Plant Nutrients - Environmental Impacts; Nitrogen Cycle

Key Terms and Concepts:

Upon completion of this course, the student should be familiar with the following terms, concepts, and programs.

Nitrogen Cycle

Mineralization of nitrogen
Volatilization of ammonia
Nitrification
Denitrification
Nitrate leaching
Immobilization
Soil nitrogen cycle

Nitrogenous fertilizers

Ammonia
Urea
Slow release urea
Ammonium Nitrate
Ammonium Sulfate
Dried blood
Feather meal
Seed meals
Sewage sludge

Major forms of nitrogen

Nitrite- nitrogen
Nitrate-nitrogen
Ammoniacal-nitrogen

Biological nitrogen fixing

Legumes
Diazotrophs
Rhizobium

Host specificity of micro organisms
Symbiotic biological fixation
Asymbiotic biological fixation
Rhizobium
Frankia
Actinomycetes
Anabena
Azolla

Phosphatic fertilizers
Diammonium Phosphate (DAP)
Monoammonium Phosphate
Single Super phosphate
Triple Super phosphate
Rock phosphate
Bone meal

Potash fertilizers
Potassium sulfate
Potassium nitrate
Wood ash
Sea weed

Primary and secondary macro nutrients
Micronutrients
Trace elements
Mobile nutrients
Phosphorous fixation

Fertilizer application
Soil testing
Nitrogen budget
Residual nitrogen
Broadcasting
Drilling
Liquid fertilizer application

Disking
Banding
Nutrient imbalance
Nutrient deficiency
Luxury consumption of nutrients
Integrated nutrient management
Precision farming
Variable rates of fertilizer application

Fertilizer related pollution
Nutrient loading
Point sources of pollution
Non-point sources of pollution
Nitrate Leaching
Nitrogen saturation
Methemoglobinemia
Hypoxia
Dead zone
Eutrophication of lakes
Phosphogypsum

Links:

Nutrient application and pollution:
Water Quality Information Center, NAL, USDA
http://www.nal.usda.gov/wqic/water_quality2.shtml

Assessing Groundwater Vulnerability to Contamination, United States Geologic Survey
http://pubs.usgs.gov/circ/2002/circ1224/

Monitoring and Assessing Water Quality, EPA
http://www.epa.gov/305b/

Reducing Watershed Nutrient Runoff, Nutrient Net, World Resources Institute
http://www.nutrientnet.org/

Coastal Hypoxia Research Program, Center for Sponsored Coastal Ocean Research
http://www.cop.noaa.gov/stressors/pollution/current/chrp.html

Pacific Environmental Research Laboratory, National Oceanic and Atmospheric Administration
http://www.pmel.noaa.gov/

National Pollution Discharge Elimination System (NPDES), EPA
http://cfpub.epa.gov/npdes/home.cfm?program_id=7

Water Quality Information Center, NAL, USDA
http://www.nal.usda.gov/wqic/

Surf Your Watershed, EPA
http://www.epa.gov/surf/

Scientific Committee on Oceanic Research
http://www.jhu.edu/~scor/

Chesapeake Bay Program
http://www.chesapeakebay.net/

Pfiesteria piscicida, Water Quality, NAL
http://www.nal.usda.gov/wqic/pfiest.shtml

Fertilizer Industry Association – US:
The Fertilizer Institute
http://www.tfi.org/index.cfm

Fertilizer Industry Association – International:
International Fertilizer Industry Association
http://www.fertilizer.org/ifa/

International Agri-Food Network
http://www.agrifood.net/

International Fertilizer Development Center
http://www.ifdc.org/

Environmental Organizations:

Water Quality, Envirolinks
http://www.envirolink.org/topics.html?topic=Water%20Quality&topicsku=2002121142643&topictype=topic&do=catsearch&catid=6

The Ecological Society of America
http://www.esa.org/

Chesapeake Bay Foundation
http://www.cbf.org/site/PageServer?pagename=homev3