Foliar versus soil applied fertilizer application:
When does each approach make sense?

When it comes to fertilizing turfgrass, choosing how to apply nutrients can sometimes be tricky. The first question to ask is why the fertilizer is being applied; is it for maintenance, deficiency management or to work through a time of stress and/or damage? The next question to ask is whether the nutrients should be applied to the foliage or to the soil. To answer this question, a few factors should be considered including the amount of nutrients applied, condition of the plant and how each nutrient being applied typically enters the plant.

An important point to understand in determining whether to feed through the roots or the leaves is that both methods have a place in a well-planned fertilizer program. If the purpose of an application is maintenance, the amount of applied nutrients would be higher and typically in granular form, especially in the cases of the primary and macronutrients. This ensures that nutrients removed from the soil by the turf stand are replaced over time. Depending on the soil type and its holding capacity for nutrients and water, application rates & frequency as well as sources of the nutrients will vary. Foliar applications are important when low application rates are required and/or better distribution of the nutrients is necessary. Nutrient applications to the foliage are limited by the amount that can be dissolved into the volume of spray solution that can remain on the leaf surface as well as the plant's ability to resist burn from the fertilizer material.

Turf plants will change physiologically over the course of a growing season due to weather patterns and day length. These variables can affect the ability of nutrients to be taken up from the soil, possibly necessitating the application of nutrients to the foliage. Often turf managers will choose where to target fertilizers based on what species is being favored and use these seasonal variations to their advantage. Additionally, if an acute deficiency exists that requires corrective measures, low-volume, liquid applications with a considerably smaller amount of applied nutrients are often made to allow for absorption through the leaves. This method provides rapid results that are typically short-lived due the limited amount of applied nutrients. However, this is the best option to get the nutrients into the plant quickly or when the root system has been compromised do to external factors.

The entry routes of each nutrient can also affect the choice of application method for the required nutrients. Many nutrients can be taken up by the roots as well as enter through the cuticle or stomates of the leaves. However, some nutrients are more efficiently absorbed through one or the other. This is the especially the case with micronutrients, for which greater response is seen through foliar application. A regimen of strictly soil-applied nutrients has been the preferred method for many turf managers simply for the ease of application, but can be limiting, especially in soils that are abnormally hot, cold, wet or dry.

When considering where and how to apply nutrients to managed turf taking into account the rate, condition of the turf and possibly entry routes will increase the effectiveness of your applications.