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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.* |
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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 |
| Project Lead Name: | Zhi-Yuan Chen |
| Reporting Period:*Please select the appropriate reporting period for this report.* |  [ ]  December [ ]  March [ ]  June [x]  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 project for the current year include: 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 Cercospora leaf blight, frogeye leaf spot and purple seed stains through foliar applications.This reporting period mainly focuses on objective 3: conducting field studies to evaluate the effectiveness of different dsRNA in reducing cercospora diseases, such as CLB and FLS (objective 3). Two separate studies are being conducted in the field: one is to assess the effect of 3 different dsRNAs and 2 different adjuvants in suppressing frogeye leaf spot diseases; and the other one is to evaluate whether nanoparticles can enhance the effect of dsRNA and extend the protect of foliar applied dsRNA. Soybean leaf samples have been collected 10 and 20 days after the initial treatment and are being analyzed for disease severity and for fungal growth. In addition, we have conducted studies to understand the mechanisms on how these dsRNAs suppress fungal disease development. In the case of ACE, H12, they are found to significantly delay the fungal spore germination and hyphal growth and hence slow the disease development. For more details, please refer to the technical report. |