**Fertilizer Programs During the Summer**Pamela J Sherratt

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Fertilizer is applied to fields in the summer to prevent nitrogen (N) deficiency, to suppress leaf senescence during periods of high temperatures, to promote some growth for recovery (especially if fields are in use), to help turf tolerate traffic, to prevent stress (certain diseases) and to maintain turf color. However, because the grass is not growing as quickly, you will apply less in the summer than in the spring or fall. Fertilizer is also a key component during seed or sod establishment. Though summer establishment is less than ideal, constant use of fields means that renovations are ongoing throughout the season. The proper procedure for a renovation program would be to have the soil tested for nutrient status and pH, and to make corrections where necessary. A starter fertilizer that contains phosphorus is applied to the soil surface at time of seeding. A recommended rate would be no more than 1 lb. N/1,000 sq.ft and at least 1 lb. P/1,000 sq.ft at the time of planting. It is important that the N level is not too high, to prevent turf burn/injury to new seedlings.

There are four key concepts to nutrient stewardship that take into consideration all of the benefits that fertilizer provides and at the same time offer some guidelines on how we apply them to maximize plant growth and recovery but do so in an environmentally responsible way. Adopting these principals is a good idea, especially if you are going to seek Environmental Facility Certification through STMA. These four concepts are referred to as the “4Rs” and they are aimed at making sure the nutrient program matches the turf’s needs and to minimize loss of N from the system. The 4 Rs are as follows:

**Right Source** – During the summer, the nitrogen source should be at least 50% slow-release (water-insoluble) or derived from a natural organic source. There are also slow-release liquid fertilizers where the nitrogen is applied in suspension. At the 1 lb. N/1,000 sq.ft rate, a slow-release source of nitrogen should not create any turf injury (burn), regardless of granule size (SGN). Quick-release (water soluble) sources of urea and ammonium fertilizer are more susceptible to volatilization, particularly on thatchy turf. Other sources of N can be derived from returning clippings and mulching leaves.

**Right Rate** - It is important to match the turfgrass needs to the amount of fertilizer being applied. Typically, Kentucky bluegrass and perennial ryegrass require more N than tall fescue. Improved cultivars will also require more fertilizer compared to common varieties. If the turf is actively growing, a 1 lb. N/1,000 sq.ft application could be made during summer, either as one application or at 0.5 lb. rate over two applications. Keep in mind that excessive N during this time will substantially decrease drought and heat tolerance. Applications of too much N can also result in extra costs and much greater leaching potential, particularly on sandy soils. Figuring out how much N to apply to a field is based on the percent of N in the bag. For example, if an 18-3-18 fertilizer is used and the application rate is going to be 1 lb. N/1,000 sq.ft, the calculation is as follows: 1(rate) / (divided by) 0.18 = 5.5 lbs. of fertilizer product needed for 1,000 sq.ft. To work out how much fertilizer is needed for the entire area, multiply the 5.5 by the area and divide by 1,000. So the calculation would be: 1/0.18 x 80,000 (example soccer field) / 1,000 = 445 lbs. of fertilizer needed for entire field. Further divide by 50 to determine how many 50 lb. bags are needed. In this case, 9 bags are required. Use this calculation to determine how many bags are needed each time, or simply use Table 1, which is a cheat-sheet I put together.

**Right Time** – If the turf is dormant and the field not in use, no fertilizer should be applied.

Similarly, fertilizer applications should be withheld or postponed if the soil is very dry and compacted and if there is little to no grass cover. During high temperatures, fertilizers should be applied in the cooler mornings, to minimize volatilization, and preferably watered in, to make sure the fertilizer enters the turfgrass root system.

**Right Place** – Every effort should be made to ensure that the fertilizer is not lost from the field from run-off or leaching. Fertilizer should not be applied to hard surfaces, bare/overly dry/compacted soil or any other surface where run-off is possible. Fertilizer should not be applied before a heavy rainfall, especially on sandy soils, as this can lead to nutrient leaching into groundwater. Soils that are overly wet are also prone to denitrification, which is a process whereby soil anaerobic bacteria convert nitrate to nitrogen gas, which is then lost to the atmosphere. This loss to the atmosphere is not detrimental to the environment (since the atmosphere already contains nitrogen gas) but it is a waste of money and time. Lastly, if recreational turf or sports fields are immediately adjacent to any kind of water (lake, stream etc.) it is best to have a vegetative buffer strip between the turf and the water that does not get any fertilizer applied. The buffer strip is generally 8-30 ft. wide, depending on soil type and slope.

In summary, summer fertilizer applications can be applied to actively growing turf to promote turf growth, recovery and seed/sod establishment, but every application should be made with the 4Rs in mind.