Soybean science challenge™

Our Soy Checkoff™
Progress Powered by U.S. Farmers

2023 SOYBEAN SCHOLARS

UofA DIVISION OF AGRICULTURE
RESEARCH & EXTENSION
University of Arkansas System

ARKANSAS SOYBEAN PROMOTION BOARD

Meet Your 2023 Soy Scholars

The Soybean Science Challenge is a farmer-funded, statewide, junior and senior high school education program that seeks to increase student knowledge about the value of Arkansas soybeans to the Arkansas economy, to the labor force, and ultimately to feed and fuel the world.

The Challenge is co-sponsored by the Arkansas Soybean Promotion Board and the University of Arkansas System, Division of Agriculture, Cooperative Extension Service.

The Challenge has reached thousands of students and teachers through real-time and on-line education, in-service training, Virtual Field Trips, virtual mini-lessons, classroom lab instruction, Arkansas-based educational publications, mentoring, and awards for independent student research.

Alyssa Thompson and Drew Thomas

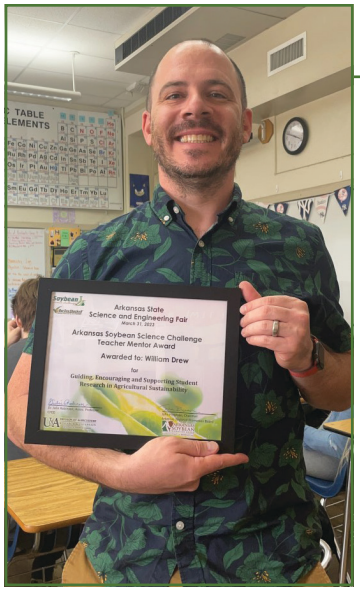
Arkansas State Science Fair
First Place Winners

Teacher-Mentor: Dr. Lindsey Waddell
Category: Animal Science
School: Arkansas School for Mathematics, Sciences, and the Arts

Project Title: Examination of Variability of Fall Armyworm Infestations in Arkansas and the Potential for Biopesticide Treatment of Soybeans

Abstract:
Fall armyworms cause around 500 million dollars in economic damage each year in the United States, and pesticidal treatments are becoming increasingly ineffective. Meanwhile, management solutions have been employed to rid Hot Springs National Park (HOSP) of its invasive plant species, but none have been wholly successful. In an effort to remedy these problems, biopesticides were made from Nandina domestica and Wisteria sinensis, two especially problematic invasive species in HOSP, and Callicarpa americana, a native species abundant within the Ouachita Mountain region. This study will map and collect data on fall armyworms across Arkansas counties. The average temperature in 2022 was 85.77°, up from last year's average of 79.5°, while 2022 average precipitation (in.) was 0.5, down from 2.07 last year. The multiple linear regression resulted in 0.005, meaning hotter and drier climates have less fall armyworms. 32.23% of the variation in infestations are explained by temperature and precipitation. Biopesticides were successfully made, however ANOVA results were not significant. Possible reasons include armyworm cannibalism and enclosure size. The third portion of this study aims to test the toxicity of the biopesticide oil, with nandina and wisteria killing 62.5% and 75%, respectively, as opposed to Sevin and Control killing 100% and 12.5%, respectively. The Chi-Sq. results supported nandina and wisteria being the most toxic, 0.2. Overall, this experiment opens the door to more environmentally friendly biopesticides synthesis to combat fall armyworm populations in Arkansas using invasive plants that need to be eradicated.

"I have students at ASMSA ask me every year now how they can enter the Soybean Science Challenge. Thank you for offering a competition that encourages students to pursue plant science research."
– Dr. Lindsey Waddell



Rini Eluvathingal

Arkansas State Science Fair
Second Place Winner

Teacher-Mentor: William Drew
Category: Environmental Management
School: Little Rock Central High School

Project Title: Effects of Biochar and SAPs on water holding capacity of soil

Abstract:

A major biological concern that has been brought to our attention multiple times is how pollution affects water. A major reason for water pollution is the use of fertilizers and pesticides for agricultural uses such as farming. Fertilizers and pesticides enter water sources through runoff water, which can lead to health risks and not only affect the quality of water but also bacteria growth and algae.

Biochar has been used for many years. Biochar is a porous substance like charcoal that is made through a process called pyrolysis, a more environmentally friendly way to make charcoal. Biochar also has water filtration properties.

This experiment will test how biochar can remove fertilizers from runoff water by measuring the quality of nitrogen, phosphorus, potassium, and pH levels of the water. The results of the experiment supported my hypothesis, the more biochar added, the less contamination from fertilizer in the water.

"Rini gained a great deal of confidence by participating in the Soybean Science Challenge. She did a great deal of work, and it was her chance to show it off." – William Drew

Justus Osbon

Arkansas State Science Fair
Honorable Mention Winner

Teacher Mentor: Alicia Deavens
Category: Chemistry
School: Fayetteville Christian School

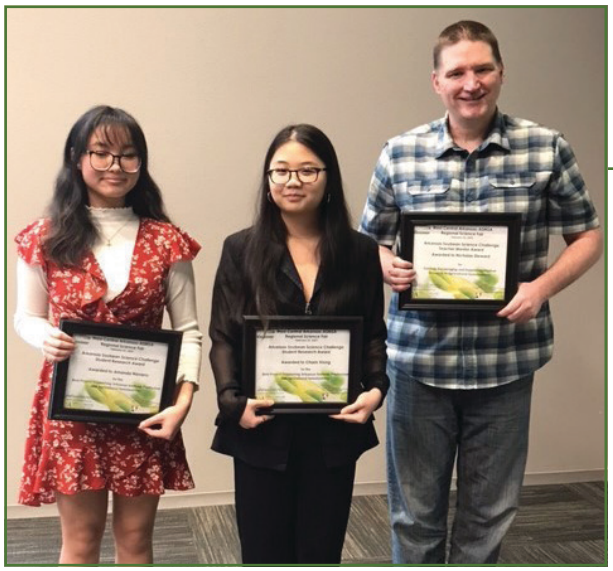
Project Title: How much smoke until you choke?

Abstract:

Which oil is cleaner to cook with based on the soot that is produced in the air while cooking? Canola oil was my control and soybean oil, and olive oil were variables.

The oils have a smoke point range from 400°F to 470°F. (Olive oil has a smoke point range of 390-470°F, Canola has a smoke point range of 375-450°F and Soybean has a smoke point range of 450°F.) My hypothesis was that canola oil would smoke sooner than soybean oil or olive oil because it has the lowest smoke point. Canola, soybean, and olive oils were heated separately with a Bunsen burner until they began to smoke. To determine the amount of smoke released from each oil when heated, I captured the smoke residue with paper and coffee filters. Each filter was weighed before and after capturing the smoke. The filters captured the smoke for one minute. The net weight difference of the filters was averaged after five trials with each oil. The results show that canola oil and olive oil release more smoke when heated to its smoking temperature.

"The diversity of soybeans as a food source, a nitrogen fixer in areas of crop rotation, and a source of other soybean biproducts make soybean research relevant for all levels of education." – Alicia Deavens



Charis Xiong and Amanda Navarro

West Central Arkansas Science Fair – ASMSA Winners

Teacher-Mentor: Nicholas Seward
Category: Computer Science
School: Arkansas School for Mathematics, Sciences, and the Arts

Project Title: Development of a novel AI Soybean Root-Knot Nematode stress assessment model in soybean plants (field and home grown)

Abstract:
Southern Root-Knot Nematodes (Meloidogyne incognita) are microscopic roundworms that act as parasites, causing devastating crop damage worldwide. These parasites primarily target the roots of soybeans and other plants, especially in most soybean-producing counties in Arkansas with possible grain yield losses as significant (>75%) with a high population of Southern Root-Knot Nematodes (SRKN). The variety of soybeans, Conventional Soybeans, were planted in potting pots, to minimize nematode damage, with and without the nematodes and photographed throughout the growing season to see the effects of the infection. Infected and non-infected soybean plant data were collected from both field and home-grown plants, ensuring proper identification with similar growing conditions. The data, consisting of pictures taken every few days, was processed in Google Collaboratory and placed into a student-built Convolutional Neural Network to see if a computer could recognize and classify soybean plants infected with SRKN from those without the disease. It was hypothesized that an NASRKNSA model could quickly and more accurately detect early signs of nematode infection in soybean plants than the current detection process with photographic data of infected and non-infected soybean plants. The NASRKNSA model was able to achieve an average mean score above 50%, showing that infected plants can be identified, not far from real-time. This study showed that the NASRKNSA model has potential to detect soybean plants infected with Root-Knot Nematodes more efficiently, indicating that the usage of this model in real-time could help soybean farmers potentially avoid major crop losses earlier on.

"I am continually amazed by the number of applications from soybeans and their byproducts. It was great to watch my students focus on keeping them healthy during cultivation." – Nicholas Seward

Siddharth Snidharan

Central Arkansas Regional Science and Engineering Fair Senior Division Winner

Teacher-Mentor: Patrick Foley
Category: Biochemistry
School: Little Rock Central High School

Project Title: Deciphering the radioprotective effects of the soy isoflavone genistein in lung cells

Abstract:
Radiation-induced lung disease is a potential challenge for thoracic cancer survivors who received radiotherapy. Search for drugs that can radiosensitize cancer cells while protecting the normal cells is currently going on. Genistein, the major biologically active soy isoflavone possesses potent antioxidants and anticancer properties with minimal side effects. This project was aimed to decipher the molecular mechanisms involved in the radioprotective effects of Genistein in normal lung cells and to demonstrate the radiosensitizing effects in cancer cells.

WI38 (Normal) and A549 (Cancer) cells were used. Effects of genistein on antioxidant activity, and TBHP-induced reactive oxygen species (ROS) were measured by DPPH assay and DCFDA assay. Cells were exposed to 4 Gy gamma irradiation and cell viability (MTT assay), intracellular ROS generation, and protein expression of SOD2, Catalase, GPx, molecular docking of Caspase 3 and protein expression of capase3,7 and 9 (Western Blotting) were also studied.

Genistein exhibited a dose dependent free radical scavenging activity. Pretreatment of WI38 cells with genistein significantly decreased TBHP-induced intracellular ROS levels. Genistein pretreatment (20 pM) significantly prevented cell death, reduced intracellular ROS levels, and maintained the protein levels of SOD2, catalase, and enzymes of the apoptotic pathway after irradiation. Interestingly, genistein either alone or in combination with radiation significantly decreased cell viability in lung cancer cells.

In conclusion, the ability of genistein to have a protective effect against radiation in normal cells and a cytotoxic/radiosensitizing effect in cancer cells suggested that it may be considered as a radioprotective drug with radiosensitizing effects.
moisture sensor worked.

"I appreciate the support and acknowledgement that the Soybean Science Challenge offers teachers."
– Patrick Foley

Sanjay Iyer

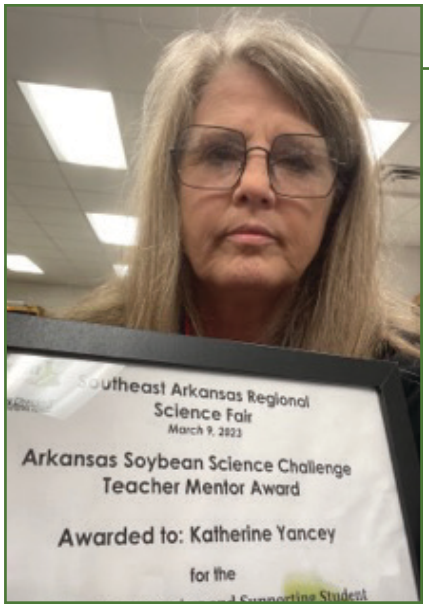
Central Arkansas Regional Science and Engineering Fair Junior Division Winner

Teacher-Mentor: Stephanie James
Category: Computer Science
School: Forest Heights STEM Academy

Project Title: PEST (Pest Evaluating Soybean Tool): A novel machine learning method to detect soybean plant pests

Abstract:
Approximately 45% of annual food production worldwide is lost due to pest infestation. Currently, chemical pesticides have been proven to be effective to fight pest infestation and increase crop yield. Though pesticides have allowed for an increase in crop yield, they have detrimental effects on the environment and our health. Soybeans are the second largest pesticide-consuming crop worldwide, accounting for 22% of total pesticide consumption. As of 2023, the U.S. is the world's second-leading pesticide consumer and the leading soybean producer. Soybean fields are regularly monitored through pesticides twice a week manually, which is a very laborious and time-consuming task for farmers. These issues underscore the need for automated soybean pest detection. Current machine learning models have an average accuracy of 74-88% in detecting soybean plant pests. By training a transfer learning convolutional neural network to distinguish healthy soybean plants from plants affected by Diabrotica speciosa and caterpillars (the two most common pests that contaminate soybeans), we propose PEST, a state-of-the-art computational tool that demonstrates a 93% accuracy rate for detecting soybean plant pests. Project PEST is successful in providing an accurate and effective automatic pest detection aid to farmers to decrease the manual monitoring of soybean fields. PEST may ultimately aid in accelerating pest detection, resulting in quicker effective treatments and an increase in crop yields. The development of a live website is currently underway so farmers around the world will be able to conduct real-time soybean plant pest detection via the built-in webcam or smartphone camera.

"The challenge provides an opportunity for students to develop critical thinking and problem-solving skills as they work on real-world issues related to soybean production." – Stephanie James



Sydney Fuller

Southeast Arkansas Regional Science Fair Senior Division Winner

Teacher-Mentor:
Katherine Yancey
Category: Plant Sciences
School: Stuttgart High School

Project Title: Effects of growing environment on plants and productivity

Abstract:
If you want to have more pepper production, my data suggests you use soil. If you want taller pepper plants, you should use hydroponics. Kale had no huge difference, but soil was numerically better than hydroponics.

In conclusion, soil and hydroponics had no clear difference after 23 days. After more time, statistics prove that there would be no difference except between peppers and kale. Kale was better than peppers and had more growth over 23 days in both treatments.

"Having Sydney do the course helped her to gain knowledge about agriculture and some of the newer farming practices." – Katherine Yancey

Layne Smith

Southeast Arkansas Regional
Science Fair Junior Division Winner

Teacher-Mentor: Preslee Carter
Category: Plant Sciences
School: Dumas Middle School

Project Title: Soil and Soybeans

Abstract:

The purpose of my experiment is for farmers to see which soil works best for soybeans. I used clay, sand, and silt soils to test which soil grows the soybeans faster. A few soil functions include providing a medium for plant growth to enable food and feed production. Another function is storage, filtering and transformation of water, minerals, and pollutants. My hypothesis is: I believe that the silt soil will help the soybeans grow faster because of the vegetables I have grown in silt. They grow fast because the silt soil has particles that hold water but doesn't keep it there too long. The particle size of silt is 0.05 to 0.002 mm and has a floury texture. The particle size of clay is <0.002 mm and has a sticky texture. The particle size of sand is 2 to 0.05 mm and has a gritty texture. The procedure I used was putting one soil sample for each type of soil in a planting container. Dig a two-inch hole and place 2 soybean seeds in each hole. Measure out 2 ounces of water and place into each container. Place containers in a corner with plant light placed directly above the plants. Give either hour of light each day and 2 ounces of water every other day. After soybeans have sprouted, record data on chart until end of experiment.

The results showed the soybeans in the clay and sand sprouted on day 6. On day 7 the silt soybean sprouted. At the end of the experiment, the soybean in the clay soil was the tallest, 17 inches, and healthier than the other soybeans. In conclusion, my hypothesis was wrong. The clay soil worked the best, I think because the clay soil particles are smaller and hold water better.

"This opportunity helped to deepen the students' understanding of the scientific method while doing actual experiments that they were proud to present." – Preslee Carter

Sydney Wolf

Northeast Arkansas Regional
Science Fair Senior Division Winner

Teacher-Mentor: Allyson Goodin
Category: Plant Sciences
School: The Academies at Jonesboro High School

Project Title: Does Planting Configuration and Irrigation Method Affect Soybean Growth?

Abstract:
The purpose of this field study is to observe which planting configuration method produces the highest yield for farmers. The planting configurations of twin row, single row, and broadcast will be used in soybean fields and then observed by their growth as well as their yield. The second part of my field study tests the need for irrigation in farming. Two broadcast fields will be evaluated through one dry farmed field and one irrigation flooded field. I predict the number of soybeans planted in a row directly affects the yield produced. Also, I predict the irrigated broadcast will have an improved yield and growth pattern compared to the dry farmed broadcast.

Once the final data was collected and analyzed, it was found the original hypothesis of the number of soybeans directly affecting the yield is supported by the twin row field. At the end of the growing season, the twin row field had the largest growth as well as the highest yield. Overall, the single row and twin row fields grew similarly for most of the study. Additionally, the yield of the twin row was 2.5 bushels per acre higher than the yield of the single row. However, the difference in yield between the irrigated broadcast and the twin row was 18.5 bushels per acre with the twin row having the higher yield. The irrigated broadcast proved that irrigation improves yield and growth patterns in broadcast fields. The dry farmed broadcast was recorded as having the lowest growth for most of the study. It is important to note, the dry farmed broadcast field continued to increase in height, while the irrigated broadcast decreased due to being salted. The irrigation broadcast field had a 63 bushels per acre yield, while the dryland broadcast produced a yield of 24 bushels per acre. There is a 39 bushel per acre difference between irrigation and dry farming.

In conclusion, the student was able to accept both parts of the hypothesis due to the support of the study results. Farmers can utilize twin rows to produce a greater yield. If a farmer were to plant using the broadcast configuration, then it is proven that irrigation will help improve the yield as well. The data from this field study can be used in any area of the world if the soil type and the growing season are similar.

"The Challenge allows my students to gain new knowledge about the impact of soybeans on their everyday life. It also allows them to participate at their own pace. This helps my students put time management skills into action." – Allyson Goodin

Levi Foster

Northeast Arkansas Regional
Science Fair Junior Division Winner

Teacher-Mentor: Katie Southard
Category: Plant Sciences
School: Salem High School

Project Title: Comparing the growth of soybeans using different types of water

Abstract:
To increase soybean production, does the type of water used to water the plants matter? The purpose of the experiment was to see which water-pond, rainwater, tap or river-makes soybeans grow the most. 16 soybean seeds were planted in the experiment and were allowed to grow for 22 days. Each cup, with one seed each, was watered daily with 2.3 ml of water and received the same amount of light. At the end of the 22-day period, the height of the four plants with the four types of water were measured and averaged. The averages were compared and turned into a bar graph. Based on the results of the experiment, soybean farmers should use river water to irrigate their soybean plants to increase soybean growth and should avoid using pond water.

"The Soybean Science Challenge gives more students the opportunity to try and win an award, and not just any award, but one that includes a cash prize which is a great motivation tool." – Katie Southard

Mason Collins and Jack Snell

Northwest Arkansas Regional Science and Engineering Fair Senior Division Winners

Teacher-Mentor: Zach Thomas
Category: Computational Biology/Infomatics
School: Alpena High School

Project Title: Diagnosing Bacterial Blight with Darknet

Abstract:
Bacterial blight is a disease that spreads throughout many kinds of plants. One of which is soybeans. As bacterial blight reproduces and grows, it inevitably causes plant necrosis leading to the leaves decay and rot. From here the plant can spread blight throughout a field causing severe damage to yield. Agriculturalists and farmers alike can use artificial intelligence to detect soybean blight early and provide treatment to the field. With developing image detection software, it becomes even more possible to treat blight in its early stages before it develops into the more harmful stages. We located a library of 75 images of soybeans infected with Bacterial Blight. Then, we annotated these images using the Computer Vision Annotation Tool online by highlighting each instance of the disease with a rectangular bounding box. We installed Darknet, DarkMark, and Darkhelp using the linux Ubuntu 22.10 terminal in WSL2. Then, we borrowed the GPU power of a Darknet expert, as he had a GPU capable of training the model quickly and efficiently. Our results indicate that the neural network model was able to be trained rapidly, thanks to the YOLOV3 mini architecture used. The network was able to quickly identify Bacterial Blight with a mAP% score of 93% and a loss of 2.8 at 4900 iterations. The Neural Network was effective at detecting blight in soybean plants. With neural networks such as these, engineers can construct automated equipment that can be applied in fields.

"These students gained a lot of information about soybeans and Arkansas' production of soybeans. They also were able to make their project very applicable to the state and its soybean producers." – Zach Thomas

Keila and Michelle Ortiz Salinas

Northwest Arkansas Regional Science and Engineering Fair Junior Division Winners

Teacher-Mentor: Kiersten Deen
Category: Plant Sciences
School: Lakeside Junior High School

Project Title: How do magnets affect the germination rate of a soybean plant?

Abstract:
This project aimed to determine how magnets can affect the germination rate of a soybean plant found through a trial of plantings of the three types of seeds (Tofu, Conventional, and Roundup Ready). We had 4 trays, three with different kinds of soybean seeds, and a singular one with all three types. We began by layering 1 inch of soil across the entirety of all 4 trays adding the seeds over the top of that layer (3 12" by 10" trays had a total of 25 seeds and 1 20" by 10" tray had 10 seeds of each type) and following that up with another inch of soil. We then began our observations by recording the growth and watering of our plants daily or every other day (unless inclement weather is present, and we cannot access the plants). Our first recorded sprouts were on 02/06/23. With a total of 5 sprouts (2 Controlled Conventional, 2 Magnetized Conventional, and 1 Magnetized Tofu). Our largest recorded sprout was about 8⅝ inches tall on 02/17/23 in the controlled conventional tray. We noticed that we have more sprouts in the trays that are magnetized rather than the controlled tray, but the controlled tray did have the biggest sprouts. We concluded that the magnets have evened out the growth between the whole tray and that is why the magnetized trays have more sprouts, but it does slow down how high the plant can grow too.

"I had my students participate for a few different reasons. The first being the real-world connections they can make utilizing the materials. Additionally, having the class and learning set up by the Soybean Challenge reduced their research time but expanded their learning." – Kiersten Deen

Ka'Lee Hanson

Southwest Arkansas Regional Science Fair Senior Division Winner

Teacher-Mentor: Amanda Watson
Category: Agriculture/Environmental Sciences
School: Emerson High School

Project Title: Soybean Hydroponics

Abstract:
This experiment was designed to test how long it takes for different types of soybeans to grow in hydroponics and the time it takes to grow. The hydroponic tank, the amount of water in the tank, and the grow light. I used 5 items, the 5 items I used were 1 grow light, aquaponic hydroponic system, soybean seeds (tofu, conventional, roundup; 10 seeds each), and two strings. I observed that the tofu soybeans grew the tallest in hydroponics, the conventional soybeans grew the second tallest, but they were the healthiest, and the roundup ready soybeans didn't grow good at all. My hypothesis was that the tofu soybeans will grow the best in hydroponics because their seeds are bigger. My hypothesis was supported. The issue in my experiment was that the roundup ready soybeans didn't really grow as well as I thought they would.

"I wanted my students to participate in the Soybean Science Challenge because it opened them to more opportunities and made them aware of soybean production in Arkansas." – Amanda Watson

Aiden Watson

Southwest Arkansas Regional Science Fair Junior Division Winner

Teacher-Mentor: Jessi Glass
Category: Agriculture/Environmental Sciences
School: Emerson High School

Project Title: The effect of oil spills on soybean runoff

Abstract:
This experiment was designed to test how oil spills affected the growth of soybean plants. Seven materials were used, including 2700 mL of soil, 18 pots, 54 soybean seeds, 1,350 mL of water, 1 pint of motor oil, 1 beaker, and 1 dropper. The soybean plants with the most oil grew to the largest size, the plant with nine drops of oil grew up to an average of 21.93 cm, and the plants with just pure water grew only to an average height of 16.71 cm. The hypothesis that the plants with the least amount of oil would grow the tallest was rejected. The first time we watered the plants, the oil stuck to the beaker, which is why we changed to dropping the oil in, allowing us to distribute the oil between the plants equally.

"The Soybean Science Challenge is a great way to introduce students to the interaction of farming and environmental science." – Jessi Glass

Hadleigh and Hannah Baker

FFA Agriscience Fair Senior Division Winners

Teacher-Mentor: Carson White and Josh Baker
Category: Animal Science
School: Mountain Home High School

Project Title: Measuring early soybean growth response to commercial fertilizer and turkey litter

Abstract:
The overall objective of this experiment was to improve the efficiency of turkey production through the implementation of management and nutritional strategies. The three specific goals that we incorporated into our experiment were: finding the protein source that would be the most economical for a poultry farmer, as well as determining which feed source was the most beneficial for the turkeys' overall health, and most importantly, which protein source would be the most impactful in terms of producing a turkey with the most sound bodily features. To ultimately determine which of the two compared protein sources would surpass the three goals we set for our project, we had to develop a direct experiment. Over the course of a 30-day experimentation period, we sectioned off our experimental area into two sections. The first section of turkeys would serve as our "control" in this experiment. They would be fed a consecutive diet of a soybean-based protein source. The second section of turkeys would serve as our independent variable. The turkeys would be fed a diet containing a non-soybean-based protein source. To decide which protein source would ultimately be the most effective in producing a well-rounded turkey, we first had to develop a dependent variable to base our results from. Therefore, at both the midpoint and at the end of our experimentation period we averaged out the weight of each group to determine our results. Although the soy-free feed source proved to be the most economical by previous research projects, ultimately our dependent variable displayed that the feed that produced the heaviest average weight for a single bird, was the most economical on a commercial level, and exerted the most nutritional benefits was the soybean-based feed source.

"The Soybean Science Challenge is an excellent way to get students engaged in learning about AG commodities and agriculture in general." – Carson White and Josh Baker

Holland Stacks

FFA Agriscience Fair Junior Division Winner

Teacher-Mentor: Chad Poindexter
Category: Plant Systems
School: Taylor High School

Project Title: Winter Forage

Abstract:
This study examined the effects of grazing on three types of winter forage. Wheat, ryegrass, and clover were planted and subsequently cut at heights ranging from 2cm to 8cm, to simulate grazing and determine the effect of grazing upon each type of forage. Forages were measured after two weeks of regrowth, cut again and subsequently measured at one week and two weeks. In this study, it was found that forages grazed (cut) to a height of 8cm recovered more quickly than forages grazed (cut) at any shorter height. Furthermore, winter wheat produced a greater volume of forage than either ryegrass or crimson clover.

"Not only did the Soybean Science Challenge online course allow Holland to compete in The Challenge, but it also showed him the importance of soybeans in agriculture." – Chad Poindexter

Soybean science challenge™

Our Soy Checkoff™ Progress Powered by U.S. Farmers

www.uaex.uada.edu/soywhatsup

UofA DIVISION OF AGRICULTURE RESEARCH & EXTENSION University of Arkansas System

ARKANSAS SOYBEAN PROMOTION BOARD

Free Educational Resources and Materials Available from the Soybean Science Challenge at www.uaex.uada.edu/soywhatsup

The Arkansas Soybean Science Challenge is a science enrichment program open to students in grades 6-12.

The Arkansas Soybean Science Challenge research program includes:

- $300 cash awards for high school student science projects impacting sustainability at Arkansas regional science fairs and Arkansas FFA Agriscience Fair; $1000 first place, $500 second place and $250 Honorable Mention at the Arkansas state science fair.
- $200 cash awards for junior high (6-8th grade) student science projects impacting sustainability at Arkansas regional science fairs and Arkansas FFA Agriscience Fair.
- $200 cash awards to teachers whose students win the Soybean Science Challenge at regional. Teacher awards at state are $300 for first place, $200 for second place and $100 for Honorable Mention. $100 for junior level Soybean Science Challenge teacher awardees at regional.

STUDENT ONLINE COURSE – 6 MODULES

- The Science of Soybean Production
- The Miracle Bean: Food
- The Miracle Bean: Fuel
- The Miracle Bean: Feed
- The Faces & Challenges of Farming: Emerging Issues
- Ready…Set…Research!

6-12th grade students who successfully complete the Soybean Science Challenge online course and enter a soybean related project in one of the Arkansas regional and state science fairs, and FFA Agriscience Fair are eligible to have their projects judged for cash awards.

For more information about the Soybean Science Challenge Program, contact:
Dr. Julie Robinson (jrobinson@uada.edu)
Diedre Young (dyoung@uada.edu)
Phone 501-671-2086

FREE CLASSROOM RESOURCES

Teacher In-Service Online Course
7 Hours ADE Approved – 6 Modules
1 Hour ADE Approved: Science Fair 101

Teacher Resources Course for Classroom Use
6 Modules, Tests, Answer Keys and over 50 other soybean-related articles and resources

Teacher Classroom Lessons in 7E & GRC-3D (NGSS Aligned) Format covering multiple subjects.

5-10-minute NGSS aligned agriculturally based mini-lesson videos for the virtual and face to face classroom. Video lessons cover a multitude of subjects with accessible Power Points.

High School Science Curriculum Resource Guide

Arkansas High-School Science Project Development Guide

Soybean Science Challenge Brochure

Free Soybean Science Challenge Seed Store for Student Research Projects

Several Virtual Field Trip videos that include Teacher Guides

Cultivating Arkansas' student scientists to change the world