

Application of Botany

- Utility of plants - Human depends on plants for all the basic needs such as food, cloth and shelter (land)
- Food - cereals, pulses, medicinal plants, vegetables, fruits, oil seeds, sugar, etc.
- Shelter - timber, paper, rubber, etc.
- Cloth - cotton, wool, silk, etc.

Economically Important plants - Domesticated, utilized and cultivated by man thousands of years ago.

CEREALS → Utilized by us

- Important source of human food - staple % of carbohydrate (carbohydrate is the food plants)
- Rice, wheat & maize played important role in the development of civilization (small amount of protein, fat and vitamins are also present)

1. RICE →

- Oryza sativa → Grown in ^{sub}tropical & sub-tropical areas
- Family - Poaceae (Graminae) → Grown in all parts of India (warm & sub-tropical)
- Inflorescence - spikelet
- Fruit - Caryopsis (dry fruit) → Grain is used as human food
- Edible part - starchy endosperm → Straw used as fodder
- Common after transplantation of seedlings in water logged fields → Sura is prepared by distillation of fermented rice
- Varieties - Sitla, Masoon, Saket, I.R.8, B.R.36, Sawarnati → Rice husk is used to prepare Suga
- Straw is also used for paper manufacturing
- Rice flour is also used for string of cotton cloth

2. WHEAT →

- winter wheat or spring wheat → sown in spring & harvested in late summer
- summer wheat
- Triticum aestivum, T. vulgare → Grown in ^{dry} temperate climate
- Family - Poaceae (Graminae) → Grown in hot & humid climate
- Inflorescence - spikelet → Grown in Bihar, Punjab, Haryana, U.P.
- Fruit - Caryopsis (life span 70 to 120 days) → Not grown in very hot & humid climates (warmer before & temperate region)
- Edible part - starchy endosperm of seed (82 to 86 % starch) → Wheat is used as food (Bread flour) → Wheat is used as fodder
- Varieties - Moti, Janak, Arjun, Lok-I, Lal Bahadur (Rust resistant)
- Grown from October to April (6 months life cycle) → Flour as Suji, Maida & Atta
- Used in preparation of sweets, bread, biscuits, cakes
- Also used in preparation of beer & whisky
- Grows to 2-4 ft.

3. MAIZE → Corn

- Zea mays → G
- Family - Poaceae (Graminae) → Grown in all parts of India
- Inflorescence - spikelet → Grows in dry & humid climates (warm temperate & tropical)
- Fruit - Caryopsis → Used as food by roasting or cooking
- Edible part - starch endosperm of seed (70% starch) → Flour is used for bread making
- Plant - 3 to 5 ft. → Ear - pistillate flower
- Varieties - → Tassel - staminate on top of plant → Flour is also used for string of cotton cloth
- Green stem is used as fodder
- Grown
- Sweet Maize also grown in Atlantic areas

is plowed under
as food for animals

Seed - rich in protein, other parts of plant are also rich in protein
→ Proteinaceous endosperm is edible part.
→ fruit → pod all legume.
→ the use of chemical fertiliser
→ the flavonoid by flavon

PULSES

→ Legumes. → All belongs to family - Leguminosae

- Pulses are next important source of human food
- contains more protein than any vegetable product (Carbohydrate & Fat are also)
- ① Pigeon Pea: → Ashar
 - Cajanus cajan, Cajanus bicolor, Cajanus flavus
 - Legume fruit or pod
 - differs by the suture or maturity
 - cultivated in tropics & subtropics

- Family - Fabaceae (Papilionaceae).
- 4-8 ft shrubby plant body (erect)
- Grown in both crop-seasons.
- Drought resistant, grows well in any soil.

- used as pulses for human food
- stem used as fuel.
- Good source of proteins.
- stem is also used for basket making & preparation of Gun powder.

② Black Gram: → mung bean.

- Phaseolus aureus
- deep green pulse.
- Easily digestible protein

- used as pulses in human food.
- Also used for making papad.
- Straw is used as fodder.

③ Lentil: → massor.

- Lens culinaris

- Grown in North & Eastern India.
- Dry leaves & straw is used as fodder.
- Cooked seed is used as pulse in human food.
- used in soup.

→ Essential oil - Evaporates

[OIL YIELDING CROPS] → Fat = Fatty acid + Glycerol

- Fatty oils - fixed oil - does not evaporate - insoluble in water - soluble in organic solvents
- Subtle oils - stored in seeds - used as cooking material for human food

① Mustard →

Brassica campestris

- Family - Brassicaceae or Cruciferae
- Seed is the source of edible oil.
- Seed contains 30-45% oil.

- Used as cooking oil for food in northern India
- Cakes are used as animal food and manure

② Sunflower →

Helianthus annuus

- Family - Compositae (Asteraceae)
- oil is extracted from seed.
- Sun-flower oil is semi-drying oil
- Seed contains 32 to 45% oil
- oil also used in paint & varnish.

- oil is used as cooking oil
- oil is also used in soap
- oil is also used for preparations of medicines
- Cake is used for animal food

③ Coconut →

Cocos nucifera (Palmae)

- oil is extracted after mechanical crushing of endosperm.
- Also called as 'tree of life' due to utility of all parts of plant-body.

- Grow in dry-humid climates
- Kerala is the house of coconut in India
- Used as cooking oil in South India
- Also used in soap & cosmetics
- used as hair-oil, shampoo.
- Contains 65 to 70% oil
- The cake is an excellent stock food.
- India exports coconut oil.

→ Caster → Ricinus communis (Family - Euphorbiaceae)

- Seed is the source of non-edible oil.
- oil is used as Lubricants in industries.