

SOYBEAN RESEARCH PRINCIPAL INVESTIGATOR PROFILE – SHAUN CASTEEL

Farmer Blog



Shaun Casteel, Associate Professor of Agronomy and Extension Specialist, Purdue University

Why did you decide to pursue a career that includes soybean research?

I'm a farm boy from Illinois and my family raised corn and soybeans. I've always loved being on the farm – it's part of my heritage. I also wanted to help people, help farmers, so it was a natural direction in terms of my education and career. At the University of Illinois, I worked with a soybean researcher and for graduate school, I wanted to get a different experience. I attended North Carolina State University and worked with cotton, nutrient management and soil science. I wanted to understand how to do research and how to help farmers. A lot of the things I learned in the world of cotton, I've brought into soybean research, sort of out-of-the-box thinking.

I have a passion for agriculture and the soybeans I grew up with. It's a crop that, up until 10 years ago or so, has been under-represented in terms of research and agronomic advancement. I wanted to help raise the profile of soybeans.

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?

First is understanding how soybeans have changed over time in terms of their growth patterns. My background is heavily into nutrients and nutrient cycling. I've conducted soybean variety trials that had varieties from the 1920s to the present, and we've documented the major shifts in the way soybeans grow and the way they take up and allocate nutrients. A lot of the modern soybeans have changed what they are doing late in the season during pod development and seed fill, and those changes have made an impact on how we manage them.

Second, soybean management influences the plant's physiology. Planting timely — timing

has great yield potential as well as management issues we must work through. The yield advantage that comes with planting timely also comes with management decisions, which leads to nutrient cycling. Farmers are planting earlier than they used to, when soils are cooler and nutrient availability from the soil, sulfur and nitrogen come into question. We need to know how to manage and improve this.

How has the soybean checkoff enhanced your ability to find answers to production problems for farmers?

The soybean checkoff is the avenue that helps me ask and answer applied questions. With applied research, everything I do is based on helping the farmer — what can I do to improve their bottom line, their decision-making. And the ability to get funding through the soybean checkoff has been tremendous. It's been the main driver for my research program. The soybean checkoff has definitely put me in a space where I can be grounded in applied research and recommendations.

Within your area of expertise, what are the top two or three general recommendations you would offer farmers to improve their management practices?

Planting timely, getting soybeans planted timely is huge. We need to think about soybeans intentionally, not as an afterthought. By planting timely, purposefully, the soybeans are able to get more node and pod development, and reproductive branches. Soybeans are being planted earlier than they used to, but when planting super-early, I haven't seen the benefits outweighing the costs. But when the fields are ready, let's roll with the soybeans before corn.

Also understanding nutrient availability is important and comes with challenges as well as opportunities.

Within your area of expertise, what do you consider to be critical soybean research needs that can impact the profitability of farmers in the future?

When we look at farming systems, we need to look at the interactions. We've researched these individual management decisions such as getting the right variety, row spacing and planting date, and we need to look at their integration in a system. When it's all clicking, we need to be looking for something new that unlocks. It's like decoding the right combination that unlocks and breaks yield barriers. It's either working blindly or having some level of road map.

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