

nitrogen to potassium ratio to encourage the formation of desirable carbohydrates. Fertilization in south Florida or on overseeded fairways should be continued to maintain desirable color but should not be excessive, since turf that grows slowly is less able to utilize the applied material.

Since roughs are mowed at greater heights than fairways and clippings are returned, fertilization requirements for roughs are much lower. Roughs are usually fertilized one to three times a year to maintain color and permit recuperation from pest or traffic damage. Forty lbs of a soluble nitrogen source, or 80 lbs of an insoluble source, are usually applied per acre per application. A complete fertilizer should be used at each treatment. Obviously, as fertilization amounts increase, so do maintenance costs associated with mowing and trimming.

SOIL AND LEAF ANALYSIS

Soil testing is a basic practice of turfgrass management. Soil analysis provides information on relative levels of nutrients, organic matter, pH, soluble salts, and cation exchange capacity. Since testing laboratories differ in methods of extraction and analysis, it is suggested that turf managers choose a particular laboratory and use it consistently to minimize the possibility of variation in analysis techniques. In most cases, these laboratories use university extraction and analysis techniques and fertility recommendations. Managers should be certain that the laboratory chosen uses information based on the calibration of soil test results for the plant material being grown. Recommendations based on responses of plants other than turfgrass may provide inaccurate results, since the needs of turfgrass differ from those of most other crops.

I. Soil Analysis Report

Most soil analysis reports list nutrient levels in one of two ways: parts per million (ppm) or meq (milliequivalent) per 100 grams of soil. Results for the major elements and micronutrients are most commonly reported in ppm on an elemental basis. An acre of mineral soil with a depth of 6 to 7 inches weighs approximately 2 million lbs. To convert ppm to approximate pounds per acre, the ppm value is multiplied by two.

Soil cations such as calcium, magnesium, potassium, and hydrogen are expressed by their relative ability to displace other cations. For example, one meq of potassium is able to displace exactly one meq of magnesium. Cation exchange capacity (CEC) and the total amounts of individual cations may be expressed in meq/100g.

Using these methods of reporting nutrient levels, laboratories give most soil test readings a fertility rating of very low (VL), low (L), medium (M), high (H), or very high (VH). Usually, the division between medium and high is the critical value. Above the high value, plant response to added fertilizer is not expected; below it, more fertilizer is needed as nutrient levels decrease. Table 3 summarizes recommended ranges for nutrient levels reported by the Florida Cooperative Extension Soil Testing Laboratory, which uses the Mehlich-I extractant. The reader should note that there are variations in the plants, soils, locations, management practices, and laboratory extraction techniques used. Time and experience are required to establish a baseline from which superintendents can gauge specific nutrient level fluctuations.