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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. |
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| Project Title:  | Spray Application of Double Stranded RNA for Simultaneous Management of Multiple Soybean Fungal and Insect Diseases |
| Organization:  | Louisiana State University Agricultural Center |
| Principal Investigator Name: | Zhi-Yuan Chen |
| Report Period: | Dec 16, 2024 to March 15, 2025 |
| Project Status: Continue (or roll over) |
| 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 this quarter, our efforts have been focusing on analyzing the leave samples we collected from our field trials in the fall. Based on our previous greenhouse study of various adjuvants on their effectiveness on enhancing dsRNA uptake by soybean plants, we identified that L, M, and N were showing clear effective in boosting dsRNA uptake. These adjuvants were mixed with three dsRNAs and two controls (dsRNA from empty vector and fungicide) in our field study (details of planting and treatments were in previous reports). We have finished analyzing the images of collected field leaf samples. It was found that Avr4 was the most effective dsRNA among the three we used in the trial and the adjuvant L was the best among the three (L, M, and N) in enhancing the effect of dsRNA. We also just finished quantifying the biomass of Cercospora pathogens using real time PCR in the leaf samples collected 20 days after the initial dsRNA application. Our data confirmed our visual assessment that soybean leaves treated with Avr4 with adjuvant L or N had the least amount of fungal pathogen, similar to the leaves treated with commercial fungicide Revtek. For details, please refer to the technical report. |