

SOYBEAN RESEARCH PRINCIPAL INVESTIGATOR PROFILE – C. NEAL STEWART

... Farmer Blog



C. Neal Stewart, Jr., Ivan Racheff chaired professor and co-director, University of Tennessee Center for Agricultural Synthetic Biology, biotechnology and synthetic biology specialty

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

I caught the “soybean bug” during my postdoc stint in Wayne Parrott’s lab at the University of Georgia almost 30 years ago. I found the crop and projects performed on the crop—genetics and biotechnology—fascinating, so, I’ve had at least one soybean project in my lab ever since.

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?

Changing the genetics of soybeans enables traits to be “hardwired” and readily dispersed throughout growing regions. Therefore, any enabling technology for trait endowment is high on my list. To that end, we recently innovated cell suspension technology that results in the ability to examine single cells using automated methods. This approach is useful to understand what is happening at the single-cell level. We’ve innovated this approach for several plant species, but the soybean system is our champion with regards to utility and reliability.



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

The checkoff approach integrates science with farming. Farmers have a direct say in what projects are funded and scientists receive relevant grounding by interacting with expert farmers to perform projects that will make a difference in the real world. One recent example is hearing about how problematic deer are to soybean plants. To help address that problem, we recently launched a genetics approach to make the plant distasteful to deer. We hope it works!

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

I am not a soybean production expert so I can't offer much help there, but I do see how important genetics and biotechnology are to improving the crop.

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?

Innovations to improve genetics can help rewire traits for soybeans that can make big changes. A new area of biotechnology is called synthetic biology and marries computational DNA design, automation and engineering. These innovations will someday be able to make designer soybeans for various purposes, which should help farmers to increase profitability.



This website is funded by the soybean checkoff



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