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| Please use this form to clearly and concisely report on project progress. The information included should reflect quantifiable results that can be used to evaluate and measure project success. Comments should be limited to the designated boxes. Technical reports, no longer than 4 pages, may be attached to this summary report. |
| Project Number: | 2223R0036 |
| Project Title:  | How does cover crops impact soil water dynamics and soybean production in Louisiana? |
| Organization:  | Louisiana State University-Agricultural Center |
| Principal Investigator Name: | Xi Zhang |
| Report Period: | Jan. 2025 – Mar. 2025 |
| Project Status: Active, 2nd Year |
| The project started on April 1, 2023. In the past quarter (01/2025-03/2025):With intact soil samples taken from control and treatment before the termination of winter rye, we measured soil water retention and saturated water flux. We further investigated soil pore characteristics by using soil water retention function. Soil water retention properties were measured by the simplified evaporation method. We measured saturated water flux with falling head method with KSAT. Soil water and thermal status were collected at 15 minutes interval with soil sensors to analyze water and heat transfer as impacted by winter rye. We also collected soybean grain, plant height and NDVI to monitor soybean growth.With collected data from control and winter rye treatments, rye can increase soil macropores and thus enhance water flux and water storage. For soybean production, rye can promote soybean growth by evidence of higher grain yield, plant height and NDVI value. The results show cover cropping has potential to enhance soybean growth by improving soil functions. However, the performance of winter rye is influenced by soil texture. In our study, winter rye has better performance in fine-texture soil than coarse-texture soil. In the past winter, we have planted cover crops with different characteristics (i.e., winter rye, winter peas and mustard). We are analyzing more data and preparing manuscript for *Soil Science Society of America Journal*. |