Role of Algae in Forest Conservation

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ABSTRACT

The diverse development in the employment of algae to conquer the environmental stress has stimulated the assurance of achieving the sustainability. Conservation of forests is the primary goal and also a challenge for a sustained world. The word sustainability indicates the overall constructive improvements of an environ that encompasses a plentiful dynamic and their regulations. Forest fulfills many needs of other organisms be it nutrition basis or habitat. The extensive applications of algae in various fields, gaining more importance and along with these genomic level study efforts, expressed sequence tags of algae, mitochondria and chloroplast sequencing are also in the pipeline of algal biotechnology research. Algae have various features such as photosynthetic nature, stored food they are being extensively used by many. Algae conserve forests by conditioning soil, providing nutrients to the plants, saving them from over using. This article is mainly centralized on the role of algae in conserving forests. Algae have potential to deal with biotic and abiotic stresses. Algae are a potential organism which removes heavy metal, decreases soil pollution, reduces carbon emission and also provides nutrition to the plants. Algal community has solution for the various sustainable Challenges viz. biofuel Production, bio mining and contaminated soil remediation, agriculture and organic residues Cycling, etc. this review successfully explained the multiple opportunities of exploring and exploiting algal resource for the future prospective. Thus algae play a significant role in maintaining lungs of world conserved.

Keywords – sustainable development, forest conservation, biotechnological approach.

INTRODUCTION

Forests are the lungs of worlds. Forest conservation is the practice of planning and maintaining forested areas for the benefit and sustainability of future generation. Forests contain roughly 90 percent of the world's terrestrial biodiversity. But now-a-days, forests are being destroyed; therefore efforts to stop or slow deforestation are important as deforestation causes serious environmental damage. It is extremely important that we have enough knowledge in the area of forests & deforestation to ensure that our world is a better one to live in & that biodiversity can be preserved. Forests play a specific and significant role in the carbon cycle by absorbing carbon dioxide during photosynthesis.

Forests rescue during natural disasters. Forests play a key role in bringing about a balance in the atmospheric temperature. Forests are home of many divers organisms. Forest conservation involves upkeep of natural resources within a forest that are beneficial to humans and animals.

Soil micro flora has been exposed to improve soil fertility and increase biomass productivity and identified as a correct environment friendly bio-based fertilizer for pollution- free application.

Most of the cynobacteria can fix nitrogen from the atmosphere and several species including *Anabaena sp.*, *Nostoc sp*. and *Oscillatoria angustissima* is known to be effective cyanobacterial based bio fertilizers.

Since the late nineteenth century, technical improvements in the lifestyles of societies have been accompanied by unprecedented environmental change. Scientists from various disciplines are attempting to develop a shared definition of 'sustainability', which includes elements from economics, environmental science and social sciences.

The diverse assemblage of photosynthetic organisms grouped together as 'the algae' provide important organisational roles and functional ecosystem services, which could make significant contributions to the pillars of sustainable development. Phycology could play an important role in the nascent development of sustainability science.

While many of the properties and potential contributions of the algae to global issues of sustainability are evident to the scientific community, relatively few of the opportunities are economically realised. There is a pressing need to bridge scientific knowledge and public opinions in order to help spur innovations for future health and environmental benefits and for economic prosperity.

IMPORTANCE OF FOREST

- Forests lower the air temperature by releasing water vapor into the air.
- At day time trees generate oxygen and store carbon dioxide, which helps to clean air. Forest attracts wild life and offer food and protection to them Forests offer privacy, reduce light reflection, offer a sound barrier and help to guide wind direction and speed. Trees offer artistic functions such as creating a background, framing a view, complementing architecture, and so on.
- Well managed forests supply higher quality water with less impurity than water from other resources.
- Some forests raise total water stream, but this is not true for all forests, Forests help in controlling the level floods.
- Forest provides different kind of wood which are used for different purposes like making of furniture, paper/ pencils and so on.

- Forest helps in keeping environment healthy and beautiful. Forests also minimize noise pollution. They store carbon, aid in regulating the planetary climate, purify water & mitigate natural hazards such as floods & landslides.
- Forests play a specific and significant role in the carbon cycle by absorbing carbon dioxide during photosynthesis.
- Forests rescue during natural disasters. Forests helps during floods as they seep in and absorb all the water, thereby preventing damage to infrastructure.
- Forests play a key role in bringing about a balance in the atmospheric temperature.
- Biodiversity at its best found in forests as they are reach in flora and fauna.

Almost 31% of the earth's land surface is covered by forests. According to a 2015 report, 23% of India's land cover consists of the forest region. Trees and plants in the forest are an integral part of the ecosystem. It sustains life on the planet, provides clean air and shelter. Also, forests help conserve biodiversity. Forests provide many resources such as food, medicine, fabric, and raw materials. Apart from keeping a check on the global temperature, forests also contribute towards preventing soil from getting eroded and shelters more than 80% of the animal species and terrestrial biodiversity. They also aid in improving the socioeconomic aspects of a country.

EFFORTS TOWARDS FOREST CONSERVATION

1. With the advent of industrialization, several trees have been cut at an alarming rate for raw materials and various other purposes. This felling of trees can be regulated by selective cutting, clear-cutting and shelterwood cutting.
2. Forest fires are one of the common causes of loss of forests. Sometimes the forest land is set on fire to make the land available for commercial purposes. Once cleared, there can be no vegetation. Natural forest fires are also responsible for the destruction of huge forest covers. Latest fire fighting techniques should be adopted to conserve the forest. However, forest fires are an important part of the ecosystem and it helps replenish nutrients in the soil from dead and decaying matter.
3. More trees should be planted to increase the forest cover. Trees should be selected according to the geographical conditions of a particular region and proper care should be taken during the growth of trees.
4. Prevention of exploitation of forestry and forest products is necessary for the conservation of forest.
5. The existing forests should be protected from diseases by spraying chemicals, antibiotics or development of pest-resistant strains of trees.

FOREST AREA

As of 2021, India's total forest and tree cover was 80.9 million hectares, which is 24.62% of the country's geographical area. This is an increase of 2,261 square kilometers since the last assessment in 2019.

The total forest cover is 7, 13,789 sq km, which is 21.71% of the country's geographical area. The tree cover is 2.91% of the country's geographical area.

The India State of Forest Report (ISFR) 2021 changed the definition of a forest to include any lands of at least one hectare area and with 10% or more tree cover.

The Union Territory of Lakshadweep has the highest forest cover of 90.33%. Among states, Mizoram has the highest forest cover of 85.41%. Further Reading: Natural Vegetation in India.

Udaipur district in Rajasthan has the largest area under forests. As per Forest Survey of India – State of Forest report 2021 (ISFR 2021), Rajasthan has Recorded Forest Area (RFA) of about 32,863 square kms. This forest area forms 9.60% of state's geographical area and about 4.23% of India's forest area. About 4.61% of the total area of the Tonk district is forest. The forests are mostly located near Tonk city. In 2021, the total forest area in Tonk was 54 hectares. In 2020, Tonk had 0.00 hectares of land above 10% tree cover, extending over 0% of its land area.

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