

# Zoysia management and playing performance

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Asian Turfgrass Center  
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# Asian golf growth taxes bermudagrass's flexibility

Clouds, weeds and insects weaken a tough species.

Greg Wecko, Ph.D.

Dynamic developments in the turf industry have occurred mainly in the temperate climates of North America, Australia and Europe. Yet in the past 15 years, remarkable growth in golf's popularity has transformed the Asian turf industry, creating new management challenges in new climates.

For example, the number of golf courses in Japan has grown from 200 in 1980 to more than 2,000. These courses

have 2.6 million club members and 12 million occasional players, and these players are driving up the price of golf.

When the average golf club membership in Japan reached \$307,000 in 1990, players started to look elsewhere for affordable golf. Destinations included tropical countries with year-round golfing opportunities, such as Thailand, Indonesia, the Philippines, Singapore, Malaysia and islands of the Western Pacific.



During the rainy season, clouds in Guam often darken the sky too much for vigorous bermudagrass growth.

## KEY POINTS

- Tropical regions may be too cloudy for some bermudagrass cultivars.
- Asian golfers have expanded the sport into tropical regions faster than regional turfgrass cultural techniques can evolve.
- Weed, pest and disease control in turfgrasses all require more research in the tropics.

### Species use

A scarcity of high-quality turfgrasses for hot and humid tropical climates has forced turf managers to adopt existing species, varieties and hybrids. The vast majority of courses in the tropical Pacific Rim have Tifway bermudagrass on fairways and Tifgreen bermudagrass on greens.

Culture of bermudagrass (*Cynodon* species and hybrids) in tropical climates faces several limitations. Perhaps unexpectedly, bermudagrass often receives insufficient solar radiation in the tropics, particularly during the rainy season.

Reduced density and increased weed infestation are common problems. If grown without adequate light, bermudagrass thins out, alters its growth habit from horizontal to more vertical, becomes more vulnerable to insects, diseases and weed infestation, and is more susceptible to wear from foot and vehicle traffic.

Research on light adequacy for bermudagrass has occurred on the island of Guam (13 degrees north of the equator) in the Western Pacific. Guam's climate and light conditions resemble those found in other hot and humid Asian countries. Temperature is uniform throughout the year and ranges from mid-70s F at night to around 90 in the daytime. Day length ranges from 11 to 13 hours year round, and days are always cloudy.

Average cloud coverage ranges from 50 percent in the dry season to 85 percent in the rainy season. In most temperate locations, daylight is longer, such persistent cloud coverage is uncommon and bermudagrass is dormant or approaches dormancy when daylight is shorter than 12 hours.

### Guam

On Guam, around noon, solar radiation from a clear sky ranges from 1,000 to 1,200 watts per square meter, depending on the time of the year. Passing clouds reduce this value to 100-150 watts per square meter, on average. These are detrimental light conditions for bermuda-

grass. On Guam, a dense tree canopy decreases solar radiation to as low as 80 watts per square meter, and 200 watts when the canopy is somewhat transparent.

Both common and Tifway bermudagrass planted on roughs and fairways under trees with dense canopies are unable to survive. When planted under relatively transparent palm trees, they show clear symptoms of light deficiency. There is some evidence, however, that some turfgrasses are less sensitive to reduced-light conditions.

TifEagle, tested on Guam since July 1998, maintains substantially higher density on greens than Tifgreen and Tifdwarf. During the rainy season, TifEagle is the only hybrid that, under intense fertilization (1 pound nitrogen per 1,000 square feet per month), can be mowed at  $\frac{1}{4}$  inch and still maintain superb density and uniformity. Tifdwarf performs better than Tifgreen; however, neither can be mowed shorter than  $\frac{3}{8}$  inch or even  $\frac{1}{2}$  inch.

### Paspalum

Improved varieties of seashore paspalum (*Paspalum vaginatum*) for both greens and fairways have recently drawn more attention as alternatives to bermudagrass. Superintendents are still reluctant to convert fairways from bermudagrass to seashore paspalum because management of these two species is quite different, and the presence of both on the golf course is usually inconvenient. Selection of seashore paspalum in place of bermudagrass is simpler on newly constructed golf courses.

### Weeds

A second major management concern is weed control. Weeds invade turf under all climatic conditions. Broadleaf weeds are relatively easy to eliminate with selective herbicides and adequate cultural practices. But in the tropics, both cultural and chemical weed-control strategies appear more challenging than in the temperate regions.

Poor density makes bermudagrass



Kawana, Japan

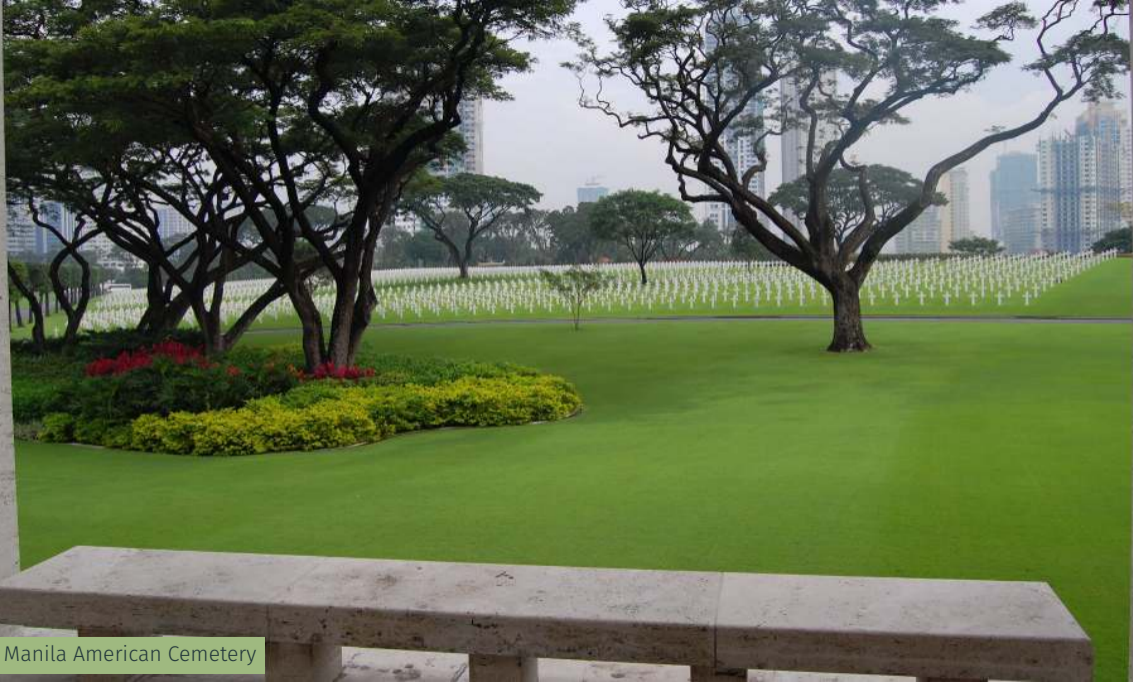


Wack Wack East Course, Manila





Royal Bangkok Sports Club



Manila American Cemetery



Hong Kong GC





SICC New Course



Tifeagle, Cavite, Philippines



Royal Bangkok Sports Club



Trang, Thailand





Trang, Thailand





Hateruma-jima, Japan



Yamaguchi-ken, Japan











near Bangkok, January





Tifeagle green near Bangkok



Tifeagle green near Bangkok

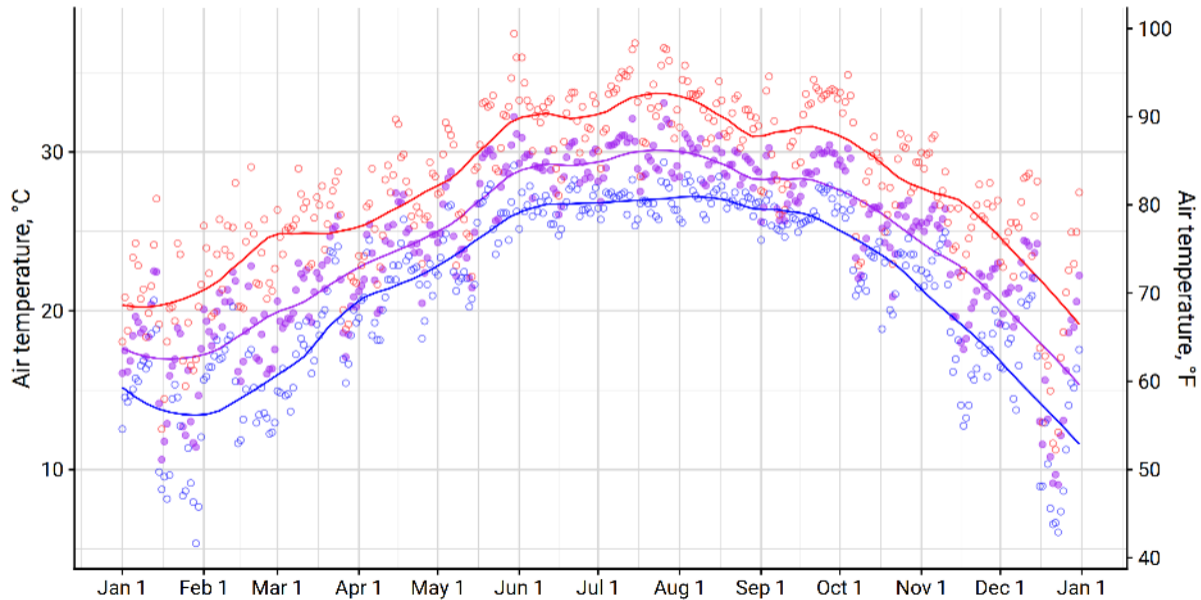






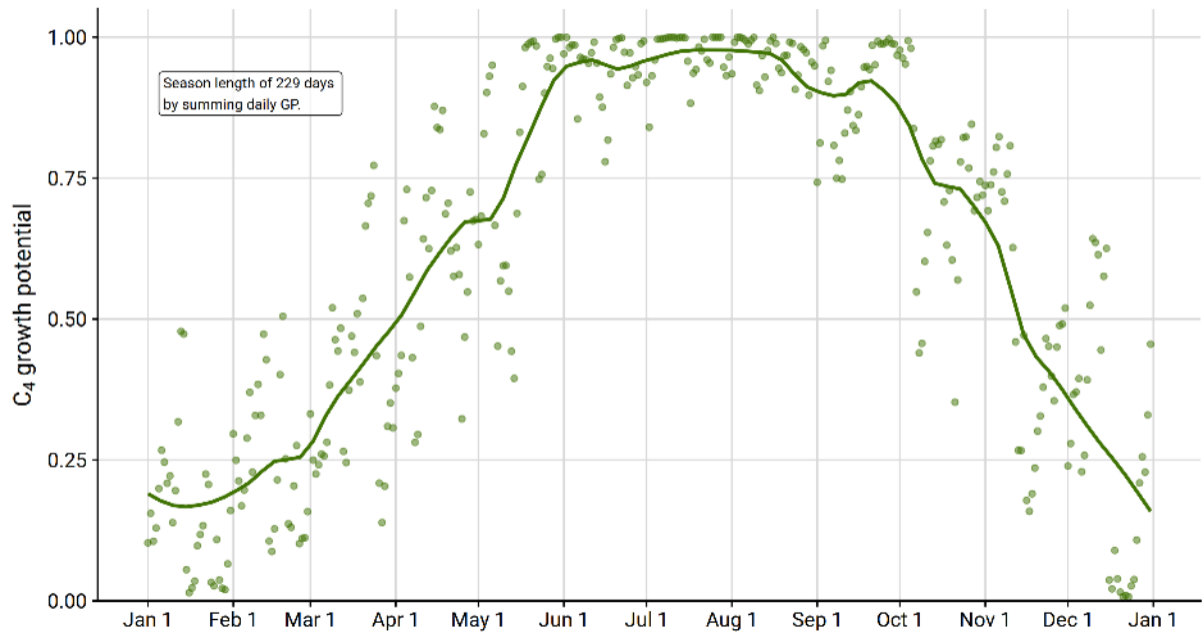
# Daily temperature summary in 2023

Hong Kong GC





# Growth potential at Hong Kong GC in 2023



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