Midwest Cover Crop Council Annual Meeting
Minnesota State Report for on 2020 cover crop activities

Contact Information

MCCC State Contact    NCCC-211 Official State Representative Name:  Anna Cates University of Minnesota E-mail: catesa@umn.edu Telephone: 406 546 4830

Minnesota Highlights:

Extension publications


Research publications


**Graduate students and post-docs**

1. Jessica Wayment (M.S.)
2. Ethan Ley (M.S.)
3. Katie Black (M.S.)
4. Hannah Rusch (MS)
5. Rabin KC, (MS)
6. Naomy P. Candelaria Morales (M.S.)
7. Eduardo Lagos (Ph.D.)
8. Sharon Perrone (Ph.D.)
9. Manuel Sabbagh (Ph.D.)
10. Yesuf Assen Mohammed (post-doc)
11. Steve Mulkey (post-doc)

**Conference Abstracts**

interseeded winter cover crops on soil nitrate in corn-soybean cropping systems. 2020 ASA-CSSA-SSSA International Annual Meetings, Nov. 9-13, 2020, Virtual.


Ongoing research studies

1. Cates/Lewandowski: The Minnesota Cover Crop Guide, funded by MN Department of Agriculture
2. Cates/Miller: Minnesota Department of Agriculture, "Evaluating erosion and yield in different tillage regimes after a winter-killed cover crop in SW Minnesota".
3. Cates: Watershed Innovation Program, "Investigating whether soil health systems improve field workability and quality of life".
5. DeJong-Hughes: Integrating Cover Crop and Strip Tillage to Improve Soil Health by Minimizing Wind Erosion and Nutrient Losses in Production-scale Sugarbeet Fields – Year 2
   Project Description: Evaluate new practices to integrate strip tillage and cover crops to improve soil health.
6. Gamble/Jungers/Gutknecht: Forever Green Initiative funded research project studying the impact of a corn-camelina-soybean double cropping system vs an alfalfa-intermediate wheatgrass system on field-scale C balances, water-use efficiency, and soil health
7. Garcia y Garcia: Cover crop termination timing. SARE Mini Grant (co-PI with Liz Stahl)
8. Garcia y Garcia and Stahl: Cover crop options planted mid-season – 2nd year at the SWROC in Lamberton
12. Field trials were completed for our cropping systems experiment, which examined the trade-offs associated with the integration of a winter legume cover crop in rotation with tomatoes, emphasizing soil and crop quality, nutrient retention, and cost effectiveness. In addition, we
completed a second replicated field experiment identifying cover crop species and planting date combinations that produce optimal nitrogen management during narrow windows of planting time in each of our three study regions (MN, KY, and KS). Sample processing and data analysis will soon be finished and compiled in peer-reviewed publications, including six planned for the biophysical data (soils, plants) and two for the economic analysis.

13. Grossman: SARE/CIG Summer Cover Crops (2020-2023): Maximizing Summer Cover Crop Conservation Benefits for Improved Vegetable Production. This projects explores cover crop options for integration into the main growing season in diversified vegetable rotations. We are testing legume and non-legume cover crop species and mixes in two rotational positions: before a fall broccoli crop, and after a spring lettuce crop. We are observing the stand quality and biomass production of these crops, and measuring their effects on the availability, storage, and loss of soil nitrogen, as well as their ability to attract pollinators and other beneficial insects. Field trials were initiated this year on the St. Paul campus of the UMN and at Big River Farms in Marine on St. Croix, MN.


15. Johnson: Understanding the role of biomass in mediating common and tall waterhemp germination and growth

16. Johnson: Leveraging Technology and Policy to Improve Land Stewardship Outcomes in Minnesota

17. Mulla: Maps showing Minnesota agricultural land with fall cover crop emergence have been summarized by county, major watershed, and sub-watershed from 2016 through 2019. The information is based on satellite imagery taken after harvest and before snowfall. Ground-truthed samples are used during the process of interpreting the images to identify areas of live green vegetation. The Cropland Data Layer is used to remove areas identified as alfalfa, hay, forage, forest, grassland, and developed. The remaining green vegetation is assumed to be a cover crop. The project is supported by the Clean Water Fund of the Clean Water, Land & Legacy Amendment.

18. Stupar: Currently, we are testing winter pea varieties in St. Paul and Lamberton for winter hardiness in the field. We are also running cold chamber grow-outs to see which varieties perform best in terms of cold-hardiness in controlled environments and checking to see if this correlates with field performance.


21. Wells: IPREFER (Integrated Pennycress Research Enabling Farm & Energy Resilience) CAP research project working with multi-institutions and different disciplines. One of the major objectives of our research activities in this project is to develop best agronomic management practices how to integrated pennycress (Thlaspi arvense L.) in the corn-soybean cropping systems to improve on-farm economics and environmental benefits.

Extension/Education/Outreach/On-farm trials/NGO
9. Grossman: The SARE/CIG Summer Cover Crops project above is collaborating with The Food Group MN and White Earth Nation on on-farm trials and education. The Food Group’s Big River Farms in Marine on St. Croix, MN, an incubator and training farm for immigrant and other under-represented farmers, is hosting full-scale field trials in 2020 and 2021. WEN was unable to host the trial as planned in 2020 due to covid-related travel restrictions, but planted demonstration/preview plots of the cover crops, and will host the trial in 2021. Additionally, Natalie Hoidal and Naomy Candelaria produced an Extension educational video for growers on how to measure cover crop biomass production.
16. Land Stewardship Project: worked with 890 landowners and farmers in the year 2020. We recently sent out a soil health survey and 132 farmers responded to let us know that they have
made soil health changes on 34,968 acres of land since 2015. Of the 34,968 acres, 18,452 were in cover crops.


18. Soil Health Coalition : Monthly radio spots KNUJ/SAM, Prairie Creek Seed Forage Tour, Bi-monthly Podcasts, Tri-State Neighbor articles, AgExpo Booth, Pomme de Terra Watershed Soil Health Meeting, Pheasant Fest, Growing Your Bottom Line, Making Lemonade from Last Years Lemons, Farm Economics, Implementing Soil Health, Dirt & Doughnuts, Soil Health Summit, Watershed & Climate Summit, Taking a Peak Under the Covers, Soil Health Economics Forum planning committee, Crop Watch Tri-State Neighbor bi-monthly, Dakota Lakes Research Farm Tour, Fridays on the Farm, Cover Crop Production Field Day, Indigo Ag Field Tour, Soil Health School, Jerry and Nancy Ackermann’s Field Day, NRCS Technical Advisory Committee Meeting, MN Association of Soil and Water Conservation Districts Area VII Meeting, Soil Management Summit breakout session, SFA Conservation Highlights


22. Stahl, L.A.B. Private Pesticide Applicator Recertification in MN – has a module on “Herbicide Persistence and Interactions with Cover Crops” (by Liz Stahl) as part of optional information to include

23. Stahl, L.A.B. Presentations at the Soil Management Summit including

24. “60-inch corn and cover crops”, Soil Management Summit, breakout session

25. Weed Management and Cover Crops – Expectations and Tradeoffs presentation by Liz


28. Stahl, L.A.B. Numerous radio spots on regional radio stations including KDOM out of Windom, KKOJ out of Jackson, and KSUM out of Fairmont

29. Stahl, L.A.B. North Central Weed Science Society Annual meeting ONLINE – moderated a chat room on cover crops (12/1/20)


Others


