

CONSERVATION INNOVATION GRANTS Final Progress Report

Grantee Name: American Farmland Trust
Project Title: Guaranteed Performance of Nutrient and Tillage Best Management Practices
Period Covered by Report: September 27, 2004 through September 27, 2007
Project End Date: September 27, 2007

Summarize the work performed during the project period covered by this report:

Status of Field Activities

BMP Challenge in 2007

In 2007, the BMP CHALLENGE provided a safety net for 35 farmers in four states, guaranteeing performance of nutrient management and reduced tillage on a total of 3,128 acres in 48 fields. The program uses side-by-side comparison strips in farmer fields to evaluate yield. A net returns comparison then factors in fertilizer or tillage cost savings to determine the net economic return to the farmer.

In 2007, university recommendations for nitrogen were outstripped by greater than average yields and higher corn prices. Yields on the check strips averaged 173 bu. per acre, 10 bushels more than the strips fertilized at BMP rates. Factoring in nitrogen fertilizer savings, farmer returns were \$15.74 per acre less when fertilizing at the BMP rate. The BMP CHALLENGE made up this shortfall with cash payments to participating farmers.

University-recommended rates are not designed to maximize yield in any one year, so it makes sense that farmers and yields might come up short in high-yielding years. In general, these occasional shortfalls are made up in years when yields don't justify that extra amount of fertilizer. However, recent increases in corn prices have thrown another variable into the mix. When corn prices increase, increasing fertilizer rates to some extent can be economically justified.

Our results for Reduced Tillage BMP Challenge participants were improved compared to the 2006 results. In 2007, yields in the reduced tillage fields averaged only 4 bushels less than intensively tilled check strips (174 bushels for full tillage and 170 bushels for reduced tillage). The average economic returns for the reduced tillage practice were only \$2 less than farmers' traditional tillage practices. We have helped farmers be aware of management decisions that can help improve performance and we hope that these results are repeated in subsequent years.

Finally, in 2007, our Enhanced Nutrient Management BMP Challenge participants had better results compared to the 2006 participants. As they did last year, participants in the

Enhanced Nutrient Management BMP Challenge project in Pennsylvania, applied nitrogen at rates 15% below current recommendations. The yields for the enhanced nutrient applications average 7 bushels less than the recommended rate (180 bushels vs. 173 bushels). The net economic returns for the enhanced rate were \$16.62 less than the net returns to the recommended rate.

BMP Challenge Performance Over Time

Since 2000, the program has helped over 50 individual farmers meet net income and conservation goals. On average, the Nutrient Management BMP Challenge program has helped farmers reduce nitrogen use by 40 lbs. per acre on average for a total of nearly 77.8 tons. These reductions also contribute to reduced emissions of nitrous oxide, a potent greenhouse gas, by nearly 5,122 lbs.

Starting in 2005, the BMP CHALLENGE approach was used with Pennsylvania corn farmers in nitrogen-impaired watersheds to reduce nitrogen below recommended rates. The idea was to test the economic feasibility of this approach for improving water quality. This Enhanced Nutrient Management project has generated N reductions of more than 48.1 tons at a cost of about \$3 per lb., competitive with other approaches including cover crops. The Pennsylvania Enhanced Nutrient Management program reduced nitrous oxide emissions by approximately 3,166 lbs. This means that since 2000, between the two programs, N has been reduced by nearly 126 tons over the past seven years and nitrous oxide emissions have been reduced by nearly 4.15 tons!

In 2006, the Reduced Tillage BMP Challenge program began supporting conservation tillage adoption. Participating farmers use no till, strip till, ridge till or other techniques aiming to preserve at least a 30% residue cover after planting. The change in tillage creates a significant learning hurdle as farmers and their advisors adjust tillage and planting equipment, weed management strategies and other key system components. This learning curve is an ideal target for the guarantee, protecting farmer net income as they learn the new approach that reduces soil erosion and nutrient runoff. To date, participating farmers have been compensated for a nearly \$20 per acre reduction in net returns while reducing sediment by more than 1700 tons and associated soil phosphorus loss by nearly 2300 lbs. Reducing tillage also contributed to a 570 ton reduction in carbon dioxide greenhouse gas emissions. In 2008, the program is working to provide additional support to farmers and advisors new to conservation tillage, including connecting them with experienced farmers, to smooth out the learning curve and reduce program costs.

2000-2007 RESULTS	Nutrient BMP	Reduced Tillage	Enhanced Nutrient Management
Total acres, 2004-2007	3885 acres	1139 acres	3554 acres
BMP yield, average and range	158.9 bu./acre 15.4 - 220	159.9 bu./acre 72 - 192	121.6 bu./acre 9 - 217
Check-strip yield, average and range	165.4 bu./acre 16.7 - 230	172.2 bu./acre 110 - 210	129.6 bu./acre 10 - 238

Farmer net returns after fertilizer or tillage savings, average and range	(\$3.90) (\$53.03) - \$81.25	(\$18.98) (\$157) - \$130	(\$19.95) (\$111) - \$105
Total N use reduction	155,712 lbs. N	-	96,237 lbs. N
Estimated sediment reduction	-	1709 tons	-
Estimated P load reduction	-	2278 lbs.	-
Estimated N ₂ O reduction	5,122 lbs.	-	3,166 lbs.
Estimated CO ₂ reduction	-	570 tons	-

Status of Outreach Activities

In addition to the field work above, in conjunction with our CIG partner Agflex, Inc., we have conducted numerous outreach activities throughout the project period. As mentioned in an earlier update, development of marketing and targeting strategy was instrumental in recruiting acres over the past three years.

The BMP Challenge was featured in several print and on-line publications listed below.

- An article about the *BMP Challenge* program ran in the *Iowa Farmer Today* on February 8, 2006 (please see http://dairycam.com/articles/2006/02/09/top_stories/01insure1.txt).
- The *BMP Challenge* program was featured on the cover of the July 2006 print and online issues of *Ohio Farmer* magazine, which can be viewed at http://magissues.farmprogress.com/OFM/OF07Jul06/OF01_to17.html.
- The *BMP Challenge* program is also currently being featured by the magazine *Mother Jones* in its online “Ocean Voyager” website, www.oceanvoyager.org. This site takes participants on a weekly voyage to environmental “hot spots” in different seas. The second week of the “Ocean Voyager” is dedicated to the problem of the Gulf of Mexico’s dead zone (hypoxia). Readers are told that by reducing nitrogen fertilizer use just 12 to 14 percent, we can shrink the dead zone without diminishing crop production, but for many farmers, the perceived risk of under-fertilizing their crops outweighs the benefits. AFT’s *BMP Challenge* is then presented as the most promising solution to this dilemma; the site states that AFT’s project “helps farmers reduce nitrogen and save money at the same time.” Visitors are asked to support the program by asking farmers to join the *BMP Challenge* and to send letters to federal and state representatives urging them to support the program and implement it in their state.
- As linked by “Ocean Voyager,” AFT has posted a new page to its website to engage visitors to take action to support the *BMP Challenge* towards reduction of agricultural pollution of the Gulf of Mexico. This page can be viewed at: www.farmland.org/resources/bmpchallenge/BMPChallenge_takeaction.asp. We have also added *BMP Challenge* content to our site on two revised pages,

<http://www.farmland.org/resources/innovation/default.asp> and
<http://www.farmland.org/resources/bmpchallenge/default.asp>.

WORKSHOPS & MEETINGS

To increase awareness of the BMP Challenge, AFT has also sponsored or participated in the following field days, workshops and meetings:

- The *Upper Midwest Best Management Practices Field Day and Expo* held on July 12, 2006 in Northfield, Minnesota. We mailed a brochure announcing this field day to over 400 contacts in Minnesota, Iowa and Wisconsin. Two articles covering the field day and the *BMP Challenge* appeared on the Agrinews website. The article can be viewed at: www.agrinews.com (or <http://webstar.agrinews.com/agrinews/262568575313000.bsp>).
- Two field days in Ohio featuring the *BMP Challenge*. The field days were held in Champaign County on August 24, 2006 and Stark County on September 15, 2006.
- A field day in Cross Plains, Wisconsin on September 11, 2006.
- A field day in Lancaster County, Pennsylvania on September 27.
- A meeting on December 7, 2006 in Harrisburg, Pennsylvania to discuss plans for further implementation of the *BMP Challenge* in Pennsylvania. Attendees included staff from the Pennsylvania Department of Agriculture, the Department of Environmental Protection, the State Conservation Commission, the Chesapeake Bay Commission and farmers who participated in the *BMP Challenge* in 2006.
- Lake Erie LaMP forum sponsored by the Ohio Environmental Council and the Delta Institute in Toledo, Ohio on July 27, 2007.
- Crawford County Conservation Tillage Field Day sponsored by Crawford County SWCD on August 10, 2007.
- Huron County Conservation Tillage Field Day sponsored by Huron County SWCD on August 17, 2007.
- “Getting Into The Zone” Conservation Tillage Field Day in New Haven, Indiana on August 30, 2007.
- In the winter of 2007/2008 AFT and its partners held three MN BMP CHALLENGE and WQT workshops for state agency, SWCD, crop advisors, NRCS, watershed groups and other professionals who work with producers in MN. Ninety-seven participants total attended the three workshops with five to seven presenters providing information on the BMP CHALLENGE, an introduction to WQT, rule development for trading in MN, and local perspectives on water quality issues and experience with the BMP CHALLENGE and WQT at each workshop.
- Presented the BMP CHALLENGE at the Shelby County Agronomy Day on January 14, 2008 in Sidney, Ohio.
- Presented the BMP Challenge at the meeting on Advancing Farmer-Friendly, Highly Effective Nutrient Use Efficiency Tools in Napoleon, Ohio on March 3, 2008.

Other Outreach Activities

- Presented the BMP Challenge at various meetings over the winter 2006/2007 including the Ohio No-Till conference, Ohio Crop Production Conference, Northwest Ohio Corn/Soybean Day.
- Conducted BMP Challenge informational seminars on January 11, 2007 in New Ulm, Minnesota and March 29, 2006 in Shelbyville, Michigan.
- Attended a meeting of the Agrotain International sales staff on October 24, 2006. Agrotain is a nitrogen stabilization product that can help reduce urea nitrogen applications. The sales staff is interested in promoting the *BMP Challenge* to users of urea fertilizers.
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- Presented “Water Quality Credit Trading 101 and the BMP CHALLENGE” at the Cannon River Watershed Partnership Board meeting in Cannon Falls, MN on January 7, 2008.
- Presented information on the BMP CHALLENGE and WQT at the MN Association of SWCD Annual Meeting and the 2007 Missouri Crop Management Conference.
- Presented on the BMP CHALLENGE and WQT at the Hawk Creek Watershed Information & Appreciation Meeting.
- Presented “Improving the MN River: The BMP CHALLENGE and WQT” at the MN Air Water and Waste Conference in Bloomington, MN on February 27, 2008; and presented “Emerging Conservation Tools: Market Based Incentives and the BMP CHALLENGE” at the Sauk Watershed District Rules Committee meeting on February 28, 2008 and on March 18, 2008 in Sauk Center, MN.
- Presented the BMP CHALLENGE in Marion, IA on March 14, 2008 hosted by the Cedar Rapids/Linn County Solid Waste Agency.
- Presented the BMP CHALLENGE at the Stearns County History Museum for Stearns County dealers and crop consultants on March 20, 2008.
- Presented the BMP CHALLENGE at the Iowa Lakes Community College on March 28, 2008 hosted by the Palo Alto SWCD.
- Presented on WQT and the BMP CHALLENGE at a Rural Advantage sponsored information meeting on March 31, 2008 in Faribault, MN.
- Presented at the 2007 CIG Showcase and the Clear Creek Watershed Nutrient Management Workshop (IA).

MAILINGS

- To date, 35,825 BMP CHALLENGE brochures have been printed with approximately 33,500 disseminated.
- The 7th edition of an electronic newsletter containing both BMP CHALLENGE program information and recent agricultural and conservation news was distributed to our database of contacts that now exceeds 5,000 people.
- A 2008 Outreach plan has been developed, with a brochure and electronic newsletter schedule with designated dates of dispersal and topic outlines has been developed.

Describe significant results, accomplishments, and lessons learned. Compare actual accomplishments to the project goals in your proposal:

BMP CHALLENGE

- Nutrient BMP guarantees have been implemented on approximately 141 farmer fields, resulting in an average 25% reduction in nitrogen fertilizer use.
- Reduced tillage was implemented on the first 14 fields in 2006 and on 13 fields in 2007.
- The Enhanced Nutrient Management BMP Challenge was initiated in Pennsylvania with 38 farmer fields in 2006 and 2007, with the goal of expanding the Enhanced Nutrient Management option (15% N reduction below BMP rates) beyond PA for the upcoming growing season, We have developed a partnership with Environmental Defense in Ohio to add approximately 20 farmers. We have requested and been approved to apply grant funds to guarantees for Enhanced Nutrient Management going forward.
- All results are recorded in a database.

We also have some significant findings from our post-participation survey we conducted with farmers who participated in the BMP Challenge in 2006.

- After participating in the BMP Challenge for only one year, 8 of the 24 producers indicated they will utilize BMP rates of nitrogen on 25% to 100% of their acres in crop year 2007.
- 17 of 22 respondents indicated that the BMP Challenge was an effective tool for protecting their income when trying BMP rates of nitrogen.
- 19 of 23 respondents indicated that they would continue to participate in the BMP Challenge program if it was available.
- 18 of 23 respondents would recommend the BMP Challenge program to other farmers.
- 17 of 22 respondents indicated they shared their experience with the BMP Challenge with at least one additional farmer and 50% of respondents indicated that they shared their experience with 2-5 farmers.

These results indicate that the BMP Challenge can have a critical impact in helping farmers gain experience and trust using Best Management Practices, which leads to implementing the practices on additional acres in the farmers operation. We will continue to survey farmers and monitor results to assess the impact of the BMP Challenge on adopting BMPs.