

Algae

Blue-Green Algae

Anabaena, Gloeocapsa, Oscillatoria

Green Algae

Chlamydomonas, Chlorella Pyrenoidosa, Oedogonium, Spirogyra

Euglenoids

Euglena gracilis

All of the above are available from Region 20, Living Science Materials Center.

Media

A number of the more commonly used media and their variations are of interest as to the types of cultures they produce.

1. *Alga-Gro Freshwater Medium* is a defined, dilute medium designed for short-term growth for a large variety of algae for morphology. The standard medium is used at a pH of 7.8 for most algae, but for some blue-green algae the pH of the medium is adjusted to 6.5. This medium was originally designed for use with spring water, but an adequate medium can be made using distilled water.
2. *Soil-Water Medium* with its variations is excellent for long-term preservation and normal morphology. At this time no substitute has been found for Soil-Water Medium for culturing *Spirogyra* and colorless euglenoids when normal morphology is required. The medium will support a wide variety of fresh water algae.

Water

One of the important aspects of any culture medium is water source. Either aged natural water or glass-distilled water is used when preparing culture mediums. Normal tap water and distilled water from metal stills contain enough toxic material to cause problems in culturing. Spring water and lake water are aged for about two months in the dark at room temperature (about 68° F.).

A second method of treating natural waters is with activated charcoal. Add 2 grams of activated charcoal, per liter of water, agitating 1 hour, and filtering. This allows use of freshly collected water without the bother of aging.

Illumination

If the cultures are used for classroom use, they should be sub-cultured within 10 days to a month.

The use of cool-white fluorescent tubes for culturing algae is recommended. Using incandescent bulbs or direct sunlight can cause problems with the cultures because of the heat generated by these sources. Cultures grown in direct sunlight will often reach a temperature 10° above that of the room. If sunlight is to be used the light should be diffused by covering the window with tissue paper or shading paint used for greenhouses.

Most cultures do best when given a short dark period each day. Adjustable, inexpensive time clocks are available which turn culture lights on and off on a fixed schedule. The two most used time sequences are 12 hours light followed by 12 hours dark and 16 hours light followed by 8 hours dark. The 16 light: 8 dark cycle is used for short-term cultures and the 12 light: 12 dark cycle for stock cultures.

Algae (cont)

Temperature

Most fresh water algae grow well between 68°-78° F. While controlled temperatures are preferable for growing algae, many algae used for teaching will do well at room temperature and will even tolerate reasonable swings in temperature 10° or so during a 24-hour period.

Requirements of Specific Algae**Blue-Green Algae**

Blue-green algae have a tendency to bleach easily under high light intensities. Generally, when culturing for morphology, the blue-green algae do best on Soil-Water Medium. This is especially true of *gloeocapsa*.

Green Algae

The green algae are a very diverse group as far as culture requirements are concerned. Most of these algae can be grown on either Soil-Water Medium or Alga-Gro Medium.

Chlamydomonas - the large form of *chlamydomonas* has a tendency to become palmelloid when grown in rich media. They should be cultured in Soil-Water Medium.

Spirogyra – this alga is difficult to grow on any medium other than Soil-Water Medium and still get normal morphology. *Spirogyra*, especially, produces cells with abnormal plastids in most other media.

Euglenoids – for classroom use one of the best ways to culture is on Soil-Water Medium with garden pea added. *Euglena gracilis* may be grown on *Euglena Broth*.