TECHNICAL BULLETIN DAVEY

Prepared by The Davey Institute

All Fertilizers Are Not Created Equal

Recently there have been a number of published articles concerning the horticultural and environmental impact of fertilizers used in the tree care industry. Generalizations about fertilization imply that all fertilizers are the same, when in fact, fertilizers come in many different formulations and types – which does make a difference in how they affect your landscape. Unfortunately, the research that has led to the negative claims against fertilization has been very limited and almost exclusively based on studies done with soluble nitrogen.

SOLUBLE VS. INSOLUBLE NUTRIENT SOURCES

One key to understanding the effects of fertilization is to understand that nutrient sources must be in a soluble form to be utilized by plants. Think of soluble nutrients as simple chemical chains and insoluble nutrients as complex chemical chains – like bricks and a brick wall. You can move bricks, but you would have to break down the brick wall before it could be moved. Similarly, plants can pick up the soluble nutrients with their root system, but cannot move or pick up insoluble nutrients in their complex form. Insoluble nutrients must be broken down to a simpler form before they can be utilized. This breakdown of the complex chains can occur with exposure to water over a period of time, or due to micro-organisms in the soil – depending on the chemical chains involved.

CONCERNS OF IMPROPER FERTILIZATION

Industry research and studies done by the Davey Institute have shown that excessive levels of soluble nutrients (especially nitrogen) can have a detrimental effect on your landscape as follows:

- Excess soluble nitrogen available at the time of new shoot growth can over-stimulate the vegetative growth of the plant and possibly upset the root-to-shoot balance.
- If a proper balance of nutrients is not available to the plant during periods of increased vegetative growth, new cells may be produced with weak cell walls. This succulent growth is more susceptible to damage caused by certain sucking insects and takes away nutrients that are used by the plant to produce natural defenses for protection from insects and diseases.
- Soluble nitrogen that is not absorbed by plant roots can leach below the root zone within about nine weeks in a typical landscape soil that is deficient in organic matter. Nitrogen below the root zone is unavailable to your plants and can end up in the water table.
- If the concentration of soluble fertilizer salts is too great, water can be drawn out of the plant roots, causing a condition known as "fertilizer burn."

ARBOR GREEN® – The Davey Difference

Arbor Green, which was developed and patented by the Davey Company in 1977, addresses all of these concerns and promotes strong, healthy plant growth - allowing your landscape to help protect itself. Along with phosphorous and potassium, it contains a nitrogen form that is predominately insoluble and slowly released over a two-year period as micro-organisms in the soil break it down to a soluble form. Since the breakdown requires microbial activity, nitrogen only becomes available during the growing season and is not released during dormant periods when it could leach below the root layer. In Southern and Western soils, where dormant periods are shorter or non-existent, this release period would be shortened. And since the concentration of soluble nitrogen is maintained at a relatively constant level, your landscape will not experience the surge growth associated with applications of soluble fertilizers. It was developed with the lowest salt index of any commercially available, complete fertilizer on the market. That means Arbor Green will not burn the roots of trees and shrubs with low salt tolerance, stressed or declining plants, or newly planted trees and shrubs.

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