



## Best Management Practices for New York State Golf Courses

### Preventing Phosphorus Leaching and Runoff

Similar to nitrogen fertilization, a variety of chemical and environmental factors influence the potential for off-site movement of phosphorus. The primary means of off-site movement is by runoff due to phosphorus content at or near the soil surface. Improper handling of organic waste, notably clippings, can also be a significant source of phosphorus movement off-site, and thus clippings should not be placed in or near storm water treatment structures or wetlands. Finally, phosphorus leaching can occur, but only under very specific soil and chemical situations.

#### Phosphorus Runoff

Turfgrass, like other untilled systems, accumulates higher concentrations of soil P in the upper soil profile (0 to 2 inches) compared to lower depths. Frequent P fertilization, especially at higher rates, substantially increases the soil P levels in this upper profile. Consequently, P in fertilizer can be lost in runoff, as much as 20% of P fertilizer. Runoff can also wash away soil sediment and plant debris with mineral P and organic P. The runoff risks are very high during turfgrass establishment due to limited plant utilization and more runoff present than in established turf.

#### Phosphorus Leaching

In its rare anionic form, phosphorus can leach and is a concern for water quality issues. P leaching potential is best managed by applying P based on soil test results. When phosphorus is complexed with other elements in the soil, however, it has a low leaching potential unless it has been over applied for many seasons. Sandy soils, on the other hand, often have a low potential to fix (tie up) P and therefore are more likely to have a P leaching problem.