

realize and accept that green color is not a factor that impacts course quality or playability.

In addition to less water for course irrigation, increased regulation of fertilizers and pesticides has and will continue to occur. In response to environmental concerns, the golf course maintenance industry has made excellent progress in reducing its reliance on these materials. Nevertheless, pesticides must be applied to control heavy pest (insect, weed, and nematode) pressures, and fertilizers have to be used to produce a dense, healthy turf cover. The loss of some compounds is to be expected, and this will make it even more difficult to maintain an acceptable level of pest control. Research continues to develop alternative management practices, treatments, and better adapted turfgrass varieties or cultivars, but how many facilities will be able to use materials that cost \$300-\$500 or more per acre on a large-scale basis?

Labor is yet another resource issue that has been a major concern. Nearly every golf course I visited this past year was dealing with a labor shortage. Not only was it hard to find and retain adequate staff to keep up with routine maintenance, but there has been a shortage of qualified individuals for assistant and technician positions. There is simply no way around the fact that modern-day course management is labor intensive and time consuming. This is especially true of course grooming and manicuring, which has a big impact on the average golfer's perception of quality. We can talk

about prioritizing and reallocating resources, but at a growing number of facilities, essential maintenance practices have been curtailed or have become very expensive due to labor shortages and shrinking budgets.

Over the years I have enjoyed the *Greenkeeper International* magazine, published by the British and International Golf Greenkeepers Association. Something that has always stood out has been the use of the word "presentation," with the primary focus being course conditioning. Unlike American trade magazines, every picture is not a shot of a green, perfectly manicured golf hole. I find this refreshing but troubling at the same time, because it highlights the fact that the aesthetic side of course presentation is often over emphasized in the United States.

It has been my contention for many years that unrealistic golfer expectations and demands will not be changed until regulations restrict or remove various management tools. I am confident, however, that American ingenuity will prevail and that the golfers of this country will continue to be provided with good to excellent quality facilities. Nonetheless, with ever-increasing limitations on resources, we remain confronted with the big job of educating golfers about the differences between aesthetics and playability.

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USGA Green Section Updates

When it rains, it pours!

Overcast Skies Stress Bermudagrass

By John Foy



June first is the official start of the hurricane season for Florida, and sometime during this month the rainy season normally kicks in. Leading up to June, we had been in a typical pattern of very sunny, dry, and warm weather. Limited rainfall over the past two months was having some impact, and every course we visit-

ed was dealing with localized dry spots (LDS). In some cases, irrigation water quality (sodium/salts) required adjustments in management practices. Yet, relative to this time last year, when a severe drought was occurring, the weather has not been a major issue.

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It's hard to complain about rainfall after two years of drought, but recent rainy weather patterns are affecting summer maintenance schedules and turf performance.

more than 15 years and I am still amazed at the rainfall extremes that occur. Approximately two weeks

ago, a tropical front moved up from the Gulf of Mexico and settled in over the southern part of the

state. This front fed in a tremendous amount of moisture, which in turn resulted in typical summer thunderstorms. While the thunderstorms have been a little erratic, needed and welcomed rain was experienced throughout the state. That was until Father's Day weekend when more widespread - and at times very heavy - rains occurred. In Naples, more than 7.5 inches of rain came down over the weekend. The month-to-date total rainfall at the Palm Beach airport was reported at 11.92 inches. The normal month-to-date rainfall is 4.65 inches.

Recent rains have complicated course maintenance activities and, in particular, keeping up with proper mowing frequencies. However, far more critical is the reduced sunlight intensity as a result of heavily overcast skies for the past 10 to 14 days.

Bermudagrass originated on the savannas of Africa where high-intensity solar radiation is a constant. Overcast weather results in reduced photosynthesis and growth. Several days of reduced sunlight intensity has a negative impact on bermudagrass health and general turf quality. This is especially true with putting greens maintained at very low heights of cut. For the remainder of the summer until a dryer, more favorable weather pattern redevelops, the practice of slightly higher heights of cut on putting greens is strongly recommended.

For Tifdwarf greens, a height of cut in the range of 0.150-0.180 inch is advisable. While the ultradwarf cultivars can tolerate lower heights, raising the mowers to 0.130 inches or slightly higher

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also is recommended. Furthermore, care needs to be exercised with verticutting frequency and severity. To compensate for higher heights of cut and to continue to provide acceptable play, rolling and/or double cutting, more frequent light top-dressing, and growth regulator applications are the best options. For the next few months, surviving the stressful environmental conditions and maintaining full bermudagrass turf cover on greens will be the main objective at most Florida courses.

As noted in earlier updates, greatly reduced sunlight intensity was as much of a problem as the persistence of moisture-saturated conditions. A primary consequence of these conditions was reduced root-system development. Shallow roots and sandy soils that lack moisture retention are a troublesome combination. Once the rains stopped and the sun popped out, temperatures also quickly shot up. These conditions resulted in the rapid onset of drought stress if supplemental irrigation was not re-initiated in a timely manner. While it may have rained yesterday, don't be surprised with having to schedule irrigation tonight.

It has been a common finding on our Turf Advisory Service visits over the past two to three weeks that accomplishment of routine summer maintenance practices has been delayed. Rescheduling aeration operations and other cultural management practices and adherence to pest management programs has been a problem. This has resulted in a flush of weed invasion, and aggressive post-emergent herbicide treatment programs will be necessary to re-establish an acceptable control level. Along with catching up on routine maintenance, wrapping up summertime projects has become a priority. Most probably don't need to be reminded that the beginning of the winter season is just a couple of months away.

Finally, as it turns out, this has not been a good summer for major course renovation. Unavoidable weather delays have resulted in most renovation projects falling four to six weeks behind.

While bringing in extra people and equipment to try to catch-up is an option in some cases, there is not a whole lot that can be done to reduce the time required for turf establishment and development of proper/acceptable conditioning.

As we move closer to the fall, increasing sprigging rates will help a little. However, exceeding a sprigging rate of 1000 bushels per acre with Tifway bermudagrass when planting fairways, roughs and tees is of no benefit. Even with ideal weather, 8-10 weeks is still required to establish full turf coverage.

While hot temperatures will persist in South Florida through October and into November, as the day length progressively becomes shorter, bermudagrass growth rate slows down. If turf establishment is not well under way at this time, it is advisable to begin an education program to make golfers aware that it may not be possible to make the originally scheduled fall reopening for play. Also, at least one full summer growing season will be required to achieve a truly mature character.

Nematodes Adding to Deluge-Induced Bermudagrass Stress

By Todd Lowe

Much of Florida is still receiving routine, weekly (sometimes daily) rainfall that began in early June. After having weathered through a two-year drought, the extended rain is welcomed at most golf courses.

With the frequent rainfall, mowing is difficult to impossible at times. The turf continues to grow and excessive amounts of clippings are generated during subsequent mowings. The plant growth regulator Primo is applied to many golf courses in Florida to improve overall quality. However, it has also been an effective tool to use during rainy periods. Primo decreases vertical turf growth thus decreasing the need for routine mowing. Therefore, clumps of clippings are not as prevalent on courses that apply Primo every three to four weeks during summer months.

The abnormal rainfall pattern also is bringing with it extended cloudy weather. Bermudagrass putting greens are very sensitive to reductions in sunlight and become chlorotic (yellow) when low mowing heights are maintained during these stressful times. As mentioned in the previous update, it is important to maintain higher mowing heights during this time to increase photosynthesis and improve turfgrass quality.

Nematode damage has been visible at many of our visits lately. Nematodes are microscopic worms that feed on turfgrass roots, making the turf more prone to drought stress and nutrient deficiencies. As a result, yellow, thin patches of turf are created and these are often associated with a small purple weed called spotted spurge. In addition to the standard nematicide Nematicur, Curfew is an experimental product that has been providing good results for the past two years. Eradication is not possible with any product and golfers must accept some occasional discoloration.

There are several products on the market that claim to provide nematode suppression, but most have limited non-biased research to substantiate their claims. University of Florida nematologist, Dr. Billy Crow, has been evaluating many different commercial products for several years. He has finally found a promising product that may be developed within the next two years that provides control as good as Nematicur and is safe to the environment. It is a byproduct of the mustard industry and has provided excellent results in his trials for the past two summers. The results from these studies as well as others (weeds, insects, diseases, fertility) were discussed at the University of Florida turfgrass field day on July 25.

For information about the authors, see inside cover.

USGA web site
www.usga.org/green/news/new.html



Todd Lowe

PLANTS OF THE YEAR FOR 2002 - PART 4

Editor's Note: Last in the series for 2002. Selected each year by a panel of horticulturists, nurserymen, educators, landscape architects and other professional members of the horticulture industry, these plants have attributes which attract wildlife or have minimal maintenance impact on the environment.

Jewel of Thailand Ginger

BOTANICAL NAME: *Curcuma cordata* (petiolata)

HARDINESS: Zones 8-11

MATURE HEIGHT

AND SPREAD: 3' tall

CLASSIFICATION:

Perennial

LANDSCAPE USE:

Specimen or ground cover for shade

CHARACTERISTICS:

Bears a 1-foot-tall pink inflorescence with yellow flowers in the fall. The pleated leaves are a handsome addition to the garden through the summer.



"ZZ"

BOTANICAL NAME: *Zamioculcas zamiifolia*

HARDINESS: Zones 9B-11

MATURE HEIGHT AND SPREAD: 2'-4' tall, 3' wide

CLASSIFICATION:

Foliage plant

LANDSCAPE USE:

Ground cover, accent or specimen plant

INTERIORSCAPE

USE: High indirect light location, can tolerate low light

CHARACTERISTICS:

The succulent aroid resembles a *Zamia* cycad. It has thick glossy leaflets and is one of the few aroids (*Philodendron* relatives) that can be grown from a leaf cutting.



Giant Plume Ginger

BOTANICAL NAME: *Curcuma elata*

HARDINESS: Zones 8-11

MATURE HEIGHT

AND SPREAD: 7'-8' tall

CLASSIFICATION:

Perennial

LANDSCAPE USE:

Specimen plant or ground cover

CHARACTERISTICS:

The perennial bears a bright pink inflorescence in spring as the massive foliage emerges to form impressive clumps. The exotic-appearing bloom can be cut for a long-lasting cut flower.

