(3) **Hordeum vulgare** = Barley/jau –It is the oldest ancient crop.
(4) **Oryza sativa** = Rice
(5) **Pennisetum typhoides**
(6) **Secale cereale** = Bajra
(7) **Sorghum vulgare** = Jawar
(8) **Triticum aestivum** = Wheat
(9) **Zea mays** = Maize

[C] **Sugar :-**
(1) Saccharum officinarum = Sugar cane

[D] **Oil yielding plants :-**
(1) **Cymbopogon caesius** = ginger grass the oil is obtained from their leaves & is used in soap industry.
(2) **C. flexnosus** = Lemon grass oil is obtained from their leaves & is used for making scented materials.
(3) **Vetiveria zizanoides** = Khus
Oil obtained from their root which is used in perfumery.

[E] **Fibre Yielding Plants :-**
(1) Erianthus arunadinaceus = Sarkanda is used in making ropes.
(2) **E. munja** = Moonj – Fibres obtained from stem is used for making ropes, mats and baskets etc.

[F] **Timber Yielding Plants :-**
(1) **Bambusa balcooa** = Bamboo
(2) **Dendrocalamus giganteus.**

[J] **Other Uses :-**
(1) **Hordeum vulgare** is used for making **beer.**
(2) **Thysanolaena mexima** – It is used for making brooms
(3) **Zeamays** is used in alcohol industry.
(4) **Vetiveria zizanoides** – (Khus) – It is used for preparation non alcoholic drinks.
Its root are also used in perfumery.

CUCURBITACEAE – FAMILY

1. SYSTEMATIC POSITION :

Class	-	Dicotyledonae
Subclass	-	Polypetalae (but most of plants are gamopetalous, it is an exception)
Series	-	Calyciflorae
Order	-	Passiflorales
Family	-	Cucurbitaceae

Special character : Stem pentangular, branched, usually fistular, with Bicollateral vascular bundle. They are arranged in two circles. Infloresce- Solitary axillary, most of the plants of this family are monoecious. It means male and female flowers are present on the same plant. Flowers are ebracteate, pedicellate, incomplete unisexual, Actinomorphic symmetry, pentamerous and Epigynous. 5 Sepals, gamosepalous, valvate aestivation. Petals 5, gamopetalous, valvate or imbricate aestivation. Tricarpellary, syncarpous, inferior ovary, unilocular, parietal placentation but it looks like axile placentation due to swelling of placenta style one, stigma three and branched.

5 Stamens, usually cohesion in three groups (2) + (2) + 1 . It means four stamens present in two pairs and fifth one is free. Fruit is pepo. The **bitter taste** of the fruit is due to presence of tetracyclic triterpenes.

FLORAL FORMULA

Male flower – Ebr $\oplus\ \male\ K_{(5)}\ C_{(5)}\ A_{(2)+(2)+1}\ G_0$

Female flower – Ebr $\oplus\ \female\ K_{(5)}\ C_{(5)}\ A_0\ \overline{G}_{(3)}$

FLORAL DIAGRAM :-

Male flower Female Flower

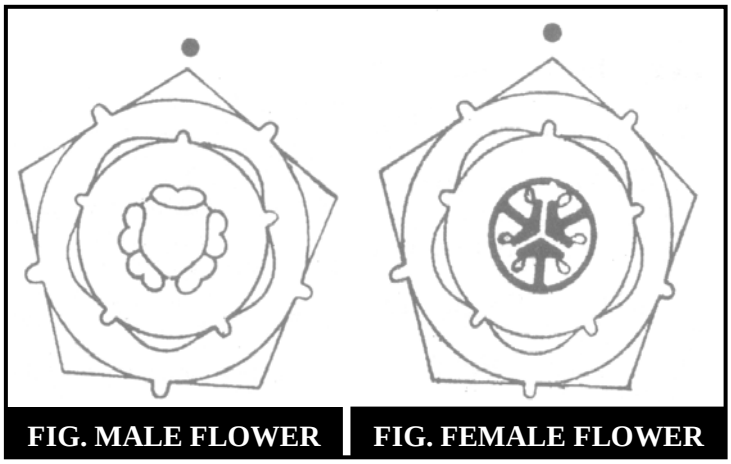


FIG. MALE FLOWER **FIG. FEMALE FLOWER**

ECONOMIC IMPORTANCE :-

[A] Vegetables and Fruits

(i)	**Kadoo**	=	**Cucurbita pepo** or **Cucurbita maxima**
(ii)	**Lauki**	=	**Lagenaria vulgaris**
(iii)	**Ridge Gourd**	=	**Luffa acutangula**
(iv)	**Muskmelon (Kharbooza)**	=	**Cucumis melo**
(v)	**Ghia tore**	=	**Luffa cylindrical**
(vi)	**Kakari**	=	**Cucumis melo var. utilissimus**
(vii)	Tarbooj (water melon**)**	=	**Citrullus vulgaris**
(viii)	Kheera	=	**Cucumis sativus**
(ix)	Karela	=	**Momordica charantia**
(x)	Tindaa	=	**Citrullus vulgaris** var. **fistulosus**
(xi)	**Ash Gourd** or White Gourd	=	**Beninxasa – hispida**
(xii)	Parval (pointed gourd)	=	**Trichosanthes dioeca**
(xiii)	Snake gourd	=	**Trichosanthes anguina**
(xiv)	Ram bel	=	**T. cucumeriana.**
(xv)	Kachari	=	**Cucumis Momordica**
(xvi)	Kundru (lvygourd**)**	=	**Coccinia cordifolia**
(xvii)	Lanku	=	**Sechium edule.**

(B) MEDICINAL PLANTS :

(i) **Ecballium elaterium** = **Eleterium** medicine is obtained, which is very useful in malaria and hydrophobia.

(ii) **Bryonia rostrata** – It is used in asthama and piles

(C) Other uses :

(i) **Careya arborea** :- Used in bidi

FAMILY RUBIACEAE

Systematic position

Class	-	Dicotyledonae
Sub class	-	Gamopetale
Series	-	Inferae
Order	-	Rubiales
Family	-	Rubiaceae
Common name	-	Madder family

General floral character :-

1. Inflorescence – Inflorescence cymose. Usually dichasial cyme
2. Flower – Bracteate or ebracteate, usually bracteolate, complete, tetramerous or pentamerous, bisexual, actinomorphic, Epigynous
3. Calyx – Sepals four or five, usually gamosepalous sometimes polysepalous, valvate aestivation
4. Corolla- Petals four or five, gamopetalous valvate or imbricate or twisted aestivation
5. Androecium – Stamens four or five, epipetalous, anther dithecous, basifixed, introrse and dehiscence longitudinally, polyandrous
6. Gynoecium – Usually bicarpellary sometimes bicarpellary to polycarpellary syncarpous, Epigynous. ovary inferior, placentation axile
7. Fruit – Capsule or berry or drupe

Floral formula :- $\oplus$ ♀ $K_{(4-5)}\ \overset{\frown}{C_{(4-5)}}\ A_{4-5}\ \underline{G}_{(2)}$ or $\underline{G}_{(2-\infty)}$



Floral diagram

Economic importance –

1. Ornamental plants

(i) Hamelia patens

(ii) Ixora coccinea

(iii) Mussaena frondosa

(iv) Gardenia lucida

2. Wood :-

(i) Anthocephalus cadamba

(ii) Mitragyna parviflora

(iii) Adiana cordifolia

(iv) Randia spinosa

3. Coffee :-

(i) **Coffea Arabica** (Arabian Coffee)

(ii) **Coffea liberica** (Liberian Coffee)

(iii) **Coffea robusta** (Congo Coffee)

4. Dye :-

(i) **Rubia tinctoria** – Red dye is obtained from its roots

(ii) **Rubia cordifolia** – Dye is obtion from its roots.

5. Medicinal plants :-

(i) **Cinchona officinalis** – Quinine is obtained

(ii) **Cephalis ipecacuanaha** – It's roots are used as expectorant, used in amoebic dysentery and pyrrhoea

(iii) **Mussaenda glabrata** – Bedina – It is used in fever and asthma

(iv) **Gardenia gummifera** – Dikamali – It's gum rasin is used as a stimulant, carminative, gum resin is also used in dyspepsia

6. Food plants :-

(i) **Anthocephalus indicus / Anthocephalus kadamba** – fruit is edible

(ii) **Hemelia patens** – Fruit is edible