COURSE: GENERAL BIOLOGY II

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DEPARTMENT: PHYSIOLOGY

LEVEL: 300 (C.O)

MATRIC: 17/MHS01/105

ASSIGNMENT:

1. Classify plants according to Eichler’s grouping of 1883.
2. How are algae of importance to man?
3. Describe a unicellular form of algae.
4. How does this unicellular alga described in question 3 carry out its reproduction?
5. Differentiate between the two types of colonial form of algae.
6. Describe a named complex form of alga.

ANSWER:

* 1. **Elchler divided the plant kingdom into four divisions**: Thallophyta (the algae and fungi), Bryophyta (the liverworts and mosses), Pteridophyta (the club mosses, horsetails, and ferns), and Spermatophyta (the seed plants), the last of which were in turn divided into two major categories: the angiosperms (the flowering plants) and gymnosperms (such as pines, spruces, and firs). Eichler’s system was eventually modified into a more natural system of classification.
  2. i) food; algae can serve as a source of nourishment.

ii)fodder; algae eg. Seaweed can serve as fodder for several farm animals.

iii)piciculture; also known as fish farming. Fish usually feed on floating plankton and zooplankton, which provides a source of healthy vitamins. Algae is also used in pisciculture as a way in which to naturally absorb carbon dioxide from the environment, while at the same time providing oxygen to the water, thus making the marine environment more habitable for fish.

iv) fertilizer; The two most common varieties of algae used in the manufacture of fertilizer are large red and brown. In particular, these two types of algae are utilized in areas located near the ocean. Liquid fertilizer can also be produced using a concentrated seaweed extract. The reasons why this type of fertilizer is so popular involves the organism’s ability to repair levels of nitrogen already present in the soil.

v) reclaiming alkaline; In many countries, such as India, fields that once produced large agricultural yields can no longer be used due to high concentrations of alkalinity in the soil. In order for crops to eventually be grown in these lands, often referred to as "Usar" lands, the ph level must be lowered and the ability of the soil to hold onto water must be increased. This process can be achieved using blue-green algae.

vi) binding agent; Algae can also be used to help bind soil together. The use of algae to aid in the healthy formation of soil is important in the protection against natural processes such as erosion.

* 1. Unicellular forms of algae are also called acellular algae as they function as complete living organisms. Unicellular forms are common in all the groups of algae except Rhodophyceae, Phaeophyceae and Charophyceae. The unicells may be motile or non-motile.

a. The motile unicells are either rhizopo­dial or flagellated.

The rhizopodial forms lack rigid cell wall and have cytoplasmic projections that help them in amoeboid movement, e.g., Chrysamoeba (Chrysophycea), Rhizochloris (Xantho- phyceae).

The flagellated unicells resemble the motile gametes and zoospores. The flagella func­tion as the organ of locomotion varying in num­ber and type in different groups. The flagellated unicells are found in many groups of algae, e.g., Phacotus and Chlamydomonas , of Chlorophyceae. Euglena of Eu b. The non-motile cells may be spiral filament as found in Spirulina (Cyanophyceae) . The coccoid unicellular algae are the simplest forms of algae found in Cyanophyceae, Chlorophyceae etc., e.g., Gloeocapsa, Chlorella.gleno- phyceae etc.

* 1. Many unicellular algae reproduce asexually by ordinary cell division or by fragmentation, whereas larger algae reproduce by spores. Some red algae produce monospores (walled, nonflagellate, spherical cells) that are carried by water currents and upon germination produce a new organism. Some green algae produce nonmotile spores called aplanospores, while others produce zoospores, which lack true cell walls and bear one or more flagella. These flagella allow zoospores to swim to a favourable [environment](https://www.merriam-webster.com/dictionary/environment), whereas monospores and aplanospores have to rely on passive transport by water currents.
  2. Colonial alga are algae in which cells resembling free swimming unicells form groups.

**DIFFERENCES**

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| VOLVOX | SYNURA |
| 1. A Volvox colony is a hollow sphere of mucilage having 500 or more biflagellate algal cells that are equally spaced around on its outer surface. | They have varied number of ovoid golden brown cells. Each cell bears two flagella, whose beatings propel the colony, through the water with a smooth rolling motion. The individual cells divide longitudinally and the colonies also divide into two, as they grow larger. |
| 1. They may be large and elaborately interconnected | Smaller and relatively simple |

6.