

WILLIE and the BEANSTALK

All University Open House Plant Growing Contest

Sponsored by **Kansas State University Department of Agronomy**



Willie and the Beanstalk is a contest is open to high school, middle school, 4-H, and/or FFA teams interested in the scientific principles surrounding plant growth. The challenge is to grow the largest soybean plant in a 40-day time span and document this effort.

Beginning on a common seeding day, contestants will grow a soybean plant for 40 days, document their activities, and bring their entry to the Department of Agronomy Plant Growing Contest Center in Throckmorton Hall during Kansas State University Open House for judging. Prizes will be awarded for the top entries in each judging category and all entrants win a tee shirt. Questions about the contest should be sent to beanstalk@ksu.edu.

2022 Contest Rules

The contest has four components:

- I. Pre-contest entry form
- II. 40-day plant growth period
- III. Written documentation of cultural practices (form available on-line)
- IV. Judging of plants and written material by K-State Agronomy Department

Contest forms and rules are available at: <http://beanstalk.agronomy.ksu.edu>

I. Contest Entry

The contest is open to 3-person teams of K-12 students living in Kansas. **The contest will have two divisions, K-8th grade, and 9th – 12th grade.** Each team should select a name for their group and prominently display that name and home town on their entry. Multiple team entries from schools and organizations are encouraged, however, students can only participate on one team. Three-person teams are encouraged, however 2-person teams are allowed if an organization has an insufficient number of students to create complete 3-person teams. Contestants cannot participate on more than one team. **Deadline for submitting an entry form at the contest website is February 28, 2022.**

II. Growing Period

1. Planting Date: For K-State Open House contest, hosted on April 9, 2022, seeds can be planted no sooner than February 28, 2022 (i.e. 40 days preceding Open House). Contestants and a team adviser must attest to planting date on the entry form. Note, seeds can be germinated and transplanted to the rooting medium, but the germination/soaking process cannot start prior to February 28, 2022.
2. Seed source: contestants may select any Soybean variety/cultivar (*Glycine max*) for this contest. Select your seed source carefully as it can greatly influence plant growth. Full cultivar name and source must be included in the [Cultural Practices Documentation Form](#).
3. Pots used for growing plants must be less than or equal to 6" in diameter and less than or equal to 10" deep. Pots can be of any material.
4. Select your soil/rooting medium carefully as the root environment has a large impact on plant growth. The physical and chemical composition of the media must be described in the [Cultural Practices Documentation Form](#).
5. Select amendments to the soil/rooting medium (fertilizers, etc.) that will optimize plant growth. Note: materials classed as growth hormones are not allowed in this competition. Types, amounts, and dates of amendment use must be described in the [Cultural Practices Documentation Form](#).
6. Select a lighting and temperature environment to maximize growth. Do not underestimate the effects of lighting and temperature. Lighting and temperature conditions must be described in the [Cultural Practices Documentation Form](#).
7. Maintain a watering regime designed for maximum growth. Describe this regime in the [Cultural Practices Documentation Form](#).

III. Cultural Practices Documentation Form (available on-line at <http://beanstalk.agronomy.ksu.edu>)

1. Keep a record of all cultural practices used in the contest. Record should be **very** detailed. Please visit the website for further instructions on the information that should be included with this form.
2. **Submit an electronic copy of your Cultural Practices Documentation Form before 5:00 p.m., Friday, April 1, 2022** to allow for judging (see website for details).
3. Bring a copy of your Cultural Practices Documentation Form to the contest.

IV. Contest Judging

Entries must be delivered to the Throckmorton Hall Lobby (near room 2002) on Saturday, April 9, 2022 between 9:00 AM and 12:00 PM for judging. All entries will be judged upon receipt and must be a single plant still growing in its pot. Students are encouraged to be present for judging and will observe the methods used and can assist with the plant evaluation.

1. Entries will be judged based on 5 criteria:
 - 1) Cultural Practices Documentation will be scored from 0-100 points. Scoring will be based on completeness, accuracy, adherence to rules, and creativity in plant husbandry.
 - 2) Plant height will be measured at the highest leaf point above the soil surface with no leaf extension (plants can be staked).
 - 3) Plant mass will be the wet weight of plants cut off at the soil line.
 - 4) Leaf area of the largest trifoliate leaf will be electronically measured.
 - 5) Leaf “greenness” of the largest trifoliate will be determined with a chlorophyll meter (SPAD meter).
2. Teams will be separated into two divisions (K-8 and 9-12). Plants within each division will be ranked based on the above criteria. Top ranked soybean plants in each criterion will receive an award.

An overall contest winner will be determined in each division (K-8 and 9-12) based on the sum of their ranks for each criteria. For example, a team that had the best documentation, the 2nd tallest plant, the 4th largest trifoliate, the 3rd greatest biomass, and the 10th greenest leaf would have the following final score: Final Score = 1 + 2 + 4 + 3 + 10 = 20. The team with the lowest overall final score will win the contest. Ties will be broken by the lowest scores in the individual categories in the following order: documentation, biomass, height, leaf area, and chlorophyll meter reading.

