

2015 MCCC Iowa report

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Summary of cover crop activities in Iowa for 2015

Cover crop plantings in Iowa may have attained 500,000 acres in 2015, about 1.92% of annual crop acreage in the state. As for 2014, the Iowa Department of Agriculture and Land Stewardship (IDALS) financially supported planting cover crop on 180,000 acres in 2015. Additionally, IDALS supported 16 demonstration projects as part of the Clean Water Iowa program and all 16 included cover crops (<http://www.cleanwateriowa.org/demonstration-projects.aspx>). The USDA NRCS supported planting cover crops on an additional 100,000 acres. Additionally, utilization of cover crops is a considerable part of the strategy to meet Iowa Nutrient Reduction Strategy goals for reducing nitrate-N, phosphorus, and sediment load in Iowa waterways (<http://www.nutrientstrategy.iastate.edu/>).

Outreach efforts on cover crops in Iowa reached over 7000 individuals at over 200 meetings, conferences, and other programs in 2015. Other current outputs that include cover crops: 5 refereed journal manuscripts published, and numerous internally produced research and extension reports, radio interviews and blogs. Currently, at least 13 grant-funded projects are underway that include cover crops; 10 of these projects include graduate students in three academic departments at Iowa State University (Agronomy, Entomology, and Horticulture) and 2 postdoctoral research associates, one each with USDA-ARS and ISU-Agronomy. Although many individuals in Iowa work very hard on developing and conveying information on cover crops, the efforts by Iowa State University graduate students, Practical Farmers of Iowa, and USDA-ARS are particularly noteworthy.

Grant Funding obtained in Iowa that includes cover crop research or outreach activities:

Berti, M., B. Johnson, D. Ripplinger, H. Kandel, A. Wick, A. Akyuz, J. Ransom, D. Franzen, R. Gesch, F. Forcella, A. Lenssen, S. Wells. 2015-2019, USDA AFRI Food Security CAP, Agricultural Production Systems – Cropping Systems. A5160. A novel management approach to increase productivity, resilience, and long-term sustainability in cropping systems in the northern Great Plains.

Kaspar, T., T. Moorman. 2012-2015. Leopold Center for Sustainable Agriculture. Winter rye cover crop effect on corn seedling pathogens. <http://www.leopold.iastate.edu/grants/e2012-03>

Kaspar, T., T. Moorman, A. Robertson, A. Lenssen. 2014. Iowa Nutrient Reduction Center. Investigating the causes of corn yield decreases following cereal rye winter cover crop. <http://www.nutrientstrategy.iastate.edu/sites/default/files/documents/abstracts/cerealrye.pdf>

Lenssen, A.W., S. Carlson, M. Wiedenhoef. 2013-2015. NCR-SARE Research & Education. Improving cover crop options for the Corn Belt.

Mallarino, A., R. Cruse, M. Helmers, J. Sawyer, D. Jaynes. 2014. Iowa Nutrient Reduction Center. Impacts of cover crops on phosphorus and nitrogen loss with surface runoff. <http://www.nutrientstrategy.iastate.edu/sites/default/files/documents/abstracts/coverimpacts.pdf>

Morton, L.W, et al. (11 institutions) 2011-2015. Cropping systems coordinated agricultural project: Climate change, mitigation, and adaptation in corn-based cropping systems. USDA-NIFA, Award No. 2011-68002-30190.

Miguez, F., J. Tyndall, J.G. Arbuckle, A. Basche and G. Roesch. 2013-2015. Leopold Center for Sustainable Agriculture. Covering the Ground: A transformative approach to scientific learning for greater cover crop adoption in Iowa. <http://www.leopold.iastate.edu/grants/e2014-20>

Miguez, F, J. Tyndall, J.G. Arbuckle, G. Roesch, A. Basche. 2014-2015. Leopold Center for Sustainable Agriculture. A transformative approach to scientific learning for greater cover crop adoption in Iowa.

Moore, K.J, D. Laird, K. Lamkey, A. Lenssen. 2013-2015. NC-SunGrant. Managing perennial cover crops for sustainable corn stover biomass removal.

Nair, A., D. Brainard, A. Shaw, C. Chase, C. Bregendahl. 2014-2017. NCR-SARE Research & Education. Cover crops and strip tillage to promote soil quality, environmental sustainability, food safety, and profitability in cucurbit cropping systems.

Nair, A., K. Delate, C. Bregendahl, G. Artz. 2014-2016. Leopold Center for Sustainable Agriculture. Quantifying nitrogen credits and impacts of cover crops on soil biology and health in vegetable cropping systems in Iowa. <http://www.leopold.iastate.edu/grants/e2014-16>

Nair, A., V. Lawson, C. Chase. 2014-2015. National Wildlife Federation. Quantifying nitrogen scavenging benefits of non-traditional fall planted cover crops to mitigate nitrogen movement into the Mississippi river basin.

Robinson, A., L. Leandro, A. Lenssen, T. Kaspar, T. Moorman. 2015-2017, Iowa Nutrient Reduction Center. Cover crops influence yield and diseases of corn and soybean.

Refereed journal articles

Basche, A.D., Archontoulis, S., Kaspar, T.C., Jaynes, D.B., Parkin, T.B., Miguez, F. 2015. Simulating long-term impacts of cover crops and climate change on crop production and environmental outcomes in the Midwestern United States. *Agriculture, Ecosystems and Environment*.

<http://www.sciencedirect.com/science/article/pii/S0167880915301468>. doi: 10.1016/j.agee.2015.11.011

Daigh, A.L.M., X Zhou, M.J. Helmers, C.H. Pederson, R. Horton, M. Jarchow, M. Liebman. 2015. Subsurface drainage nitrate and total reactive phosphorus losses in bioenergy-based prairies and corn systems. *J. Environ. Qual.* 44:1638-1646.

Iqbal, J., D.C. Mitchell, D.W. Barker, F. Miguez, J.E. Sawyer, J. Pantoja, and M.J. Castellano. 2015. Does nitrogen fertilizer application rate to corn affect nitrous oxide emissions from the rotated soybean crop? *J. Environ. Qual.* 44:711-719.

Kaspar, T.C., Bakker, M.G. 2015. Biomass production of 12 winter cereal cover crop cultivars and their effect on subsequent corn yield. *Journal of Soil and Water Conservation.* 70:353-364.

Pantoja, J.L., K.P. Woli, J.E. Sawyer, D.W. Barker. 2015. Corn nitrogen fertilization requirement and corn-soybean productivity with a rye cover crop. *Soil Sci. Soc. Am. J.* 79:1482-1495.

Proceedings

Patel, S., J.E. Sawyer, J.P. Lundvall, and J. Hall. 2015. Root and shoot biomass and nutrient composition in a winter rye cover crop. p. 113-118. In *Proc. Forty-Fifth North Central Extension-Industry Soil Fertility Conf.*, Des Moines, IA. 4-5 Nov. 2015. Vol. 31. International Plant Nutrition Inst., Brookings, SD.

Theses and Dissertations

Suitability of winter canola (*Brassica napus*) for enhancing summer annual crop rotations in Iowa. ISU MS Thesis. Rafael Martinez-Feria

Abstract: Winter canola (*Brassica napus*) could be a good candidate for enhancing cropping systems in Iowa because of its potential to provide environmental benefits and produce a marketable crop compatible with existing grain production and distribution schemes. However, it is still uncertain whether this crop would be suitable for helping balance environmental and financial goals of conventional cropping systems under the environmental and market conditions unique to Iowa. The work presented in this thesis is an effort to assess the suitability of winter canola for providing environmental benefits while fitting within the logistic and economic constraints of current cropping systems. Based on observations from experimentation in field plots, it is determined that canola can be successfully established in the fall, survive the winter, and regrow in the spring, but adequate conditions during fall growth are crucial. It is estimated that seeding by 31 Aug in the north to 12 Sep in the southeast will allow enough time for adequate growth of canola during the fall in at least half of the years in Iowa. Because these seeding date requirements will likely conflict with standing crops during most years, adjustments to the rotation schemes of conventional rotations are needed. Therefore, two

alternative systems are proposed, and their economic profiles are studied. Findings from this economic analysis suggest that these rotation alternatives produce relatively less net returns than the conventional corn (*Zea mays* L.)- soybean (*Glycine max* (L) Merr.) rotation, throughout a range of market and canola yield scenarios. Based on these results, it is determined that although winter canola can provide some environmental and economic enhancements to summer annual crop rotations in Iowa, but the specific situations in which canola can fit these rotations are limited. Nonetheless, more research is needed to fully understand the productivity of winter canola, before counting these as feasible alternatives for Iowa producers.

Graduate students with research projects on cover crops, Iowa State University and USDA-ARS NLAE.

| Name | Major Professor | Title |
|------------------------|----------------------------|---|
| Appelgate, Seth | A. Lenssen & M. Wiedenhoef | Improved cover crop options for the Corn Belt |
| Bartel, Cynthia | A. Lenssen & K. Moore | Managing perennial cover crops for sustainable corn stover biomass production |
| Basche, Andrea | F. Miguez | Climate-smart management in Iowa cover crops: evaluating the benefits and tradeoffs of cover crop incorporation |
| Jokela, Dana | Ajay Nair | Conservation tillage systems in organic pepper and broccoli production |
| Kruse, Raymond | Ajay Nair | Summer cover crops for fall vegetable production |
| Martinez-Feria, Rafael | M. Wiedenhoef | Suitability of winter canola for enhancing summer annual crop rotations in Iowa |
| Patel, Swetabh | J. Sawyer | Rye cover crop |
| Schenck, Lara | T. Kaspar & A. Robinson | Winter rye cover crop effect on corn seedling pathogens |
| Sklenar, Tim | A. Lenssen | Cover crop termination timing and biomass removal: Impact on soybean systems |
| Tillman, Jennifer | Ajay Nair | Strip tillage systems in cucurbit production |

Post-doctoral researchers and research associates with projects on cover crops at Iowa State University and USDA-ARS NLAE.

| Name | Co-workers | Title |
|---------------------|------------------------|---|
| Ms. Jyotsna Acharya | A. Robinson | Investigating the causes of corn yield decreases following cereal rye winter cover crop |
| Dr. Matt Bakker | T. Kaspar & T. Moorman | Investigating the causes of corn yield decreases following cereal rye winter cover crop |
| Dr. Chumki Banik | D. Laird | Managing perennial cover crops for sustainable corn stover biomass production: Temporal variation in soil nitrate-N |

Extension Bulletins

Hartzler, B, M. Anderson, and R. Vittetoe. 2015. Herbicide use may restrict grazing options for cover crops. Iowa State Univ. Ext. Outreach. Crop 3082.

<https://store.extension.iastate.edu/Product/Herbicide-use-may-restrict-grazing-options-for-cover-crops>

Meeting Abstracts, Poster-Oral presentations at scientific meetings, and departmental seminars:

Acharya, J. 2015. Effect of cereal rye cover crop on corn seedling diseases and yield. Departmental seminar, Plant Pathology and Microbiology, Iowa State University, 27 October 2015. 40 attendees.

Appelgate, S., T.C. Kaspar, M.H. Wiedenhoef, A.W. Lenssen. 2015. Cover crop options and mixes for the upper Midwest. 15-18 Nov. ASA-CSSA-SSSA International meetings. St. Paul, MN.

Bakker, M., T. Moorman, T. Kaspar, D. Manter. 2015. Cropping systems for enhanced sustainability and environmental quality in the Upper Midwest. Am. Phytopath. Soc. Annual meetings.

Banik, C., D.A. Laird, K.J. Moore, and A.W. Lenssen. 2015. Soil C and N dynamics for a corn-perennial cover crop cropping system. 15-18 Nov. ASA-CSSA-SSSA International meetings. St. Paul, MN.

<https://scisoc.confex.com/scisoc/2015am/webprogram/Paper93241.html>

Bartel, C.A., K.J. Moore, A.W. Lenssen. 2015. Establishment of perennial cover crops with corn and soybean. 15-18 Nov. ASA-CSSA-SSSA International meetings. St. Paul, MN.

<https://scisoc.confex.com/scisoc/2015am/webprogram/Paper94490.html>

Kaspar, T.C., J. Acharya, A. Robertson, M. Bakker, A. Lenssen, and T. Moorman. 2015. Effect of length of interval between cereal rye cover crop termination and corn planting on seedling root disease and corn growth. 15-18 Nov. ASA-CSSA-SSSA International meetings. St. Paul, MN.

Marcillo, G. and F. Miguez. 2015. Corn Yield Response under Winter Cover Crops: An updated Meta-analysis. ASA-CSSA-SSSA annual meetings, 15-18 November 2015, Minneapolis, MN.

Patel, S., J.E. Sawyer, and J.P. Lundvall. 2015. Enhancing corn yield in a winter cover crop system. In Annual Meetings Abstract (on-line), ASA, Madison, WI.

Sklenar, T., A.W. Lenssen, M.H. Wiedenhoef, T.C. Kaspar. 2015. Cover crops in soybean systems: Brassicas, rye, biomass use and termination timing. Iowa Soil & Water Conservation Society and Midwest Cover Crop Council annual meetings, 17-18 February 2015, Des Moines, IA.

The following 12 pages of cover crop efforts are from the Practical Farmers of Iowa Cover Crop program for 2015

1. Publications

Video and Audio

Secured **6** Video and Radio stories on cover crops;

- "Fear of Change in Cover Crop Adoption" Video. Blake Vince. February 13, 2015. <https://www.youtube.com/watch?v=CM4GDwwua4g>
- Radio interview on WHO's "The Big Show" on April 23, 2015 with Mark Peterson about cover crop termination
- "CC 09: PFI's Sarah Carlson, Midwest Cover Crop Research Coordinator" Conservation Chat. June 25, 2015. <http://conservationchat.libsyn.com/cc-09-pfis-sarah-carlson-midwest-cover-crop-research-coordinator>
- Radio interview on WHO's "The Big Show" on July 28, 2015 with Mark Peterson about cover crops on prevented planting acres
- Radio interview on WHO's "The Big Show" on November 17, 2015 with Mark Peterson about cover crops
- Radio interview on WHO's "The Big Show" on December 22, 2015 with Bill Frederick about cover crops and small grains

Newspaper and trade publications

Secured **20** in print publications;

- "Cover crops can help fight pests" Sarah Carlson. Wallace's Farmer. February 2015. <http://magissues.farmprogress.com/WAL/WF03Mar15/wal036.pdf>
- "Healthy soil for healthy plants" Nick Ohde. Wallace's Farmer. March 2015. <http://magissues.farmprogress.com/WAL/WF03Mar15/wal036.pdf>
- "Tips for terminating cover crops." Drake Larsen. Wallace's Farmer. March 2015. <http://magissues.farmprogress.com/wal/wf03mar15/wal058.pdf>
- "The promise of cover crop mixes" Nick Ohde. Wallace's Farmer. April 2015. <http://magissues.farmprogress.com/wal/wf04apr15/wal013.pdf>
- "Cereal rye goes to seed" Nick Ohde. Wallace's Farmer. May 2015. <http://magissues.farmprogress.com/wal/wf05may15/wal005.pdf>
- "Effect of covers on cash crop yield" Sarah Carlson. Wallace's Farmer. June 2015. <http://magissues.farmprogress.com/wal/wf06jun15/wal027.pdf>
- "Seeding covers at V6 corn stage" Sarah Carlson. Wallace's Farmer. June 2015. <http://magissues.farmprogress.com/wal/wf06jun15/wal026.pdf>
- "A new/old way of farming" Sarah Carlson featured. The Gazette. August 30, 2015.

<http://www.thegazette.com/subject/news/a-newold-way-of-farming-20150830>

- "Cover Crops, manure go together" Nick Ohde. Wallace's Farmer. July 2015.
<http://magissues.farmprogress.com/wal/wf07jul15/wal021.pdf>
- "How cover crops affect corn, beans" Stefan Gailans. Wallace's Farmer. July 2015.
<http://magissues.farmprogress.com/wal/wf07jul15/wal066.pdf>
- "Can This Genius Strategy Stop Big Ag from Dumping Fertilizer Into Drinking Water?" Sarah Carlson featured. Mother Jones. September/October 2015.
<http://www.motherjones.com/environment/2015/07/des-moines-nitrate-water-lawsuit>
- "How do we fix Iowa's nitrate pollution?" Sarah Carlson featured. Des Moines Register. September 12, 2015. <http://www.desmoinesregister.com/story/money/agriculture/2015/09/13/tiling-pollution-nitrates/72103422/>
- "Bean harvest under cover" Nick Ohde. Wallace's Farmer. September 2015.
<http://magissues.farmprogress.com/wal/wf09sep15/wal060.pdf>
- "Farmers try out new cover crop seeding methods." Jack Boyer featured. Farm Bureau Spokesman. September 28, 2015. <https://www.iowafarmbureau.com/Article/Farmers-try-out-new-cover-crop-seeding-methods>
- "Iowa farmer depends on pesticides; His son asks: Is there a better way?" Jon Bakehouse featured (PFI field day mentioned). Chicago Tribune. December 11, 2015.
<http://www.chicagotribune.com/news/watchdog/ct-gmo-crops-pesticide-resistance-farming-met-20151210-story.html> (Picked up nationally).
- "Use Oats in Diverse Rotations" George Schaefer featured (from PFI field day). Successful Farming. December 15, 2015. http://www.agriculture.com/crops/other-crops/oats/use-oats-in-diverse-rotations_159-ar51354
- "What to prescribe for Iowa's eroding topsoil?" Sarah Carlson featured. Des Moines Register. November 27, 2015.
<http://www.desmoinesregister.com/story/money/agriculture/2015/11/27/what-prescribe-iowas-eroding-topsoil/76447188/>
- "Seeding covers earlier holds onto more nitrates" Nick Ohde. Wallace's Farmer. November 2015.
<http://magissues.farmprogress.com/wal/wf11nov15/wal072.pdf>
- "Cover crops can extend grazing" Wallace's Farmer. November 2015.
<http://magissues.farmprogress.com/wal/wf11nov15/wal078.pdf>
- "Farmers plant the seeds of an oat rotation revival" Sarah Carlson featured. Iowa Farmer Today. November 12, 2015. http://www.iowafarmertoday.com/news/crop/farmers-plant-the-seeds-of-an-oat-rotation-revival/article_ae7c7eca-88ad-11e5-a339-33c4098e0a49.html

Practical Farmers research reports

Published **9** reports from on-farm research trials where farmers compared the ecological and economic resilience of cover crop systems to a control on their farms.

- "Winter Cereal Rye Cover Crop Effect on Cash Crop Yield: Year 6" Practical Farmers Research Report. Stefan Gailans. May 2015.
- "Winter Canola Used as a Cover Crop in Iowa" Practical Farmers Research Report. Stefan Gailans. July 2015.
- "Cover Crop Variety Trial 2014-2015" Practical Farmers Research Report. Stefan Gailans. July 2015.
- "Effect of Seeding Date on Cover Crop Performance" Practical Farmers Research Report. Stefan Gailans. July 2015.
- "Grazing Cover Crops for Winter Feed, 2015 Update" Practical Farmers Research Report. Meghan Filbert. December 2015.
- "Corn Following Green Manure Cover Crops Established with Small Grain" Practical Farmers Research Report. Stefan Gailans. December 2015.
- "Summer Squash Following Winter Rye with Strip and No-Till" Practical Farmers Research Report. Liz Kolbe. November 2015.
- "Timing of Nitrogen Supply to Corn from Spring Terminated Red Clover" Practical Farmers Research Report. Stefan Gailans. November 2015.
- "Cereal Rye Cover Crop Termination Date Ahead of Soybeans" Practical Farmers Research Report. Stefan Gailans. November 2015.

PFI Newsletter

Published **6** newsletter articles on cover crops;

- "Protecting Cash Crops: Cover Crops or Genetically Engineered Traits" Sarah Carlson. The Practical Farmer. Vol. 31. No. 1. Winter 2015.
- "Long-Term Research Helps to Paint a Clearer Picture of Cover Crops" Stefan Gailans. The Practical Farmer. Vol. 31. No. 2. Spring 2015.
- "Striving for Diversity with Cover Crops" Stefan Gailans. The Practical Farmer. Vol. 31. No. 3. Summer 2015.
- "Farm Strength Through Diversity" Nick Ohde. The Practical Farmer. Vol. 31. No. 4. Fall 2015.
- "The Ultimate Farmer-Led Learning Experience" Stefan Gailans and Meghan Filbert. The Practical Farmer. Vol. 31. No. 4. Fall 2015.
- "Members Reflect on the Trip of a Lifetime." Meghan Filbert and Stefan Gailans. The Practical Farmer. Vol. 31. No. 4. Fall 2015.

Practical Farmers blog

Published **54** blog posts related to cover crops;

- "What not to give away this holiday season: the soil." Practical Farmers Blog. Sarah Carlson. December 22, 2015. <http://practicalfarmers.org/blog/2015/12/22/what-not-to-give-away-this-holiday-season-the-soil/>
- "2015 Cooperators' Meeting recap" Practical Farmers Blog. Stefan Gailans. December 17, 2015. <http://practicalfarmers.org/blog/2015/12/17/2015-cooperators-meeting-recap/>
- "RESEARCH REPORT: Timing of N Supply to Corn from Spring Terminated Red Clover" Practical Farmers Blog. Stefan Gailans. December 16, 2015. <http://practicalfarmers.org/blog/2015/12/16/research-report-timing-of-n-supply-to-corn-from-spring-terminated-red-clover/>
- "RESEARCH REPORT: Corn Following Green Manure Cover Crops Established with Small Grain" Practical Farmers Blog. Stefan Gailans. December 9, 2015. <http://practicalfarmers.org/blog/2015/12/09/research-report-corn-following-green-manure-cover-crops-established-with-small-grain/>
- "Bringing oats back to Iowa" Practical Farmers Blog. Sarah Carlson. December 2, 2015. <http://practicalfarmers.org/blog/2015/12/02/bringing-oats-back-to-iowa/>
- "RESEARCH REPORT: Summer Squash Following Winter Rye with Strip- and No-Till" Practical Farmers Blog. Liz Kolbe. December 1, 2015. <http://practicalfarmers.org/blog/2015/12/01/research-report-summer-squash-following-winter-rye-with-strip-and-no-till/>
- "RESEARCH REPORT: Cereal Rye Cover Crop Termination Date Ahead of Soybeans" Practical Farmers Blog. Stefan Gailans. November 30, 2015. <http://practicalfarmers.org/blog/2015/11/30/research-report-cereal-rye-cover-crop-termination-date-ahead-of-soybeans/>
- "Interseeding Cover Crops into Corn and Soybeans: A Meta-Analysis" Practical Farmers Blog. Sarah Carlson. November 24, 2015. <http://practicalfarmers.org/blog/2015/11/24/interseeding-cover-crops-corn-soybeans-meta-analysis/>
- "It's a Wrap: Impacts, Reflections and Recaps from 2015 PFI Field Days" Practical Farmers Blog. Sally Worley. November 6, 2015. <http://practicalfarmers.org/blog/2015/11/06/its-a-wrap-impacts-reflections-and-recaps-from-2015-pfi-field-days/>
- "Fall 2015 Cover Crops" Practical Farmers Blog. Stefan Gailans. November 4, 2015. <http://practicalfarmers.org/blog/2015/11/04/fall-2015-cover-crops/>
- "Field Day Recap: Scattergood Farm – cover crops and vermicompost, Sept. 26" Practical Farmers Blog. Liz Kolbe. November 2, 2015. <http://practicalfarmers.org/blog/2015/11/02/field-day-recap-scattergood-farm-cover-crops-and-vermicompost-sept-26/>
- "Interseeding cereal rye into corn at V4 stage at Jack Boyer's in 2015" Practical Farmers Blog. Stefan Gailans. October 29, 2015. <http://practicalfarmers.org/blog/2015/10/29/interseeding-cereal-rye-into-corn-at-v4-stage-at-jack-boyers-in-2015/>
- "Cover crops at Roger & Mary Knutson's farm, Hardin County" Practical Farmers Blog. Stefan

Gailans. October 29, 2015. <http://practicalfarmers.org/blog/2015/10/29/cover-crops-at-jacob-bolsons-farm-hardin-county/>

- "Guest Blog: Reminiscing about North Dakota" Practical Farmers Blog. Meghan Filbert. October 26, 2015. <http://practicalfarmers.org/blog/2015/10/26/dan-wilson/>
- "Cover Crop Webinar Series with SARE and ASA" Webinar. October 7, 2015. <http://practicalfarmers.org/farmer-knowledge/farminar-archive/cover-crop-webinar-series-with-sare-and-asa-2/>
- "Use EQIP to Improve your CSP Application" Practical Farmers Blog. Steve Carlson. October 13, 2015. <http://practicalfarmers.org/blog/2015/10/13/use-eqip-to-improve-your-csp-application/>
- "Soil Health and Cover Crop Workshops @ The Grundy County Fair recap" Practical Farmers Blog. Sarah Carlson. September 18, 2015. <http://practicalfarmers.org/blog/2015/09/18/soil-health-and-cover-crop-workshops-the-grundy-county-fair-recap/>
- "Field Day Recap: Ackley Farm, Sept. 8" Practical Farmers Blog. Stefan Gailans. September 16, 2015. <http://practicalfarmers.org/blog/2015/09/16/field-day-recap-ackley-farm-sept-8/>
- "Field Day Recap: Bent Gate Farm, August 28" Practical Farmers Blog. Nick Ohde. September 10, 2015. <http://practicalfarmers.org/blog/2015/09/10/field-day-recap-bent-gate-farm-august-28/>
- "Guest post: Rolling in the rye, part 2" Practical Farmers Blog. Stefan Gailans. September 10, 2015. <http://practicalfarmers.org/blog/2015/09/10/guest-post-rolling-in-the-rye-part-2/>
- "Field day recap: Bill Frederick, Aug. 19" Practical Farmers Blog. Stefan Gailans. August 25, 2015. <http://practicalfarmers.org/blog/2015/08/25/field-day-recap-bill-frederick-aug-19/>
- "Factsheet: Livestock and Cover Crops" Practical Farmers Blog. Meghan Filbert. July 30, 2015. <http://practicalfarmers.org/blog/2015/07/30/factsheet-livestock-cover-crops/>
- "2015 Prevent Plant & Cover Crop Options" Practical Farmers Blog. Sarah Carlson. July 27, 2015. <http://practicalfarmers.org/blog/2015/07/27/2015-prevent-plant-cover-crop-options/>
- "NWF Research Results: Cover Crops Benefit Wildlife, Farmers Alike" Practical Farmers Blog. Steve Carlson. July 23, 2015. <http://practicalfarmers.org/blog/2015/07/23/nwf-research-results-cover-crops-benefit-wildlife-farmers-alike/>
- "RESEARCH REPORT: Winter Canola Used as Cover Crop in Iowa" Practical Farmers Blog. Stefan Gailans. July 22, 2015. <http://practicalfarmers.org/blog/2015/07/22/research-report-winter-canola-used-as-cover-crop-in-iowa/>
- "RESEARCH REPORT: Cover Crop Variety Trial, 2014-15" Practical Farmers Blog. Stefan Gailans. July 21, 2015. <http://practicalfarmers.org/blog/2015/07/21/research-report-cover-crop-variety-trial-2014-15/>
- "Field Day Recap: Cover Crops in Corn in July: Will They Make It to the Fall? July 16" Practical Farmers Blog. Nick Ohde. July 17, 2015. <http://practicalfarmers.org/blog/2015/07/17/field-day->

[recap-cover-crops-in-corn-in-july-will-they-make-it-to-the-fall-july-16/](#)

- "Field Day Recap: The What, How and When of Cover Crops at J Boyer Farms, July 8" Practical Farmers Blog. Stefan Gailans. July 14, 2015. <http://practicalfarmers.org/blog/2015/07/14/field-day-recap-the-what-how-and-when-of-cover-crops-at-j-boyer-farms-july-8/>
- "Field Day Recap: Evaluating a Cover Crop Terminator (and more!) at Ash Grove Farm, July 7" Practical Farmers Blog. Stefan Gailans. July 14 2015. <http://practicalfarmers.org/blog/2015/07/14/field-day-recap-ash-grove-farm-july-7/>
- "Field Day Recap: McGrew Brothers Farm, June 22" Practical Farmers Blog. Nick Ohde. June 29, 2015. <http://practicalfarmers.org/blog/2015/06/29/field-day-recap-mcgrew-brothers-farm-june-22/>
- "RESEARCH REPORT: Effect of Seeding Date on Cover Crop Performance" Practical Farmers Blog. Stefan Gailans. July 6, 2015. <http://practicalfarmers.org/blog/2015/07/06/research-report-effect-of-seeding-date-on-cover-crop-performance/>
- "Hail, giant ragweed and more: one farm's work on resiliency" Practical Farmers Blog. Teresa Opheim. July 6, 2015. <http://practicalfarmers.org/blog/2015/07/06/hail-giant-ragweed-and-more-one-farms-work-on-resiliency/>
- "Field Day Recap: David Ausberger, June 25" Practical Farmers Blog. Nick Ohde. July 2, 2015. <http://practicalfarmers.org/blog/2015/07/02/field-day-recap-david-ausberger-june-25/>
- "Field Day Recap: George and Steve Schaefer, June 17" Practical Farmers Blog. Stefan Gailans. June 24, 2015. <http://practicalfarmers.org/blog/2015/06/24/field-day-recap-george-and-steve-schaefer-june-17/>
- "Hear PFI's Cover Crop Research" Practical Farmers Blog. Sarah Carlson. June 19, 2015. <http://practicalfarmers.org/blog/2015/06/19/hear-pfis-cover-crop-research/>
- "Multiple Benefits from Wetlands, Prairies and Cover Crops: Martens field day recap" Practical Farmers Blog. Nick Ohde. June 19, 2015. <http://practicalfarmers.org/blog/2015/06/19/multiple-benefits-from-wetlands-prairies-and-cover-crops-martens-field-day-recap/>
- "Guest post: Rolling in the rye, part 1" Practical Farmers Blog. Stefan Gailans. June 15, 2015. <http://practicalfarmers.org/blog/2015/06/15/guest-post-rolling-in-the-rye-part-1/>
- "Harrison/Crawford County Corn Growers Association host two Cover Crop meetings on June 23" Practical Farmers Blog. Sarah Carlson. June 11, 2015. <http://practicalfarmers.org/blog/2015/06/11/harrisoncrawford-county-corn-growers-association-host-two-cover-crop-meetings-on-june-23/>
- "True armyworm, cereal rye cover, and no-till: an unfortunate combination in 2015" Practical Farmers Blog. Sarah Carlson. June 11, 2015. <http://practicalfarmers.org/blog/2015/06/11/true-armyworm-cereal-rye-cover-and-no-till-an-unfortunate-combination-in-2015/>

- “Upcoming FARMINARS: Cover Crops and Wildlife + Economics of cover Crops” Practical Farmers Blog. Sarah Carlson. June 4, 2015. <http://practicalfarmers.org/blog/2015/06/04/upcoming-farminars-cover-crops-and-wildlife-economics-of-cover-crops/>
- “Farmers are stewards of our natural resources” Practical Farmers Blog. Sally Worley. May 21, 2015. <http://practicalfarmers.org/blog/2015/05/21/farmers-are-stewards-of-our-natural-resources/>
- “Rolling Cereal Rye: Tips for Success – Guest Blog by Dana Jokela” Practical Farmers Blog. Nick Ohde. May 21, 2015. <http://practicalfarmers.org/blog/2015/05/21/rolling-cereal-rye-tips-for-success-guest-blog-by-dana-jokela/>
- “Looking for cover crop services” Practical Farmers Blog. Sarah Carlson. May 15, 2015. <http://practicalfarmers.org/blog/2015/05/15/looking-cover-crop-businesses/>
- “RESEARCH UPDATE: Does a cover crop affect corn or soybean yields” Practical Farmers Blog. Stefan Gailans. May 13, 2015. <http://practicalfarmers.org/blog/2015/05/13/research-update-does-a-cover-crop-affect-corn-or-soybean-yields/>
- “Cover Crop Cost Share Available July 2015” Practical Farmers Blog. Sarah Carlson. May 12, 2015. <http://practicalfarmers.org/blog/2015/05/12/cover-crop-cost-share-available-july-2015/>
- “PFI members share their cover crop pics” Practical Farmers Blog. Sarah Carlson. May 1, 2015. <http://practicalfarmers.org/blog/2015/05/01/pfi-members-share-cover-crop-pics/>
- “Preliminary research: seeding cover crops early into standing corn” Practical Farmers Blog. Stefan Gailans. April 16, 2015. <http://practicalfarmers.org/blog/2015/04/16/preliminary-research-seeding-cover-crops-early-into-standing-corn/>
- “Quick Tips for Managing Cover Crops this Spring” Practical Farmers Blog. Sarah Carlson. April 10, 2015. <http://practicalfarmers.org/blog/2015/04/10/quick-tips-for-managing-cover-crops-this-spring/>
- “We can’t control the weather...” Practical Farmers Blog. Stefan Gailans. March 26, 2015. <http://practicalfarmers.org/blog/2015/03/26/we-cant-control-the-weather/>
- “RESEARCH REPORT: Green manure cover crops established with small grains” Practical Farmers Blog. Stefan Gailans. March 17, 2015. <http://practicalfarmers.org/blog/2015/03/17/research-report-green-manure-cover-crops-established-with-small-grains/>
- “RESEARCH REPORT: Nitrogen replacement value of red clover” Practical Farmers Blog. Stefan Gailans. March 10, 2015. <http://practicalfarmers.org/blog/2015/03/10/research-report-nitrogen-replacement-value-red-clover/>
- “RESEARCH REPORT: Side-dressing corn following a winter rye cover crop–Update 2014” Practical Farmers Blog. Stefan Gailans. March 2, 2015. <http://practicalfarmers.org/blog/2015/03/02/research-report-side-dressing-corn-following-winter-rye-cover-crop-update-2014/>

- “RESEARCH REPORT: Summer Squash Following Winter Rye” Practical Farmers Blog. Stefan Gailans. February 27, 2015. <http://practicalfarmers.org/blog/2015/02/27/research-report-summer-squash-following-winter-rye/>
- “RESEARCH REPORT: Grazing Cover Crops on Corn Ground” Practical Farmers Blog. Meghan Filbert. February 26, 2015. <http://practicalfarmers.org/blog/2015/02/26/research-report-grazing-cover-crops-corn-ground/>

Other publication materials

- “Choosing a Cover Crop Species.” Practical Farmers Fact Sheet. August 2015.

2. On-farm research projects

- Working with 33 PFI farmers who are conducting 12 experiments related to cover crops in 2015.
- Spring, Summer, Fall 2014 Practical Farmers of Iowa, Iowa Learning Farms and Iowa State University Farmer Association Farms evaluated a pure cover crop and a cover crop mix’s effect on cover crop growth, soil fertility, and nitrate in shallow groundwater at six regional research farms in Iowa. The project began in 2013 and continues into 2015.
- Fall 2014 Practical Farmers of Iowa and Iowa Learning Farms began a project on 10 commercial farms across the state seeking to determine the effect of aerially seeding cover crops on cover crop growth and commodity crop yield.
- Fall 2014 Practical Farmers of Iowa, Iowa Learning Farms, and Hagie Manufacturing conducted year two of a project on three farms comparing. Treatments include broadcasting into standing commodity crop with a modified high-clearance sprayer vs. drilling after commodity crop harvest. Additionally, cover crop selections compared include pure stands vs. mixes.

3. Outreach Organized and held **79 cover crop field days, workshops, conference sessions, webinars, meetings, and presentations** at different locations around Iowa with a total number **6256** of people attending.

Field Days/Workshops Held or participated in **37** field days/workshops.

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|-----------|---|------------|----|
| 1/7/2015 | “On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop | Okoboji | 45 |
| 1/7/2015 | “On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop | Burlington | 30 |
| 1/14/2015 | “On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop | Storm Lake | 50 |
| 1/15/2015 | “On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop | Moravia | 35 |
| 1/17/2015 | “On-Farm Cover Crop Research” – Women in Denim Workshop | Storm Lake | 15 |
| 1/20/2015 | ISU Crop Advantage Series | Atlantic | 40 |
| 1/21/2015 | “On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop | Fort Dodge | 45 |

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| 1/22/2015 | "On-Farm Cover Crop Research" – ISU Crop Advantage Series Workshop (2) | Waterloo | 120 |
| 1/27/2015 | Asmus Farm Supply | Rake | 55 |
| 1/28/2015 | "On-Farm Cover Crop Research" – ISU Crop Advantage Series Workshop | Iowa City | 60 |
| 2/10/2015 | AAI AgriBiz Showcase | Des Moines | 50 |
| 4/2/2015 | "On-Farm Cover Crop Research" – Iowa Learning Farms Field Day | Dickens | 45 |
| 5/27/2015 | WFAN Cover Crop Meeting | Madison County | 25 |
| 6/3/2015 | Ida County Farm Bureau | Ida County | 40 |
| 6/15/2015 | "Multiple Benefits from Wetlands, Prairies and Cover Crops" – PFI Field Day | Winterset | 47 |
| 6/16/2015 | "On-Farm Cover Crop Research" – Iowa Learning Farms Field Day | Chariton | 25 |
| 6/17/2015 | "Rotations: Organic and Conventional Grains and Cattle Grazing" – PFI Field Day | Kalona | 52 |
| 6/22/2015 | "Conservation, Soil Health and On-Farm Energy" – PFI Field Day | Emerson | 100 |
| 6/23/2015 | Cover Crops Presentation | Harrison/Crawford County | 50 |
| 6/24/2015 | "Practical Talk on Pasture and Row Crop Farming" – PFI Field Day | Coon Rapids | 40 |
| 6/25/2015 | "Farm Production: Corn, Soybeans, Solar and Wind" – PFI Field Day | Jefferson | 50 |
| 6/30/2015 | Walmart/Monsanto/EDF Tour of Marsden Research Farm Plots | Boone | 10 |
| 7/7/2015 | "Learning Together: Evaluating a Cover Crop Terminator" | Hampton | 58 |
| 7/8/2015 | "Cover Crops: What, How and When?" | Reinbeck | 55 |
| 7/16/2015 | "Cover Crops in Corn in July: Will They Make it to the Fall?" | Orange City | 52 |
| 7/22/2015 | "Cover Crops 101 to 401 and Everything in Between" | Grundy Center | 70 |
| 8/3/2015 | Bus Trip to Gabe Brown's Ranch | North Dakota | 43 |
| 8/19/2015 | "Crop Diversity and Grazing Livestock for Soil Health" | Jefferson | 43 |
| 8/26/2015 | NRCS Soil Health Workshop | Cherokee | 50 |
| 8/28/2015 | "Summer Cover Crop Mix for Forage, Cover and Soil Health" | Stanton | 70 |
| 9/3/2015 | "Starting a Cattle Operation with Contract Grazing" | Norway, Amana | 55 |
| 9/8/2015 | "Integrating Cash Crops, Cover Crops and Livestock" | Bedford | 45 |
| 9/10/2015 | ILF/Wright Co SWCD Field Day | Woolstock | 54 |
| 9/12/2015 | "Trying New Things: Cover Crops, Organic and Livestock" | Charles City | 45 |

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| 9/26/2015 | "Vermicomposting and Cover Crops for Vegetables" | West Branch | 85 |
| 11/10/2015 | Greenhorn Grazing | Dyersville | 10 |
| 11/12/2015 | Oskaloosa Cover Crop Meeting (Unilever/ADM) | Oskaloosa | 20 |

Webinars Held or participated in **8** webinars.

- "Cover Crops for Iowa" Farminar. Sarah Carlson. June 17, 2015. 10 participants. 349 archived views. <http://practicalfarmers.org/farmer-knowledge/farminar-archive/cover-crops-for-iowa/>
- "Cover Crops and Wildlife Habitat." Farminar. Sarah Carlson. June 22, 2015. 39 participants.
- "The Economics of Cover Crops" Farminar. Sarah Carlson. July 20, 2015. 36 participants. 31 archived views. <http://practicalfarmers.org/farmer-knowledge/farminar-archive/the-economics-of-cover-crops/>
- "The Basics of Cover Crops in Iowa" Webinar. July 30, 2015. <https://www.iowafarmbureau.com/Article/Webinar-The-Basics-of-Cover-Crops-in-Iowa->
- "Alternatives to Cereal Rye and the Benefits of Grazing Covers" Farminar. December 8, 2015. 27 participants. 108 archived views. <http://practicalfarmers.org/farmer-knowledge/farminar-archive/alternatives-to-cereal-rye-and-the-benefits-of-grazing-covers/>
- "The Haney Soil Test and Nutrient Turnover" Farminar. December 1, 2015. 52 participants. 180 archived views. <http://practicalfarmers.org/farmer-knowledge/farminar-archive/the-haney-soil-test-and-nutrient-turnover/>
- "Mindset and Method of Cover Crops in Vegetable Production" Farminar. November 17, 2015. 29 participants. 133 archived views. <http://practicalfarmers.org/farmer-knowledge/farminar-archive/mindset-and-method-of-cover-crops-in-vegetable-production/>
- "Cover Crops" Farminar with University of Costa Rica class. Sarah Carlson. November 9, 2015. 45 participants.

Conferences Held or participated in **4** conference/events.

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| 1/23-24/2015 | Practical Farmers of Iowa Annual Conference (3 Cover Crop Sessions) | Ames | 190 |
| 2/3-5/2015 | Iowa Power Farming Show | Des Moines | 1500 |
| 2/17-18/2015 | Cover Crops Conference | Des Moines | 350 |
| 11/20/2015 | SOIL Conference | Des Moines | 120 |

Interviews and presentations: PFI staff and/or farmers presented or were interviewed on cover crops at **10** occasions.

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| 1/23/2015 | "Cover Crops and Land Values" – Peoples Company's Land Investment Expo | West Des Moines | 200 |
| 2/13/2015 | Griswold Optimist Club | Griswold | 30 |
| 2/23/2015 | Cover Crop Presentation – ISU Agronomy Class | Ames | 30 |

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| 7/23/2015 | Presentation at Profit Pro | Albert Lea, MN | 35 |
| 8/4/2015 | Presentation at NSAC National Meeting | Iowa City | 50 |
| 8/17/2015 | Presentation to Graduate Program in Sustainable Agriculture Class | Ames | 20 |
| 8/18/2015 | Presentation to Heartland Co-op @ Retreat | Moravia | 70 |
| 8/27/2015 | Presentation at Iowa State University Agronomy Department Seminar | Ames | 50 |
| 10/2/2015 | Issues in Sustainable Ag/ISU | Ames | 80 |
| 11/2/2015 | Cedar Rapids Audubon Society | Cedar Rapids | 15 |

Meetings Hosted and/or participated in 20 meetings related to cover crops.

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| 3/4/2015 | Wildlife Society Meeting | Ames | 90 |
| 3/5/2015 | Unilever Sustainable Soy Meeting - "Practical Farmers of Iowa and Cover Crops" | Chariton | 7 |
| 3/6/2015 | Unilever Sustainable Soy Meeting – "Practical Farmers of Iowa and Cover Crops" | Ankeny | 15 |
| 3/9/2015 | "Practical Farmers of Iowa and Cover Crops" – Annie's Project | Sully | 16 |
| 3/10/2015 | Doniphan County SWCD Meeting | Doniphan County, KS | 50 |
| 4/9/2015 | Feeding the World Symposium | Iowa City | 50 |
| 6/30/2015 | "Water Quality Dinner Dialog" – IAWA, IFU, and IEC | Orient | 30 |
| 7/7/2015 | IAWA Steering Committee Meeting | | 25 |
| 7/13/2015 | Cover Crops Presentation w/ Grain Millers | Marion, Indiana | 10 |
| 7/16/2015 | Meeting with Bill Stowe | Des Moines | 1 |
| 7/21/2015 | Presentation at WQI Cattlemen Meeting | Lytton | 6 |
| 7/30/2015 | Wallace Center Water Dialogues | Des Moines | 50 |
| 8/4/2015 | Presentation at NSAC National Meeting | Iowa City | 25 |
| 8/4/2015 | Presentation at Women in Ag Meeting | Ankeny | 100 |
| 8/6/2015 | Trained trainers at GLBW | Calmar | 80 |
| 8/11/2015 | Ag in the Community Group | Clarion | 7 |
| 8/25/2015 | Iowa Beef Center Meeting | Ames | 2 |
| 11/19/2015 | Women, Land and Legacy | Storm Lake | 15 |
| 12/8/2015 | Cover Crops in Iowa: Augustana College | Rock Island, IL | 25 |
| 12/10/2015, 12/11/2015 | Practical Farmers of Iowa Cooperators' Meeting | Ames | 99 |

Other communications

Cover Crop Speakers Bureau Participants:

Adam Kleiss
Arlyn Kauffman
Bob Lynch
Craig Fleishman
Dick Sloan
Don Elsbernd
Francis Thicke
Fred Abels
Jack Boyer
Jeff Olson
Jeremy Gustafson
Jerry Sindt
Jon Bakehouse
Jon Kiel
Lee Tesdell
Mark Peterson
Paul Ackley
Rick Juchems
Rob Davis
Steve Berger
Steve McGrew
Tim Recker
Tim Smith
Tom Frantzen
Tony Thompson
Wade Dooley
Wendy Johnson