SOYBEAN RESEARCH PRINCIPAL INVESTIGATOR PROFILE – CAIO VIEIRA

Farmer Blog

Caio Vieira, Arkansas Soybean Breeding team lead and crop, soil and environmental sciences professor, Arkansas Agricultural Experiment Station System – Division of Agriculture

Why did you decide to pursue a career that includes soybean research?
The fact that soybeans have the highest seed protein content among any other crop, and the ability to manipulate soybean response to stressors through genetics fascinated me. This led me to pursue a career in soybean breeding and genetics. I see tremendous potential in this field, especially as soybean protein gains broader adoption in the food and feed industries.

What research topic have you completed in the past or are working on now that could have or has had the most significant impact on soybean production?
One of our major research goals is to understand the genetics regulating soybean response to various biotic and abiotic stressors. Specifically, the genetics behind soybean resistance to southern root-knot nematode and tolerance to flooding have been the most interesting and rewarding projects, given the complexity and the severe impact those have on soybean production in the Mid-South.

How has the soybean checkoff enhanced your ability to find answers to production problems for farmers?
The soybean checkoff is absolutely essential for advancing soybean research in the United States. With its support, we can investigate both regional production challenges and collaborate with researchers across disciplines and institutions to address broader, more complex issues in soybean production.

Within your area of expertise, what are the top two or three general recommendations you would offer farmers to improve their management practices?
Choosing the right soybean variety is crucial for aligning with management practices.

Understanding how specific genetics perform in a given environment, particularly their resilience to biotic and abiotic stressors, can significantly impact profitability. Additionally, selecting varieties that fit well with existing management strategies, such as irrigation, fertility management and planting timing, can further optimize yield potential and risk mitigation.

Within your area of expertise, what do you consider to be critical soybean research needs that can impact the profitability of famers in the future?
Soybean breeding plays a key role in simultaneously increasing yield potential and sustaining yield under stress conditions, both critical for long-term sustainability of the soybean industry. However, these objectives require distinct research approaches. Improving yield potential requires extensive population development, rigorous testing and a focus on physiological traits like light interception, energy conversion efficiency and harvest index. On the other hand, improving stress resilience requires identifying new genetic sources, understanding the genetic architecture of key traits and integrating multiple breeding strategies to balance stress tolerance with high yield.

Photo courtesy: University of Arkansas System Division of Agriculture

SRIN Articles:

How Flooding Soybeans in Early Reproductive Stages Impacts Yield, Seed Composition

SOYBEAN RESEARCH & INFORMATION NETWORK

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