CORE 4 4 MORE

Crop Nutrient Management – Nutrient Properties

All plant nutrients are cycled through the environment (Figure 17). Three of the nutrients most often limiting to crops - nitrogen (N), phosphorus (P), and potassium (K) - have unique cycles dictated by chemical and biological transformations, movement in soils, and transport by runoff and erosion (Figures 18–20). Nutrients in the soil are absorbed by plants and incorporated in plant phytomass. When these plants die, the nutrients in their phytomass are decomposed by soil organisms, especially microorganisms, and returned to the soil where the cycle begins again.

Nutrient cycles are "leaky", however. If nutrients are present in the soil in greater quantities than they are needed or at times when they cannot be used by crops or soil microbes, they may be lost to the environment through runoff, erosion, leaching, or volatilization. Nutrient availability to crops also depends on the chemical form in which nutrients are present. Nutrients present in an unavailable form will not be taken up by plants even though they may be needed, and may be lost from the cycle. Nitrogen in particular undergoes a number of transformations as it is cycled. These transformations occur under different environmental conditions and understanding when they are likely to occur can help improve nutrient management planning.

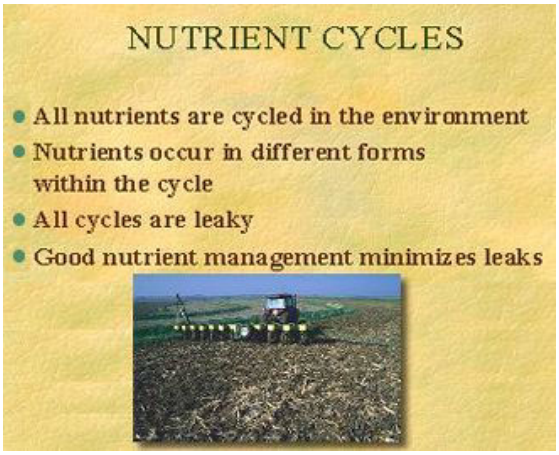

Figure 17

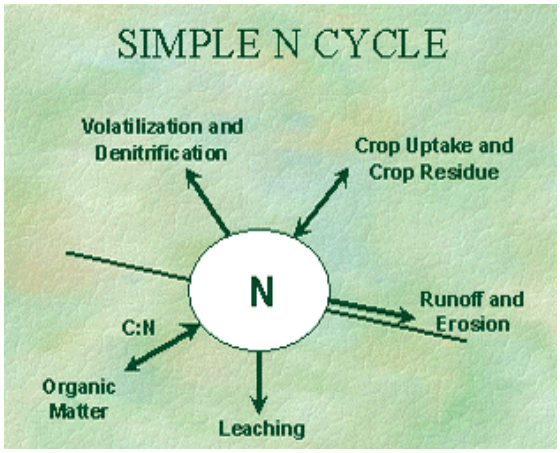

Figure 18

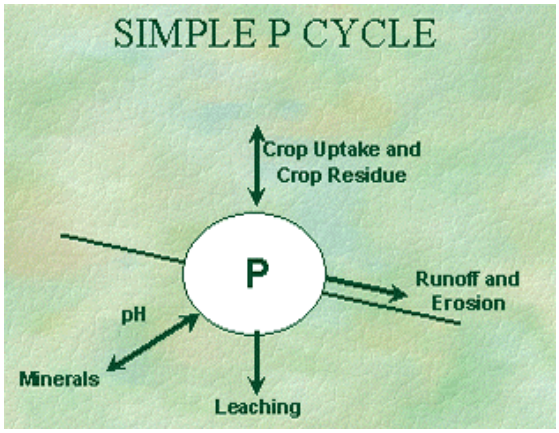

Figure 19

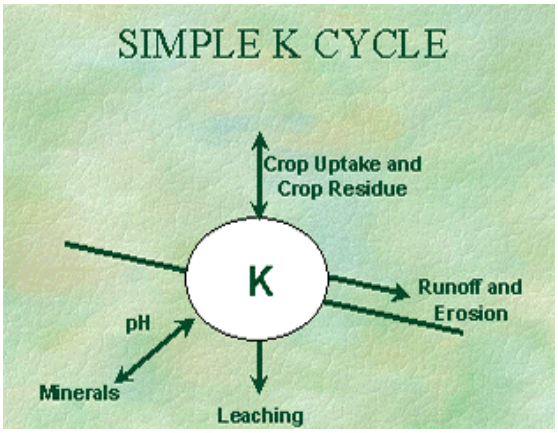

Figure 20