2015 MCCC Iowa report

Compiled by Andy Lenssen, Department of Agronomy, Iowa State University, Ames, IA 50011-1010

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:


**Refereed journal articles**


**Proceedings**


**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 constrains 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.**

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

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

<table>
<thead>
<tr>
<th>Name</th>
<th>Co-workers</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms. Jyotsna Acharya</td>
<td>A. Robinson</td>
<td>Investigating the causes of corn yield decreases following cereal rye winter cover crop</td>
</tr>
<tr>
<td>Dr. Matt Bakker</td>
<td>T. Kaspar &amp; T. Moorman</td>
<td>Investigating the causes of corn yield decreases following cereal rye winter cover crop</td>
</tr>
<tr>
<td>Dr. Chumki Banik</td>
<td>D. Laird</td>
<td>Managing perennial cover crops for sustainable corn stover biomass production: Temporal variation in soil nitrate-N</td>
</tr>
</tbody>
</table>
Extension Bulletins


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


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

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](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


- 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;


“Can This Genius Strategy Stop Big Ag from Dumping Fertilizer Into Drinking Water?” Sarah Carlson featured. Mother Jones. September/October 2015. [Link]

“How do we fix Iowa’s nitrate pollution?” Sarah Carlson featured. Des Moines Register. September 12, 2015. [Link]

“Bean harvest under cover” Nick Ohde. Wallace’s Farmer. September 2015. [Link]


“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. [Link] (Picked up nationally).

“Use Oats in Diverse Rotations” George Schaefer featured (from PFI field day). Successful Farming. December 15, 2015. [Link]


“Cover crops can extend grazing” Wallace’s Farmer. November 2015. [Link]

“Farmers plant the seeds of an oat rotation revival” Sarah Carlson featured. Iowa Farmer Today. November 12, 2015. [Link]
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.


**PFI Newsletter**

Published 6 newsletter articles on cover crops;


**Practical Farmers blog**

Published 54 blog posts related to cover crops;


• “Cover crops at Roger & Mary Knutson’s farm, Hardin County” Practical Farmers Blog. Stefan


**recap-cover-crops-in-corn-in-july-will-they-make-it-to-the-fall-july-16/**


• “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/


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.

<table>
<thead>
<tr>
<th>Date</th>
<th>Title</th>
<th>Location</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/7/2015</td>
<td>“On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop</td>
<td>Okoboji</td>
<td>45</td>
</tr>
<tr>
<td>1/7/2015</td>
<td>“On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop</td>
<td>Burlington</td>
<td>30</td>
</tr>
<tr>
<td>1/14/2015</td>
<td>“On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop</td>
<td>Storm Lake</td>
<td>50</td>
</tr>
<tr>
<td>1/15/2015</td>
<td>“On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop</td>
<td>Moravia</td>
<td>35</td>
</tr>
<tr>
<td>1/17/2015</td>
<td>“On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop</td>
<td>Storm Lake</td>
<td>15</td>
</tr>
<tr>
<td>1/20/2015</td>
<td>ISU Crop Advantage Series</td>
<td>Atlantic</td>
<td>40</td>
</tr>
<tr>
<td>1/21/2015</td>
<td>“On-Farm Cover Crop Research” – ISU Crop Advantage Series Workshop</td>
<td>Fort Dodge</td>
<td>45</td>
</tr>
<tr>
<td>Date</td>
<td>Event Description</td>
<td>Location</td>
<td>Audience</td>
</tr>
<tr>
<td>------------</td>
<td>-------------------------------------------------------------------------------------</td>
<td>----------------</td>
<td>----------</td>
</tr>
<tr>
<td>1/22/2015</td>
<td>&quot;On-Farm Cover Crop Research&quot; – ISU Crop Advantage Series Workshop (2)</td>
<td>Waterloo</td>
<td>120</td>
</tr>
<tr>
<td>1/27/2015</td>
<td>Asmus Farm Supply</td>
<td>Rake</td>
<td>55</td>
</tr>
<tr>
<td>1/28/2015</td>
<td>&quot;On-Farm Cover Crop Research&quot; – ISU Crop Advantage Series Workshop</td>
<td>Iowa City</td>
<td>60</td>
</tr>
<tr>
<td>2/10/2015</td>
<td>AAI AgriBiz Showcase</td>
<td>Des Moines</td>
<td>50</td>
</tr>
<tr>
<td>4/2/2015</td>
<td>&quot;On-Farm Cover Crop Research&quot; – Iowa Learning Farms Field Day</td>
<td>Dickens</td>
<td>45</td>
</tr>
<tr>
<td>5/27/2015</td>
<td>WFAN Cover Crop Meeting</td>
<td>Madison County</td>
<td>25</td>
</tr>
<tr>
<td>6/3/2015</td>
<td>Ida County Farm Bureau</td>
<td>Ida County</td>
<td>40</td>
</tr>
<tr>
<td>6/15/2015</td>
<td>&quot;Multiple Benefits from Wetlands, Prairies and Cover Crops” – PFI Field Day</td>
<td>Winterset</td>
<td>47</td>
</tr>
<tr>
<td>6/16/2015</td>
<td>&quot;On-Farm Cover Crop Research&quot; – Iowa Learning Farms Field Day</td>
<td>Chariton</td>
<td>25</td>
</tr>
<tr>
<td>6/17/2015</td>
<td>&quot;Rotations: Organic and Conventional Grains and Cattle Grazing” – PFI Field Day</td>
<td>Kalona</td>
<td>52</td>
</tr>
<tr>
<td>6/22/2015</td>
<td>&quot;Conservation, Soil Health and On-Farm Energy” – PFI Field Day</td>
<td>Emerson</td>
<td>100</td>
</tr>
<tr>
<td>6/23/2015</td>
<td>Cover Crops Presentation</td>
<td>Harrison/Crawford County</td>
<td>50</td>
</tr>
<tr>
<td>6/24/2015</td>
<td>&quot;Practical Talk on Pasture and Row Crop Farming” – PFI Field Day</td>
<td>Coon Rapids</td>
<td>40</td>
</tr>
<tr>
<td>6/25/2015</td>
<td>&quot;Farm Production: Corn, Soybeans, Solar and Wind” – PFI Field Day</td>
<td>Jefferson</td>
<td>50</td>
</tr>
<tr>
<td>6/30/2015</td>
<td>Walmart/Monsanto/EDF Tour of Marsden Research Farm Plots</td>
<td>Boone</td>
<td>10</td>
</tr>
<tr>
<td>7/7/2015</td>
<td>&quot;Learning Together: Evaluating a Cover Crop Terminator&quot;</td>
<td>Hampton</td>
<td>58</td>
</tr>
<tr>
<td>7/16/2015</td>
<td>&quot;Cover Crops in Corn in July: Will They Make it to the Fall?”</td>
<td>Orange City</td>
<td>52</td>
</tr>
<tr>
<td>7/22/2015</td>
<td>&quot;Cover Crops 101 to 401 and Everything in Between&quot;</td>
<td>Grundy Center</td>
<td>70</td>
</tr>
<tr>
<td>8/3/2015</td>
<td>Bus Trip to Gabe Brown’s Ranch</td>
<td>North Dakota</td>
<td>43</td>
</tr>
<tr>
<td>8/19/2015</td>
<td>&quot;Crop Diversity and Grazing Livestock for Soil Health&quot;</td>
<td>Jefferson</td>
<td>43</td>
</tr>
<tr>
<td>8/26/2015</td>
<td>NRCS Soil Health Workshop</td>
<td>Cherokee</td>
<td>50</td>
</tr>
<tr>
<td>8/28/2015</td>
<td>&quot;Summer Cover Crop Mix for Forage, Cover and Soil Health&quot;</td>
<td>Stanton</td>
<td>70</td>
</tr>
<tr>
<td>9/3/2015</td>
<td>&quot;Starting a Cattle Operation with Contract Grazing&quot;</td>
<td>Norway, Amana</td>
<td>55</td>
</tr>
<tr>
<td>9/8/2015</td>
<td>&quot;Integrating Cash Crops, Cover Crops and Livestock”</td>
<td>Bedford</td>
<td>45</td>
</tr>
<tr>
<td>9/10/2015</td>
<td>ILF/Wright Co SWCD Field Day</td>
<td>Woolstock</td>
<td>54</td>
</tr>
<tr>
<td>9/12/2015</td>
<td>&quot;Trying New Things: Cover Crops, Organic and Livestock&quot;</td>
<td>Charles City</td>
<td>45</td>
</tr>
</tbody>
</table>
Webinars Held or participated in 8 webinars.


Conferences Held or participated in 4 conference/events.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Location</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/23-24/2015</td>
<td>Practical Farmers of Iowa Annual Conference (3 Cover Crop Sessions)</td>
<td>Ames</td>
<td>190</td>
</tr>
<tr>
<td>2/3-5/2015</td>
<td>Iowa Power Farming Show</td>
<td>Des Moines</td>
<td>1500</td>
</tr>
<tr>
<td>2/17-18/2015</td>
<td>Cover Crops Conference</td>
<td>Des Moines</td>
<td>350</td>
</tr>
<tr>
<td>11/20/2015</td>
<td>SOIL Conference</td>
<td>Des Moines</td>
<td>120</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
<th>Location</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/23/2015</td>
<td>“Cover Crops and Land Values” – Peoples Company’s Land Investment Expo</td>
<td>West Des Moines</td>
<td>200</td>
</tr>
<tr>
<td>2/13/2015</td>
<td>Griswold Optimist Club</td>
<td>Griswold</td>
<td>30</td>
</tr>
<tr>
<td>2/23/2015</td>
<td>Cover Crop Presentation – ISU Agronomy Class</td>
<td>Ames</td>
<td>30</td>
</tr>
</tbody>
</table>
### Meetings Hosted and/or participated in 20 meetings related to cover crops.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
<th>Location</th>
<th>Attendance</th>
</tr>
</thead>
<tbody>
<tr>
<td>3/4/2015</td>
<td>Wildlife Society Meeting</td>
<td>Ames</td>
<td>90</td>
</tr>
<tr>
<td>3/5/2015</td>
<td>Unilever Sustainable Soy Meeting - “Practical Farmers of Iowa and Cover Crops”</td>
<td>Chariton</td>
<td>7</td>
</tr>
<tr>
<td>3/6/2015</td>
<td>Unilever Sustainable Soy Meeting – “Practical Farmers of Iowa and Cover Crops”</td>
<td>Ankeny</td>
<td>15</td>
</tr>
<tr>
<td>3/9/2015</td>
<td>“Practical Farmers of Iowa and Cover Crops” – Annie’s Project</td>
<td>Sully</td>
<td>16</td>
</tr>
<tr>
<td>3/10/2015</td>
<td>Doniphan County SWCD Meeting</td>
<td>Doniphan County, KS</td>
<td>50</td>
</tr>
<tr>
<td>4/9/2015</td>
<td>Feeding the World Symposium</td>
<td>Iowa City</td>
<td>50</td>
</tr>
<tr>
<td>6/30/2015</td>
<td>“Water Quality Dinner Dialog” – IAWA, IFU, and IEC</td>
<td>Orient</td>
<td>30</td>
</tr>
<tr>
<td>7/7/2015</td>
<td>IAWA Steering Committee Meeting</td>
<td>Marion, Indiana</td>
<td>25</td>
</tr>
<tr>
<td>7/13/2015</td>
<td>Cover Crops Presentation w/ Grain Millers</td>
<td>Des Moines, IA</td>
<td>10</td>
</tr>
<tr>
<td>7/16/2015</td>
<td>Meeting with Bill Stowe</td>
<td>Des Moines, IA</td>
<td>1</td>
</tr>
<tr>
<td>7/21/2015</td>
<td>Presentation at WQI Cattlemen Meeting</td>
<td>Lytton</td>
<td>6</td>
</tr>
<tr>
<td>7/30/2015</td>
<td>Wallace Center Water Dialogues</td>
<td>Des Moines, IA</td>
<td>50</td>
</tr>
<tr>
<td>8/2/2015</td>
<td>Presentation at ISU Ag in the Community Group</td>
<td>Clarion</td>
<td>7</td>
</tr>
<tr>
<td>8/25/2015</td>
<td>Iowa Beef Center Meeting</td>
<td>Ames</td>
<td>2</td>
</tr>
<tr>
<td>11/19/2015</td>
<td>Women, Land and Legacy</td>
<td>Storm Lake, IA</td>
<td>15</td>
</tr>
<tr>
<td>12/8/2015</td>
<td>Cover Crops in Iowa: Augustana College</td>
<td>Rock Island, IL</td>
<td>25</td>
</tr>
<tr>
<td>12/10/2015</td>
<td>Practical Farmers of Iowa</td>
<td>Ames</td>
<td>99</td>
</tr>
<tr>
<td>12/11/2015</td>
<td>Cooperators’ Meeting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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