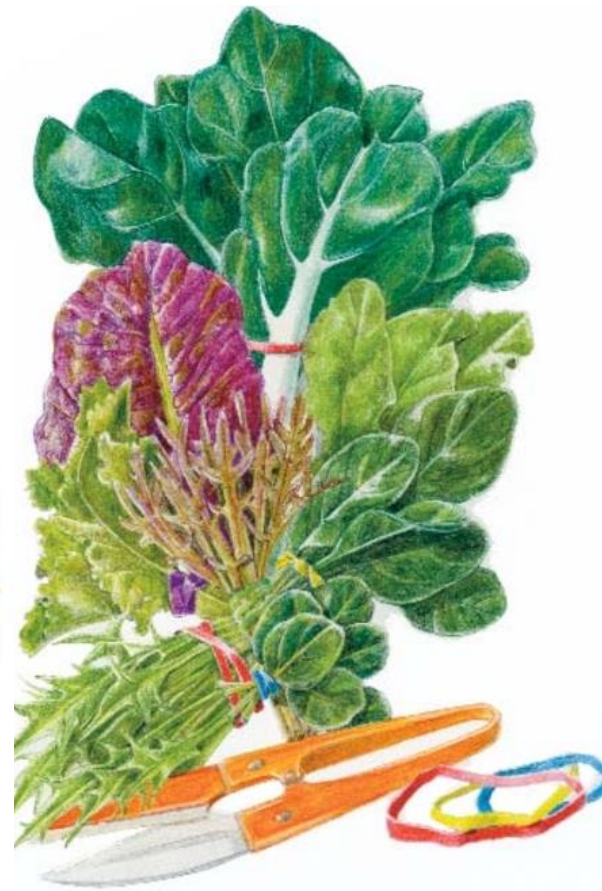


ECONOMIC BOTANY AND MEDICINAL PLANTS

BOTN 5144
MS BOTANY

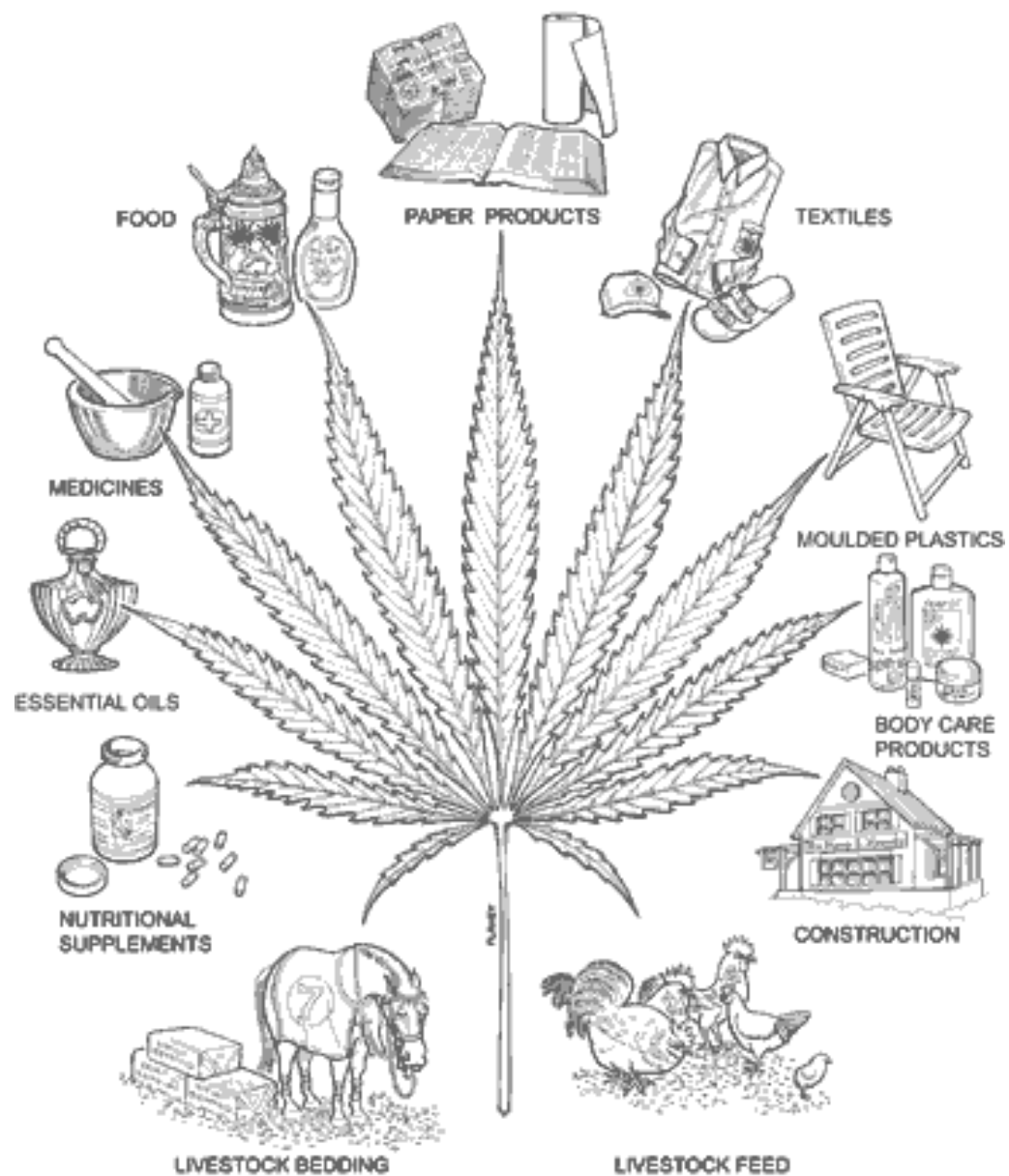
DR. AASMA TUFAIL



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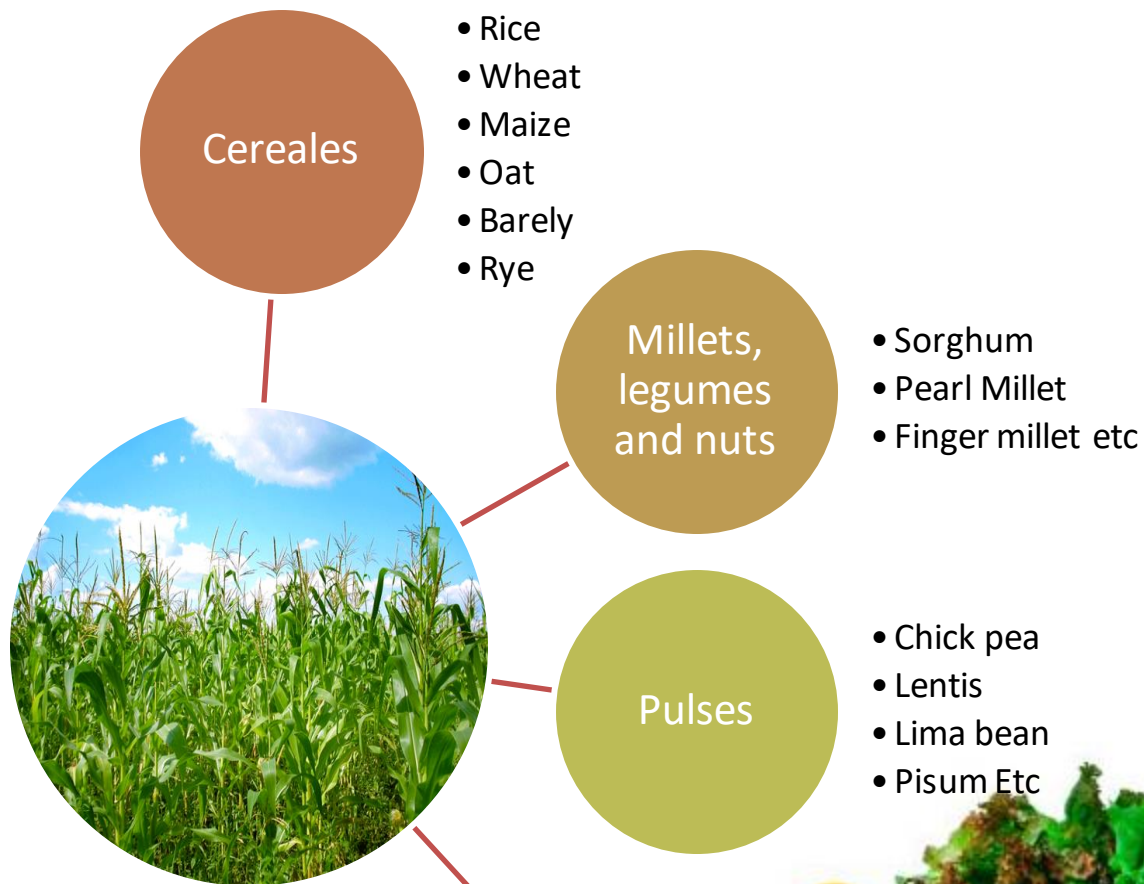
-
- A large, vibrant assortment of fresh fruits and vegetables, including leafy greens, carrots, grapes, apples, and more, arranged in a pile.



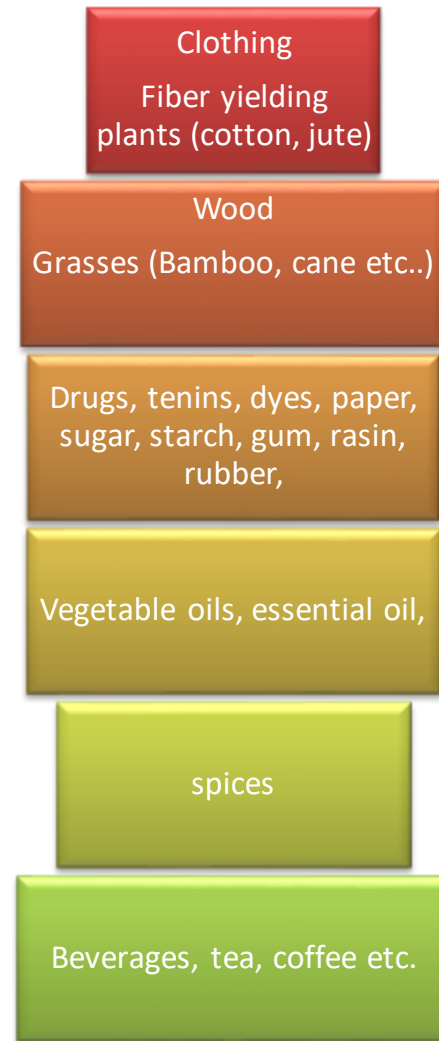




Plants as a source of food
(First need of Human)



Other need of human



Cereals or grains and pulses



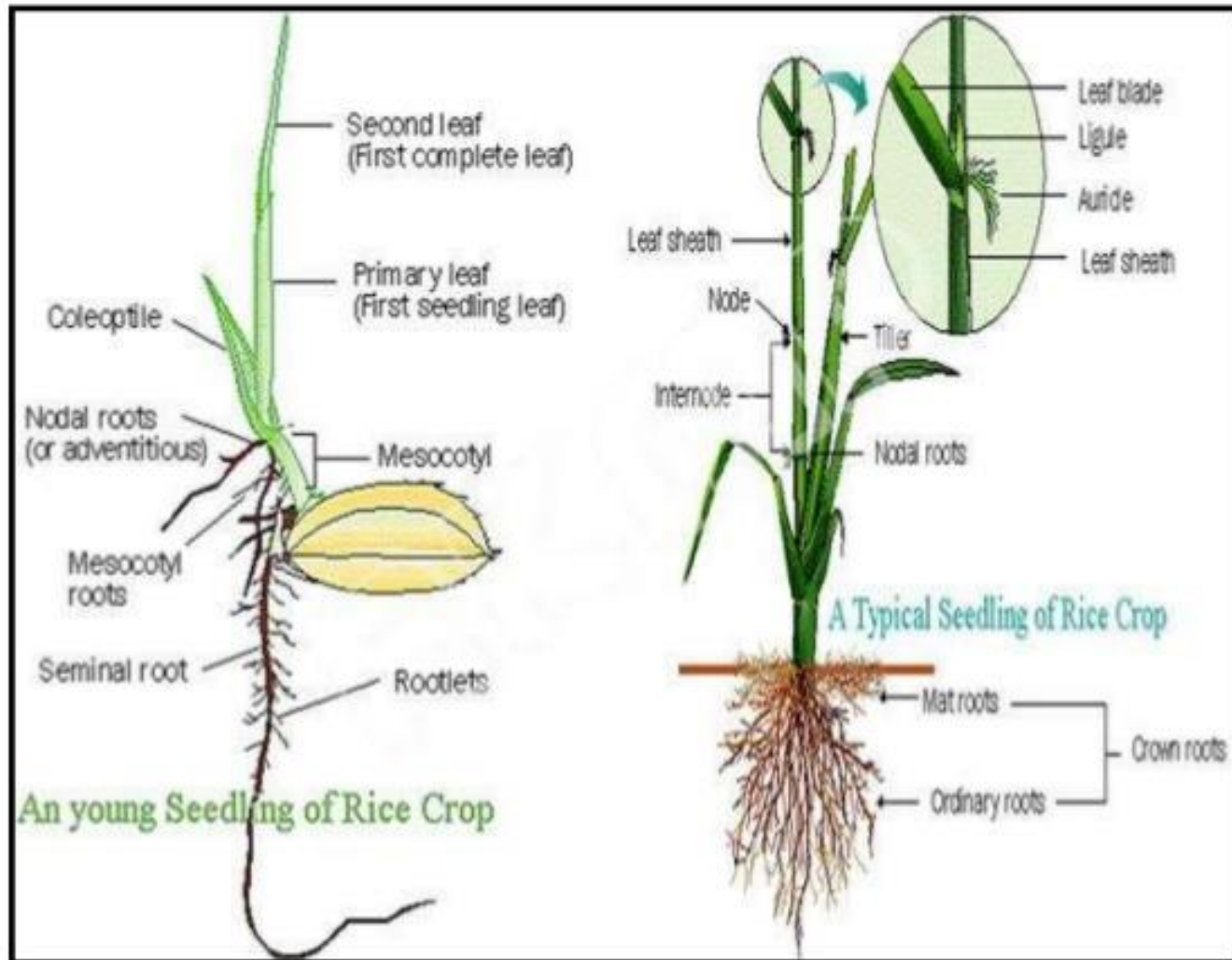
introduction

- **Cereal crops** are interchangeably called grain crops.
- In many publications and correspondence, they are simply called *grains* or *cereals*.
- As of 2012, the top 5 cereals in the world ranked on the basis of production tonnage are **maize (corn), rice (paddy), wheat, barley** and **sorghum**. These crops are also among the top 50 agricultural commodities in the world with maize ranking second next to sugarcane.
- Rice (paddy) ranks **third**, wheat - **4th**, barley - **12th**, and sorghum - **30th**. Another cereal, millet, ranks no. **42** (FAOStat 2014, updated Aug. 18, 2014).

- According to **Chapman and Carter (1976)**, “a cereal is generally defined as a grass grown for its small, edible seed.” They also explained that all cereals are angiosperms, monocots, and members of the grass family Gramineae.
- Similarly, Lantican (2001) defines cereal or grain crops as agronomic crops belonging to the grass family Gramineae which are utilized as staples;
- the word “cereal” is derived from the most important grain deity, the Roman Goddess **Ceres**.

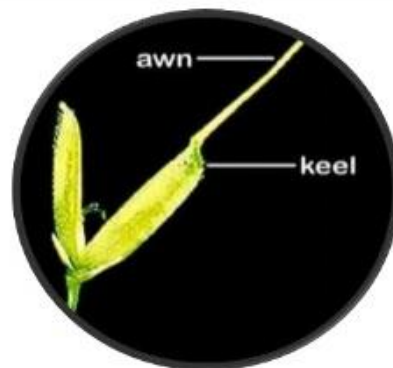
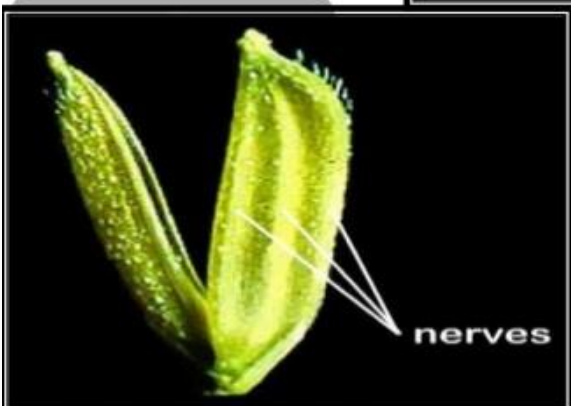
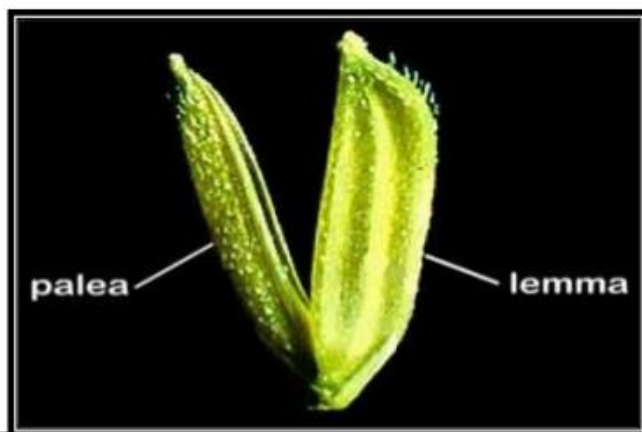
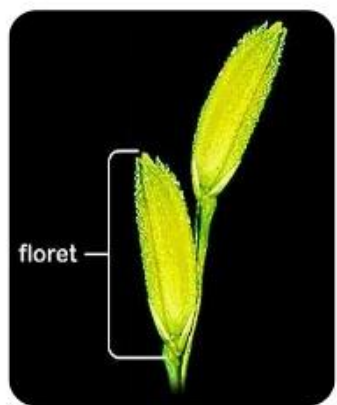
- Botanically, however, the seed and the grain are not exactly the same despite their interchangeable use.
- In rice, the grain consists of the brown rice and the enveloping rice hull. The brown rice is the plant's true fruit (a type of fruit called caryopsis) and consists of a seed and the surrounding fruit wall. The fruit wall (pericarp) consists of several thin layers of tissues which are fused together and inseparable from the seed coat. In indica rice, the hull consists of the lemma, palea, sterile lemmas, and rachilla. The grain, or kernel, of corn (maize) is likewise a caryopsis.

Morphology of rice plant



IDENTIFY THE DIFFERENT PART

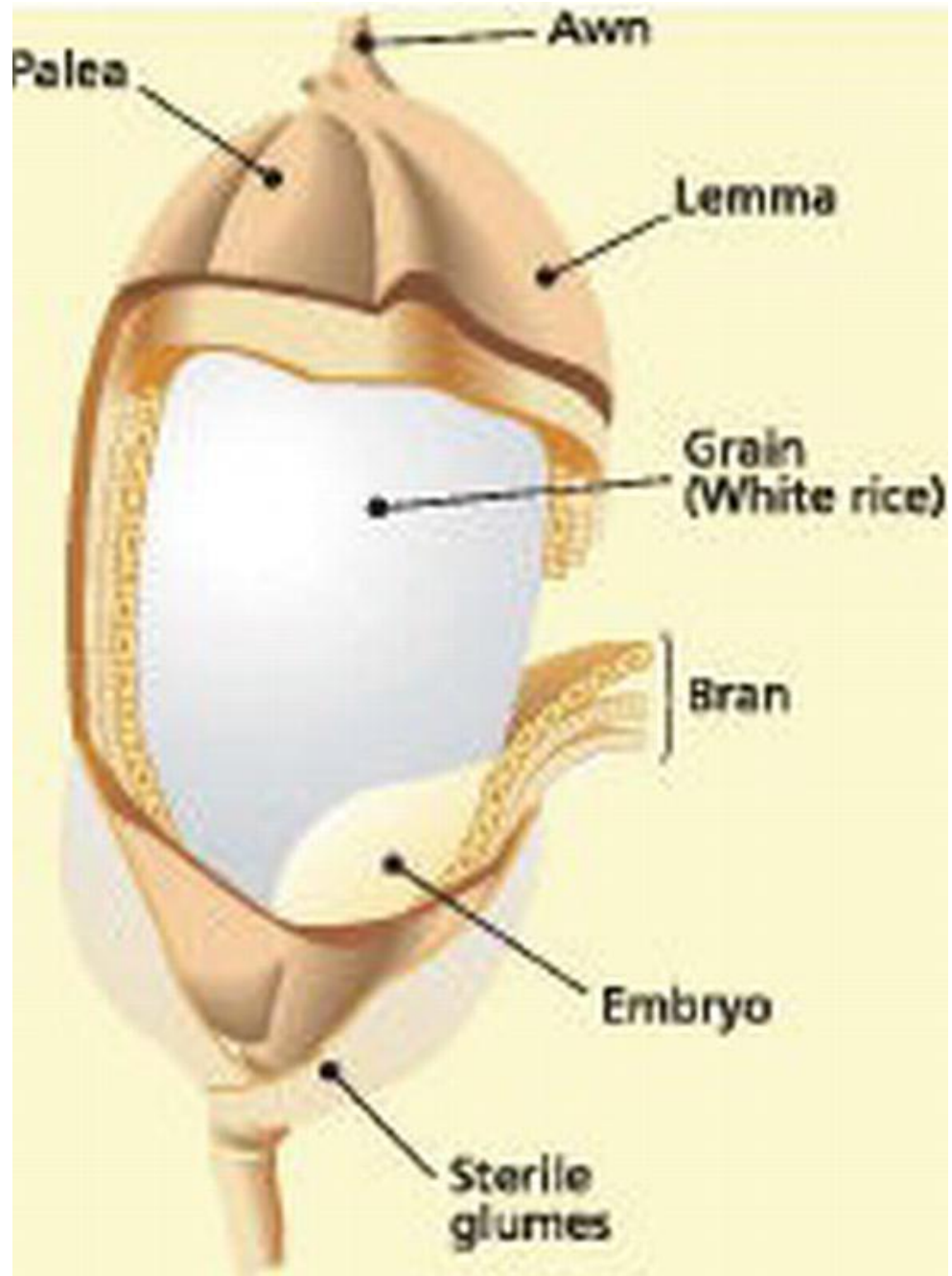
- GERMINATING SEED
- SEEDLING
- TILLER
- CULM
- LEAF
- PANICLE AND SPIKELET
- FLORATE
- FLOWER
- RICE GRAIN



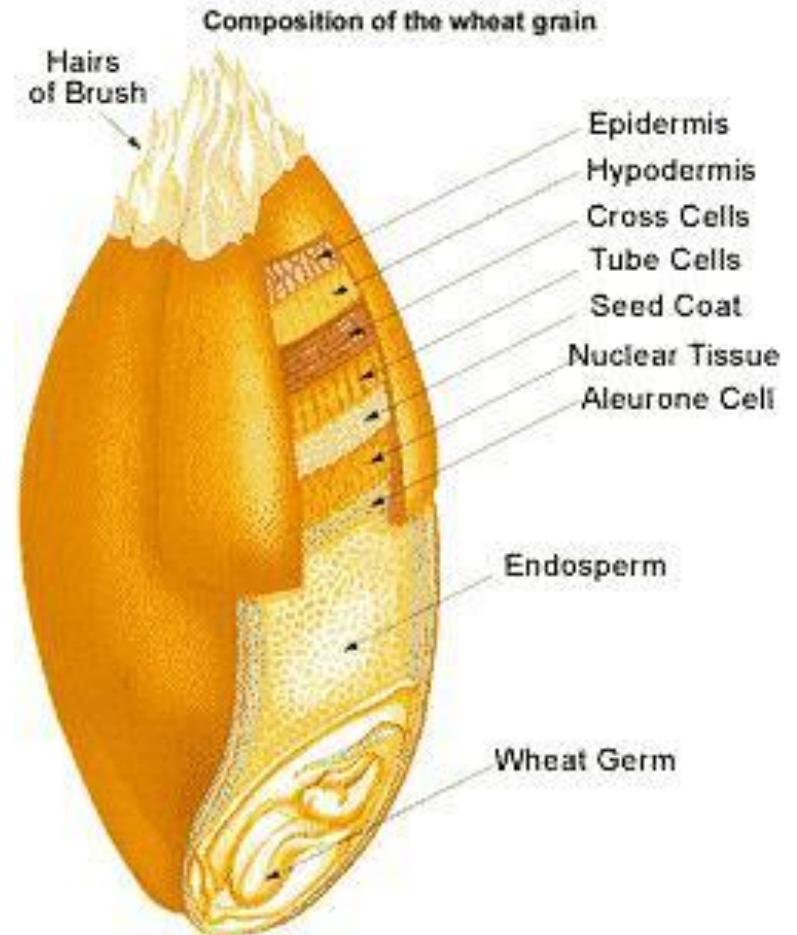
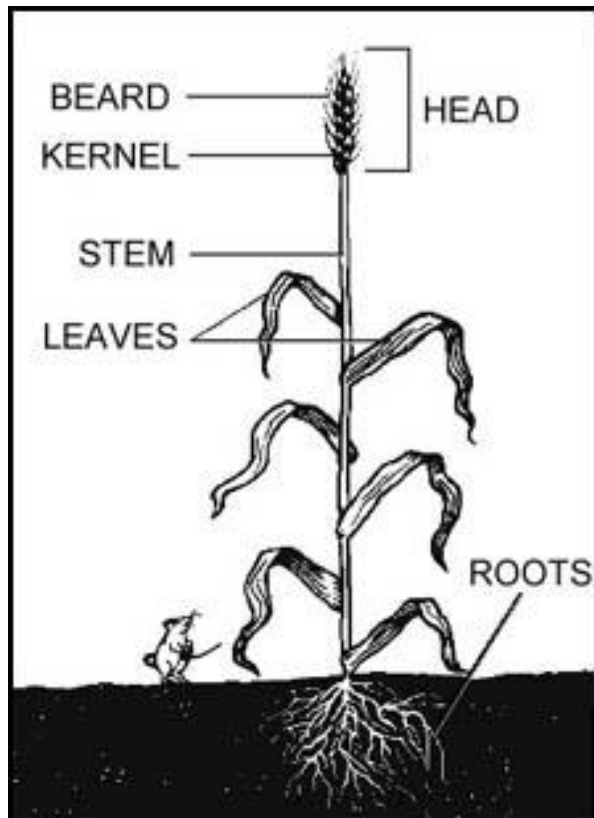
RICE GRAIN

- The rice grain is the ripened ovary, with the lemma, palea, rachilla, sterile lemmas and the awn firmly attached to it.





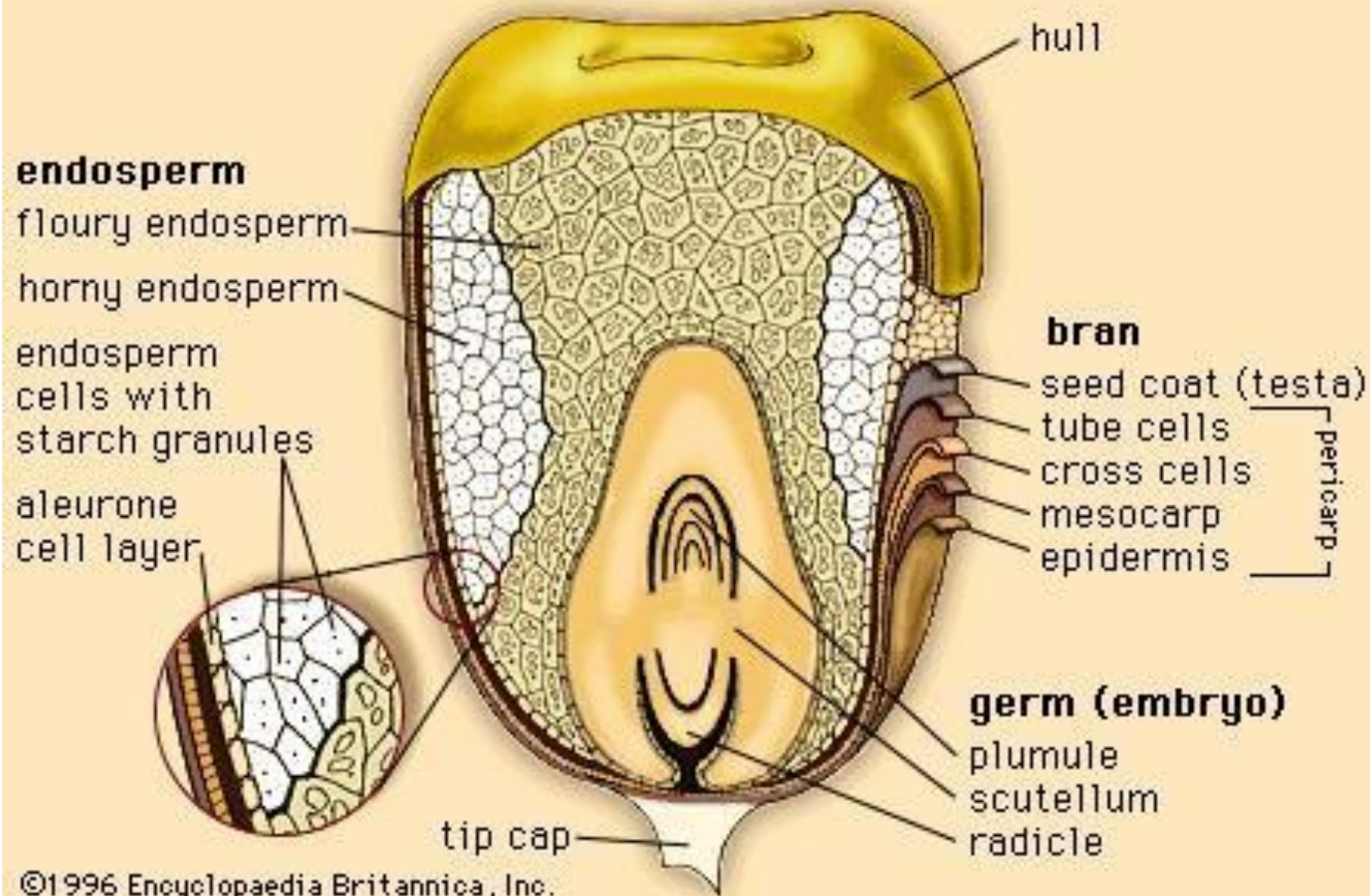
Wheat plant and seed



Maize seed



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- Cereal crops are necessarily grasses, They are grown primarily for the harvesting of mature grains which are used or processed into staple food and animal feed. They are also processed into various products such as **starch, malt, biofuel (alcohol) and sweetener (i.e., high fructose corn syrup)**.
- Although with similar uses, the **pseudocereals** or **pseudograins** are not grasses. They include members of the families **Amaranthaceae** (amaranths), **Chenopodiaceae** (goosefoot) and *Polygoniaceae* (smartweed). The principal pseudograins of the Americas belong to the amaranth and goosefoot families. These plants produce dry fruits which are called by various terms such as nutlets, achenes and grains

- List of Cereal Crops:
- Rice (mainly *Oryza sativa*)
- Wheat, bread wheat (*Triticum aestivum*)
- Durum wheat, macaroni wheat (*Triticum durum*)
- Corn or maize (*Zea mays*)
- Barley (*Hordeum vulgare*)
- Millet (*Panicum miliaceum*, *Eleusine coracana*, *Setaria italica*, *Pennisetum glaucum*)
- Sorghum (*Sorghum bicolor*)
- Oat (*Avena sativa*)
- Rye (*Secale cereale*)
- Triticale (x*Triticosecale*)
- Teff, taf (*Eragrostis tef*)
- Fonio (*Digitaria exilis*)
- Wild rice, Canada rice, Indian rice, water oats (*Zizania* spp.)
- Spelt (*Triticum spelta*)
- Canary grass (*Phalaris* sp.)

Pseudocereals

A pseudocereal is one of any non-grasses that are used in much the same way as cereals (true cereals are grasses). Their seed can be ground into flour and otherwise used as cereals. Examples of pseudocereals are amaranth (Love-lies-bleeding, red amaranth, Prince-of-Wales-feather), quinoa, and buckwheat.



Pseudocereals

- Quinoa (*Chenopodium quinoa*)
- Amaranth or Grain amaranth (*Amaranthus* spp.)
- Buckwheat (*Fagopyrum esculentum*)
- Kañiwa (*Chenopodium pallidicaule*)
- Pitseed goosefoot (*Chenopodium berlandieri*)

Quinoa (*Chenopodium quinoa*)



Amaranthus spp.)



Buckwheat (*Fagopyrum esculentum*)



Kañiwa (*Chenopodium pallidicaule*)



Pitseed goosefoot (*Chenopodium berlandieri*)



Study of cryptogams and phonograms for their economic uses



Plant Kingdom

