Many challenges face professional turfgrass managers, golf course superintendents and landscape managers in today's competitive marketplace. With a host of fertilizer options at your disposal, how can you be sure the fertilizer you choose for your project is the best choice? What makes one fertilizer bag different from another, other than the analysis on the label?

WHAT DOES THE ANALYSIS ALONE NOT TELL US?
The analysis on the outside of the fertilizer bag only tells us part of the story about what is actually inside the bag. Fertilizers come in a variety of configurations; homogenous pellets that provide excellent uniformity, blends of two or three homogenous pellets which are nearly as uniform as the 100% homogenous varieties and granular bulk blend fertilizers. Bulk blend fertilizer options are a non-uniform mixture composed of several different materials.

ACHIEVING UNIFORM DISTRIBUTION.
Granulated fertilizer materials are solid homogenous mixtures generally produced in ammoniation granulation plants by combining various raw materials. Each uniformly sized fertilizer particle contains all the nutrients in the analysis. The principal advantage of granulated materials is the uniform nutrient distribution. No segregation of the nutrients occurs during the handling or spreading of the fertilizer.
WHY DOES UNIFORM DISTRIBUTION MATTER?

With uniform distribution, the plant roots absorb a complete set of all applied nutrients. Research has shown that the maximum response from nitrogen and phosphate occurs when the two are associated. This kind of chemical combination is found only in homogenous pellets or high quality pellet blends. If the nitrogen is separated from the phosphorus by as little as two inches, you can see up to a 50% reduction in phosphorus uptake by the plant. Granulated fertilizers also generally have superior handling properties with little tendency to cake or dust.

Blended fertilizers, on the other hand, are simple physical mixtures of dry fertilizer materials. The ingredients of a blended fertilizer can be straight materials, granulated compound fertilizers mixed together, or a combination of the two. In blended fertilizers, the individual particles remain separate in the mixture and there is a greater potential for segregation of the nutrients. Non-uniform application can be very frustrating and produce unsightly results on turfgrass.

CAUSES OF NUTRIENT SEGREGATION.

With granular blends you have three different forces working against uniform distribution; coning, sifting and ballistic segregation.

Coning segregation refers to granular blends as a mixture of several different materials with particles of different shapes, sizes and density. If you pour a mixture of these blends into a pile, the heavier, more dense particles will fall to the bottom and edges of the pile while the lighter, less dense particles will tend to accumulate in the center of the pile.

In sifting segregation, the pile of fertilizer being transported across the sports field, golf course, or landscape setting will tend to sift and separate. This sifting can also occur in fertilizer shipments by rail or truck travelling long distances.

Ballistic segregation occurs as the granular blend is applied to the turfgrass or landscape area. The spinner tends to throw heavier particles greater distances than lighter particles. In other words, when the fertilizer is being applied through a spreader it tends to segregate even further than the homogenous fertilizer pellets. If the blend is made from materials that differ widely in particle size, the separation can be severe and result in uneven nutrient distribution. Actual field measurements have shown a variation of 50-225% of the recommended amount of a fertilizer blend in a given swath resulting from segregation.

KEY TAKEAWAY

Dry granular fertilizer blends are mixtures of different sizes, shapes and weights. The forces of segregation add to the non-uniformity in blends of this type. Uniform application becomes difficult at best. Uneven distribution of nutrients, even with the same spreader, can result in spotty growth, lack of uniform color and increased management problems. Homogenous pellets, in comparison, provide for even application and increased nutrient efficiency through positive nutrient interaction.