

## **Group Name: Algology**

### **Group works on:**

1. Diversity and floristic and digitised database studies of freshwater algal resources which gives the baseline data for future environmental assessment and pollution monitoring studies.
2. Algal biofuel studies (bio-diesel and bio-hydrogen) are useful for future alternative fuel resources as well as effective substitute of fuel industry in energy sector.
3. Anti-microbial compounds and anti-cancerous compounds from potential micro-algae are very promising source in industrial and societal sector.

### **Objectives:**

To explore fresh water algal diversity of north India.

To digitize algal flora of north India at PADAP database (Primary, secondary and tertiary data)

To study the possible exploration algal resources for their

- Bio-fuel purpose,
- Anti-microbial
- Anti-cancerous and
- Nutritional aspects

To study the algal bloom appearance, disappearance and re-appearance

To study the molecular taxonomy of fresh water algae.

### **Achievements**

#### **Up to 11<sup>th</sup> Five year plan:**

1. Algal floristic reports, enumeration and new records from the unexplored areas of north-India.
2. Two DBT sponsored projects on 'Algal biofuels' worth 1.23 crore was sanctioned. In these projects, lab. Extension, has been made with good analytical equipment and man power of six project assistants. Artificial ponds were renovated for algal bloom production.
3. Enrichment of algal collection was added to existing algal herbaria.
4. Our team also done digitization and compilation of fresh water algal flora of India.
5. Several queries regarding algal collection, identification and isolation aspects from different parts of the country were answered.
6. Green and blue-green algal isolation and uni-algal cultures are maintained at NBRI, Lucknow.

#### **In 12<sup>th</sup> Five year Plan:**

1. Several algal strains screened for lipid, protein and fatty acid analysis. Work is in progress for mass cultivation and lipid extraction of potential algal strains.
2. Several algae were screened for anti-cancerous compounds and promising results were obtained. Work is in progress for compound isolation.

3. Training in algal collection, identification and isolation was imparted to several university students and researchers.

**Ongoing Projects:****NBRI In house projects**

1. OLP 0083-Institutional: Taxonomic studies and digitization of plant diversity (Fresh water Algae) of Upper Gangetic Plains of India.
2. OLP 0084- Institutional: Digitization and organization of CSIR-NBRI Herbarium (National facility).
3. BSC 0106 (CSIR 12<sup>th</sup> Five year Plan): Bioprospection of plant resources (algae) and their natural products

**Outside agencies like DBT/DST/MoEF projects:**

1. DBT sponsored project. GAP-2154: "Bioprospection of Microalgae and Cyanobacteria from Fresh Water of North India for biofuel production"
2. DBT sponsored project GAP-3316: Studies on algal blooms, their characterization and the factors influence bloom formation"
3. DST funded project GAP 3305: Characterization of Cyanotoxins (microcystins) and quantification of their potential utilization.
4. DST funded project GAP 3310: Amelioration of biohydrogen generation by genetic modification and process optimization from microorganism

**Foreign collaborations:** NA

**Areas for open collaboration:** Algal Biofuels

**Publications:**

Research papers	75
Review articles:	4
Book chapters:	10
Conference proceedings:	6
Abstracts in National Conferences:	35
International Conference:	25

**Published books:** 1

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