FIELDS OF LEARNING
TEXAS WHEAT PRODUCERS BOARD

Wheat Anatomy & Plant Growth Lesson Plan

Grade Level: Grades 6-8
Note: Can be scaled up or down as needed.

Lesson Duration:
50 minutes
Note: Adding additional activities will add to lesson duration.

Objectives:
- Students will be able to identify and label the major parts of the wheat plant.
- Students will explain the functions of key wheat plant parts (e.g., head, stem, leaves, roots) and kernel components (bran, germ, endosperm) in relation to wheat growth and nutrition.
- Students will understand the timeline for winter wheat production, including germination, tillering, heading and maturation.
- Students will be exposed to the Feekes Scale of Wheat Development and explain its significance in the crop growth cycle.

Materials Needed:
- 'Wheat Anatomy-Plant Growth' slide presentation
- 'Wheat Anatomy-Plant Growth Guided Notes' worksheet
- 'Kernel & Plant ID' activity
- 'Wheat Nutrition' handout (optional visual aid or handout)
- Printed activity sheets for each student (or uploaded to preferred LMS)

Lesson Outline:
Introduction (5 minutes)
- Briefly review topics covered in the previous lesson.
- Ask students "What are the primary elements all plants need to grow?

Direct Instruction (5 minutes)
- Present 'Wheat Anatomy-Plant Growth' slides 2-13.
- Discuss the fundamentals of plant growth and the anatomy of the wheat kernel and plant. (See page 4 for guided discussion questions.)

Guided Practice (10 minutes)
- Distribute the "Kernel & Plant ID" activity from the handout.
- Work through the first question together as a class.
- Allow students to complete the rest in pairs or small groups.

Direct Instruction (10 minutes)
- Present 'Wheat Anatomy-Plant Growth' slides 14-22.
- Review the timeline for winter wheat growth. (See page 4 for guided discussion questions.)
- Discuss the Feekes Scale of Wheat Development. (See page 4 for guided discussion questions.)

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- Use slide visuals and optional 'Wheat Nutrition' handout (can be printed for individual student use or shared on screen for students to see).

Independent/Group Activity (15 minutes)
- Each student fills a cup with soil and plants wheat seeds. Label with name and date.
- Water lightly and place in sunlight. Students will observe growth through stages (germination, emergence, tillering, elongation).
- As a group: Tie project observations to slides showing wheat's growth phases (planting, germination, tillering, dormancy, regrowth, heading, maturation and harvest).

Review and Discuss (5 minutes)
- Go over the labeling answers as a class, allowing students to self-check and discuss any missed items.
- Highlight key facts:
  -Each portion of the wheat kernel and plant have specific purposes.
  -Winter wheat has the following stages for growth: planting, germination/emergence, tillering, dormancy, regrowth, reproductive stages, maturation/harvest.
  -The Feekes Scale has 11 stages used to measure the growth of the wheat plant.

Extension (Optional):
- Timeline: Students create a spring wheat timeline showing planting, tillering, heading and harvest dates.
- Feekes Stage 10: Students research or view images/descriptions of Feekes stage 10 (head emergence) and present 1-2 sub stages.

Assessment:
- Participation in class discussions.
- Completion and accuracy of labeling worksheet (check with provided answer key).

Differentiation:
- Provide diagrams and word banks for labeling.
- Allow oral group labeling and flexible response formats.
- Modify timeline/Feekes slides to visuals or matching for learners needing support.

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Additional Activities (Optional):

Wheat Growth Stages Timeline
Objective:
- Understand the Feekes Scale of Wheat Development.

Materials:
- Photos of each stage of the Feekes scale.

Activity:
- Students arrange and label images from tillering to ripening.
- Add what management strategies a farmer is employing at each stage. Example: At what stage would a farmer apply nitrogen to their crop? University sources (ex. Texas A&M University, Kansas State University, Oklahoma State University, etc.), commodity boards (ex. Texas Wheat, Kansas Wheat, etc.), (USDA) and agribusiness sources (Bayer CropScience, Crop Protection Network, etc.) are recommended.

Kernel Cross-Section Exploration
Objective:
- Learn what's inside a wheat kernel.

Materials:
- Enlarged diagrams or 3D printed/foam models of kernels and magnifying lenses.

Activity:
- Students identify and label the bran, germ and endosperm.
- Compare texture and color of whole wheat vs. white flour and discuss the difference between whole wheat and white flours.

Wheat Life Cycle Art
Objective:
- Reinforce learning through creative expression.

Materials:
- Paper, paints/crayons, craft supplies, real wheat samples.

Activity:
- Each student or group illustrates one stage of the wheat life cycle or creates a 3D model using craft materials (e.g., yarn for roots, dried grass for stems).

Wheat2School
Plant wheat in your school garden using Wheat2School ® from the California Wheat Commission. Learn more at https://www.wheat2school.com/home

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Guided Discussion Questions:

Plant Growth & Photosynthesis
- Question: *Why is sunlight important for plant growth?*
- Potential Answer: *Sunlight provides the energy plants need for photosynthesis to make food.*

Nutrients
- Question: *Why do plants need different types of nutrients instead of just one?*
- Potential Answer: *Different nutrients support different plant functions.*

Wheat Plant Anatomy
- Question: *Which part of the wheat plant is most commonly used for human consumption?*
- Potential Answer: *Kernel*

Wheat Kernel Anatomy
- Question: *Which part of the kernel makes up the largest part of the kernel weight and contains carbohydrates, protein and vitamins.*
- Potential Answer: *Endosperm*

Growth Stages & Feekes Scale
- Question: *What happens to wheat plants during dormancy?*
- Potential Answer: *Above-ground growth stops, but the roots continue developing.*