(Left) Scenery and safety go hand in hand. Tiered tees and a guard-railed golf-car roadway enhance this par-3 hole. (Below) Is this a look at the future or the past?

for golf courses begin on January 1. At that time Arizona will start water allocation at a rate of five acre-feet per year for all golf courses. It is currently the only state with this kind of water law, and other areas will be closely watching this situation. Thus far, clubs have had little or no problem staying at or under their water allotment. With less water being applied, the courses have also shown improvement from an agronomic and playing standpoint.

IN SOUTHERN California, water quality continues to be a problem for those superintendents maintaining greens that are comprised of bentgrass and high *Poa annua* populations. As the salts in the soils continue to increase, many superintendents are finally getting through to their memberships that growing grass under poor soil situations simply cannot be done without good drainage. The rebuilding of older soil-base, non-subsurface drained greens continues in southern California and other areas plagued with this problem.

In addition to flooding problems in northern California, the excessive amount of moisture resulted in a heavy snow pack in Utah. As a result, the Great Salt Lake has risen above its banks and is not only threatening several golf courses but the airport as well. It is unfortunate that all of this excess water couldn't be funneled elsewhere.

Other than the problems with water, the year has been rather uneventful for most superintendents in the western United States. Some superintendents have had problems with disease, while superintendents in Portland, Oregon, and Los Angeles have had their first turf loss from nematodes. Other than these isolated cases, the superintendents in the western United States continue to produce quality playing conditions.

Southeastern Region

by **CHARLES B. WHITE**, Director,
and **JOHN H. FOY**, Agronomist

WITH THE exception of Florida, this year was extremely difficult in the Southeast because of severe heat and drought. They took a toll on many golf courses due to the combination of lack of water, poor irrigation systems, and in some cases mistakes in management going into or during the drought period.

The spring and summer proved to be an educational experience for many superintendents, who found out that if they are managed properly, turfgrasses are actually quite drought and heat tolerant — including bentgrass. Bentgrass was often watered on a two-day irrigation cycle throughout the summer and supplemented with the hand watering of drier areas. These practices helped to maintain good soil aeration and good rooting vigor and depth through the summer, a real feat considering that soil temperatures were as high as 85 degrees for much of the summer. In some cases there was actually new root initiation in June from bentgrass in the Piedmont Southeast following an aerification with small tines and an application of potassium sulfate. This is certainly a credit to good management by superintendents who understand the relationship of low nitrogen and high potash fertility programs.

Among the golf courses that best survived the summer drought and heat were those that had basically a 1:1 ratio of nitrogen to potash, coupled with proper and strategic water regimes. This year many learned that small quantities of water can sustain turfgrass health and playing conditions far better than larger volumes.

DESPITE THE heat and drought this summer, one of the most important factors determining bentgrass success was air circulation. The accompanying picture shows a well-built green with very poor turf in the center when all other greens on the course were in excellent condition. The difference? No air movement due to surrounding banks and undergrowth. Poor air circulation is truly one of the greatest enemies in the turf management business, along with excessive heat, humidity, and drought.

Generally speaking, I thought that golf course superintendents coped extremely well with the drought. Many superintendents did an excellent job of

rationing water when availability became minimal, and adjusted to the limited water supply by instituting such programs as increased potash applications, raising cutting heights slightly, and reducing frequencies of cut.

A side benefit of the drought was increased awareness of the importance of proper irrigation and water supply. In many cases, boards approved funds for upgrading irrigation systems and water supply sources. Unfortunately, it often takes such extremes to obtain capital improvement funds for golf courses, but at least for some, there was a silver lining inside their dark cloud.

On the other hand, southern Florida was inundated with rain this summer. One course in southwestern Florida reported 15 inches in 21 days, while most of the Southeast fell 12 to 15 inches behind in rainfall this year. Courses that were well drained had a relatively good summer. Poorly drained courses had a significant amount of disease and other problems associated with saturated soils.

The southeastern United States had weather extremes in 1986 that challenged the golf course superintendent to use all his skills, and each one became a better manager in the process.

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I certify that the statements made by me are correct and complete.

Robert Sommers, Managing Editor

Mid-Continent Region

by JAMES F. MOORE, Director

TURF MANAGERS in the Mid-Continent Region would like to forget 1986. Difficult may be the best word to describe the season, although others would choose harsher adjectives.

Although the causes of the difficulties varied widely, a common foe was the very early play on dormant or nearly dormant turf. Most clubs experienced between 8,000 and 12,000 rounds of golf above their yearly average. Although the increased revenue was welcome, the extra traffic amplified limitations such as poor greens construction, improperly sized or heavily shaded tees, and fairway soils that quickly compacted with the additional cart usage. Weakened turf became more disease susceptible, and as the summer progressed, many courses lost large amounts of turf.

A NUMBER of trends (some good and some not so good) in turf maintenance were noticed across the 10 states that make up this region.

Aerification — Everyone seems to be climbing on the bandwagon, and courses are responding with better turf and improved playing conditions.

Fertilization — Although lower phosphorous levels discourage *Poa annua*, some are carrying this reduction to an extreme, resulting in severely weakened turf.

Chemicals — Many excellent new chemicals are available. Unfortunately, a tremendous amount of experimenting is going on — on the greens. Good superintendents should experiment, but on the nursery or practice green.

Construction — Too many clubs were trying to provide championship putting quality every day on greens whose construction more closely met the specifications of the highway department than those of the Green Section. Poorly constructed greens must be maintained to less demanding standards (especially when it comes to speed) than a green that is built properly. Many clubs are also building new greens and, unfortunately, yielding to the temptation to cut corners to save a few dollars. It is part of the superintendent's responsibility to protect the interests of his club by insisting on proper construction techniques.

Wetting Agents — It's too bad these products don't deliver all the promises made for them. Although they can be helpful to a limited degree, they cannot substitute for good construction and good cultivation practices. When applied heavily and followed by high temperatures, problems can sometimes result.

The year 1987 will no doubt offer its own challenges to turf managers in the Mid-Continent Region. You should be realistic about what can be produced, given the set of circumstances (budget, construction, climate, etc.) present at your club. It is our goal as USGA Agronomists to help you achieve the most from your course within the bounds of solid agronomics.