Plant Evaluation

Media Type: Video
Duration: 46 min.

Goal: To learn about the scientific background of plants and the application of their evaluation.

Description: This presentation includes detailed information about a diverse selection of plants, including anatomy, physiology, reproduction, health and production. The process, steps and applicability of evaluating plants in various settings is detailed in this presentation.

Objectives:
1. To analyze the anatomy and physiology of plants.
2. To evaluate the environmental impacts made on plants.
3. To discuss the physiological disorders impacting plants.
4. To identify diseases affecting plants.
5. To discuss the application of plant evaluation in both urban and agricultural settings.

▼ Common Core Standards

Agriculture, Food & Natural Resources Career Cluster (AG)

Cluster	Standard
	Evaluate the nature and scope of the Agriculture, Food & Natural Resources Career Cluster™ and the role of agriculture, food and natural resources (AFNR) in society and the economy.
	Analyze the interaction among AFNR systems in the production, processing and management of food, fiber and fuel and the sustainable use of natural resources.
Food Products & Processing Systems Career Pathway (AG-FD)	Develop and implement procedures to ensure safety, sanitation and quality in food product and processing facilities.
	Apply principles of nutrition, biology, microbiology, chemistry and human behavior to the development of food products.
	Select and process food products for storage, distribution and consumption.
	Explain the scope of the food industry and the historical and current developments of food products and processing.
Natural Resources Systems Career Pathway (AG-NR)	Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions to natural resource issues and goals.
	Analyze the interrelationships between natural resources and humans.
	Develop plans to ensure sustainable production and processing of natural resources.
	Demonstrate responsible management procedures and techniques to protect or maintain natural resources.
Plant Systems Career Pathway (AG-PL)	Develop and implement a crop management plan for a given production goal that accounts for environmental factors.
	Apply the principles of classification, plant anatomy and plant physiology to plant production and management.
	Propagate, culture and harvest plants and plant products based on current industry standards.
	Apply principles of design in plant systems to enhance an environment (e.g., floral, forest, landscape and farm).

Plant Evaluation

College & Career Readiness Anchor Standards for Reading

Reading Standards for Informational Text

Key Ideas & Details	Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.	
Craft & Structure	*11-12.4*	Determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings; analyze how an author uses and refines the meaning of a key term or terms over the course of a text.
Integration of Knowledge & Ideas	*9-10.7*	Analyze various accounts of a subject told in different mediums, determining which details are emphasized in each account.
	9-10.8	Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is valid and the evidence is relevant and sufficient; identify false statements and fallacious reasoning.
	11-12.7	Integrate and evaluate multiple sources of information presented in different media or formats as well as in words in order to address a question or solve a problem.
	Read and comprehend complex literary and informational texts independently and proficiently.	
Range of Reading & Level of Text Complexity	*9-10.10*	By the end of grade 9, read and comprehend literary nonfiction in the grades 9–10 text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 10, read and comprehend literary nonfiction at the high end of the grades 9–10 text complexity band independently and proficiently.
	11-12.10	By the end of grade 11, read and comprehend literary nonfiction in the grades 11–CCR text complexity band proficiently, with scaffolding as needed at the high end of the range. By the end of grade 12, read and comprehend literary nonfiction at the high end of the grades 11–CCR text complexity band independently and proficiently.

College & Career Readiness Anchor Standards for Writing

Writing Standards

Text Types & Purposes	Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.	
	Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	
Production & Distribution of Writing	*9-10.4*	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
	9-10.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
	9-10.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibly and dynamically.
	11-12.4	Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
	11-12.5	Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.
	11-12.6	Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

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▼ Common Core Standards

Writing Standards

Research to Build & Present Knowledge	Conduct short as well as more sustained research projects based on focused questions, demonstrating understanding of the subject under investigation.
	Gather relevant information from multiple print and digital sources, assess the credibility and accuracy of each source, and integrate the information while avoiding plagiarism.
	Draw evidence from literary or informational texts to support analysis, reflection, and research.
Range of Writing	Write routinely over extended time frames and shorter time frames for a range of tasks, purposes, and audiences.

College & Career Readiness Anchor Standards for Speaking and Listening

Speaking & Listening Standards

Comprehension & Collaboration	9-10.2	Integrate multiple sources of information presented in diverse media or formats evaluating the credibility and accuracy of each source.
	11-12.2	Integrate multiple sources of information presented in diverse formats and media in order to make informed decisions and solve problems, evaluating the credibility and accuracy of each source and noting any discrepancies among the data.
Presentation of Knowledge & Ideas	Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.	
	Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.	

College & Career Readiness Anchor Standards for Language

Language Standards

Conventions of Standard English	Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
	Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
Knowledge of Language	Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
Vocabulary Acquisition & Use	Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.
	Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when considering a word or phrase important to comprehension or expression.
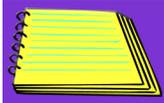
Plant Evaluation

Class 1: Distribute the *Plant Evaluation Vocabulary Handout* and the *Worksheet* for students to use as reference materials. Show the *Plant Evaluation - Introduction to Plant Evaluation* segment. Distribute the *Assessment* and have students complete. Distribute the *Size, Quality & Growth Activity.* Distribute the *Plant Anatomy Project.*

4 min.

Class 2: Show the *Plant Evaluation - Plant Anatomy & Physiology* segment. Remind students to use the *Vocabulary Handout* and *Worksheet* as references. Distribute the *Assessment* and have students complete. Distribute the *Deficiency Notecards Project* and instruct students to turn it in during Class 8.

5 min.

Class 3: Show the *Plant Evaluation - Environmental Impacts segment.* Remind students to use the *Vocabulary Handout* and *Worksheet* as references. Distribute the *Assessment* and have students complete. Distribute the *Weeds Activity* and have students turn them in during Class 5.

10 min.

Class 4: Show the *Plant Evaluation - Weeds & Pests* segment. Students should continue to use the *Vocabulary Handout* and *Worksheet* as references. Distribute the *Assessment* and have students complete. Distribute the *Plant Disease Activity* and instruct students to turn it in during Class 7.

11 min.

Class 5: Show the *Plant Evaluation - Physiological Disorders* and *Plant Evaluation - Plant Disease* segments. Remind students to use the *Vocabulary Handout* and *Worksheet* as references. Distribute the *Assessment* and have students complete. Distribute the *Plant Diversity Project* and instruct students to turn it in during Class 8. Have students turn in the *Weeds Activity*.

9 min.

Class 6: Show the *Plant Evaluation - Applying Plant Evaluation* segment. Distribute the *Seed Quality Student Handout*. Students should continue to use the *Vocabulary Handout* and *Worksheet* as references. Distribute the *Assessment* and have students complete. Allow students to complete the *Plant Disease Activity* and turn in.

7 min.

Class 7: Review concepts taught in the *Plant Evaluation* segments. Distribute the *Plant Evaluation Final Assessment* and have students complete. Have students work on the *Plant Diversity Project.* Have students turn in the *Plant Disease Activity.*

Class 8: Allow students to complete any unfinished work. Have students turn in the *Deficiency Notecards* and the *Plant Diversity Projects.* Have students present the *Plant Anatomy Project.*

Lesson Links

USDA Plant, Soil and Nutrition Research
- http://www.ars.usda.gov/main/site_main.htm?

Career & Technical Student Organizations

Texas Tech Department of Plant & Soil Science
- Scholarship for incoming freshmen
FFA
- Agronomy

Career Connections

Using the *Career Connections Activity*, allow students to explore the various careers associated with this lesson. See the *Activity* for more details. *If student licenses have been purchased:* Students will select the interviews to watch based on your directions. *If only a teacher license is purchased:* Show students all the career interviews and instruct them to only complete the interview form for the required number of interviews.
- iCEV50692, Keith Backman, Certified Professional Horticulturalist & Crop Advisor, Dellavalle
- iCEV50088, Laura Barringer, Senior Associate, Global Harvest Initiative, John Deere

Plant Evaluation

Lab Activity

Size, Quality & Growth
Directions:
Instruct students to conduct research using credible sources such as websites ending in .edu, .gov or .org. Students should select a plant and find information based on the importance of size, quality and growth to the plant. Do not allow more than one student to select the same plant.

Weeds
Directions:
Students should identify at least five common weeds in the local area and provide facts relating to the weed's physical traits and techniques used to remove them.

Plant Disease
Directions:
Students should use credible sources ending in .edu, .gov or .org. With proper supervision, students should find one or more plants to research and discover which diseases may affect them. Using a notecard, students should illustrate the diseases.

Projects

Plant Anatomy
Directions:
Instruct students to select and research a plant with an anatomy they find interesting or unique. Students should create a labeled poster board with most major anatomical features included. Students should write a one paragraph description for each anatomical feature they include on their poster.

Deficiency Notecards
Directions:
Students should select at least 10 nutrient deficiencies. Once they find their deficiencies, students should list the name of each deficiency on one side of a notecard with three facts about the deficiency and one method used to improve upon the deficiency on the other. Remind students to use credible sources ending in .edu, .gov or .org.

Plant Diversity
Directions:
Instruct students to research and select five plants from both urban and agricultural settings. Once they select their plants, students should find three interesting facts for each which were not included in the presentation. They should put the facts in a chart, in addition to making a small illustration of each plant.

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