JB COMMENTS:

In my book **Turfgrass: Science and Culture** and those of many others since then, the zoysiagrasses (*Zoysia* spp.) are shown as having excellent drought resistance comparable to the bermudagrasses (*Cynodon* spp.). This has been the prevailing concept for many decades. However, recent research conducted by Sifers and Beard has shown otherwise.

For example, 3 years of investigations under droughty conditions in College Station, Texas, revealed that the zoysiagrass cultivars turned brown and entered dormancy between the 45th and 55th days, whereas most bermudagrass cultivars remained green for at least 120 days with a few cultivars retaining their green color for more than 150 days of severe drought stress. Green color retention during drought stress is referred to as dehydration avoidance. Once irrigation was applied the bermudagrasses readily recovered. A much higher percentage of the shoot meristems recovered from the bermudagrass turfs than from the zoysiagrass turfs.

These findings are supported by our evolutionary understanding of the two species. The *Zoysia* species evolved under the warm-very humid conditions of southeast Asia, whereas the *Cynodon* species evolved under the warm-semi-arid climates of southeastern Africa. Consequently, the bermudagrasses are very deep rooted while the zoysiagrasses are quite shallow rooted, causing the latter to be more prone to water stress problems. Under favorable growing conditions the bermudagrasses exhibit root depths of 6 to 7 feet (1.8-2.1 m), even at a 1 inch (25 mm) mowing height, while zoysiagrass rooting was typically no more than 20 inches (0.5 m).

It is very evident from these investigations that the zoysiagrasses possesses less than half the dehydration avoidance of the bermudagrasses, as well as substantially lower drought resistance. Our books need to be rewritten in this regard.

WINTERKILL AND ICE COVERS:

Winterkill is a term used to describe all types of death to turfs during the winter. Other authors frequently attribute one type of kill as being caused by extended ice covers. The mechanisms suggested involve the ice cover serving as a barrier that either prevents needed oxygen from reaching the underlying plants or trapping toxic gases around the plant causing their death.

Numerous investigations in the 1960's by this author at Michigan State University revealed turfgrasses tolerance to extended ice covers. Both creeping bentgrass (*Agrostis stolonifera*) and Kentucky bluegrass (*Poa pratensis*) survived 150 days in ice blocks at 25°F (-4°C). Annual bluegrass (*Poa annua*) was killed between the 75th and 90th day surrounded in a block of ice.

Death of turf frequently occurs in low depressional areas where an ice sheet has existed during the winter. However, it is far more common for the turf to be killed in association with the ice sheet in the following manner. First, standing water either before freezing or after thawing of the ice results in crown hydration of the plants. If this is followed by a rapid drop in temperature to below 20°F (-7°C) kill typically results. The species most prone to injury is annual bluegrass, especially if located on poorly drained sites.

UPCOMING JB VISITATIONS:

Provided for Institute Affiliates who might wish to request a visitation when I'm nearby.

- April 14 to 15 - Columbus, Ohio
- May 14 to 24 - Australia
- June 7 to 8 - Orlando, Florida
- June 9 to 16 - Italy
- June 27 to 28 - San Diego, California
- July 1 to 21 - Scotland and England
- July 24 to Aug. 3 - Rhode Island