

PRESENTATION ON MORPHOLOGY OF WHEAT

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- CLASS :B.SC.(H) ZOOLOGY SEM: IV
- PAPER NAME: GE (ECONOMIC BOTANY AND PLANT BIOTECHNOLOGY)
- DDU COLLEGE

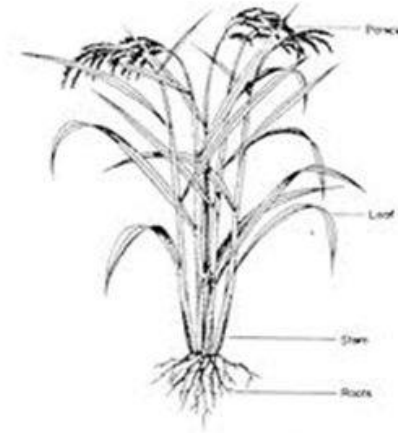


Introduction to Grasses (Poaceae)

- Also known as Graminae (Grass family, True grass)
- Largest family of economic and ecological importance
- In India 268 genera and 1200 species of grasses
- Grasslands occupy 25% of earth's vegetation
- Distributed in all continents and in all climatic zone (Arctic, Antarctic and Ice covered zone)
- Grow in marshes, deserts, prairies, woodlands, on sands, rocks, in all soil types and from sea level to highest elevation
- Most successful life form on earth
- Important component in food chain
- Annuals or perennials
- Few centimeter herbs to 25 feet bamboos
- Tolerable to long period of drought

Grass Family Characteristics

- Parallel leaf veins (like all monocots)
- fibrous roots
- either annual or perennial
 - but crop species are all annuals
- Growing point is below ground until flowering. For most grasses, the flowers are at the tip of each branch.
 - Branches (tillers) also start below ground.



Herb:

Non-cultivated and non-woody stem. Which can be easily broken. It's height is about in between 1 to 2 feet. E.g. wheat, rice, maize etc.



Oryza sativa



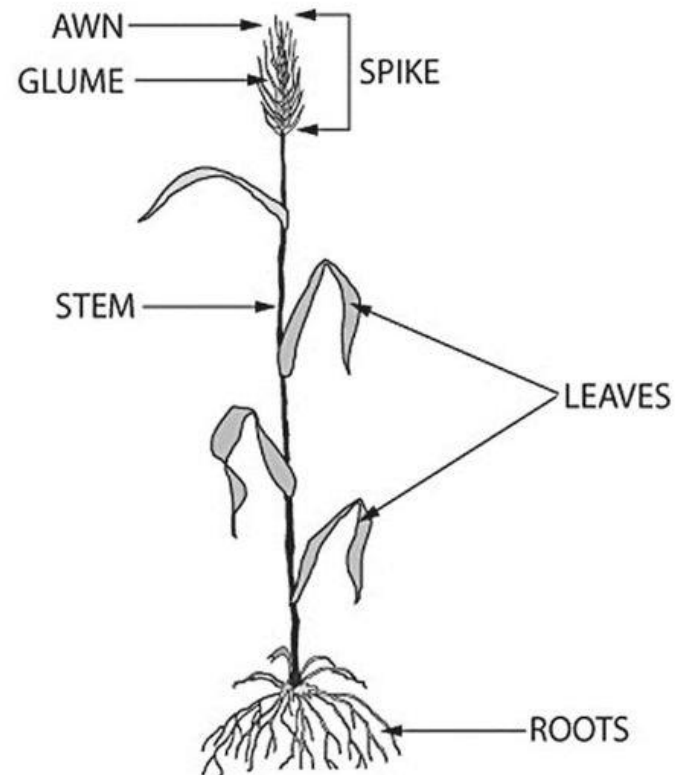
Triticum aestivum

Wheat

- Wheat (*Triticum*) is the source of most bread, noodles, beer.
- The foundation of Western civilization: Middle East, Egypt, Mediterranean, Europe.
- Wheat was domesticated at about the same time and place as barley and rye: the uplands of Turkey, Iran, and Iraq, roughly 10,000 years ago.
 - In the book of Genesis, at the beginning of the Bible, Adam and Eve are kicked out of the Garden of Eden and forced to grow wheat.



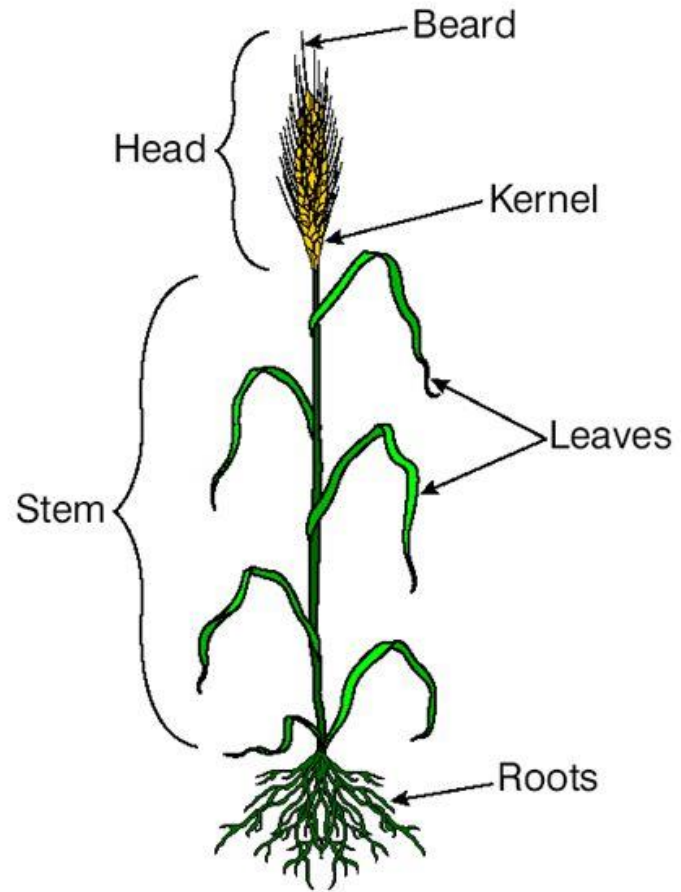
Wheat



Parts of a wheat plant

- 1 seed
- Tillers
- Several stems
- Can grow 500 seeds from one seed

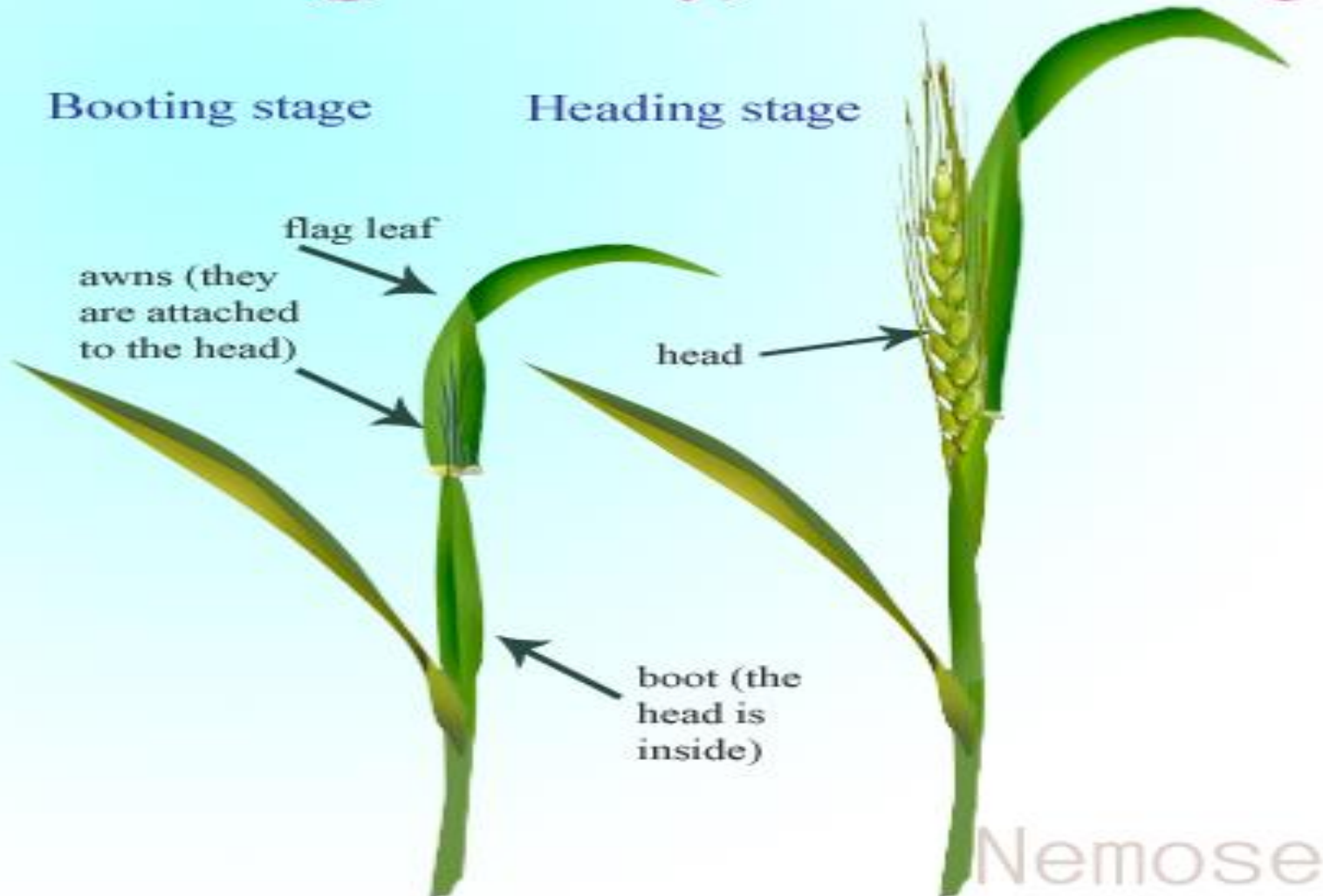
MATURE WHEAT PLANT

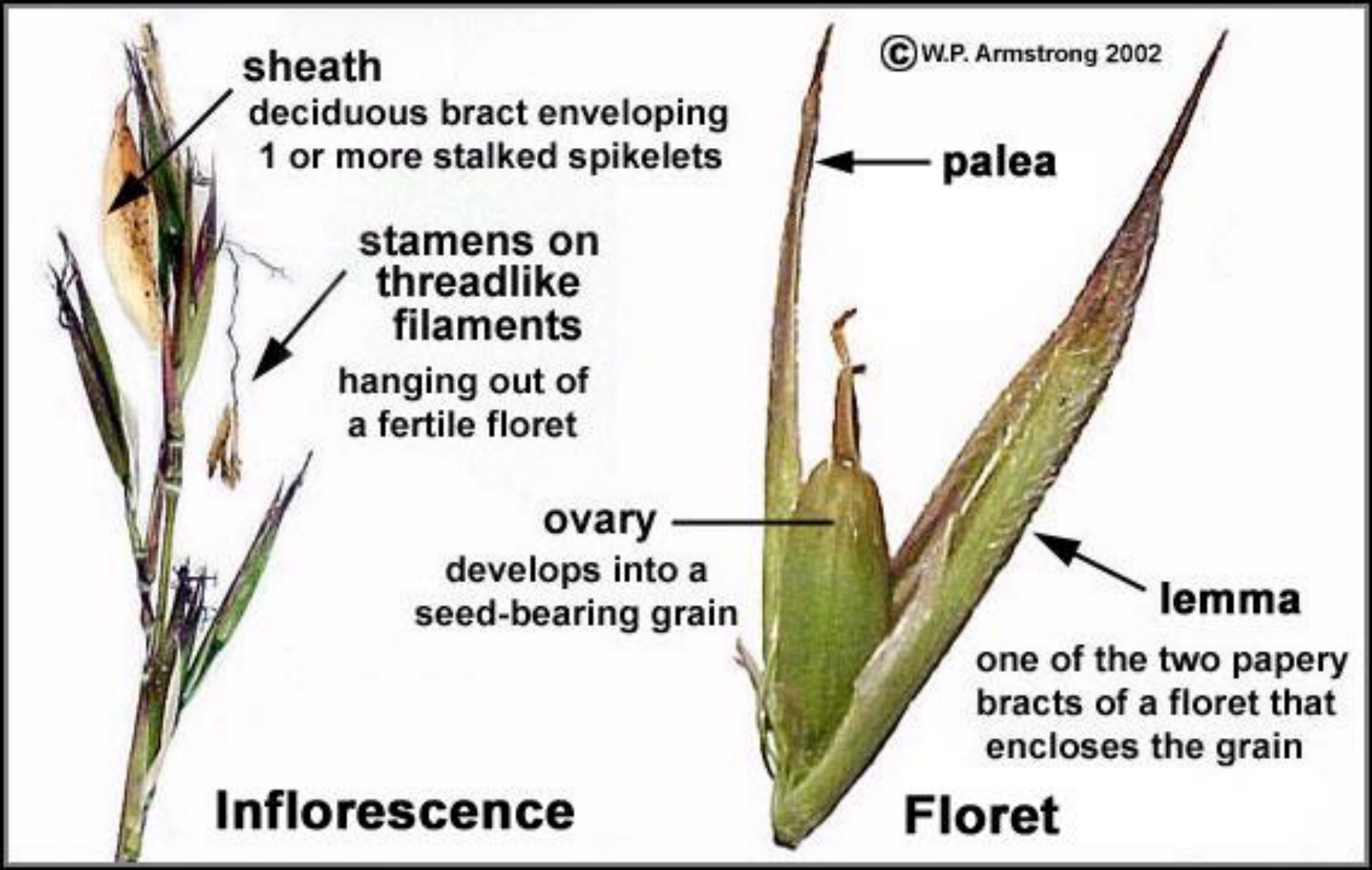


Poaceae (grass family) before flowering

Booting stage

Heading stage





sheath
deciduous bract enveloping
1 or more stalked spikelets

**stamens on
threadlike
filaments**
hanging out of
a fertile floret

ovary
develops into a
seed-bearing grain

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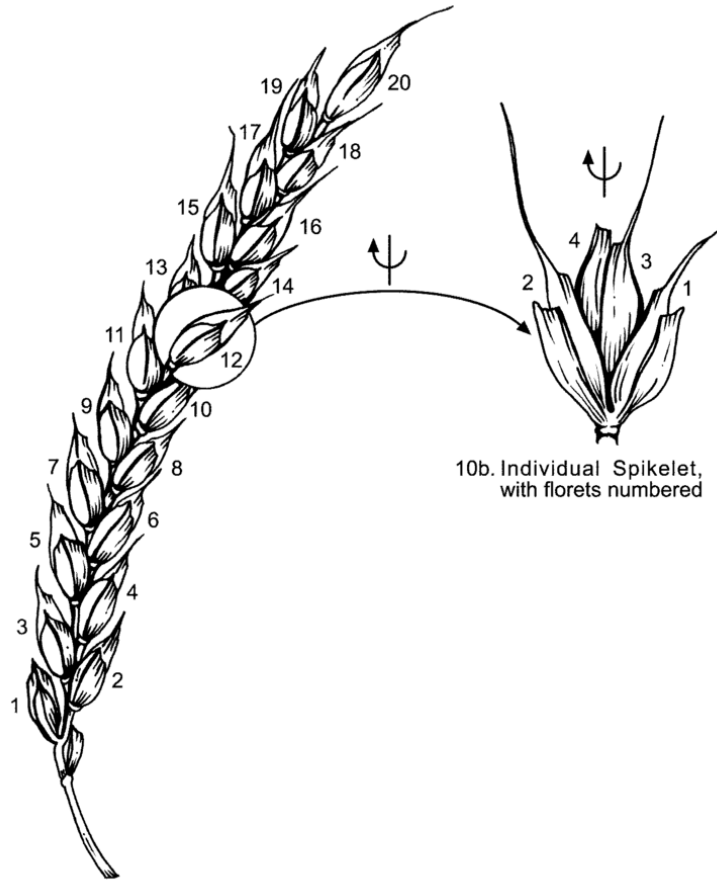
palea

lemma

one of the two papery
bracts of a floret that
encloses the grain

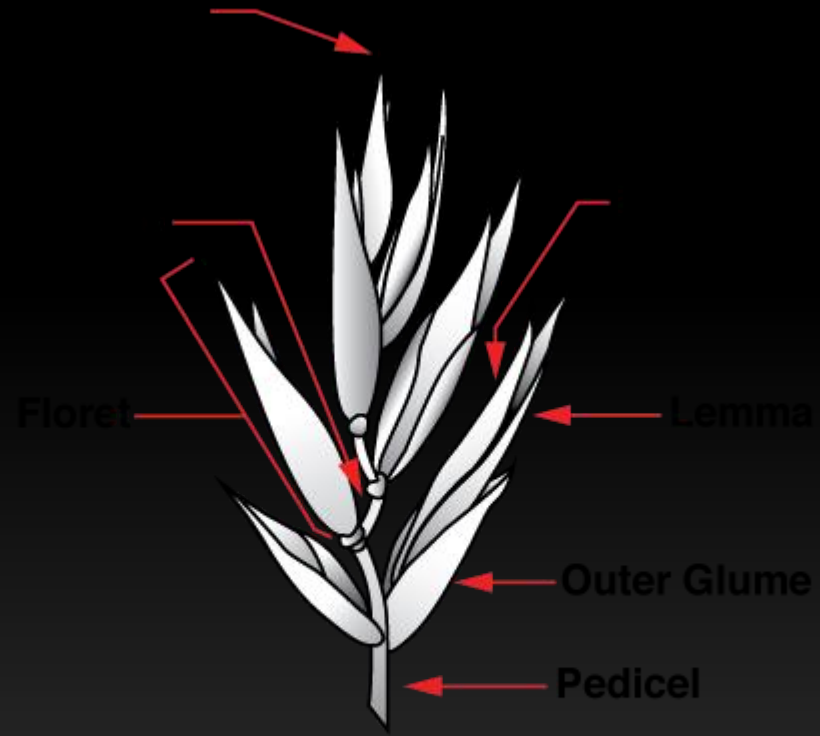
Inflorescence

Floret



10a. Lateral view of a wheat spike. Note the alternately inserted spikelets, which are labelled as they were dissected.

10b. Individual Spikelet, with florets numbered



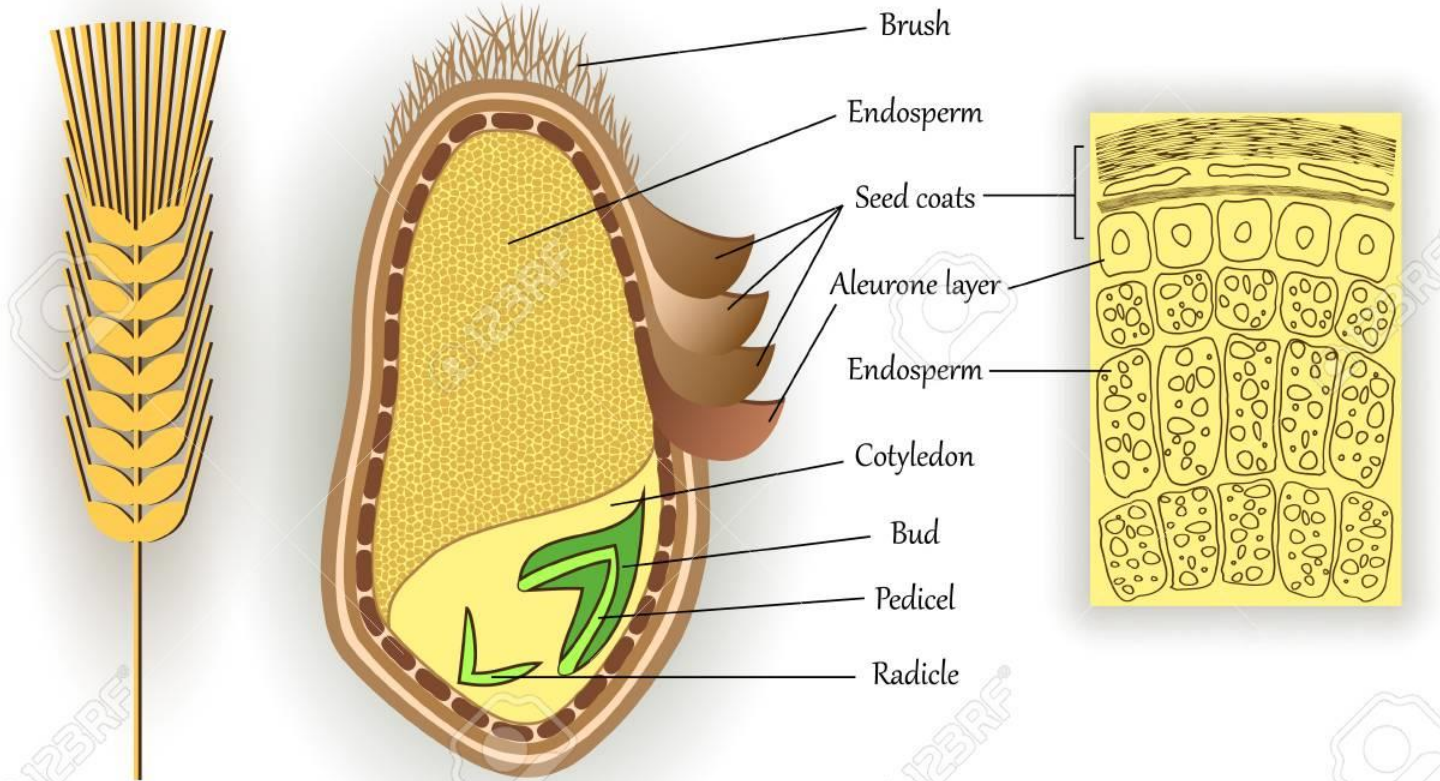
Spikelet



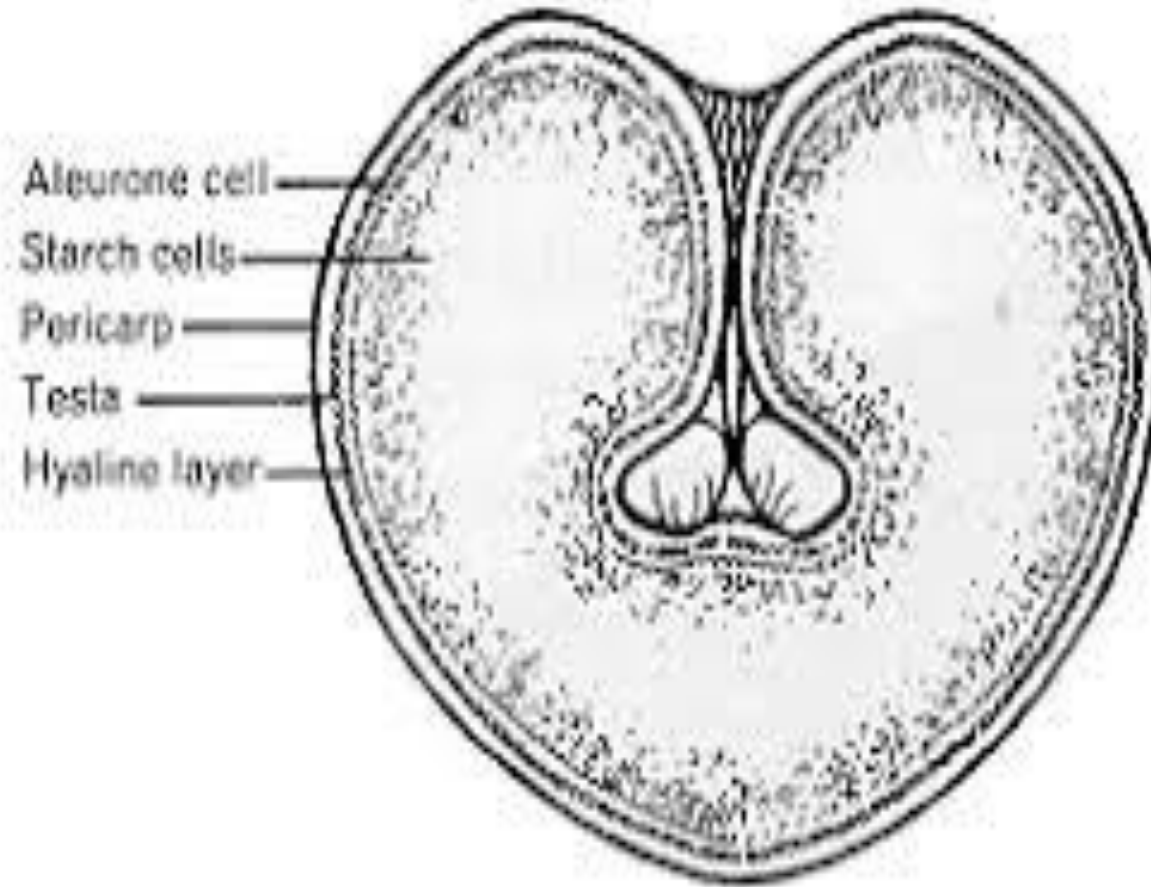
- Spikelets are characteristic of the Poaceae family (Graminae, Grass).
- Individual flower units are called Spikelets
- The central axis of the inflorescence is called a **rachis**
- Spikelets have two scaly bracts present at the base called **glumes**
- Number of florets per spikelet vary in different species
- Each floret has no calyx or corolla
- Reproductive organs of the floret are enclosed by two bracts, the external larger one is called **lemma** and the interior smaller one is called **palea**



STRUCTURE OF WHEAT GRAIN



A grain of wheat cut across the middle



Poaceae is the most economically important group of angiosperms.

Staple cereals: *Oryza* (rice), *Triticum* (wheat), *Avena* (oats),
Zea (corn), *Secale* (rye)

Sugar: *Saccharum* (sugarcane), *Sorghum*

Alcohol: *Oryza* (sake), *Saccharum* (rum), *Hordeum*
(beer), *Secale* and *Zea* (whiskey)

Other stuff: Forage and fodder, paper and building materials (e.g. bamboo), essential oils (e.g. lemongrass), ornamental and turf grasses.