WATER QUALITY IN AQUACULTURE

Chlorophyll

- The green pigment chlorophyll (which exists in three forms: chlorophyll *a*, *b* and c) is present in most photosynthetic organisms and provides an indirect measure of algal biomass and an indication of the trophic status of a water body.

Chlorophyll

- It is usually included in assessment programmes for lakes and reservoirs
- It is important for the management of water abstracted for drinking water supply, since excessive algal growth makes water unpalatable or more difficult to treat.

CHLOROPHYLL

- The growth of planktonic algae in a water body is related to the presence of nutrients (principally nitrates and phosphates), temperature and light.
- Therefore, concentrations of chlorophyll fluctuate seasonally and even daily, or with water depth, depending on environmental conditions.

CHLOROPHYLL

- Water bodies with low levels of nutrients (e.g. oligotrophic lakes) have low levels of chlorophyll (< 2.5 µg l-1) whereas waters with high nutrient contents (especially those classed as eutrophic) have high levels of chlorophyll (5-140 µg l-1), although levels in excess of 300 µg l-1 also occur.

CHLOROPHYLL

- Chlorophyll fluoresces red when excited by blue light and this property can be used to measure chlorophyll levels and indicate algal biomass.
- Direct, and continuous, measurement of chlorophyll fluorescence can be made with a fluorimeter which can be used *in situ* by pumping water through it or, for some specially designed instruments, by lowering it into the water.

CHLOROPHYLL

- Samples taken for chlorophyll analysis in the laboratory should be collected in polythene bottles and 0.1 to 0.2 ml of magnesium carbonate suspension added immediately as a preservative.
- Samples should also be filtered immediately although they can be stored in a cool dark place for up to 8 hours.
- The chlorophyll pigments are solvent-extracted and measured spectrophotometrically

NUTRIENTS
NITROGEN COMPOUNDS

- Nitrogen is essential for living organisms as an important constituent of proteins, including genetic material.
- Plants and micro-organisms convert inorganic nitrogen to organic forms.

NUTRIENTS
NITROGEN COMPOUNDS

- In the environment, inorganic nitrogen occurs in a range of oxidation states as nitrate (NO_3) and nitrite (NO_2), the ammonium ion (NH_4) and molecular nitrogen (N_2).