

Agricultural Science II

Curriculum Guide: *Plant Science*

Unit Objective:

Students will demonstrate an understanding of the basic plant processes of germination and photosynthesis by conducting a seed germination experiment and writing a summary of their findings.

Show-Me Standards: 1.3, SC7

References:

Planet Ag. Science Fair Project Ideas. Accessed April 24, 2003, from <http://www.fl-ag.com/PlanetAg/ideas.htm>.

Plant Science. University of Missouri-Columbia, Instructional Materials Laboratory, 1991.

Sci4Kids. Science Projects in Agriculture. Accessed April 24, 2003, from <http://www.ars.usda.gov/is/kids/fair/story.htm>.

Instructional Strategies/Activities:

- Students will engage in study questions in lessons 1 through 8.
- Additional activities that relate to the unit objective can be found under the heading “Other Activities” in the following locations: p. 24 and p. 39.

Performance-Based Assessment:

Students will conduct a seed germination experiment comparing the difference in growth patterns between monocot and dicot seeds. Each student will germinate both types of seeds (e.g., corn and beans). The student will examine the seeds each class period and record the differences (height and the appearance of the plant) in a chart that he or she designs. In addition, students will experiment with different variables such as light, media type, initial seed depth, and moisture levels. Before the students plant their seeds, they must hypothesize what will happen to their seeds. At the end of the experiment, students will write a 1-page summary of their findings.

Assessment will be based on the content and presentation of the chart and the overall quality of the summary.

**Plant Science
Instructor Guide**

The instructor should assign the performance-based assessment activity at the beginning of the unit. Students will work toward completing the activity as they progress through the unit lessons. The assessment activity will be due at the completion of the unit.

1. Provide the following materials for students.
 - ☐ Bean and corn seeds (four of each per student)
 - ☐ Plastic cups
 - ☐ Media
 - ☐ Water
2. Assign each student a variable relating to levels of light, media type, initial seed depth, or soil moisture levels. Students will germinate their seeds according to their variable.
3. Students will predict or hypothesize what will happen to their plants based on their variable.
4. Have students develop a chart to record their plants' activity.
 - a. The chart will include a space at the top for writing the hypothesis before the experiment begins.
 - b. Students will examine their plants and record activity (e.g., height and appearance) every day that they are in the classroom.
 - c. Students will collect data over a 3-week period.
5. At the end of 3 weeks, students will write a 1-page summary of the performance of their plants.
6. Assessment will be based on the content and presentation of the chart and the overall quality of the summary.

**Plant Science
Student Handout**

1. Your instructor will provide the following materials.
 - ☐ Bean and corn seeds (four of each type)
 - ☐ Plastic cups
 - ☐ Media
 - ☐ Water
2. Your instructor will assign a variable relating to levels of light, media type, initial seed depth, or soil moisture levels. You will germinate the seeds according to the variable.
3. You will predict or hypothesize what will happen to your plants based on the variable.
4. You will develop a chart to record your plants' activity.
 - a. The chart will include a space at the top for writing the hypothesis before the experiment begins.
 - b. You will examine your plants and record activity (e.g., height and appearance) every day that you are in the classroom.
 - c. Data will be collected over a 3-week period.
5. At the end of 3 weeks, you will write a 1-page summary of the performance of your plants.
6. Assessment will be based on the content and presentation of the chart and the overall quality of the summary.

Agricultural Science II

Plant Science Scoring Guide

Name _____

Assessment Area	Criteria	0 Points	1 Point	2 Points	3 Points	4 Points	Weight	Total
Content of Chart	<input type="checkbox"/> Complete (all days have data) <input type="checkbox"/> Plants were treated according to the variable <input type="checkbox"/> Hypothesis is present <input type="checkbox"/> Hypothesis is logical per the variable	0 criteria met	1 criterion met	2 criteria met	3 criteria met	All 4 criteria met	X 10	
Presentation of Chart	<input type="checkbox"/> Easy to follow <input type="checkbox"/> Organized format <input type="checkbox"/> Neat <input type="checkbox"/> No spelling errors	0 criteria met	1 criterion met	2 criteria met	3 criteria met	All 4 criteria met	X 5	
One-Page Summary	<input type="checkbox"/> Proper grammar <input type="checkbox"/> No spelling errors <input type="checkbox"/> Covers assigned variable <input type="checkbox"/> Well organized	0 criteria met	1 criterion met	2 criteria met	3 criteria met	All 4 criteria met	X 10	
TOTAL								

Final Assessment Total _____/100 pts.

Comments:

