**ACCOMPLISHED RESEARCH DURING YEAR 1 OF THE PROJECT (up to December 20, 2019)**

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 final number of collected fields are 52. From these 52 plots we will collect and analyze 669 seed samples for seed composition. These plots are located in environments that are representative of 52% of US soybean area. We are currently getting the last bit of 2019 yield data from collaborators and seed samples are being processed for seed composition at MN. State reports will then be distributed and posted on [www.coolbean.info](http://www.coolbean.info).

|  |  |
| --- | --- |
| State | Number of fields |
| IA | 12 |
| IL | 1 |
| MI | 10 |
| MN | 4 |
| ND | 6 |
| NE | 4 |
| OH | 8 |
| WI | 7 |
| Total | 52 |

To promote our NCSRP research project we conducted live Twitter interviews with several of our farmer cooperators. On July 17th, we interviewed Ethan Imoehl in Iowa and Tom Novak in Wisconsin. On July 31st, we interviewed the Poltermanns, who farm both Wisconsin and Illinois. When we got to Ohio on the 29th, we interviewed Keith Kemp and Bill Hamman. The next day we went to northern Ohio where we interviewed the Durbin family and their county extension agent, Chris Zoller. In summary, we had four states covered and nine people on camera in six interviews.

The NE-WI core team has been actively utilizing the legacy data from the initial project. The team delivered six oral presentations during the 2019 ASA/CSSA meetings showing results from the project.

To date we have published three manuscripts from this legacy data (listed below) four in review and two 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>

* Rattalino Edreira, J. I., S. Mourtzinis, G. P. Azzari, J. Andrade, S. P. Conley, D. B. Lobell, J. E. Specht, and P. Grassini. From sunlight to seed: assessing limits to solar radiation capture and conversion in agro-ecosystems. Agricultural and Forest Meteorology 280 (2020) 107775. doi: <https://doi.org/10.1016/j.agrformet.2019.107775>
* Mourtzinis, S., P. Grassini, J. I. Rattalino Edreira, J. Andrade, P. M. Kyveryga, and S. P. Conley. Assessing approaches for stratifying producer fields based on biophysical attributes for yield-gap analysis. Field Crops Research (in review).
* Rattalino Edreira, J. I., S. Mourtzinis, G. P. Azzari, J. Andrade, S. P. Conley, J. E. Specht, and P. Grassini. Combining field-level data and remote sensing to understand impact of management practices on producer yields. Field Crops Research (in review).
* Matcham, E., S. Mourtzinis, S. P. Conley, J. I. Rattalino Edreira, P. Grassini, A. Roth, S. N. Casteel, I. A. Ciampitti, H. J. Kandel, P. M. Kyveryga, M. A. Licht, D. S. Mueller, E. D. Nafziger, S. L. Naeve, J. Stanley, M. J. Stanton, and L. E. Lindsay. Management Considerations for Early and Late-Planted Soybean in the North Central US. Agronomy Journal (in review).

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.