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| Project Title | | Breeding Maturity Group 4 Soybean with Enhanced Resistance to Southern Root-knot Nematode by Reducing Galling and Nematode Reproduction | | | | | | |
| PI’s Name | | Caio Canella Vieira | | E-mail | | [caioc@uark.edu](mailto:caioc@uark.edu) | | |
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| Additional PIs  For this project | | Travis Faske (UARK), Henry Nguyen (Mizzou), Feng Lin (Mizzou) | | | | | | |
| Research locations  (states involved) | | AR: Fayetteville, Kibler, Stuttgart, Marianna, Pine Tree, Rohwer MO: Portageville | | | | | | |
| **Timeline:**  **Current Year - FY23** | | | **Multi-Year Project Information** (if applicable) | | | | | | |
| Year 1 | | Year 2 | | | Year 3 | |
| Start Date | 4/1/2025 | |  | |  | | |  | |
| End Date | 3/31/2026 | |  | |  | | |  | |
| Funds Requested | $80,000 | | $ | | $ | | | $ | |
| **Program Area: Soybean Breeding and Genetics/Nematode Management Control** | | | | | | | | | |
| Other related funding: | | United States Department of Agriculture (USDA-NIFA), United Soybean Board, Arkansas Soybean Promotion Board. | | | | | | |
| Objectives: | | i) Characterize the response of lines carrying different combinations of the resistance regions on chromosomes 10 and 13 and genetically diverse accessions for nematode reproduction and root galling, and ii) develop maturity group (MG) 4 breeding populations and varieties with SRKN resistance for production in the Mid-South. | | | | | | |
| Justification: | | Roughly 17 million acres of soybean are planted in MG 4 varieties in the Southern U.S. and most of the MG 4 varieties are susceptible to the SRKN. To sustain the production and durability of SRKN resistance, identifying and deploying genes for resistance that affect different stages of nematode development is critical. | | | | | | |
| Exp Setup: | | The project is divided into nematology and breeding components. The first includes a series of greenhouse screening experiments, while the latter involves a complete breeding pipeline to develop SRKN-resistant varieties. | | | | | | |
| Summary: | | This project aims to characterize the impact of new resistant genetic sources on nematode reproduction and root galling and develop MG4 conventional and herbicide-resistant soybean varieties with SRKN resistance that are suitable for production in the Mid-South. | | | | | | |
| Benefit to midsouth farmers: | | Resistance deployed into earlier MG is critical for the successful management of SRKN as it has been moving northwards over time. The successful long-term value of SRKN resistance occurs when multiple resistance mechanisms are deployed and/or multiple resistance genes for SRKN are stacked. | | | | | | |
| Progress Made: | | Novel sources of resistance have been identified, screening protocols have been established, and hundreds of breeding populations and many breeding lines have been developed and advanced across our breeding pipelines. | | | | | | |
| Signature of Principle Investigator | | | | | | | Date: | | |
|  | | | | | | | 7/31/2024 | | |

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