Natalie Blake wins 2018 Arkansas Soybean Science Challenge Award at Southeast Arkansas Regional Science Fair

MONTICELLO, Ark. -- Natalie Blake, 15, a sophomore at Ridgway Christian High School in Pine Bluff won the Soybean Science Challenge at the 2018 Southeast Arkansas Regional Science Fair held at University of Arkansas-Monticello on March 8.

Blake received a $300 cash award provided by the Arkansas Soybean Promotion Board at the Awards Ceremony. Her science project titled "Effects of Hybridization on Salt Tolerance in Glycine max" placed first in Plant Science. Blake will compete at the Arkansas State Science and Engineering Fair March 30. At the University of Arkansas-Pine Bluff Science and Engineering Fair, Blake's project also placed first in Plant Sciences, plus first runner-up for the overall Best of Fair Award.

Diedre Young, Blake's teacher, won the Soybean Science Challenge Teacher Mentor Award. "Natalie learned that hard work and determination will be recognized by those interested in the fruition of her endeavors. She learned research has rewards and that her work has practical applications," Young said. "We forget that her and her cohorts are students; many haven't made their mark in the world and the challenge gives these students the ability to do that – make a mark by doing research in soybeans."

Blake acknowledged competition at the science fair was tough, but was overjoyed at winning. "I was happy to be there to compete and I learned a lot from the experience."

Young had students participate in the Soybean Science Challenge because it introduced real world problems into the classroom in an open-ended inquiry-based method. She learned when students have a motivator, they work harder on their project. She noticed the experience of the Soybean Science Challenge spilled over into other aspects of the students' academic lives; their grades and study habits improved and their educational outlook reached beyond high school. She highly recommended that teachers use the online course as a successful way to help students with their science fair projects and their academics as well.

When Blake took the Soybean Science Challenge online course, the topics that interested her the most were soy-based products and how the Arkansas economy depends on soybean production.

Prior to completing the online course and conducting the research, Blake admitted she knew very little about soybeans; she knew they were a food crop and are in animal feed as well.

Young became aware of the Soybean Science Challenge at the Southeast Arkansas Regional Science Fair in 2015 and has been encouraging and working with her students to compete ever since.

Walt and Shannon Blake, Natalie's parents, are very proud of her; they believe she has excelled due to her own motivation and dedication. "She has had a lot of support from her schoolmates and teacher, as well as her family."

Both Young and Blake's parents agree that Natalie works hard in her studies and desires to excel in her schoolwork. This love of learning gives her a strong desire to teach others. Natalie's love of the outdoors makes doing agricultural research easy and fun.

"The Soybean Science Challenge allows Arkansas senior high students to participate in scientific discovery that can make a difference to our state and the world," said Karen Ballard, professor at the University of Arkansas System Division of Agriculture's Cooperative Extension Service. She is the developer and director of the program. "Soybean farmers help feed the world, and Soybean Science Challenge students not only learn about this important commodity crop, but they also develop an understanding of the challenges and complexity of modern farming."

"The goal of the Arkansas Soybean Science Challenge is to engage students in 'real world' education to support soybean production and agricultural sustainability," said Gary Sitzer, chairman of the Arkansas Soybean Promotion Board. "The program also rewards scientific inquiry and discovery that supports the Arkansas soybean industry."

Information on the 2018-19 Arkansas Soybean Science Challenge will be available in summer 2018. For more information, contact Dr. Karen Ballard at kballard@uaex.edu or Dr. Julie Robinson at jrobinson@uaex.edu.

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Natalie Blake: Ridgway Christian High School, Diedre Young-Mentor

Project Title: "Effects of Hybridization on Salt Tolerance in Glycine max"

Category: Plant Sciences

Abstract:

RESEARCH QUESTION: The research question for this project is "Will hybridization improve the salt tolerance of soybean varieties which are chloride includers?

HYPOTHESIS: The hypothesis is that out of the tested soybean varieties, the includer X excluder hybrids will perform better than the chloride includer in saline soil.

PROCEDURES: The procedure for this project is to plant 3-5 each of the four hybrids and 3-5 seeds of the includer (CZ4748 LL) in pots. One pot of each variety will act as control (watered with distilled water), and the others will be watered with 300 mg/L salt added. This will represent the average of chloride levels (from salt) found in Arkansas groundwater. This project has no risk factors. The plants were watered with the saline solution every other day. The student will determine the growth by measuring the stem length from the soil and counting the number of leaves on each plant. The student believes the results will show that the hybrid plants will be more tolerant of chloride in ground water than the plants which are chloride includer. The results from this project would provide a valuable source of information to farmers who would be able to choose soybean varieties which are naturally tolerant of high chloride levels in the future, finding the type of soybean that copes with high chloride levels would increase the soybeans produced by farmers. This would help feed more people and increase the agricultural economy of Arkansas.

RESULTS: The table shows the average growth recorded by the student in the raw data. The data shows the average growth of the following CZ4748LL (includer); (CZ4748LL X CZ4540LL); (CZ4748LL X UA5414RR); (CZ4748LL X UA5115C); (CZ4748LL X Pl163453 [soja]). The final bar graph shows the greatest growth of all subjects in control and test trials. While the results were similar for the hybrids and the includer in the control group, in the test group, the hybrids maintained their growth, while the includer variety's overall growth was considerably less.

CONCLUSION: The results show that the student was correct in the hypothesis that the includer X excluder hybrid soybeans performed better than the chloride includer soybean plants. The sources for error in this experiment could be the limited number of available hybrid seeds, the time factor of planting two crops of soybeans, and the viability of the seeds.