



**S.J.M COLLEGE OF ARTS, SCIENCE AND COMMERCE,
CHANDRAVALLI CHITRADURGA**

SUBJECT: BOTANY.

MICROBIAL DIVERSITY.

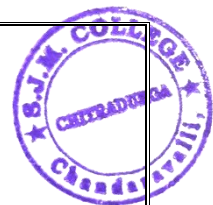
PROJECT WORK ON: "STUDY OF ALGAE, LICHENS, FUNGI".



2022-2023

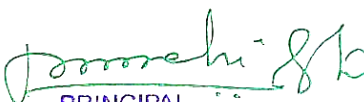
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INTRODUCTION: -

Algae are defined as a group of predominantly aquatic photosynthetic, and nucleus, leaves and specialized multicellular reproductive structure of plants.

A lichen is not a single organism it is a stable Symbiotic association between a fungus and algae Like all fungi require carbon as a food source. This is provided by their Symbiotic algae are Cyanobacteria that are photosynthetic the lichen symbiosis thought to be a mutualism since both the fungi and the photosynthetic partners the majority of the lichen is. Composed of the fungus and the rest is composed of a green are blue algae many times the lichen both, types of algae.

Fungi are eukaryotic organ microorganisms. Fungi can occur as yeasts, Molds or as a combination of both forms. Some Fungi are capable of causing Superficial, cutaneous, subcutaneous systemic or allergic diseases. eukaryotic organisms. They are familiar as Mushrooms. These organisms are classified as Kingdom.

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-: ALGAE: -

CHARACTERISTICS OF ALGAE: -

Specific general characteristics of Algae are common to plants as well as animals.

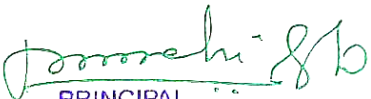
Algal cells are eukaryotic for instance Algae can photosynthesize like plants, and they possess Specialized Structure and cell organelles, like centrioles and flagella, found only in animal. The algal cell walls consist of Mannans, Cellulose and some of the Galatians. Listed below are general characteristics of Algae.

- *Algae are Photosynthetic Organisms
- *Algae can be either unicellular or multicellular Organism
- *Algae lack a well-defined body. so, roots, stems. or leaves are absent. structures like
- *Algae are found where Reproduction in there is adequate moisture.
- *Reproduction in algae occurs in both asexual and sexual form. Asexual reproduction occurs by spore formation
- *Algae are free a - living, although some can form symbiotic relationship with other organism –

Examples of Algae:-

Prominent examples of algae include

- * Ulothrix
- *Fucus
- * Porphyria
- * Spirogyra


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-: TYPES OF ALGAE: -

There some of are many types of algae the more prominent types. However, there are

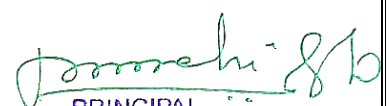
-: RED ALGAE: -



Red algae also called Rhodophyta, it is a distinctive species, found in marine as well as fresh water ecosystem. The pigments Phycocyanin and phycoerythrin are responsible for the Characteristic red colouration of the algae. other pigments that provide green colouration (such as chlorophyll a) are present however, they lack Chlorophyll b or beta carotene

extended Reading: Red Algae

-: GREEN ALGAE: -



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- it is a Large, informal grouping of algae having the primary photosynthetic pigments chlorophyll with auxiliary pigments such as carotene a and b. along Xanthophylls and beta carotene
- Higher organisms are green algae to conduct photosynthesis for them. Other species of green algae have a symbiotic relationship with other organism
- Members are unicellular, multicellular, colonial and Flagellates prominent examples for green algae include Spirogyra, Ulothrix, Volvox, etc.

Extended Reading: Chloroplasts.

-: BLUE-GREEN ALGAE: -



- In the past, blue-green algae were one of the most well-known types of algae. However, since blue-green algae are prokaryotes, they are not currently included under algae [because all algae are classified as eukaryotic organisms]
- Also called Cyanobacteria, these organisms live in moist or aquatic environments just like other algae. They include dams, rivers, reservoirs, creeks, lakes and oceans. This clan of bacteria obtains energy through the process of photosynthesis. Ecologically, some species of blue-green algae are significant to the soil. Hence, these green algae environments that fix nitrogen are also called nitrogen-fixing bacteria. Examples: - Nostoc, Anabaena etc....

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-: LICHENS: -

*Characteristics of lichen

- The fungus with its root gets the water and minerals and algae using its.
- They are Sensitive to air Pollution and are an indicator of air pollution.
- Halophytic plant body with irregular. shape and pigmentation
- Pigmentation is due to the algae.
- Algae belongs to the blue-green algae. like Nostoc stigarema
- Fungus partner belongs to ascomycetes family.

There are three types

1}Crustose lichen: -



There are present in the form of thick layer on the Substratum and these cannot be separated without breaking.

Ex: -Rhinoceros

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2}Foliose lichen: -

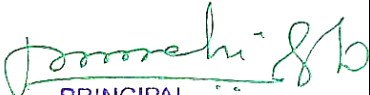


There are like dried leaves and lobe thallus they are attached with Substrum with help of rhizoid like rhizines.

Ex:- xanthoria



3}Fruticose lichens: -


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These are Shrubby lichens with developed. shrub like Cylinder and branched thallers, they grow erect and hang from the Substratum the plant body is attached to Substratum with the help of basal mucila genous disc

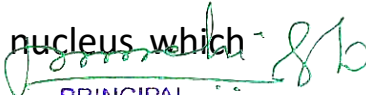
Ex: -Letharia



-: FUNGI: -

Characteristics of Fungi:

1. Fungi are eukaryotic organisms means they have true nucleus which are enclosed in membranes.
2. They are non- vascular organisms.

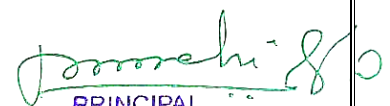

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3. Fungi have cell walls.
4. There is no embryonic stage for fungi
5. They reproduce by means of spores
6. There are sexual and Asexual Kind of reproduction
7. They are typically non-motile
8. Fungi exhibit the phenomenon of alteration of generation.
9. Fungi are achlorophyllous, which means they lack the chlorophyll pigment
10. The vegetative body of the fungi may be unicellular or composed of microscopic threads called hyphae.
11. Hyphae can grow and form a network called a mycelium
12. Yeasts are unicellular fungi that do not produce hyphae
13. Optimum temperature of growth for most Saprophytic fungi is 20-30C while (30-39)c for parasitic fungi
14. In 1991 a landmark paper estimated that there are 1.5 million fungi on Earth.
15. Only about 300 species of fungi are infectious to human.

Examples: Candida Albicans, Aspergillus, Blastomyces, coccidioides, cryptococcus, neoformans, etc..

classification of Fungi

- * Ascomycetes Ex:- Penicillium, cercospora, Helotiales
- * Basidiomycetes Ex:- Agaricus, gilled mushrooms
- * Oomycetes Ex:- Phytophthora, potato late blight
- * Zygomycetes Ex:- Mucorales, Mucor
- * Deuteromycetes Ex:- Trichoderma, Alternaria



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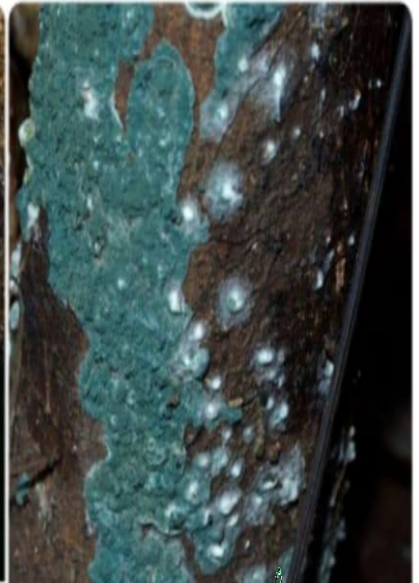


Economic importance of Fungi:-

- * They play an important role in medicine yielding antibiotics in agriculture.
- * It forms of in many industries and is important in manufacturing food items like bread, cheese etc...
- * Agaricus and morchella, are eaten as food and cultivated on a commercial basis.
- * The large scale production of yeast cake.
- * Some metabolic fungi products are used in medicine.

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CONCLUSION

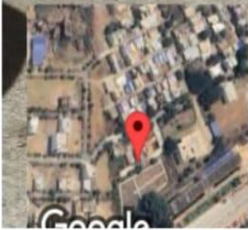
- *Algae and algae technology can be used in the process to sustain production of Food for the Future.*
- *Future Food production will be environmentally friendly and efficient with algae technology.*
- *Elevation affects lichen abundance because of micro-environmental changes associated with elevation gradients.*
- *Stand structure effects lichen abundance with more lichen.*
- *On subalpine fir substrate.*
- *In denser stands.*
- *Lichen abundance is confined mostly to subalpine elevations.*
- *The kingdom fungi are a diverse group of prokaryotes. It produces extracellular metabolites which carry enormous biotechnological applications.*
- *The fungal pigment is one of those bio active compounds. Almost all groups of fungi produce pigments of different colours and characteristics. The most important fungal pigments include carotenoids, flavins, quinones, phenazines etc. These pigments carry antibacterial, antifungal, anti-cancerous and antioxidant potential.*

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GPS Map Camera



Chitradurga, Karnataka, India

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577501, India

Lat 14.213286°

Long 76.380147°



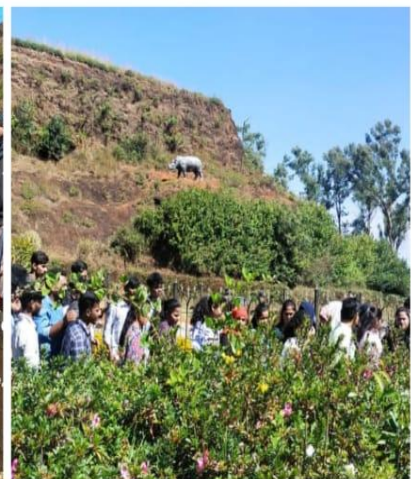
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