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Cameron Holder wins 2021 Arkansas Soybean Science Challenge Honorable Mention Award at the Southwestern Energy Arkansas State Science and Engineering Fair and regional award at Northeast Arkansas Regional Science Fair

Cameron Holder, 16, a sophomore at Nettleton High School in Nettleton, won the 2021 Soybean Science Challenge (SSC) Honorable Mention Award at the virtual Southwestern Energy Arkansas State Science and Engineering Fair April 1, and the regional award at Northeast Arkansas Regional Science Fair March 5.

Holder received a \$250 cash award for his SSC Honorable Mention finish at State and a \$300 cash award for his regional win. Awards were provided by the Arkansas Soybean Promotion Board. His science project titled “Quantifying soybean CO₂ exchange with chlorophyll content” placed first in plant science and was awarded ‘best of fair’ and ISEF finalist award at the regional level.

Bryant Fong, Cameron’s teacher, won the \$100 State Soybean Science Challenge Honorable Mention Teacher-Mentor Award and the \$300 regional award. Fong stated that the Soybean Science Challenge is a great way to learn about the science behind soybeans in the classroom. “Students gained an understanding of scientific research, and how not every question can be answered with a clearly outlined procedure as in classroom labs. The learning modules provided background and relevance for soybean research. They were so informative that I implemented them in my general classroom lessons. I have gained a greater appreciation for producers and agriculture researchers as they identify plant processes to develop sustainable methods to grow soybeans,” he explained.

Holder said it was amazing to receive Honorable Mention in the State Soybean Science Challenge. “It is an honor to be recognized for this award. I learned so much in the judging process such as how important computer science is to agriculture today,” he replied.

Cameron’s mother, Annette Holder, was very proud to see him receive the award. “I thought the project was unique, and it addressed a real-world problem,” she said.

Fong expounded on what Cameron learned as he worked through his project. “Cameron was a great student in that he collected data and designed the project mostly by himself. He

designed his own plant staging which was not correct to agronomists but showed his strength in experimental design and collecting consistent data,” Fong replied.

Fong also explained why soybean research (and the Soybean Science Challenge) is so important in the classroom. “Science and engineering practices are part of the new science standards. Soybean research and background is a great way to introduce science research in the classroom, especially in Arkansas because agriculture is all around the Northeast part of the state. This makes it very relatable to students. Students were finally able to understand what the “green stuff” on the side of the country roads were. This past year, I used the soybean learning modules in the general classroom, and students still remember the research questions months later,” he stated.

“The Soybean Science Challenge provides an opportunity for Arkansas Junior High and High School students to participate in scientific research that can impact the State of Arkansas as well as the world. Soybean Science Challenge student researchers learn about this important commodity crop and its many uses including feeding the world, development of biofuels and sustainable products. The Soybean Science Challenge helps students develop an understanding of the challenges and complexities of modern farming,” said Dr. Julie Robinson, Associate Professor and director of the program.

“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, a former member of the Arkansas Soybean Promotion Board. “The program also rewards scientific inquiry and discovery that supports the Arkansas Soybean Industry.”

The Arkansas Soybean Science Challenge was launched in January 2014 to 9-12th grade science students. Students who successfully completed the online course were eligible to have their original soybean-related research projects judged at the 2021 ISEF-affiliated Arkansas Science and Engineering Fairs.

Information on the 2021-2022 Arkansas Soybean Science Challenge will be available in summer 2021. For more information, contact Dr. Julie Robinson at jrobinson@uada.edu or Diedre Young at dyoung@uada.edu.

The Cooperative Extension Service is part of the University of Arkansas System Division of Agriculture.

Cameron Holder, Nettleton High School, Nettleton, Arkansas, Teacher: Bryant Fong

Category: Plant Science

Title: Quantifying soybean CO₂ exchange with chlorophyll content

Abstract:

Soybean is a major crop grown in Arkansas. Studying plant development is important to inform management decisions such as irrigation or chemical applications to maximize yield. The chlorophyll content of each leaf was measured and compared to the carbon dioxide exchange. The chlorophyll content was higher at leaves closer to the top compared to the bottom possibly related to more sunlight at top of canopy. The CO₂ exchange went down because photosynthesis uses CO₂. By identifying most productive leaves, highest chlorophyll content and greatest reduction of CO₂, producers and scientists can target management to maximize plant productivity.