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Robert Lutgen wins 2021 Arkansas Soybean Science Challenge Honorable Mention Award at the Southwestern Energy Arkansas State Science and Engineering Fair

Robert Lutgen, 16, a homeschooled sophomore, won the 2021 Soybean Science Challenge Honorable Mention Award at the virtual Southwestern Energy Arkansas State Science and Engineering Fair April 1.

Lutgen received a \$250 cash award for his SSC Honorable Mention finish at State. The award was provided by the Arkansas Soybean Promotion Board. His science project is titled “How drones can help manage tailwater on farms.” Lutgen also participated at the Central Arkansas Regional Science and Engineering fair.

Mary Lutgen, Robert’s mentor, won the \$100 State Soybean Science Challenge Honorable Mention Teacher-Mentor Award. Lutgen stated that the Soybean Science Challenge Course and resources helped to bring a ‘real-life’ feel to science in the classroom. “The materials and virtual field trips Soybean Science Coordinator Diedre Young put together helped bring to life the subject of biology and provided practical life applications and opportunities you would not have noticed before,” she replied.

Lutgen was thrilled to receive Honorable Mention in the State Soybean Science Challenge. “I am honored and excited that I received Honorable Mention. The Soybean Science Challenge was a nice tie into Biology this year, especially the chapters on ecology and plant processes,” he replied.

Robert’s parents, Kyle, and Mary Lutgen were excited to see him receive the award. “We are very proud of him! He put in a great deal of work on his project and began to think of things he could change or do differently next time,” they explained.

Lutgen acknowledged he has a new appreciation for agriculture now. “Before the Soybean Challenge, I had no idea what soybeans were and how important they are. I learned about different ways of watering crops and the importance of tailwater to farmers and later learned that farmers measure this by inches per acre. This project has definitely given me a new perspective on agriculture and the careers associated with it,” he stated.

Mary Lutgen, Robert's mentor, commented on how much Robert gained from this experience. "Robert developed a real sense of satisfaction in working on a project of this scale versus regular science labs, and he gained confidence in his interviewing skills from Regional to State," she replied.

"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.

Robert Lutgen, Homeschooled, Cabot, Arkansas; Teacher-Mentor, Mary Lutgen

Category: Environmental Science

Title: How drones can help manage tailwater on farms

Abstract:

Purpose: The purpose of this experiment is trying to answer the question "Can the Use of Drones Improve the Management of Tail Waters on Farms?" The student believes that the drone will help see how much the volume of the water changes and detect any problems that may occur.

Method: The student called his county's extension office to help him get in contact with a farmer. Once the information had been collected, the student contacted the farmer and asked for his permission to fly a drone over his tailwater ditch. After the student got permission, he

flew the drone lengthwise over the ditch and flew the drone once a month for a three-month period. With a measuring software, the student accurately measured the surface area of the ditch so that he could calculate by how much the water had changed.

Data: The length of the ditch on Day 1 was 463 ft, the depth was 2ft, and 10.5 ft wide. The total volume of the water was 9723ft². On Day 2, the length and depth remained the same while the width had increased to 10.75 ft, causing the volume to become 9954.5 ft². On Day 3, the length and depth once again held constant, but the width had increased to 11.33ft, making the volume 10491.56 ft².

Conclusion: Drones can help farmers better manage their tailwater and save them time and money in the process. The data of this experiment shows that the student's hypothesis is correct.