University of Missouri

The Magazine of the Mizzou Alumni Association

MIZZOU

Soy-genes

Breeding the soybeans of tomorrow.

Story by Erik Potter

Published Feb. 13, 2013

When most MU scientists look for drought-resistant traits in soybeans, they do so in the lab using seedlings under carefully controlled conditions.

MU Professor of Plant Science Grover Shannon breeds soybeans to find useful traits, such as drought resistance. Photo by Nicholas Benner.

When they find something interesting, they see if Grover Shannon can replicate it in the sandy, drought-prone fields near his Portageville office in Missouri's Bootheel.

"They may find a gene in the lab that looks like it's more drought tolerant — it doesn't wilt in the greenhouse. But you put that soybean in the field … and, maybe it doesn't wilt as bad, but the mechanism doesn't translate into yield," Shannon explains. And in farming, "It's all about the yield."

Shannon, a professor of plant science, has a stockpile of germplasm from 19,000 wild Asian soybean plants that he is testing for drought or flood tolerance. The wild plants wouldn't do well as crops because they don't have the high-yield, pest-resistant genetic advantages that modern soybeans do. So when Shannon finds a wild trait he likes, he tries to breed it into the domesticated plant.

So far, he's made it through about 3,000 of the wild plants. The process takes years, but he hopes to perfect a drought-resistant variety that will improve yields in drought years by 20 percent to 30 percent — something that would generate a lot of interest but something commercial businesses don't necessarily want to take the time to develop themselves.

"A lot of the things we do are long-term, and these [seed] companies are interested in turning out

varieties based on [next year's] seed sales," Shannon says. But he's happy to do the tedious work. "Once we find the gene, those genes could be [sold] to all the [seed] companies, and they could introduce the genes across the country and the world."

The mission is to grow more food and to help farmers make a better living. By improving yields in bad years without sacrificing yields in good years, and doing so without irrigation, Shannon estimates he can put an extra $90 of profit per acre into a farmer's pocket.

Topics: Agriculture and the Environment, Research, Web Exclusives
Tags: Faculty

Published by MIZZOU magazine, 109 Reynolds Alumni Center, Columbia, MO 65211 | Phone: 573-882-5916 | Email: mizzou@missouri.edu