

Without an adequate supply of nitrogen the quality of any landscape will suffer, especially the turfgrass.

Nitrogen is available in many forms: totally soluble or slowly available to the plant; organic or inorganic; high or low salt index. All of these forms have their own characteristics and can have very different effects on plant growth. All plants prefer the nitrate or inorganic form of nitrogen, and have little use for the other chemical form of nitrogen, the am-

monical form. The third chemical form, organic nitrogen, is not used directly by plants. When a fertilizer containing nitrogen in the organic or ammonical form is applied to the landscape, it must be changed to the nitrate form before it can be used by the landscape. These changes are accomplished in the soil by bacteria. You do not need to add anything to any soil for these conversions to take place. Be assured that the right bacteria are always available. Examples of these nitrogen forms are found in Table 1.

Those fertilizers listed in Columns A & B are all soluble. So is the organic form urea found in Column C. When applied to the landscape, the nitrogen they contain goes freely into the soil water solu-

tion that surrounds the roots of the plant. If the soluble nitrogen is in the nitrate form, it may enter freely into the plant.

Plants do not always need a lot of nitrogen at one time. A slow, steady growth rate is better than a quick, fast burst of growth, as research has shown. Soluble materials have relatively high salt indexes. High-salt fertilizers can burn plants. If soils and/or irrigation waters already have a high salt level, avoid using these high-salt-index fertilizers.

One fact makes a soluble nitrogen material desirable: it can be applied to the landscape in water, through an irrigation system or sprayer. This is easier than using bagged fertilizer and a spreader. Most slow-release materials are great nitrogen sources for the landscape, but they must be applied dry. The best nitrogen source would meter out the nitrogen slowly, but would be applied through an irrigation system or by using the tank-truck-hose-nozzle system. The goal of research these past few years has been to find such a material; one that acts as slow-release but can be used in a water carrier system. These new nitrogen materials are now coming to market.

Urea is completely soluble, but through chemistry, it can be changed into forms that have entirely different characteristics. Not only are they slowly soluble in that they supply nitrogen at a low, steady level, they can also use water as a carrier. Perhaps "slow-release" is a better term for these new materials. The term that seems to be the most appropriate is "solution slow-release nitrogen."

Coron and similar products are the next generation in liquid fertilizers. Clear liquid fertilizers add versatility to fertilizer programs. Coron is a low-salt-index fertilizer that contains slow-release nitrogen (70% CRN). Being a polymethelene urea-based fertilizer combines the ease of handling liquids with reduced clippings and increased root growth that is associated with traditional dry slow-release fertilizers.

Injection into the irrigation system is easily handled by storage tanks and injector equipment. Tank-mixing requires little agitation and no pre-mixing to dissolve materials. This makes truck/tank/hose/nozzle systems quicker and easier to use.

Advances in nitrogen chemistry have given us the most ideal form of nitrogen yet. Ease of application, low burn potential and slow feeding make these new materials far superior to all other forms. They are certainly worth trying. **LM**

'New' forms of nitrogen

by BILL KNOOP, Ph.D. / Technical Editor



Soluble nitrogen can be applied through an irrigation system or sprayer.

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