

# Unit D: Production of Field Crops

## Lesson 1: Cereal Crops: Growing Wheat



# Terms

- Durum wheat
- Kernel hardness
- Semolina
- Shattering
- Spring wheat
- Winter wheat



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# *Objective 1:*

Identify wheat and its uses.

# What is wheat and how is it used?

- Wheat is the most important cereal grain crop. It is grown in all areas of Afghanistan and is considered the staple crop and national food. Wheat is predominantly used for human consumption.
- Wheat makes up 80 percent of Afghanistan's grain production.



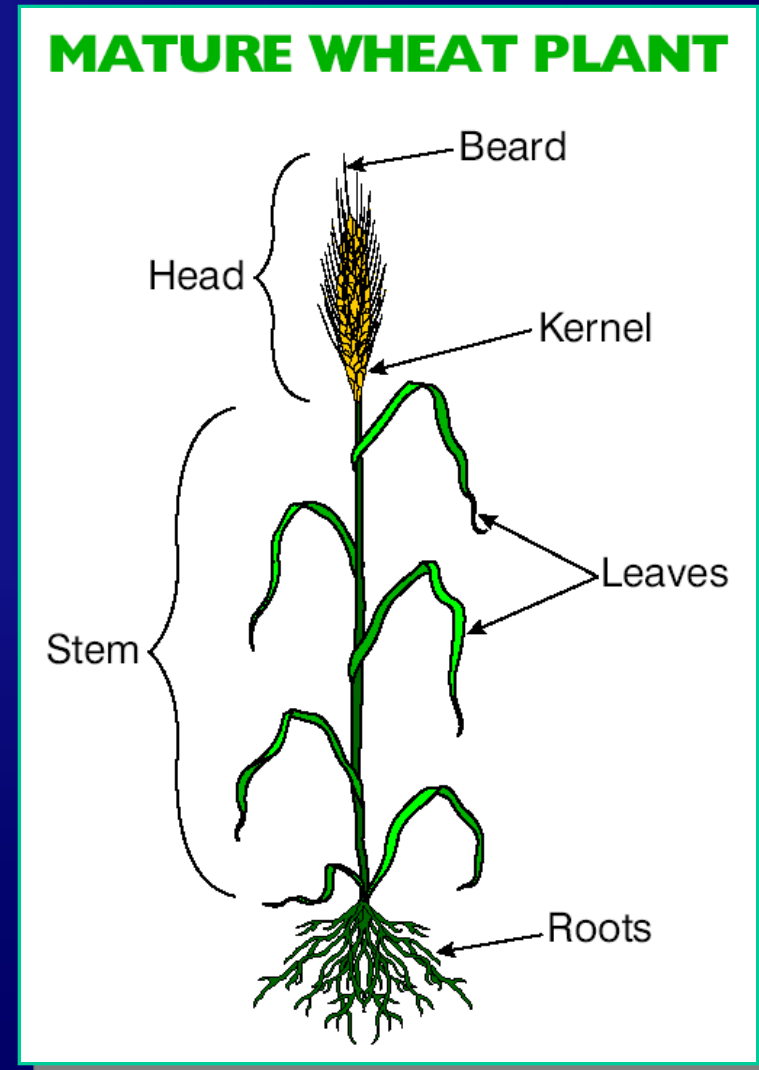
# What is wheat and how is it used?

- The mature wheat plant is made up of the roots, stem, leaves, and head.
- The head contains the kernels and the beard.
- A kernel is a wheat seed. There are about 50 kernels in a head of wheat and 6804 to 7711 kernels in a kilogram



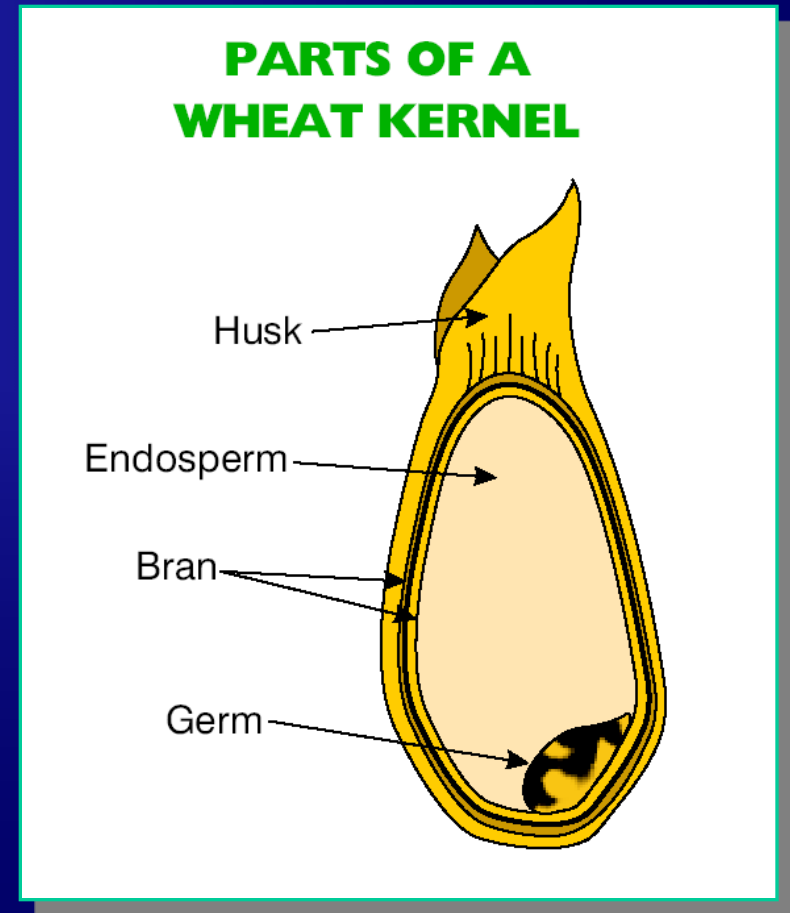
# What is wheat and how is it used?

- There are three common kinds of wheat heads: common, which has a longer, bearded head; club, which has a short head and no beard; and the durum, which is bearded and has hard kernels.



# What is wheat and how is it used?

- The parts of the wheat kernel are the husk, endosperm, bran, and germ.





# What is wheat and how is it used?

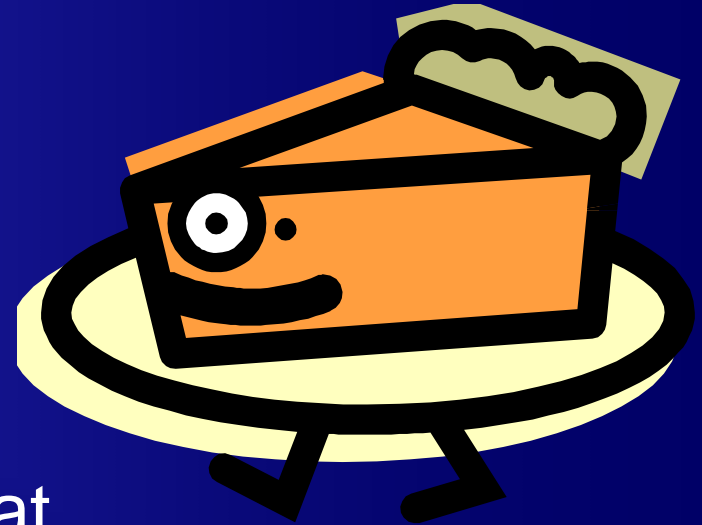
- Wheat is primarily grown for human consumption.
- The vast majority of wheat grown is made into flour.





# What is wheat and how is it used?

- This flour can then be processed into bread, crackers, pasta, pastries, and cakes.
- Wheat can also be processed into ready-to-eat foods, alcohol, and dextrose.

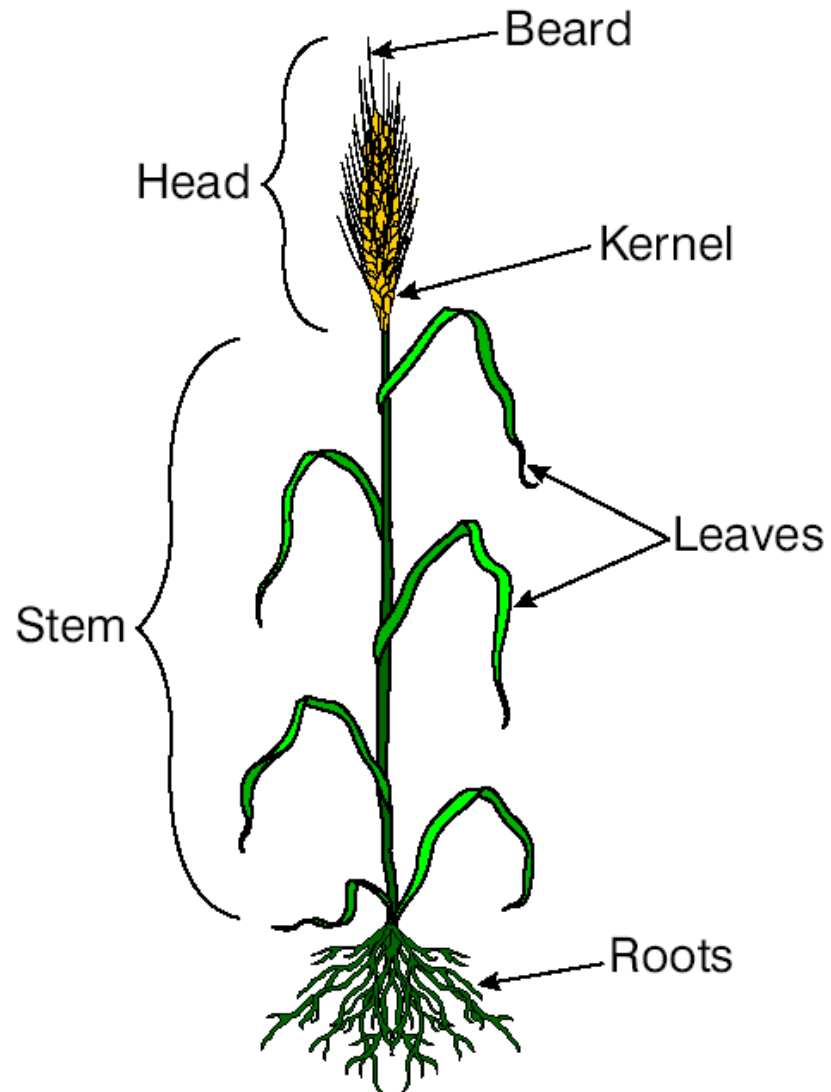


# What is wheat and how is it used?

- D. Wheat can also be used as a source of green forage.
- Once the grain is harvested the remaining straw can be used as fodder. In some countries straw is used as bedding for livestock.



# MATURE WHEAT PLANT



## *Objective 2:*

Identify areas where  
wheat is grown.

# Where is wheat grown?

- Winter wheat is typically grown in the coldest zones, although some Spring wheat is also grown in these zones.
- There are two main classes of wheat, spring and winter.
- These classes are based on time of planting, this also determines where they can be grown.

# Where is wheat grown?

- **Spring wheat** is planted in the spring, grows during the summer, and matures in early fall.
- **Winter wheat** is planted in the fall, establishes itself over the winter, and grows rapidly in the spring.
- Reportedly, 90% of wheat in Afghanistan is winter wheat and 10% is spring wheat

## *Objective 3:*

Describe the different types of wheat.



# What are the different types of wheat?

- III. Wheat can be classified according to time of planting, color, and kernel hardness.
  - Time of planting, or season classifications include spring wheat and winter wheat.



# What are the different types of wheat?

- Classification by color includes red-kernel wheat and white-kernel wheat.
- Wheat is also classified as soft-kernel or hard-kernel.
- Kernel hardness, color, and season can be crossed to develop a wide range of wheat types.

# What are the different types of wheat?

- The color of the seed coat determines classification as red or white.
- *Kernel hardness* is the method used to determine wheat type based on the hardness of the endosperm.
- Wheat is classified as either soft or hard.

# What are the different types of wheat?

- Soft wheat is commonly used in cakes and cookies because it produces a finer textured flour.

# What are the different types of wheat?

- Hard wheat produces the coarse flour used in breads.
- *Durum wheat* is the hard wheat primarily used for making semolina.
- *Semolina* is the granular flour used to make a variety of pasta products.



# **CLASSIFICATION OF WHEAT**

## **Time of planting/season**

- **Spring**
- **Winter**

## **Color**

- **Red**
- **White**

## **Kernel hardness**

- **Soft**
- **Hard**

## *Objective 4:*

Explain the cultural practices of wheat production.



# What are the cultural practices of wheat production?

- Cultural practices are the procedures used in producing a crop.
- Cultural practices for red/white, soft/hard, and spring/winter wheat are similar but vary with the climate of the area.

# What are the cultural practices of wheat production?

- A variety is a plant cultivar that is cultivated and retains its features when reproduced.
- When planting wheat, the variety selection should be based on climate adaptation, yield, disease resistance, pest resistance, plant height, and winter hardiness.

# What are the cultural practices of wheat production?

- Successful wheat production is a direct result of proper planting.
- There are three important factors related to planting: planting date, seedbed preparation, and seeding rate and depth.

# What are the cultural practices of wheat production?

- Planting dates are determined by the wheat's season, winter or spring.
- Winter wheat is planted in the fall before winter begins.

# What are the cultural practices of wheat production?

- Wheat should be planted in a prepared seedbed.
- A seedbed can be prepared by turning over the soil and finely raking it.
- In some parts of the world plowing with a chisel or moldboard plow followed by a disk harrow or do-all is used to cover larger scale operations.
- Both methods reduce soil clods and prepare a fine seedbed. Turning over the soil before planting also helps reduce weed growth.

# What are the cultural practices of wheat production?

- Wheat should be planted in moist soil and should be scatter evenly before raking over them.
- When dealing on a larger scale, drills also provide a uniform plant population.

# What are the cultural practices of wheat production?

- Drills are about 15.24 centimeters apart and can plant from 9.1 to 45.4 kilograms of seed for every 0.4 Hectares. One-half a kilogram of wheat seeds may include 12,000 to 20,000 seeds.





# What are the cultural practices of wheat production?

- A healthy wheat plant requires a good fertilizer and proper pH level.
- Soil tests are used to determine pH and nutrient level.
- Wheat grows best in slightly acidic soils. Nutrient application timing is as important as the nutrients applied.
- Nitrogen should be applied before planting and prior to grain development.

# What are the cultural practices of wheat production?

- Wheat plants are subject to a number of pests.
- Common wheat diseases include snow mold, root rot, rust, powdery mildew, and scab.
- Common wheat pests include the "Sunn pest" (*Eurygaster integriceps*), Locust pests, Russian wheat aphids.
- Cultural practices, proper seeding, and pesticides can be used to manage pests in wheat plants.

# What are the cultural practices of wheat production?

- Wheat should be harvested after the heads of the wheat are mature.
- Wheat should be harvested before shattering. *Shattering* is the point at which mature kernels fall from the wheat head. .
- Wheat should be harvested at 12.5 percent moisture, wheat harvested at higher moisture levels can be artificially dried.

# What are the cultural practices of wheat production?

- You could follow the ancient test and bite down on a grain to see if it's ready to harvest. If it's hard, it's ready. If it's squishy, it's not.

# What are the cultural practices of wheat production?

- Use a sickle or scythe to harvest the wheat, leaving at least two or three inches of stubble. Bundle the wheat into large stacks or shocks, and tie each stack with a length of heavy string. Stack the bundles upright in an area where they are protected from moisture. Allow the wheat to cure thoroughly before attempting to thresh and winnow. Traditionally thresh and winnow is done by throwing the wheat up into a breeze. The heavy grain would fall back to the floor, while the wind blew the chaff away.



# Shocks of Wheat



# What are the cultural practices of wheat production?

- On large scale operations, wheat is harvested using large combines that cut the stalks and separate the kernels.

