

Plant Systems and Plant Science Careers Discussion Guide

Teachers: These discussion questions may be used at any point in exploring plant systems and plant science with your students. If your students do not have significant prior knowledge of this career area, it may be best to use this guide after viewing some of the other links on our [Plant Systems and Plant Science careers page](#). At the bottom of this guide, there are “Suggested activities” to try with your class.

Discussion questions

1. If you have taken the Student Interest Survey for the career areas on our site, do your results align with this career path? What interests and skills do you possess that may be a good fit for plant systems and plant science?
2. Many professionals in this field have a love of plant life. Do you enjoy growing plants or crops? What activities or experiences have you had that indicate an interest in the growth and development of plants?
3. **Scenario Practice:** Use the following scenario and questions to explore the field of plant systems and plant science and how it relates to you. (Teachers: At the end of this discussion guide, a Scenario Practice Solution is provided as guidance in solving the practice scenario).

*You work for Beck's Superior Hybrids, a seed specialist company, as their lead agronomist. They have just received a new breed of pest-resistant soybeans. When insects such as June beetles and slugs prey on these soybeans, they will ingest a protein in the plant that is toxic to them. You are responsible for planting a small plot of the soybeans, caring for them, and evaluating how successful they are as a pest-resistant plant. You will need to collect data that reveals how well this plant grows, develops and performs as a pest-resistant species.**

Problem solving:

- What variables will you measure to determine if this plant is healthy and able to kill common pests?
 - What part of the plant care and evaluation process would you most enjoy? How might this crop positively impact the U.S. and the world? For example, in what ways could a pest-resistant seed contribute to feeding our growing population?
4. There are many ways to get involved in plant science even before you graduate. You may help out with your family's farm or garden. You could join a related school club or start one yourself. You may contact one of the GrowNextGen industry leaders and ask them to visit your school or share resources. You could help coordinate a virtual field trip to a leader in the industry. What other ways can you think of to be involved in plant science as a high school student?

Curriculum connection question

- Please reflect on the material you have learned this year. Make one connection between the content you are learning and plant science. (For example: Have you discussed photosynthesis or the growth cycle of certain plants in a biology class? Have you examined plant tissues in biology? What have you learned about the nutrient needs of plants in your agriculture courses? What relevance might these topics have to the field of plant science?)

Suggested activities

- As an entrance or exit ticket, have students quickly brainstorm other career areas that rely on plant science (directly or indirectly) to exist and be profitable. Students should be ready to defend the relationships between the other career paths and plant science. A class concept map could be created based on student responses.

* From *GMO Compass*, 2006,

http://www.gmo-compass.org/eng/agri_biotechnology/breeding_aims/147.pest_resistant_crops.html

- Have students research a crop of interest to them. Have them create an infographic or other advertisement informing the public of several aspects of this crop. Students may answer any or all of the following questions in their infographic:
 - What does the life cycle of this crop look like?
 - What is involved in the care of this crop? What nutrients does it require and how much of each, relative to the crop size? What is the best way to conserve natural resources while meeting the needs of this crop?
 - Is there a genetically engineered version of this crop available? What are its unique traits?
 - Of what nutritional value to humans or animals is this crop? What is the demand or target market for this crop—who will make use of it and how?
 - In what climates is the crop commonly grown?
 - What are the most common ways in which this crop is transported?
- As an entrance or exit ticket, ask students to brainstorm 3 ways they could take some “next steps” toward a career in plant science and plant systems before they graduate.

Scenario practice solution

- Possible variables to be measured: hours of sunlight given to the soybeans, amount of water given to the soybeans, type and amount of fertilizer given to the soybeans (if any), tissue samples from the soybeans (possibly compared to a typical breed of soybean plant grown by Beck’s Superior Hybrids), average height of the soybeans, look of the foliage of the soybeans, average soybeans produced by the plants, number of pests (or estimation of average number) found around the plants that have been eliminated by eating the plants.
- Pest-resistant soybeans could reduce the amount of money farmers would need to spend on pesticides. Farmers could devote this income to expanding and enhancing crop production. Pest-resistant soybeans could improve the environment by reducing the amount pesticides that are needed and cycle through the environment. Encourage students to brainstorm several other outcomes that could directly and indirectly affect food production worldwide.