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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. | |
| Project Number: |  |
| Project Title: | Southern Root-Knot Nematode in Maturity Group 4 Soybean: Characterization of Resistance Mechanisms and Breeding for Resistance |
| Organization: | University of Arkansas |
| Project Lead Name: | Travis Faske |
| Report Date: | Apr 15 to Jun 15 |
| **National Soybean Checkoff Research Database** [**https://www.soybeanresearchdata.com/**](https://www.soybeanresearchdata.com/) **(public website funded by USB). Please include a non-technical project status along with your project status. The non-technical project status will be published to the website. If a non-technical project status is not provided, the contents of this entire report will be published.** | |
| Project Status: | |
| Obj. 1: Characterization of the mechanism of resistance to SRKN. Labs at UA and LSU have been training new personnel to optimized protocols to assess the mechanism of resistance in selected soybean lines (Faske and Watson).  Obj. 2: Genetic characterization and development of functional markers for new sources of resistance to SRKN. Seed increase of resistant lines: Forrest, PI 567516C, and PI 438489B and DNA markers for QTL on chr 13 is underway. (Nguyen)  Obj. 3: Development of breeding populations and MG4 soybean varieties with resistance to SRKN. In AR, ten new crossing combinations of MG4 lines with SRKN-resistant germplasm will be generated and nine F2 population will be screened with molecular markers for further selection (Acuna-Galindo). In MO, 19 high-yielding breeding lines were entered in the 2022 USDA Southern Trials with resistance to SRKN. Seven of these lines are being evaluated in AR (Faske). A total of 260 advanced breeding lines, most derived from SRKN-resistant pedigree are being tested in 2022 advanced yield trials (AYT) across 8 states. These lines are currently being phenotypically screened for SRKN and genotypically characterized using molecular markers tightly linked to genes conferring resistance to SRKN (Chen).  Currently, funding has yet to be distributed to any PI. | |
| **Non-technical project status:** | |
| The southern root-knot nematode (SRKN) is an important, yield-limiting pathogen of soybean in the Mid-Southern U.S. This project was designed to determine how different SRKN-resistance sources affect nematode maturity, reproduction, and galling and develop SRKN-resistant MG4 soybean varieties. Currently, breeding programs in MO and AR have selected advanced germplasm derived from SRKN-resistant pedigrees. These entries will be screened with molecular markers and in the field in AR and MO. Different sources of SRKN-resistant parents identified by molecular markers will be assayed for SRKN maturity. | |