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| *This report and any technical reports (no longer than 4 pages) or final deliverables (e.g., studies, reports, etc.) need to be uploaded to Smartsheet. These reports and deliverables are viewable by USB staff only.*  *For Progress Reports: You are also required to provide a Progress Summary. This item will be shared publicly, so it should contain non-proprietary, non-confidential information.*  *For Final Reports: You are also required to provide a Final Summary and Benefits to Soybean Farmers. These items will be shared publicly, so they should contain non-proprietary, non-confidential information.*  *The boxes to enter the summary/benefits information and to upload reports to Smartsheet can be accessed by clicking the “Open Request” button located in your Smartsheet email notification.* | |
| Project Title: | Development of climate-smart high-yielding practices associated with high-end biological treatments and soybean-related microbiome resiliency |
| Organization: | University of Texas at Arlington |
| Project Lead Name: | Woo-Suk Chang |
| Reporting Period: *Please select the appropriate reporting period for this report.* | December  March  June  September  Final |
| The information included in this detailed report should reflect quantifiable results that can be used to evaluate and measure project success.If Progress Report – What key activities were undertaken and what were the key accomplishments during this reporting period? List each key deliverable from the proposal and describe progress made (or not made) toward achieving it, including metrics were appropriate.If Final Report – What were the key accomplishments during the life of the project? List each deliverable from the proposal and describe progress made (or not made) toward achieving it, including metrics where appropriate. | |
| Since June 15, we have completed planting (no-till vs. conventional tillage) in the Mid-South and successfully sampled all fields. Three inoculant conditions were applied across both tillage systems: i) TXVA strain (drought-tolerant inoculant), ii) First-Up (a commercial inoculant), and iii) no inoculant (control). **Table 1** shows the summary of the field work.  **Table 1.** Summary of the 2025 field trials (as of September 15, 2025).   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | Location | Collaborators | Planting Date | Sampling Date | Harvest Date | Cultivar Used | MG | | Port Lavaca, TX | Dr. James Grichar | 4/9 | 7/1 | No Harvest\* | Lynda-GT | INDT | | Leland, MS | Dr. Tessie Wilkerson | 6/5 | 8/21 | TBD | AG49XF4 | 4L | | Portageville, MO | Dr. Feng Lin | 6/11 | 8/20 | TBD | Ellis | 4L | | Colt, AR | Dr. Shawn Clark | 6/25 | 8/20 | TBD | Ellis | 4L |   \* Due to the Dicamba damage, the both conventional tillage and no-till fields produced no yield.  At the filed site in Port Lavaca, TX, plants and root nodules were sampled for nodulation and plant biomass assay on July 1 (**Figs. 1 and 2**). We also collected soil samples for the physicochemical analysis (**Fig. 3**). However, we were not able to harvest soybeans because of Dicamba damage. The cultivar used, Lynda-GT, contains the glyphosate-tolerant gene but lacks protection against Dicamba. Visible Dicamba damage was observed on July 1, and subsequent exposure to drift ultimately resulted in no yield at this site. All other fields have been sampled for nodulation and plant biomass, and the samples are currently being processed for analysis.  **Figure 1.** Soybean plant biomass (dry weight, g) and height (cm) in conventional and reduced tillage plots at Port Lavaca, Texas. The Lynda cultivar was planted under three treatments: TXVA (drought-tolerant inoculant), First-Up (commercial inoculant), or control (no inoculant), with six and four biological replicates per treatment in the conventional and reduced tillage plots, respectively.  **Figure 2.** Soybean taproot and total nodule counts in conventional and reduced tillage plots at Port Lavaca, Texas. The Lynda cultivar was planted under three treatments: TXVA (drought-tolerant inoculant), First-Up (commercial inoculant), or control (no inoculant), with six and four biological replicates per treatment in the conventional and reduced tillage plots, respectively.  **Figure 3.** Soil physicochemical properties in conventional and reduced tillage plots at Port Lavaca, Texas. The Lynda cultivar was planted under three treatments: TXVA (drought-tolerant inoculant), First-Up (commercial inoculant), or control (no inoculant), with six and four biological replicates per treatment in the conventional and reduced tillage plots, respectively. For physicochemical analysis, six technical replicates of rhizosphere soil were pooled to form one composite sample. | |