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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: | June 16, 2024 to September 15, 2024 |
| Project Status - What key activities were undertaken and what were the key accomplishments during this quarter? Please use this field to clearly and concisely report on project progress. Limit 5,000 characters. | |
| 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.  In the second quarter of the third year, our project has been focusing on producing dsRNA in large scale and to conduct field trials through spray application of dsRNA for managing CLB and FLS. For objective 1, we screened five new adjuvants for their ability in enhancing dsRNA uptake in greenhouse for reducing FLS disease. We have completed our analysis of the soybean leaf samples and found the adjuvant E was very effective for enhancing the effect of Avr4 by about 3 fold. For objective 2, we examined the Fe/Mg nano particles for their potential in protecting the dsRNA against UV radiation. However, the data did not show a clear benefit of incorporating Fe/Mg nanoparticles. For objective 3, soybean variety (Syngenta NK43-Y9XFS) was planted three times (on May 22, 2024; June 12, 2024; and July 5, 2024). Soybean plants in the second planting were treated on a weekly basis for three times starting on August 19. Visual assessment showed that at least two dsRNAs with formulation L showed a clear reduction in FLS symptoms when the FLS symptoms were evaluated after two sprays on Sep 3. Leaf samples from soybean plants that have been treated with various dsRNA with different formulations will be collected and analyzed to see whether we can achieve a successful FLS disease suppression with two or three sprays of dsRNA as commercial fungicides.  For more details, please refer to the technical report. | |
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