

Ag Retailers Continue Growth in Products and Services to Keep Phosphorus and Nitrogen on Cropland: 2017 Survey Results

In 2011, with support from the Great Lakes Protection Fund, the Partnership for Ag Resource Management (PARM) initiated a project with Sandusky River Watershed ag retailers to identify, promote and track products and services that reduce phosphorus (P) losses from cropland to improve water quality. The effort expanded to the Great Lakes Basin (GLB) in 2015.

Our 2017 season survey represents our sixth year working with Sandusky ag retailers, and our third year for the entire GLB. This year's survey incorporates N fertilizer application methods and nutrient loss reduction estimates. Data from the annual survey is critically important to learn and communicate ag retailers' voluntary efforts to help solve water quality problems within the Great Lakes Basin – without additional regulations.

Ag retailers throughout the GLB continue to make tremendous progress, increasing sales of cover crops, variable rate application, soil sampling and other services, contributing to cleaner water for drinking, recreation and commerce, and improving profitability for agribusinesses and farmers.

Survey highlights

- 68 ag retail locations participated this year, reporting on 2017 product and service sales.
- Rotational soil sampling jumped 34% to 81% of the acreage serviced by participating Sandusky River Watershed ag retailers from 2012 to 2017.
- In the Sandusky River watershed, the average acres of Variable Rate Technology (VRT) P and cover crop sales both decreased slightly compared to last year, but still remain at rates above the GLB.
- GLB-wide, VRT increased from 24% to 42% of acres serviced by our participating 68 ag retail locations from 2015 to 2017. Cover crops increased from 11% to 18% of acres serviced.
- The most common specialized P applications reported in our survey were topdress P and foliar P feeding. The most common specialized N applications were N loss inhibitors and sidedress N.

- Based on estimates from publications in scientific journals and Sandusky River watershed water quality monitoring data, these product and service sales represent more than 4 million pounds of P and 46 million pounds of N retained for the crop, and kept out of waterways in the GLB.

***Note: Due to errors in the 2017 survey, fall incorporation of broadcast fertilizer data and sidedress fertilizer application data were not properly collected. Please use the following link so that PARM is able to obtain accurate data for these questions: <https://www.surveymonkey.com/r/JS95KDI>**

Promoting products and services

In 2017, with support from the EPA and Great Lakes Restoration Initiative, we spearheaded a program for ag retailers to offer discounted VRT acres to farmers in specific watersheds who had not yet tried VRT. A total of 20,000 acres were made available, with 1604 acres remaining to be allotted by 2019. Ag retailers interested in participating in this program are invited to contact Mark Adelsperger at mark@partnershipfarm.org.

Our *Phosphorus Loss Reduction Handbook for Agronomists* is available for free download at <http://partnershipfarm.org/agronomist-handbook/>, along with new fact sheets on nitrogen use efficiency and enhanced efficiency fertilizers.

Free P loss wallet cards with helpful tips for agronomists and farmers continue to be available. More than 25,000 cards have been distributed to date. Visit <http://partnershipfarm.org/ploss-reduction-wallet-card/> to place your order.

Phosphorus (P) loss from any field is possible. Fields with any of the following conditions may be at higher risk. Your special attention can help prevent P losses.

- ▶ Soil test levels are above maintenance.
- ▶ Areas with high surface runoff potential:
 - Poorly or imperfectly drained soils.
 - Sloping fields.
 - Fields with less than 30% crop residue cover on soil surface.





Do

- ▶ Lightly incorporate (2-3") P applications; ag retailers can notify customer when applications are made.
- ▶ Follow recommendations for setbacks.
- ▶ Broadcast P for one crop year at a time only.
- ▶ Soil test at least every three years.
- ▶ Apply at University recommendations.
- ▶ Plant cover crops.
- ▶ Consider variable rate application.
- ▶ Consider reduced tillage: no till, strip till.

Don't



- ▶ Broadcast without light incorporation.
- ▶ Broadcast application before heavy rain.

Ag retailers driving stewardship and sustainability

**PHOSPHORUS LOSS REDUCTION
 HANDBOOK FOR AGRONOMISTS**

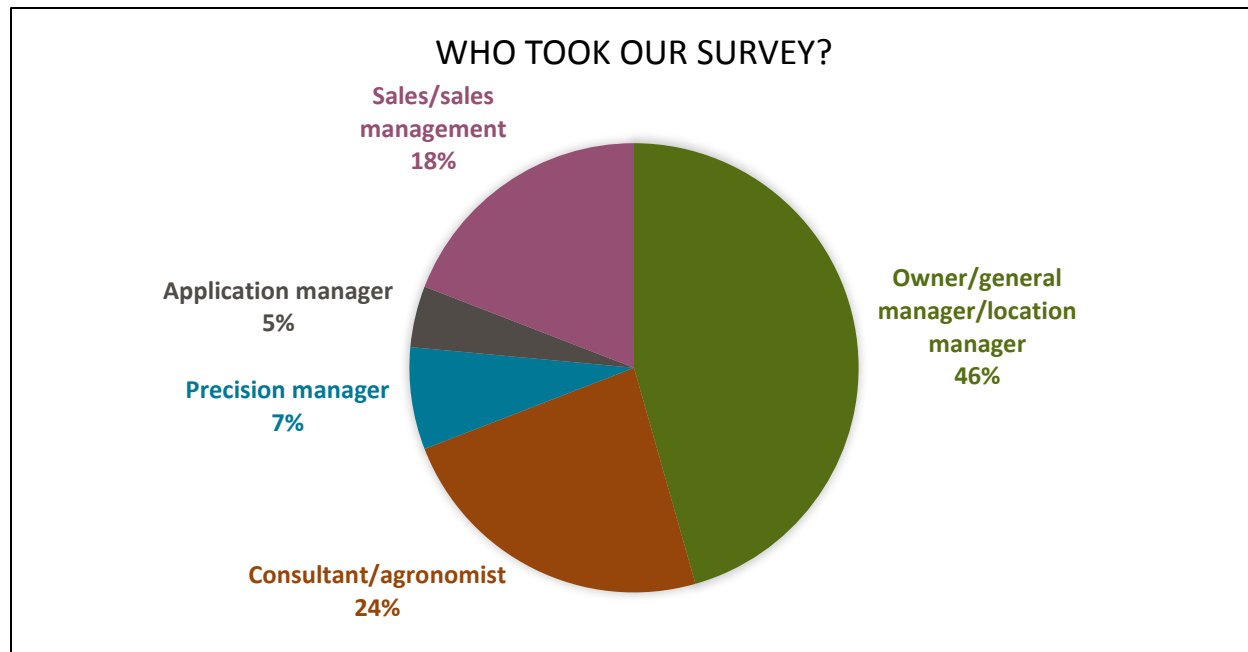
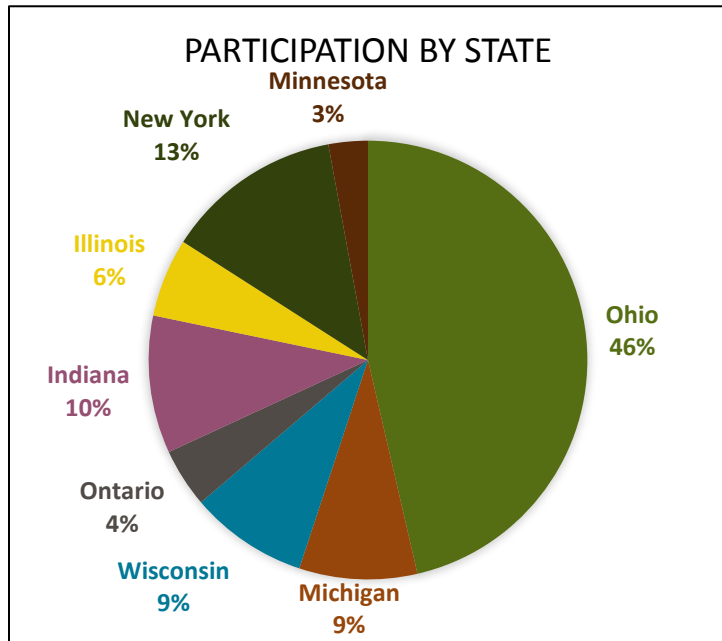
2nd Edition
 published by the IPM Institute of North
 America, Inc. Revised November 2017



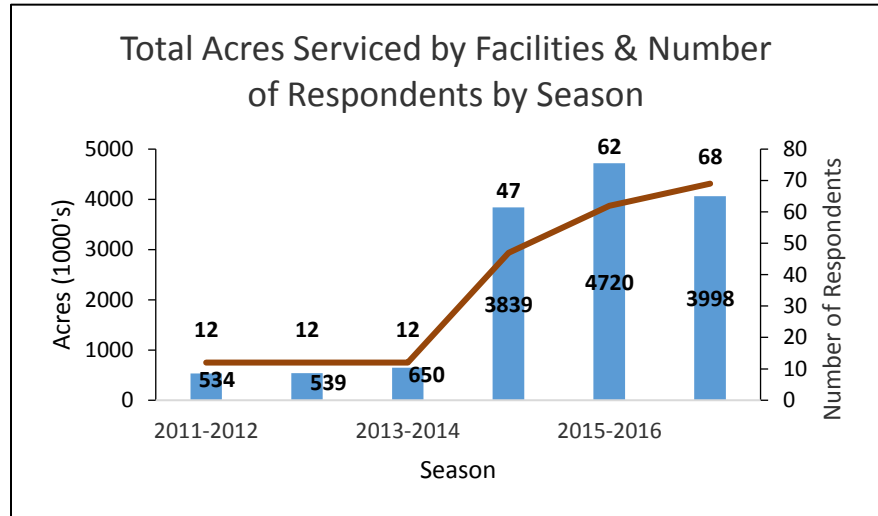
Survey results overview

68 ag retail locations participated, located in Ohio, Michigan, Wisconsin, Ontario, Indiana, Illinois, New York and Minnesota. Nearly half (46%) were completed by owner/general manager/location managers, followed by consultants/agronomists at 24%. The participant numbers are a positive indicator that water quality is a priority for ag retailer leadership at participating locations. Nearly half of the program participants were located in Ohio, the state where the survey was initiated in 2011 in the Sandusky River Watershed.



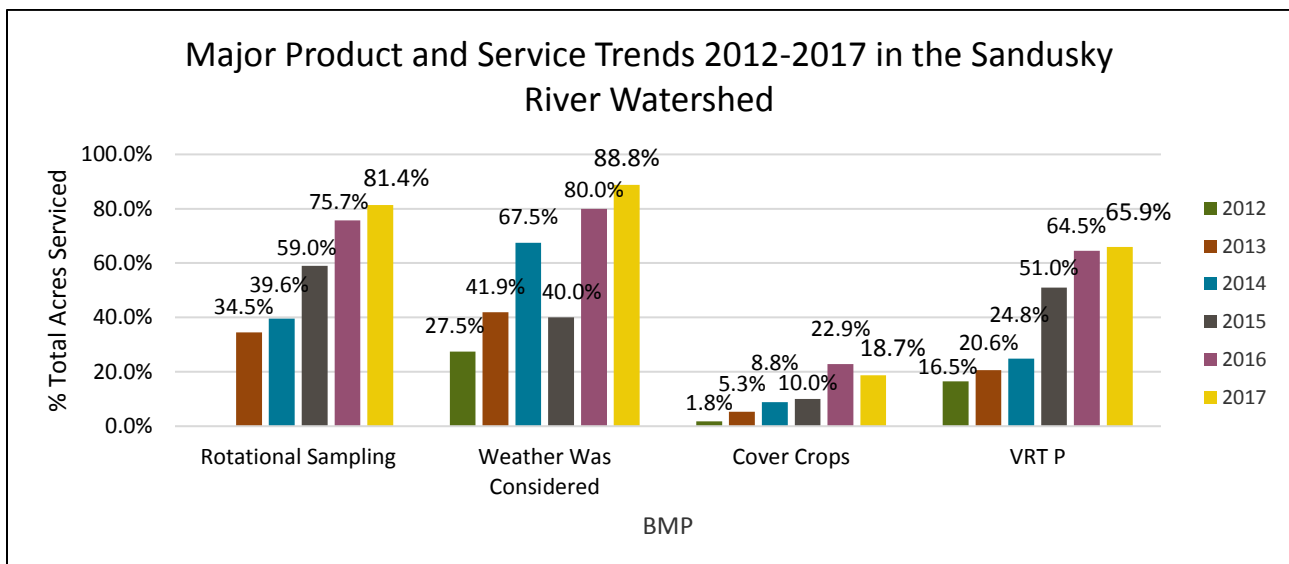
The total number of ag retailers in the program increased in 2017 (chart below), however the total number of acres decreased due to a smaller average number of acres serviced per location dropping from 76,122 in 2016 to 58,799 in 2017 (table below).

	Acres
Sum	3,998,322
Average	58,799
Maximum	200,000
Minimum	4000

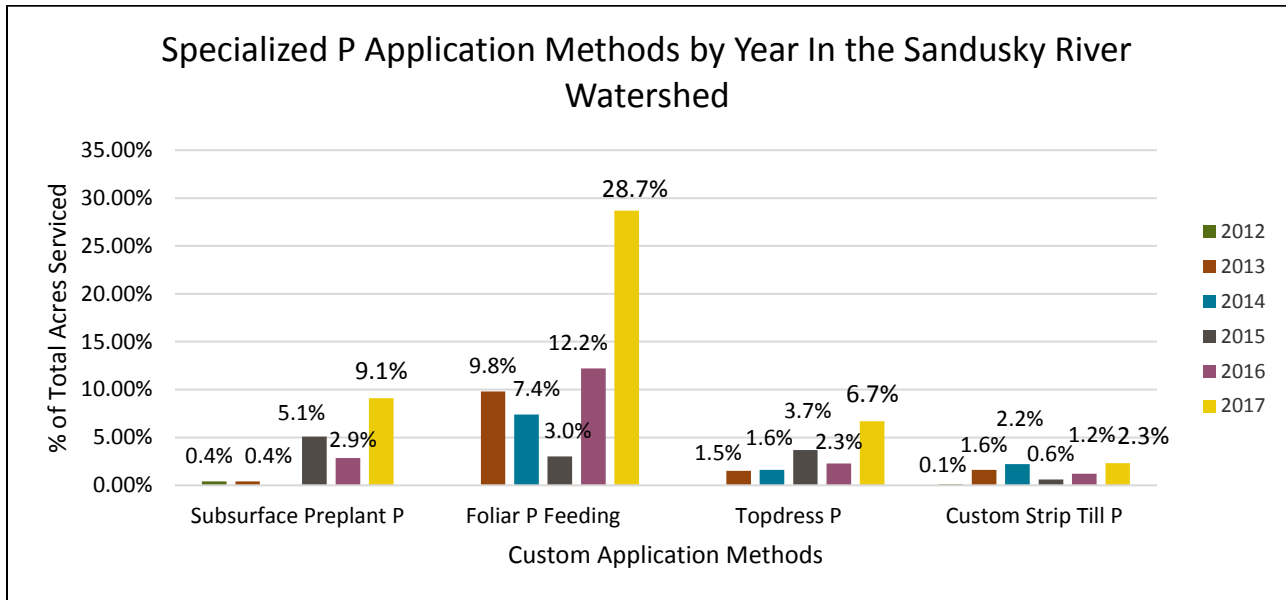


Sandusky River Watershed sales trends

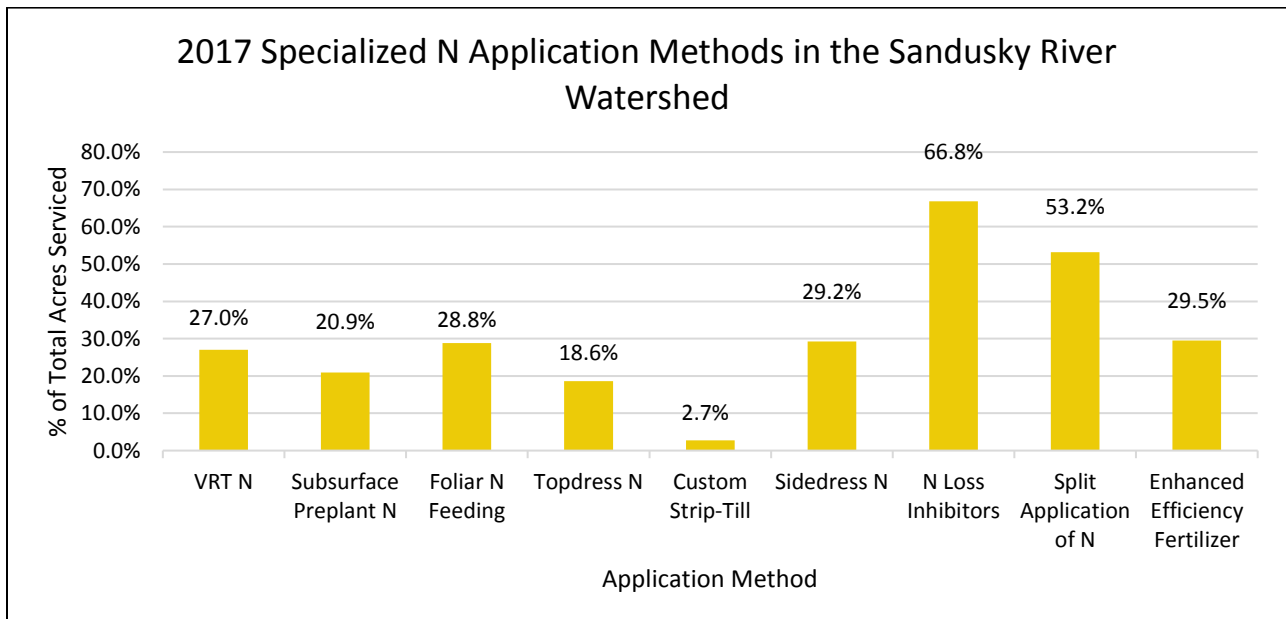
This past year represents our sixth year surveying twelve ag retailers in the Sandusky River Watershed. Our 2017 results show continued increases in sales of rotational soil sampling, consideration of weather before fertilizer application and variable rate P. Slight decreases were observed for cover crops; however, Sandusky averages did not decrease to 2015 averages and are still above GLB averages for the same services. Of all acres serviced by responding retailers, rotational sampling (acres reported sampled at least every four years) increased 5.7% percent from 2016 to 2017.



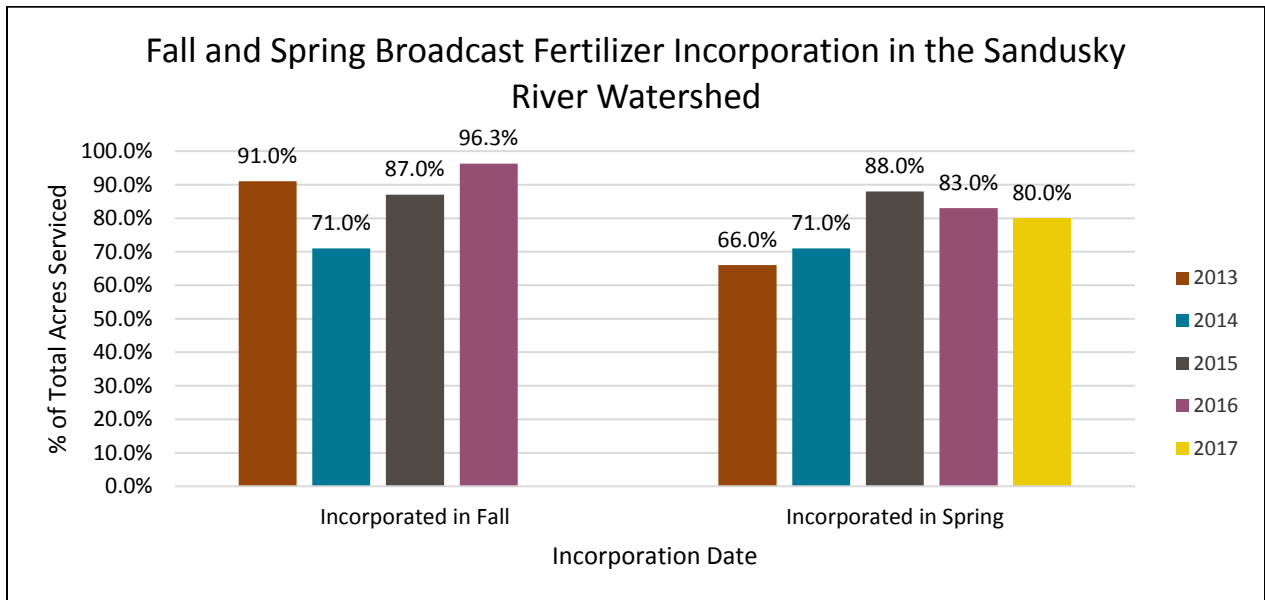
Many Sandusky ag retailers offer specialized application methods as reported here. Foliar P feeding and subsurface preplant P were the most common, with 28.7% and 9.1% usage across all reported acres, respectively. Foliar P feeding increased 16.5% from 2016 to 2017, while topdress P increased 4.4% and custom strip-till increased slightly as well.



This was our first year that we surveyed specialized N application methods. The use of N loss inhibitors was the most common practice in the Sandusky River Watershed at 66.82%, followed by the split application of N at 53.18%. All of the specialized N application methods were used at a higher rate than their complimentary specialized P application methods.



Light incorporation (2-3") of broadcast P applications can reduce P losses. In 2017, a reported 80% of spring broadcast application acres were incorporated, which represents a slight decrease compared to 2016. Due to an error in the survey, 2017 fall incorporation data was not included. Data were not collected on incorporation in 2012.



* An error in the 2017 survey was found for fall incorporation. Please use the following link, <https://www.surveymonkey.com/r/JS95KDI> to provide PARM with accurate data

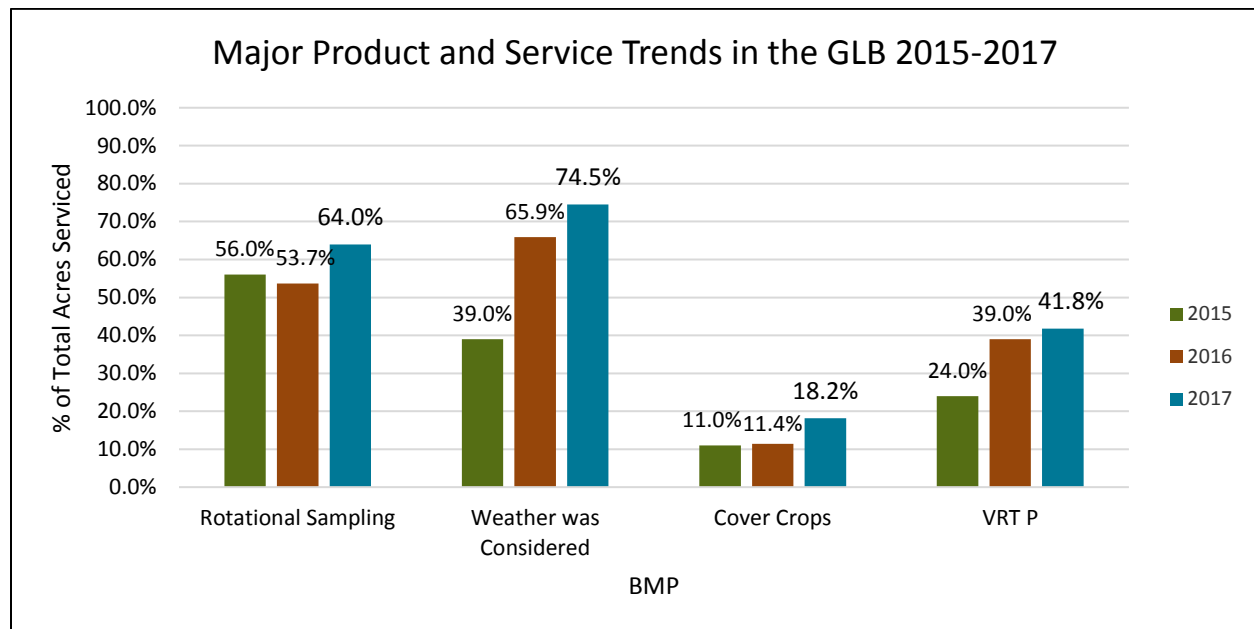


Great Lakes Basin results

A majority of responding ag retailers reported making a profit on the products and services that they offered. The one exception is custom-strip till; however, this is slightly skewed by the 40% of respondents that did not know if they were making a profit. The most profitable products and services were custom P or N applications of topdress, foliar P-feeding, and sidedress with 89.5%, 84.9% and 82.2% of those surveyed reporting a profit, respectively.

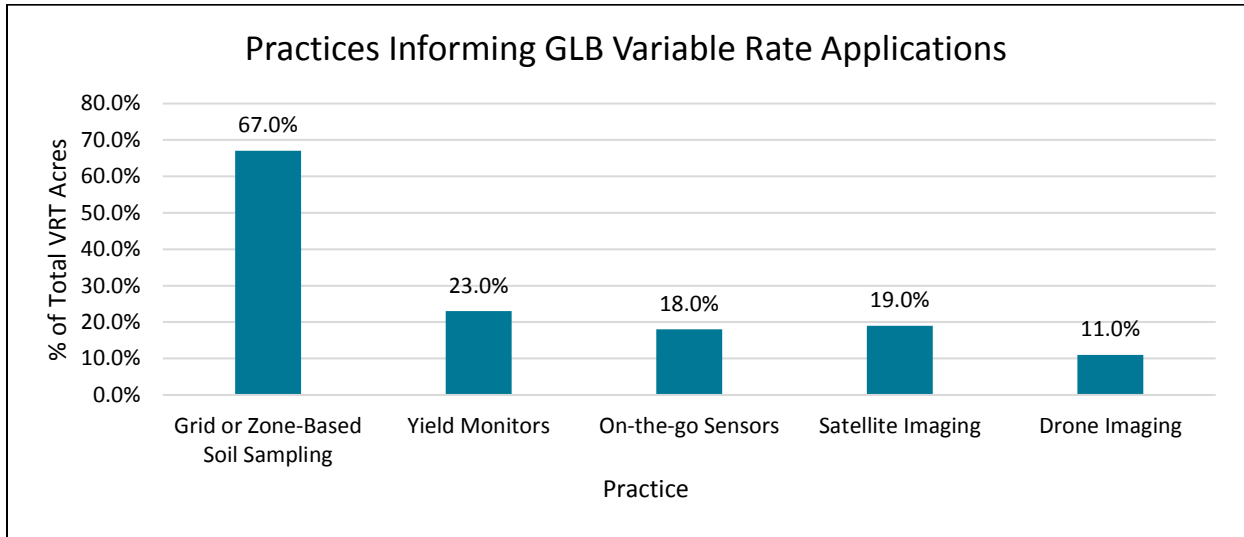
GLB Profitability of BMPs 2017	I am not breaking even		I am breaking even		I am making a profit		I do not know		I do not offer this service		Total
	Count	% offering	Count	% offering	Count	% offering	Count	% offering	Count	% of total	
Cover Crops	4	7.5	11	20.8	35	66.0	3	5.7	10	15.9	63
Rotational soil sampling	4	6.8	12	20.3	38	64.4	5	8.5	4	6.3	63
VRT N or P	2	4.0	10	20.0	37	74.0	1	2.0	11	18.0	61
Subsurface preplant	0	0.0	3	17.6	10	58.8	4	23.5	47	73.4	64
Topdress	0	0.0	6	10.5	51	89.5	0	0.0	6	9.5	63
Sidedress	0	0.0	8	17.8	37	82.2	0	0.0	18	28.6	63
Foliar feeding	2	3.8	6	11.3	45	84.9	0	0.0	10	15.9	63
Gypsum application	4	11.1	8	22.2	22	61.1	2	5.6	28	43.8	64
Custom strip-till	3	30.0	1	10.0	2	20.0	4	40.0	54	84.4	64

GLB-wide, weather was considered before fertilizer application on the greatest proportion (74%) of acres serviced. This percentage represents an 8% increase from last year. Rotational sampling rebounded for a total of 64% of reported acres. Additionally, 42% of the total acres surveyed utilized VRT P and 15% for VRT N, and cover crops were planted on 18% of acres, a total increase of 7% of implemented for the past two years.

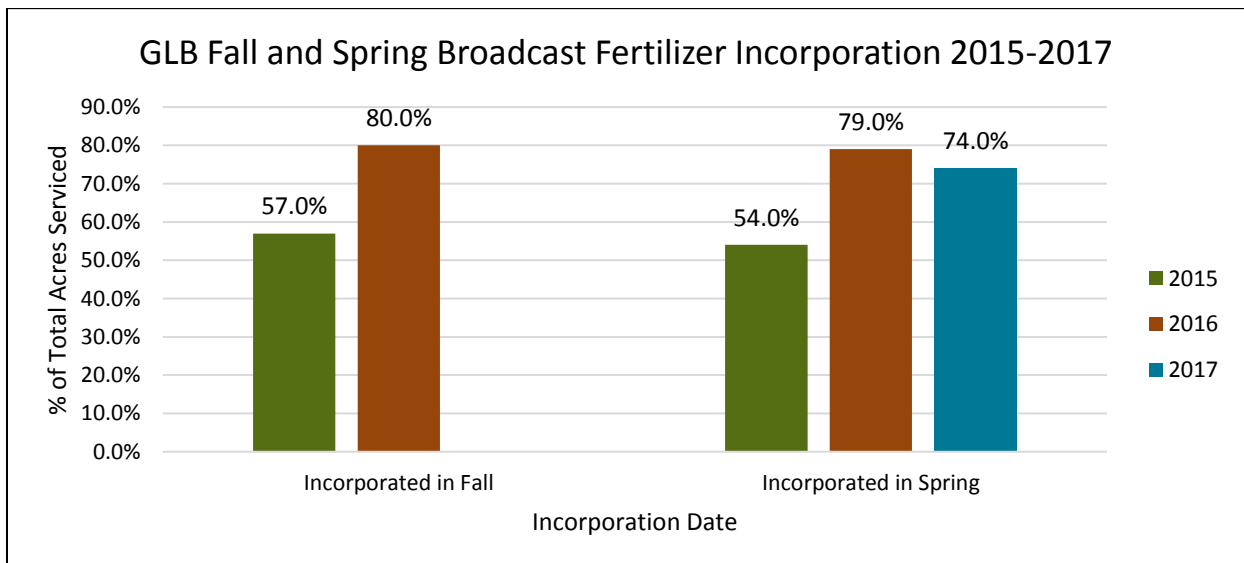


What do these sales increases mean in terms of reducing the amount of P and N that leaves cropland and enters waterways? Our review of published studies provides some insight: cover crops reduce total P (TP) losses by an average of 0.69 lbs. per acre and total N (TN) losses by 6.89 lbs. per acre; VRT reduces TP losses by 1.01 lbs. and TN losses by 7.1 lbs. per acre; and rotational soil sampling reduces TP losses by 0.36 lbs. per acre and TN losses by 5.30 lbs. per acre- when coupled with applying at Extension-recommended rates. Using these rough estimates, ag retailers who responded to our survey reduced TP losses by over 1,675,666 pounds and TN losses by 3,716,594 pounds from VRT sales alone!

For the first time, we asked retailers to indicate the practices that inform their variable rate prescriptions. The most common practice was grid or zone-based soil sampling, followed by yield monitors. We will be able to better analyze industry trends with additional years of data.

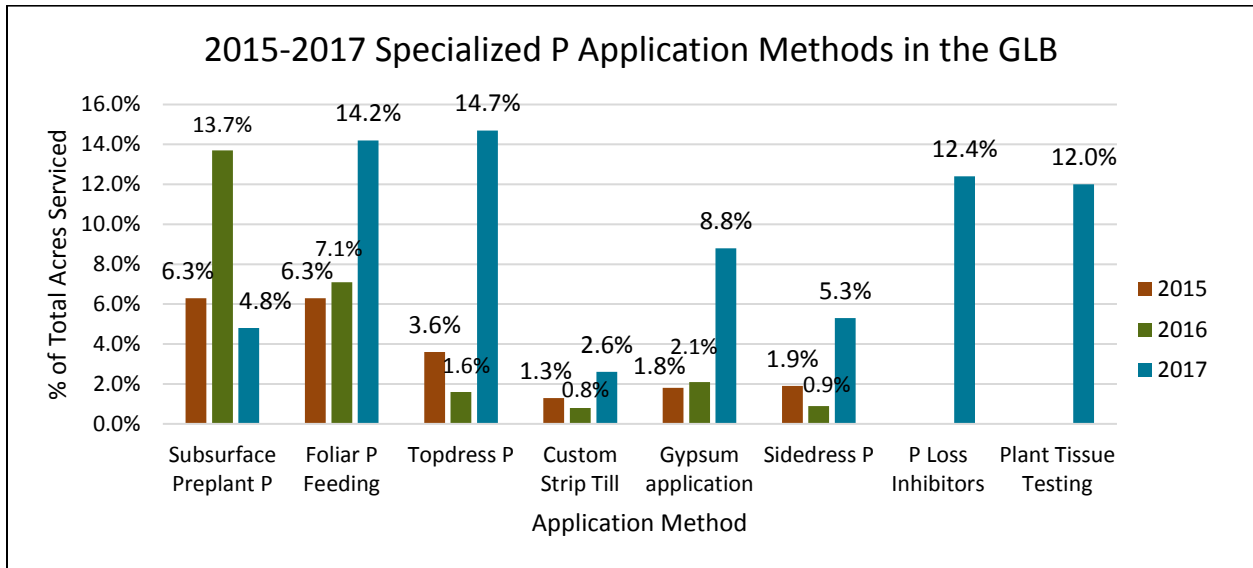


Spring broadcast applications of P were incorporated on 67% of the acres serviced by participating ag retailers this year, a slight decrease compared to last year. Due to an error in the survey, fall incorporation of broadcast fertilizer was not included. Incorporation can reduce P losses, especially dissolved reactive P, which is immediately available to aquatic algae. Light incorporation is preferred compared to tillage, which can increase risk of sediment and particulate P losses.

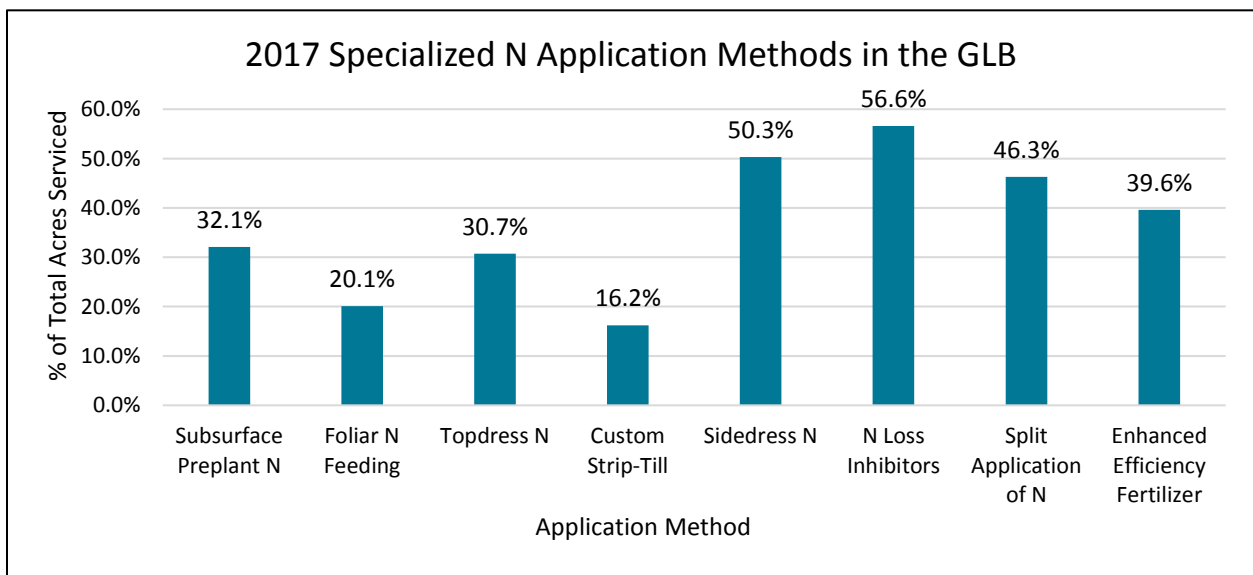


* An error in the 2017 survey was found for fall incorporation. Please use the following link, <https://www.surveymonkey.com/r/JS95KDI> to provide PARM with accurate data.

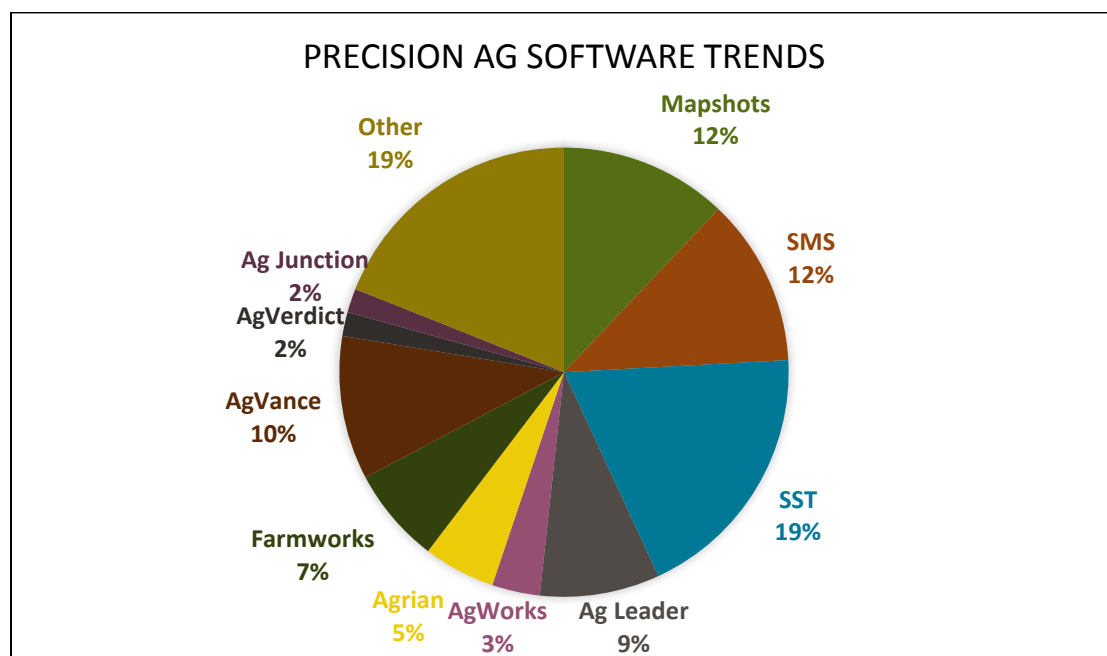
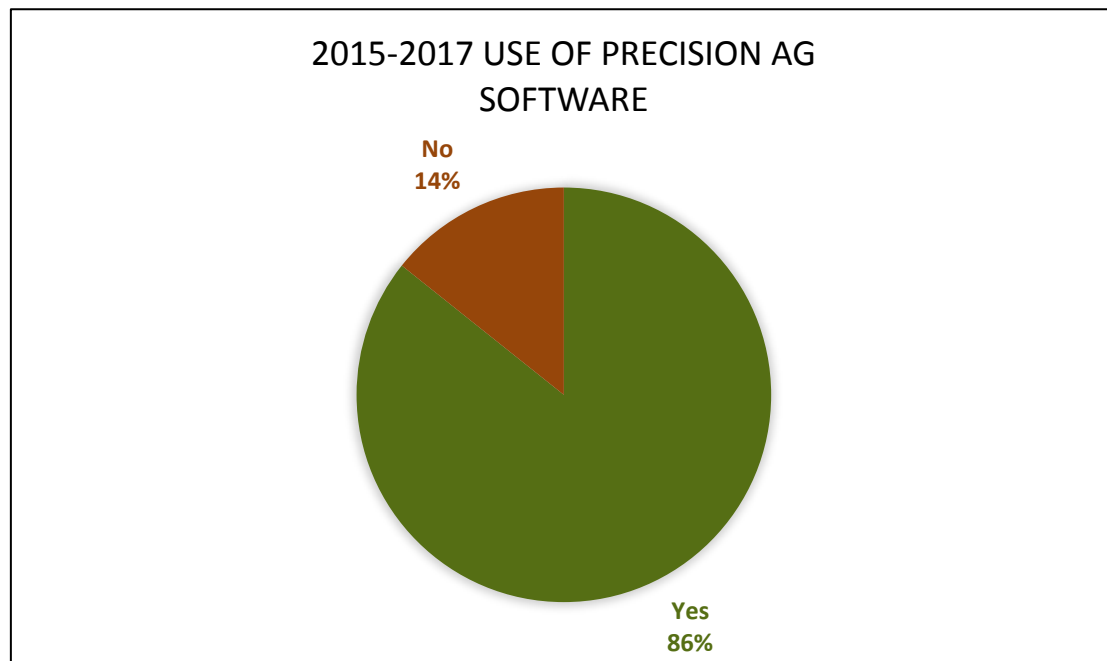
The most common specialized P application methods reported in our survey were topdress P and foliar feeding, with 20.2% and 19.9% of all surveyed acres receiving these applications, respectively. Subsurface preplant P, which was the most common service last year, dropped very slightly to 13.2% of total acres serviced this year. P loss inhibitors and plant tissue testing were both added to the survey this year and constitute over 16% and 12% of acres serviced, respectively.



This is the first year that we surveyed specialized N application methods. The most common specialized N application were N loss inhibitors and split application of N with 56.6% and 46.3% of acres serviced respectively. All of the specialized N application methods were used at a higher rate than their complimentary specialized P application methods.



Nearly all of those surveyed use precision ag software. The top three precision ag software reported in use were SST with 19%, SMS with 12% and Mapshots with 12%. These were the same top three programs reported last year. The most common precision ag software listed under 'Other' was Echelon, with 8% of participating ag retailers reporting use of this precision ag software.





Many thanks to our participating ag retailers!

Ag Plus, Inc.	Churubusco, IN
Ag Pro Farm Service LLC	Corunna, MI
Ashland Crop Service Inc	Ashland, OH
Berkey Farm Center	Berkey, OH
Brickner Farm Service	Fostoria, OH
Carolina Eastern Crocker, LLC	Stafford, NY
Carolina Eastern Vail	Oriskany Falls, NY
Centerra Co-op	Sullivan, OH
Centerra Co-op	Andover, OH
Centra Sota Cooperative	Watkins, MN
Central Ohio Farmers Co-op, Inc.	Marion, OH
Ceres Solutions	Clay City, IN
Ceres Solutions	West Point, IN
Conserv FS	Waterman, IL
Crop Production Services	Eaton, OH
Crop Production Services	Attica, OH
Crop Production Services	Dunkirk, OH
Crop Production Services	Marion, NY
Crop Production Services	Dixon, IL
Crop Production Services	Saline, MI
Crop Production Services	Chalmers, IN
Crop Production Services	Linwood, MI
Crop Production Services	Upper Sandusky, OH
Crop Production Services	Cohocton, NY
The Delong Company, Inc.	Clinton, WI
Diversified Agri-Services Inc.	McCutchenville, OH
Gaerte Ag Service LLC	Defiance, OH
Georgetown Ag	Georgetown, OH
GROWMARK FS, LLC	Knowlesville, NY
GROWMARK FS, LLC	Gainesville, NY
GROWMARK FS, LLC	Caledonia, NY
GROWMARK FS, LLC	Kennedy, NY
Helena Chemical Company	Fowler, IN
Helena Chemical Company	Continental, OH
Heritage Cooperative	Upper Sandusky, OH
Heritage Cooperative	Sycamore, OH
Huron Bay Cooperative	Teeswater, ON
JENNINGS GOMER EQUITY	Gomer, OH



PARTNERSHIP *for*
AG RESOURCE MANAGEMENT
sustainability | profitability | science

Legacy Farmers Cooperative	Arlington, OH
Legacy Farmers Cooperative	Arcadia, OH
Lima Elevator Company Inc.	Howe, IN
Luckey Farmers, Inc.	Woodville, OH
Luckey Farmers, Inc.	Bradner, OH
Lucknow District Co-Operative, Inc.	Lucknow, ON
Lyon County Farm Service J.V.	Ghent, MN
Mercer Landmark	Ohio City, OH
Michigan Agricultural Commodities	Middleton, MI
Midwestern BioAg	Milledgeville, IL
Mid-wood, Inc. / Bascom Agronomy	Tiffin, OH
OHIGRO Inc.	Waldo, OH
Prattville Fertilizer and Grain	Pittsford, MI
Precision Ag Services Inc.	Wauseon, OH
Rio Creek Feed Mill	Algoma, WI
Rudd Spray Service	Watertown, NY
S&S Jerseyland Dairy	Sturgeon Bay, WI
Silver Creek Supply	Kenton, OH
Stratford Agri Analysis	Stratford, ON
Sunrise Cooperative	Attica, OH
Sunrise Cooperative	Fremont, OH
Sunrise Cooperative	Crestline, OH
Tarter Feed & Fertilizer	Canton, IL
The Andersons	Gibsonburg, OH
The Andersons	Fostoria, OH
The Andersons	Waterloo, IN
United Cooperative	Pulaski, WI
United Cooperative	Shawano, WI
United Cooperative	Coleman, WI
Wilbur-Ellis	Edmore, MI

With much appreciation for generous funding provided by:



Great Lakes
Protection Fund



THE
MCKNIGHT
FOUNDATION