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1. CLASSIFICATION OF PLANTS ACCORDING TO EICHLER’S GROUPING IN 1883:

In 1883, Eichler divided the kingdom plantae into two sub-kingdoms, crytogamae and phanerogamae.

# SUB-KINGDOM CRYPTOGAMAE:

* They are lower plants and they do not bear flowers or seed. Hence they are called non-flowering and seedless plants.
* The embryo if present is naked and is called spores.
* They include three divisions: thallophyta, bryophyte, and pteridophyta.

**DIVISION THALLOPHYTA**:

* Plants belonging to this group do not have well differentiated body design but has a simple body design..
* They are predominantly aquatic. Freshwater or marine.
* Examples are: spirogyra, ulothrix, cladophora, and chara.

# SUB-DIVISION ALGAE:

* They are autotrophs.
* Their body is simple and not well differentiated.
* Their forms and sizes are variable.
* Algae are further classified as green algae, red algae and brown algae. The red color and brown are due to the presence of accessory photosynthetic pigments.

# DIVISION BRYOPHYTA:

* The plant body is commonly differentiated to form a stem and leaf-like structures.
* They are called amphibians of the plant kingdom because they grow in moist areas.
* It has an embryo in its developmental process.
* Examples are: moss (funaria), and marchantia (liverwort).

# DIVISON PTERIDOPHYTA:

* In pteridophytes, the plant body is sporophyte and can be differentiated into roots, stem, and leaves. It is the highest group among the cryptogams.
* They have a specialized tissue for the conduction of water and other substances from one part of the plant body to another. They are also called vascular cryptogams.
* Seeds are absent. They produce naked embryo called spores.
* They bear sporangia which produce spores.
* Examples are: ferns, marsilea, pteris, selaginella, etc.

# SUB-KINGDOM PHANEROGAMAE:

* They bear flowers and seed. They are called the spermatophytes.
* The plant body is well differentiated into stems, leaves and roots.
* Seeds are the result of sexual reproductive process.
* They are further classified into **GYMNOSPERM (NAKED SEED) AND ANGIOSPERM (ENCLOSED SEED).**

# SUB-DIVISION GYMNOSPERMAE:

* The plants of this group bear naked seeds and are usually perennial, evergreen and woody.
* Sporangia are formed over a modified leaf-like structure called sporophylis.
* Examples are: cycas, picea (Christmas tree), Thuja (morpankhi).

# SUB-DIVISION ANGIOSPERMAE:

* These are flowering plants.
* Their seeds develop inside an organ which is modified to become a fruit...
* They are divided into two groups: **MONOCOTS** (plants that have one cotyledon) example; (maize, rice, wheat). And **DICOTS** (plants that have two cotyledon) example; (garden pea).

2. IMPORTANCE OF ALGAE TO MAN:

* It serves as food for people
* The red algae provide agar and carrageen used for the preparation of various gels used for scientific research
* It’s contains high iodine content which prevents goitre
* It serves as thickening agents in ice cream and shampoo
* Alginic acid from the brown algae is used to stabilize emulsions and suspensions

**3.A UNICELLULAR FORM OF ALGAE:** Unicellular algae are plant like autotrophs and contain chlorophyll. They include groups that have both multicellular and unicellular species. Diatoms, unicellular algae that have siliceous cell walls. They are the most abundant form of algae in the ocean, although they can be found in fresh water as well. We also have chlamydomonas which represents the unicellular and module form of green algae. It is found in stagnant water

**4.REPRODUCTION**. Reproduction can either be vegetative (asexual) or sexual

Vegetative results in the production of daughter cells in which the amount and quality of genetic material in the nucleus of the mother cell is maintained in the daughter cells. The amount of genetic material in the mother cell nucleus of n, the daughter cells also have n quantity of genetic material. The mitotic division maintains the quality and quantity of genetic material.

Sexual reproduction

It involves union of sex cell, aggregation of cells in a colony occurs under favourable conditions. These cells pair by their posterior end. This pairing is said to be isogamous because the pairing cells(Gametes) are morphologically identical.

**5.DIFFERENCE BETWEEN THE TWO COLONIAL FORMS OF ALGAE**:

1. **VOLVOX:**

* **Its sexual reproduction is oogamus.**
* **It has a multicellular motile thallus.**
* **Its complex form is pandorina.**

1. **PANDORINA**

* **Its sexual reproduction is anisogamous.**
* **It has a unicellular motile thallus.**
* **It’s a genus of green algae.**

**6.A COMPLEX FORM OF ALGAE:**

**FUCUS:** It’s a genus of the brown Algae whose species are found on rocks in the intertidal zones of the sea shores. The body of the plant is flattened, dichotomously-branched thallus with a mid rib, a vegetative apex and a multicellular disk with which plant is attached to rock surface. The body has air bladders which is believed to aid the plant to float on the water. It varies in size from a few centimetres to about 2 metres in length. Sexual reproduction is oogamous, sex cells are produced in conceptacles which have openings (ostioles) on the surface of the thallus.