|  |  |
| --- | --- |
| Project Number:  |  |
| Project Title:  | Spray Application of Double Stranded RNA for Simultaneous Management of Multiple Soybean Fungal and Insect Diseases |
| Organization:  | Louisiana State University Agricultural Center |
| Project Lead Name: | Zhi-Yuan Chen |
| Reporting Period:*Please select the appropriate reporting period for this report.* |  [x]  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. |
| The objectives of this proposed study in the third year are to: 1) Continue the effort to fine-tune the conditions to increase the efficacy of dsRNA in disease suppression; 2) Examine the potential of mixing different dsRNA to enhance their effectiveness in reducing disease symptoms under greenhouse conditions; and 3) Perform small scale field studies to determine the effectiveness of these dsRNAs in simultaneous management of CLB, FLS, and PSS through foliar applications. For objective 1 in this quarter, we screened two adjuvants for their effectiveness in enhancing dsRNA uptake for soybean rust disease management. We found the adjuvant B is more effective than D in enhancing CYP4 dsRNA for suppressing soybean rust pathogen. For objective 2, we have reported our findings in the previous quarter and we will need to repeat the study and to explore other nano materials as well. Our main effort in this quarter has been focusing on objective 3: evaluating different dsRNAs and adjuvants in their ability in reducing FLS under field conditions. Soybean variety (Syngenta NK43-Y9XFS) from second planting (June 12, 2024) were sprayed with various adjuvants or adjuvants + dsRNAs on a weekly basis starting on Aug 19 for three times. FLS disease severity was rated one month later. We found that the soybean plants treated with Avr4 dsRNA with adjuvants had the least disease symptoms compared to the other two dsRNAs used in the study, which is close to the control soybean plants that were treated with Revtek fungicide. Three adjuvants all seem to be effective. L and N appear to be a little better than M. For details, please refer to the technical report. |