INField Advantage Indiana Soybean Alliance INC Project Start: 5-18-2020 Project End: 12-31-2023 Award Number: NR203A750013G015

1. Project Summary:

The INField Advantage program offered an innovative approach to conservation through a programing framework that provided access to nutrient management and soil health trials to farmers who may not traditionally engage in conservation programs. Indiana commodity groups and our partners have viewed the INField Advantage program as a foundational activity that local and national programs have looked to model and take to the next level. This program was designed to allow farmers to begin receiving baseline data through soil sampling, a core activity related to nutrient management. Farmers could also enroll in a split field trial regarding nutrient management, reduced tillage practices, or cover crops. Through this framework, farmers moved through a navigable path towards understanding which practices may work best on their individual operations. The program planned to divide the state into six watershed-based regions, and the trials would be offered and developed to address specific concerns in each of the watershed-based regions. Trials were designed and planned in partnership with private industry, the Indiana State Department of Agriculture, and University Extension to include opportunities with cover crops manure management, reduced tillage, and nutrient management. Farmers would receive feedback on the trials through an agronomist to discuss results and experiences in small peer group meetings.

2. Project Goal and Objectives:

Objectives of the project include:

1) Increase the use of soil health and nutrient management practices in priority watersheds in Indiana.

2) Increase cover crop acreage and advance 4R principles (the right nutrient source at the right time at the right rate and the right place), particularly on fields that use manure.

3) Target outreach to farmers who traditionally do not participate in conservation programs or utilize a private agronomist.

4) Offer small, local peer group meetings. The findings and experiences on each farm will be shared among multiple farmers to advance broader adoption of practices.

5) Aggregate and share evaluation data collected through Field to Market and social surveys to promote information learned and progress made through the program.

3. Project Background:

This project aimed to add innovative conservation opportunities to a program that originated through a separate USDA (United States Department of Agriculture) grant to the Indiana State Department of Agriculture in 2011. When the original grant period ended in 2014, the program proved so valuable that ISA (Indiana Soybean Alliance) and ICMC (Indiana Corn Marketing Council) collaborated with ISDA (Indiana State Department of Agriculture) to continue the Indiana On-Farm Network, which was rebranded as INField Advantage. From 2011 to 2018, INField Advantage grew from a dozen farmers in one county to approximately 370 farmers in 62 counties. While the program was known by the same name as this grant, the goals and market strategy evolved as technology and practices advanced. In the early days of INField Advantage, the program focused on nitrate stalk testing with the goal of better understanding nutrient utilization and model nutrient loss across the state.

In 2018, an advisory committee consisting of farmers, private industry, commodity organizations, governmental agencies and nongovernmental conservation organizations gathered to strategize the next phase of INField Advantage. The consensus was that INField Advantage provided a strong network and platform that can be leveraged to further advance the state's nutrient loss reduction goals, specifically goals set forth by the Indiana Agriculture Nutrient Alliance (IANA). The strategic direction of the program was to focus on watershed-based regions to incentive farmers in those watersheds to move from a baseline understanding of their data to management trials specific to their operations' goals in addressing nutrient loss and soil health concerns.

The grant was written and applied for in 2019. The grant was awarded in May of 2020, during a time of great headwinds as a society and accelerating climate-smart initiatives. The global COVID 19 pandemic impacted the program's ability to leverage networks The project was initially envisioned as utilizing a network of private and public contractors and partners to implement. However, pandemic restrictions, particularly for State and Federal partners constrained activities. In addition, the U.S. Department of Agriculture Climate Smart Commodities efforts, the agricultural incentives available in the Inflation Reduction Act, and the general groundswell of carbon-based incentive programs both with private and public funding made this space incredibly competitive especially for the target market of this grant, farmers new to soil health practices. Finally, ISA and ICMC delt with the consolidation of an agribusiness partner and sunsetting of another partner program. One of our primary agribusiness partners experiencing a merger and being unable to continue to support the project and the Soil Health Partnership, whom we were relying on for the replicated strip portion of the project, stopped operations during the grant period. Despite the headwinds faced by the program, it was seen as a leading program which gleaned insights and perspectives that have helped shape future programs.

In April 2022 INField Advantage was a recipient of the *Success in Stewardship* award by National Corn Growers (NCGA). The Success in Stewardship Network (SISN), an initiative of <u>NCGA</u> and the <u>Environmental Defense Fund</u>, breaks down the notion that only elite groups can

improve environmental results. Conservation practices that protect the land and water are not only accessible, profitable, scalable—they are commonplace on farms across America. Recipients of 2022's SISN recognition, which included INField Advantage, were honored at a panel presentation at Commodity Classic that was hosted by U.S. Farm Report's Tyne Morgan.¹

4. Project Methods:

To focus on specific watershed concerns, the program aimed to target six watershed-based regions across the state. Small peer groups were intended to be formed within each region to be led by local group leaders provided through conservation districts, university extension and private partners. Tier 1 of the program farmers would involve collecting on-farm data to receive baseline information pertaining to their field. Tier 2 management trials involved farmers analyzing their baseline data and determining what practices they would like to implement in their fields. Farmers had the option to explore cover crops, nutrient management practices and tillage practices and utilized expert technology by working with private industry, university extension, and local and state conservation partners to understand and implement these best management practices into their operations. Specifically, this project was meant to meet USDA priorities by providing farmers a framework to explore alternative manure management application by implementing soil health management systems, such as introducing cover crops, onto their manure fields. The third tier of the program promoted replicated strip trials, allowing farmers to test their personal experiments in multiple locations for a more accurate data set. Meetings throughout the year were aimed at allowing farmers to understand how to utilize real time data and implement management decisions. This project was meant to take INField Advantage to the next level by providing producers the opportunity to gain experience with a wider variety of best management practices and evaluation tools. These new opportunities were meant to be implemented by our valuable partners across our grower network. Our partners provided agronomic expertise, valuable experience, and innovative tools to help producers implement these practices in their operations.

¹ https://ncga.com/stay-informed/media/in-the-news/article/2022/04/the-success-in-stewardship-network-honoring-2022-s-recipients-at-classic22

5. Project Results:

The project ended much differently than the original authors of the grant had anticipated. The learnings from the program help shape and influce successive programs.



The grant was laid out as a three-tier system with differing levels of commitment where farmers could engage at their comfort and interest level. Tier 1 of the program involved collecting on-farm data to receive baseline information pertaining to the farmer's field. Tier 2 management trials involved farmers analyzing their baseline data and determining what practices they would like to implement in their fields. The third tier of the program promoted replicated strip trials.

Through these tiers, technical assistance was a key part of the work. The Soil Health Partnership was set to be a primary partner in this grant, particularly for the replicated strip trials. When they stopped operations in 2021 ISA and ICMC's ability to offer the technical assistance needed to properly conduct a replicated strip trial was lost. The loss of this organization not only affected our program but left technical shortfalls through the state that needed to be backfilled by existing organizations, stretching technical assistance resources. Additionally, Extension experienced retirements and staff movements at this time and was unable to fill the gap left by the Soil Health Partnership.

Purdue Extension has since recognized that gap in service and has started an effort to reconnect



county Educators to campus Specialists and farmers, including but not limited to Purdue on the Farm. Indiana Soybean Alliance and the Indiana Corn Marketing Council have also been involved and engaged with our extension organization to help shape the future of how extension interacts with the farmers of the state, including partnering to host a position with the direct goal of connecting soil health principals with farmers, extension, and research. The authors consider it a highlight of this project that the Purdue on the Farm effort has been spun partly out of this grant to better serve the needs of the farmers in Indiana with data driven decisions and technical assistance. The key feedback received from farmers is they were interested in conservation practices but needed technical assistance to help them understand the data. Cover crops in particular are a complicated practice. The soil health benefits require far more analysis to determine what they mean and how to make recommendations from them. A good amount of soil health data was collected through this project from farms across the State and another highlight of this project is that data will be fed into the Producer Operations Data System so that it can be aggregated with other projects and broader insights can be drawn from it.

Project participation varied from year to year. The above figure better represents grower interest in the program with participation including farmers expressing interest in the program and beginning the enrollment process. The above participation figure represents initial enrollment figures but in any given year about half or less of the farmers completed the entirety of the enrollment forms, provided a comprehensive dataset, or completed the program for other reasons.

A key learning from the INfield Advantage program is that there is a direct relationship between

the ease of enrollment, data requirements and the number of farmers participating. This grant opportunity required significant grower and management information necessitating a sixteenpage enrollment form, which led to a decline in year-over-year participation. This data requirement became a large hurdle for many enrollees to complete the process despite many offers of assistance from partners and staff. These issues of data required and how to transfer it from the farmers to the various programs is a significant issue for more than just this project and will continue to be a challenge until a workable solution can be devised. Our State Department of Agriculture created a web interface that simplified a great deal of the intake process but only after several other avenues were exhausted and time spent with data researchers at Purdue and elsewhere. Ultimately, we were not able to collect enough soil health data through this project alone to tease apart the variability within fields and across the state.

Three farmer trials were offered throughout the life of the project: a split nitrogen trial to try different nitrogen application timings, a tillage trial to try reduced or no tillage practices on part of a field, and a cover crop trial where farmers could split a field and apply cover crops to one half of a field. More trials were solicited and considered by partners but ultimately were not feasible at the time. Cover crops were by far the most popular trial option. Farmer profile information pulled from one year gives a good representation of the type of farmer interested in new management practices such as cover crops. The figures below show more detail on cover crop types chosen and tillage methods used. Most of the program participants already utilized no-till practices. Most others already practiced some form of conservation tillage leaving some residue on the soil surface. Most program participants used a cereal grain cover crop such as winter rye, which you would expect from farmers newer to cover cropping. A close second included legumes for the soil health and nutrient benefits that they bring to a cover crop system. Crop rotation figured in to the cover crop decisions as well. The farmers in the program were predominantly in a corn and soybean rotation, as is common in Indiana and often cover crops were selected based on the crop following; cereal rye or other cereals before soybeans and a legume cover crop before corn.



Number of Growers By Cover Crop Type TOTAL



Number of Growers By Tillage Type TOTAL



The original grant was written such that a large body of farmers would enroll the first year and be carried through successive years of the program. That was not the case for the reasons that have been laid out above and so the ability to work with the farmers over multiple years was lost. Attempts were made by the team involved with the program to encourage multiyear participation, including digitizing, and condensing the sign-up sheet. While we did see that aid in participation, it also led to a less thorough data set. Cover crops are well documented to take multiple years to accrue soil health benefits and a year or two in the program did not provide as many talking points through the sampling for our technical assistance partners to use in their conversations with the farmers. The soil health tests were performed, but without the robust technical support of partners, the analysis results were less impactful for the farmers to use in their decision making than initially planned. The grant was written to use the Field to Market's Fieldprint platform but ag retailers partnering on the project had other platforms they were using with their farmers and so those platforms were also offered. One company stopped operations and the Truterra Sustainability tool became the primary tool used to generate reports for use in the farmer's decision-making process. Similarly, to the soil health test results, the Truterra reports needed a good technical assistance partner to help the farmer derive actionable insights from the report.

In an attempt to boost participation for our last year of field activities, we partnered with Beck's Hybrids' Becknology Days to highlight the program. Through that partnership, we were able to add an additional twenty growers over the course of the event with farmers participating ranging from the far southern to northern ends of the state.

In the final year of the grant the project partnered with Sustainable Environmental Consultants, part of the Eocene Environmental Group, and utilized their EcoPractices approach to generate a

sustainability report for interested farmers in the program. We offered this report to all farmers who had previously participated with multiple outreach attempts and methodologies. By the time we needed to wrap up the offering, two farmers enrolled seven fields totaling more than 660 acres. The full report is included in the appendix and gives more detail but through the implementation of conservation practices when compared to a conventional system there was an estimated 212 tons of soil carbon sequestered and 896 tons of soil saved. The use of manure saved an estimated \$26000 in equivalent nitrogen, phosphorus, and potassium fertilizer applications.

Project Outputs

Indiana Association of Soil and Water Conservation Districts Annual Conference Packet Indiana Conservation Partnership 2021 Accomplishments <u>http://icp.iaswcd.org/wp-content/uploads/2022/01/2021-accomplishments-booklet_v12_FINAL.pdf</u>

Hypoxia Task Force 2019-2021 Report to Congress page 28 (pdf attached)

https://coastalscience.noaa.gov/news/third-gulf-of-mexico-hypoxia-task-force-report-to-congresspublished/#:~:text=This%20combined%202019%2F2021%20report,%2C%20and%20sub%2Dbasin%20or ganizations.

INFIELD Advantage Winter 2021 Magazine Article

Success in Stewardship Network award at Commodity Classic and covered in the US Farm Report https://www.ncga.com/stay-informed/media/in-the-news/article/2022/04/the-success-in-stewardshipnetwork-honoring-2022-s-recipients-at-classic22 https://www.agweb.com/news/business/conservation/success-sustainability-how-farmers-continueuncover-practical-solutions

Trial enrollment open news articles, press releases, podcasts, radio, etc <u>https://indianasoybean.com/press-releases/infield-advantage-to-help-indiana-farmers-test-cover-crop-benefits/ https://hoosieragtoday.com/infield-advantage-to-help-indiana-farmers-test-cover-crop-benefits/</u>

https://hoosieragtoday.news/infield-advantage-to-help-indiana-farmers-test-cover-crop-benefits/ https://www.wowo.com/infield-advantage-program/ https://hoosieragtoday.podbean.com/e/the-hat-soil-health-podcast-infield-advantage-climate-smartfarming-and-ccsi-field-days/ https://www.agrinews-pubs.com/news/science/2022/07/08/enrollment-open-for-infield-advantageopportunity-to-test-cover-crop-benefits/ https://brownfieldagnews.com/tag/infield-advantage/

The ISDA team developed a Python Script to scrape and aggregate data from reports. They have also developed a web tool for field staff to enter data.

Indiana State Department of Ag Gulf Hypoxia Task Force update to Congress: https://www.epa.gov/system/files/documents/2023-11/10305_2023-htf-report-to-congress_508.pdf

Project Impacts

The impacts of this project are best considered as what information was gained that can inform future efforts. The farmers gained experience with soil health and conservation practices. New methods and partners are engaging with farmers in new and unconventional ways which ultimately farmers benefit from.

The nature of how to run a program of this kind is an invaluable lesson to learn. One of the main goals of this specific grant opportunity was to provide in-depth soil health data back to farmers so that they could make management decisions from those data. We experienced some of the same lessons learned as Kladivko et al. in their 2019 State-wide soil health programs for education and on-farm assessment: Lessons learned paper in the Journal of Soil and Water Conservation. While Kladivko et al. focused more on research and the evaluation of soil health testing this program was more outreach focused engaging farmers and supporting them through technical assistance and data, providing a safety net of sorts and reducing some of the risks associated with adopting a new management technique on a farm. A project of this type and magnitude requires a great deal of outreach and engagement and farmers typically prefer those interactions to be in person. Pandemic restrictions prevented most of those interactions and hampered the ability to return many of the impacts such as the extremely valuable small group meetings that the program has had success with prior to the grant period. The successes that were had were accomplished through new combinations of efforts. Mailers remain an effective way to reach a broad group of people, but virtual meetings became a new common way of meeting.

Farmers are interested in making cover crops work for them. The project had a dozen farmers in the first year and grew to include nearly 140 farmers by the end of the grant period. We know that the farmers were planting cover crops on more of their acres than just those enrolled in the program because they were enrolled in other programs such as the USDA Climate Smart Commodities opportunities and other efforts focused on carbon. Because of the billions of dollars for cover crops available to farmers from a variety of sources, this program could not provide comparable compensation packages. Nor could we, as a grower association, recommend this opportunity over some of the other opportunities available that are more favorable to farmers with better compensation and less paperwork requirements, especially if enrollment in this program meant that they would be unqualified for other programs. The project, despite costs rising rapidly through the grant period, still only spent about half the funds initially granted. The authors feel the project's results and impacts are substantial given that the funds expended were substantially less than was originally budgeted for despite costs rising drastically in the intervening period.

As a state, Indiana commodity organizations and our partners believe that programs like INField Advantage has been a foundational example for many of the national programs to follow and model themselves after.

Appendices:

Ecopractices report Website for ISDA