NCSPR "Boots on the Ground: Validation of Benchmarking Process Through an Integrated On-Farm Partnership" Project Report

April 2019

Shawn Conley University of Wisconsin-Madison) and Patricio Grassini (University of Nebraska-Lincoln), project leaders. Maninder Singh (Michigan State University), Hans Kandel (North Dakota State University), Laura Lindsey (The Ohio State University), Seth Naeve (University of Minnesota), and Keith Glewen (University of Nebraska-Lincoln)

We had a kick-off meeting with project collaborators on November 5, 2018. At this meeting we discussed project objectives, outputs and logistics, and we agreed on the protocol to follow for site selection and management practices evaluation. Briefly, collaborators will try and identify a minimum of 20 field trials (one per farmer field) per state. The goal is to compare the yield and profit measured for the treatment of interest against the replicated strips that represent the average management (control). The treatment of interest in each state has been identified utilizing the results of the previous NCSRP project (Benchmarking soybean production system in the North-central USA).

Project PIs Grassini (NE) and Conley (WI), along with Dr. Juan Ignacio Rattalino Edreira (NE), Dr. Jose Andrade (NE), Dr. Antoine Couedel (NE), Dr. Spyridon Mourtzinis (WI), Mr. Adam Roth (WI) and Mr. John Gaska (WI) will supervise data collection and will be responsible to quality control the data and input them into a digital database. The NE-WI core team has had bi-monthly Skype calls to discuss and monitor project progress. We also had a 2-day meeting at UW in January to finalize project protocols and discuss outcomes derived from the project results.

After substantial input from all project collaborators, we designed the survey form to be used in the project to collect all necessary field data. State collaborators were requested to identify fields before April 15, 2019. The number of collected fields as of April 1 are shown in the table below.

2019 Yield Gap Field Tracker					
State	**Candidate TEDs**	**Candidate sites**	**Sites confirmed within target TED**	**PI**	**Email**
Iowa	104603, 204603, 304603, 404603, 504603, 604603, 704603	14	6	Scott Nelson	snelson@iasoybeans.com
Michigan	103603, 203603, 303603, 403603, 503603, 603603, 703603	0	0	Maninderpal Singh	msingh@msu.edu
Minnesota	103503, 203503, 303503, 403503, 503503, 603503, 703503	0	0	Seth Naeve	naeve002@umn.edu
Nebraska	104503, 204503, 304503, 404503, 504503, 604503, 704503	1	1	Keith Glewen	kglewen1@unl.edu
North Dakota	102303, 202303, 302303, 402303, 502303, 602303, 702303	0	3	Hans Kandel	hans.kandel@ndsu.edu
Ohio	104803, 204803, 304803, 404803, 504803, 604803, 704803	16	15	Laura Lindsey	lindsey.233@osu.edu
Wisconsin	103703, 203703, 303703, 403703, 503703, 603703, 703703	8	8	Shawn Conley	spconley@wisc.edu
Total		39	33		

The NE-WI core team has been actively utilizing the legacy data from the initial project. To date we have published two manuscripts from this legacy data (listed below) one in review and three in preparation.

- G. Azzari, **et al.** 2019. SATELLITE MAPPING OF TILLAGE PRACTICES IN THE NORTH CENTRAL US REGION FROM 2005-2016. Remote Sensing of Environment 229: 417-429. https://doi.org/10.1016/j.rse.2018.11.010
- Andrade, J.F. et al, 2019. Assessing the influence of row spacing on US soybean yield using experimental and producer survey data. Field Crops Research 230: 98-106. https://doi.org/10.1016/j.fcr.2018.10.014

By the end of this 3-year project, we will have validated a novel research approach that utilizes self-reported on-farm production practices, together with on-farm validation, to identify management practices with greatest impact on farm yield and profit. Consequently, we will strengthen state-to-state research collaboration through the managed coordination of the on-farm partnership, build farmer-to-farmer networks and identify and communicate key management practices that increase soybean productivity and return of investment.

We will also build a framework through our farmer-to-farmer networks, farmer video profiles, and field labs to communicate findings directly to farmers from farmers.