Aakash Bhattacharyya wins 2021 Arkansas Soybean Science Challenge Junior Division Award at the Central Arkansas Regional Science and Engineering Fair

Aakash Bhattacharyya, age 12, a 7th grader at Lisa Academy West Middle School in Little Rock, won the Soybean Science Challenge Junior Division award at the 2021 Central Arkansas Regional Science and Engineering Fair held virtually in Little Rock on March 6.

Aakash received a $200 cash award provided by the Arkansas Soybean Promotion Board. His science project titled "Electronic Soil Moisture Sensor: Save Water, Save the Future" also placed first in Environmental Management and was accepted to participate in the National Broadcom Masters Competition.

Amber Butte, Aakash's teacher, won the $100 Soybean Science Challenge Junior Division Teacher-Mentor Award. Butte stated that the Soybean Science Challenge is a great way to learn about the importance of soybeans in Arkansas. "I had a few students who were recommended to participate in the Soybean Science Challenge. When I heard about the recommendation, I was very excited for my students to participate in this wonderful activity. I encouraged my students to participate and present the projects that they put so much effort into. By taking the SSC online course, I believe that my students were able to gain an awareness of the importance of cultivating soybeans in Arkansas. I am glad to see that the youth of Arkansas can present their ideas and make a positive impact in their state or even around the world through The Challenge," she replied.

Aakash was honored to win the 2021 Junior Division Soybean Science Challenge. "I am very honored and happy to be called the 2021 Junior level winner of the Soybean Science Challenge. I would like to keep doing research to help the farmers in Soybeans farming and help the environment," he replied.

Arpita Bhattacharyya, Aakash's mother, was very happy to see him receive the award. "We were elated. We knew how much Aakash wanted it and how passionate he is about his science fair projects. We encouraged him to continue improving on this project next year," she stated.

Aakash was impressed with what he learned from participating in the Soybean Science Challenge. "By participating in the Soybean Science Challenge, I gained tremendous knowledge

on soybeans, it's nutritional value and great impact on the environment. I also gained knowledge on new ways to use my soil moisture sensor," he explained.

"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 and in 2021, grade 6-8 was added for the Jr level award. 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.

Aakash Bhattacharyya, Lisa Academy West Middle School, Little Rock, Arkansas; Teacher, Amber Butte

Category: Environmental Management

Title: Electronic Soil Moisture Sensor: Save Water, Save the Future

Abstract: Access to good quality water is a growing concern. According to the U.S. Geological Survey, in 2010, approximately 29% of surface water and 65% of fresh groundwater was used for agricultural needs, and half of that being wasted due to irrigation inefficiency and water wastage. Therefore, improving irrigation water usage efficiency is significant. Irrigation water use efficiency depends on applying irrigation water at the right time, right place, and right amount. In my project, I made a Soil Moisture Sensor to reduce unnecessary water consumption. I used a NAND 4011 circuit to make a soil moisture sensor. Essentially what this does is making it light up the bulb only when there is not enough water. I tested the efficiency of my circuit using 3 different soil types (regular, potting, river-bed soil) with different amounts of water. I observed how my circuit performed. My control variables were Soil amount, and the circuit (equal distance between 2 resistors). I tested 3 times for each soil type and water amount combination. After, conducting the experiment and looking at my circuit. I have

concluded that my circuit is indeed sensitive and is functional and usable to reduce unnecessary water consumption. Also, based on my data, the type of soil minorly matters when using my soil moisture sensor. My hypothesis was proven correct because my soil moisture sensor indeed worked. In the future, I would like to improve my sensor to measure the exact amount of water needed.