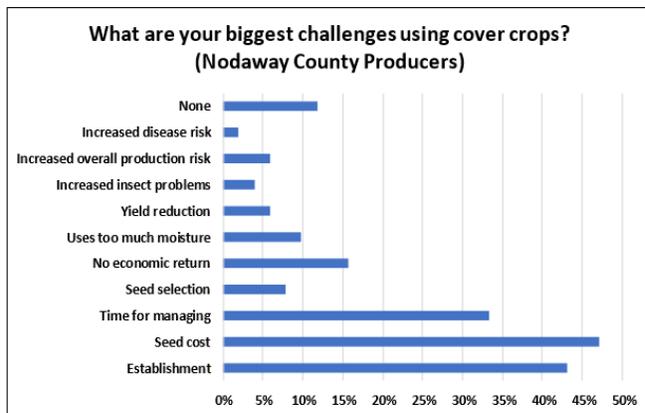
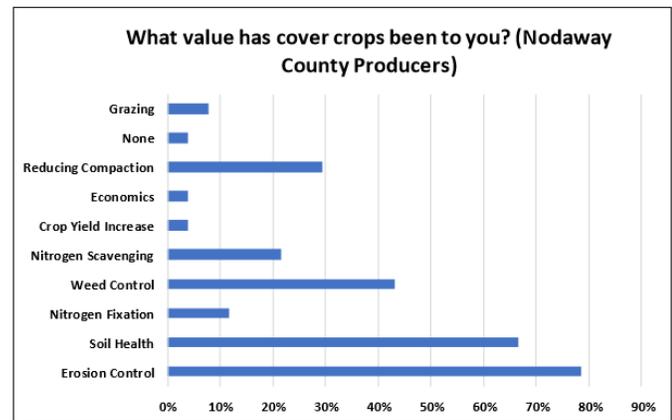
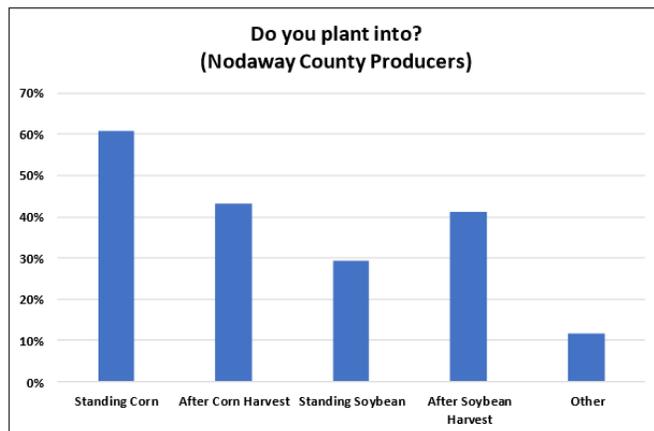
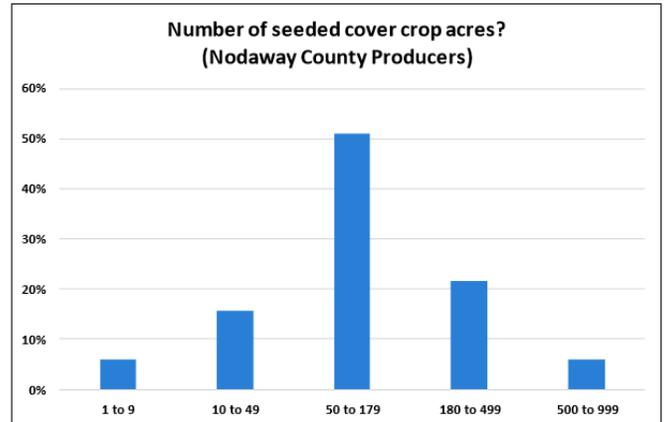
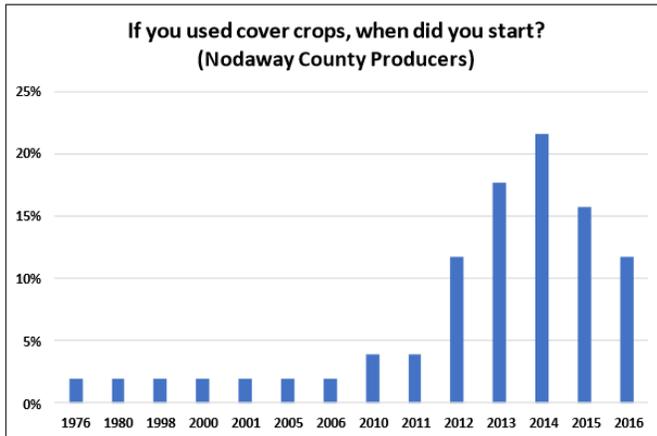
## Northwest Missouri Farmer Perspectives

Wayne Flanary, University of Missouri Extension Agronomist

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As part of the CIG grant “Impact of Cover Crops to Aid in the Recovery of Flooded Soils” a cover crop survey was conducted in early spring of 2017 with surveys being sent to farm operators and operator owners in Holt, Atchison, Nodaway and Andrew counties. Of 736 surveys sent 314 were returned (43% return rate). Of the respondents, 53% have used cover crops.

The greatest value of cover crops for producers is erosion control and soil health from the four county area, with the biggest challenges using cover crops being time, seed cost and establishment. The following is some of the results from Nodaway county producers.



## Cover Crop Challenges in Missouri

- What species to plant
- What cover crop works prior to corn
- Dealing with residual herbicides
- Cover crop establishment
- Time of terminating the cover crop
- Nitrogen management
- Best way to graze cover crops