

Textbook Algae answers:

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1. Two characteristics of algae are:
  - a. They must live in or near a source of water since they don't have an internal system of tubes to move water and materials from one part of the plant to the other.
  - b. All algae has Chlorophyll A
2. Multicellular algae are in the Kingdom Plantae. Single celled algae are in the kingdom 'Protista'.
3. Some unicellular algae are considered to be plants because they are more 'plantlike' than protistlike.
4. Algae are adapted to life in water by being able to use different wavelengths of light depending on their depth, and being able to absorb nutrients and gases through their very thin cell membranes through osmosis. They are also able to reproduce through the water carrying their gametes.

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1. Algae are grouped according to their color, and how they store food.
2. The differences between Chlamydomonas and Volvox are that Chlamydomonas is single celled, whereas the Volvox is colonial – perhaps a precursor to multicellular plants. Chlamydomonas has characteristics of both protest and land plants. Some Volvox cells may be specialized for reproduction.
3. Red algae have the ability to use whatever small amount of light penetrates into the deep waters – they have special pigments.

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1. Alternation of Generations is the ability to reproduce both sexually and asexually, having both a 'diploid' and a 'haploid' part to the life cycle.
2. An advantage of asexual reproduction is that many offspring are produced very quickly in favourable conditions.
3. Alternation of Generations helps ensure the survival of the species because when conditions are favourable, then asexual reproduction produces many offspring in a short period of time, but when conditions are not favourable, the sexual reproduction allows for diversity and adaptation of the gene pool allowing some of the offspring to be more resistant to the unfavourable conditions ensuring survival of the species.

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1. Algae have changed the face of the earth because they produce oxygen through photosynthesis, thereby increasing the concentration of oxygen in the atmosphere.
2. If all algae became extinct, 50 – 75% of the oxygen would be gone from the atmosphere. The atmospheric concentration of oxygen would drastically decrease, and oxygen breathing animals would die, or have to adapt to a much lower concentration of oxygen. There would be much fewer animals on earth.
3. Food products that contain algae are ice cream, candy bars, pickle relishes, salad dressings, chip dips, pancake syrups, chow mein, etc. etc.
4. Algae have contributed to our understanding of disease by allowing us to grow bacteria to study in Agar – an algae product. Otherwise, algae has been used to treat some diseases such as lung ailments, stomach ulcers, arthritis, etc.