

Some examples of nutrients out of balance with the environment are:

- Excess growth of aquatic plants, including algae and submerged weeds can impair the desired uses of the water body (Figure 22). In general, phosphorus tends to be the cause of eutrophication in fresh waters, while nitrogen is primarily the cause in estuarine or marine waters.
- Excess nitrate-nitrogen and nitrite-nitrogen can be a health risk to humans and animals. Water concentrations of nitrate nitrogen greater than 10 mg/L are considered to be unsafe for human consumption, in particular for small babies.
- Ammonia (NH_3) produced in animal manures and other organic nutrient sources can become toxic to aquatic life. Levels greater than 0.02 mg/L are considered toxic to fresh water aquatic life, including fish (Figure 23).
- Nutrition of forages becomes out of balance when levels of potassium are high. Such nutrient imbalances cause poor livestock health and can even lead to serious illness.
- Excess nutrients can lead to air quality problems such as ammonia volatilization, production of greenhouse gases, and offensive odors.



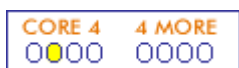
Nutrient enrichment can lead to excess algae growth.

Figure 22



NH_3 is toxic to fish.

Figure 23



Crop Nutrient Management – Assessment Tools

The objective of nutrient management is to supply adequate chemical elements to the soil and plants without creating an imbalance in the ecosystem. All the things that affect the environment (climate, soils, air, water, human activities) will affect the fate and transport of nutrients. Precipitation events and temperature have a large influence on nutrient transformation, transport, and even additions to the soil-plant-air-water-animal system, yet they are difficult to manage.

Nutrient sources, such as the application of fertilizer, irrigation water, and organic materials, are the easiest to control. Monitoring nutrients in the environment through soil, water, air, plant, and animal testing is the most direct way of knowing what levels exist. Adjusting the inputs based on the current levels of nutrients available and amount required for crop production is the best way to maintain crop production and avoid excess accumulations.