It Was A Wicked Hot Summer!

It has been another summer of wicked weather in much of the country, particularly the Mid-West, where numerous records for high temperatures (both day and night) were set. Such conditions have plagued the same region for three summers in a row, although two years ago, heavy rains and flooding also added to the misery. In any event, prolonged tropical weather in the cool humid region of the country has not been favorable for cool season grasses to flourish.

Cool season grasses are amazingly adaptive to adverse weather, provided the adversity is not too protracted. However, cool season grasses have a defense mechanism in place to help them overcome the adversity and that is called dormancy. Unfortunately, dormancy is not a pretty sight as the grass canopy looses it's normal green color, turns brown, and essentially looks dead (a common phenomenon seen in the rough on courses where the rough is not irrigated). To avoid this 'dead' appearance, irrigation and other cultural tactics are usually imposed on the grass by turfgrass managers so that it does not go dormant. This is done in order to provide consistent playing conditions and aesthetic appeal as long as the adverse weather conditions persist. Years ago, when there were very few irrigated fairways, the turf went dormant, tee shots traveled much further on hard ground and brown grass, and the minor amounts of annual bluegrass that were present, actually perished (more about that later). The result was that annual bluegrass was only a problem on greens, surrounds, tees, and other areas that were irrigated to keep them green (essentially, annual bluegrass was a non-issue).

As we consider the realities of the situation that exists today on most golf courses in the world, annual bluegrass is a common enemy, playing conditions must be consistent every day, green speeds must be acceptable to all, and if turf is lost for any reason, it must be put on the fastest track to recovery that is humanly possible.

Therefore, we need to return to the issue of dormancy and the role that it plays in the manner in which turfgrasses recover from environmental stresses. It is known. that turfgrasses utilize carbohydrates rapidly when environmental stresses occur, in order for them to accommodate the energy and respiratory demand caused by the stresses. As internal carbohydrate levels decrease and cannot be adequately replaced by photosynthetic activity (due to the reduction in the efficiency of the photosynthetic process that is caused by the stresses), a critical level of carbohydrate is reached which triggers the dormancy mechanism. This mechanism is inherent in all most all grasses, with the exception of annual bluegrass. Annual bluegrass (particularly the annual ecotypes) does not have a very effective mechanism for dealing with environmental stresses, therefore, once permanent wilting has occurred the plant often perishes. By contrast, at least physiologically, the other cool season grasses are much better equipped to survive the adverse environmental conditions.

The recovery from such environmental stresses primarily results from the vegetative generation of new tillers from stolon and rhizome buds and from the surviving crowns of existing plants
(perennial ecotypes of annual bluegrass also have this capability). This vegetative recovery is relatively slow and requires water and the return of cooler air and soil temperatures. Much of the recovery that occurs for annual bluegrass is the result of the germination of seed from the seed bank in the soil.

Regardless of the mechanism that is inherently in place for recovery, studies have shown that the availability of nutrients, particularly nitrogen is critically important to enhance and hasten recovery. The irrigation that may have been applied in an attempt to ward off the stresses, moves nutrients downward in the soil and below the active rootzone. Nitrogen, being relative mobile through the soil as well as potassium, becomes less and less available for uptake.

Once the environmental stresses have subsided and new growth from vegetative propagules is noted, it is critically important to have nitrogen and potassium available to the emerging shoots. Foliar applications of nutrients that are applied to this new growth can quickly make these nutrients available and they will be rapidly utilized, thus enhancing rate of recovery. In addition, the application of bio-stimulant products containing cytokinins will enhance the newly developing root system which will also support and facilitate the recovery process.

On another note, it is important to not impose mechanical stresses during this recovery process. Although it is very seductive to want to vent and disturb the site mechanically, such an approach is most often counter productive. Mother Nature will work wonders as long as management is in a facilitative mode, so do not interrupt the natural processes that you can work hand in hand with, during this period of recovery.

My best to all of you!

Dr. Tom