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Emerging golf markets: new countries embrace the game



How today's courses learn from the past



R&A chief defends Old Course changes

Plus:

Golfers demand firm and fast, says leading US club boss; Warm season links, which grasses to use; Traditional greenkeeping, species transition; Food and beverage, can it make money? Family business, the story of Thai golf

Achieving the warm season links

Turf scientist Dr Micah Woods offers his suggestions for courses that want to mimic links course playability in warm season environments



The world's greatest golf courses are either links courses or have some playing characteristics of links courses, namely turfgrass surfaces on which the golf ball will bounce and roll. Across the world, many courses have been built that are intended to share these playing characteristics, but in climates where the bents and fescues that inhabit links courses can't thrive. So how can such conditions be produced with warm-season grasses in areas like Southeast Asia?

I've not heard objections to the firmness of warm-season putting greens or the way balls react when they hit the surface. If anything, golfers complain to me that warm-season greens are too hard. That is an obvious clue that firm conditions are possible with warm-season grasses.

We must understand how grasses grow. I've heard various objections to warm-season grasses as fairway surfaces. These objections usually take the form of complaints that the grasses are sticky, or soft, that they grab the club, or that the ball does not run. I've certainly seen that myself, and I can understand those objections. But if we imagine the opposite extreme, a hardpan surface with bare ground and no grass, we now have an extremely firm and

fast-running surface. And suffice it to say, in that case, the club won't be grabbed at all. It is not so much that the grass itself is causing soft or sticky surfaces – it is an excess of grass that causes such conditions.

The primary species on real links courses is fine fescue, and it is fine fescue growing at a slow rate. The best links turf conditions are produced when the grass is growing slowly. With warm-season turf, no matter the species, we need to manage the growth rate if we are to create links-like conditions.

There are a few factors that influence growth rate, but only two that can really be controlled by a turfgrass manager. Growth is directly related to the assimilation of carbon through photosynthesis, and this process can be modelled by four factors: air temperature, the amount of photosynthetic light, plant water status, and leaf nitrogen content. On the scale of an entire golf course, there is very little that a turfgrass manager can do to modify temperature or light. But assuming there is good drainage and the capacity to provide supplemental irrigation, then the plant water status and leaf nitrogen can be managed, and water and nitrogen can be used to control the growth rate.

To achieve the most links-like conditions, the growth rate should be kept as slow as

possible, allowing the turf to grow only fast enough to recover from traffic damage.

Which species of grass should we choose? In the tropics, the four common species of grass are broadleaf carpetgrass (*Axonopus compressus*), manilagrass (*Zoysia matrella*), bermduagrass (*Cynodon spp.*), and seashore paspalum (*Paspalum vaginatum*). Warm-season species used in subtropical regions include kikuyugrass (*Pennisetum clandestinum*) and Japanese lawngrass (*Zoysia japonica*) along with bermudagrass and seashore paspalum.

That's a lot of potential grasses, but if we want to achieve links-like conditions in the tropics, we need to choose a species that won't die. Why? We need to restrict the growth rate of the grass, and we need to mow it relatively low. The grasses that tolerate those conditions in Southeast Asia are manilagrass and broadleaf carpetgrass. From Sanya to Singapore, Mumbai to Manila, the grasses in the parks, on the roadsides, and in any low maintenance area, are manilagrass and broadleaf carpetgrass.

When we put these species on a golf course in the tropics, we can withhold irrigation and allow the grass to go dormant, we can stop growth by withholding fertiliser, we can mow the grass as low as we can set the mowers, and



Manilagrass on the twelfth hole at Banyan Golf Club in Hua Hin, Thailand. Left: in May 2010, during a drought. Right: November 2010, after the drought

we won't kill the grass. These species give the turfgrass manager an ability to create links-like conditions with relative ease.

In Dallas, Miami, Honolulu, Melbourne, Cairo or Malaga, the grass species that won't die will be different. But the same principle applies. Choosing the species that won't die in that location allows the turf manager to maintain the slowest possible growth rate.

In most parts of Southeast Asia, bermudagrass and seashore paspalum will eventually die if they are maintained with regular mowing, low fertiliser, and minimal irrigation. The only way to keep good bermudagrass and seashore paspalum fairways is to maintain an artificially high growth rate, but that never produces links-style conditions. Conversely, by using the well-adapted manilagrass or broadleaf carpetgrass, we can maintain a very low growth rate, and that, if desired, can produce links-style conditions.

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What about infrequently mown native areas? The wispy fine fescue rough of links courses in Britain is a unique ecological setting. It does go with links courses, but it is not a habitat that is natural to the tropics. I understand the desire to make courses in the tropics that mimic the great links courses, but I would suggest that the playing characteristics of the fairways and greens be replicated, with the roughs away from the line of play not necessarily made into grass. It isn't natural and it rarely works. We wouldn't try to produce a tropical rainforest in Scotland, I hope, and trying to reproduce something like Royal Aberdeen on the coast of Vietnam just isn't going to work.

But if one must attempt it, I suggest destroying the soil as a solution. By compacting the soil, there will be a smaller root system, the grasses will take up less water and nitrogen, and this will create dwarf plants. Once established, we must keep irrigation and fertilizer off those areas. And when mowed, clippings should be removed. This will gradually deplete the soil of organic matter and nitrogen and other essential elements, further contributing to dwarf plants. And what grasses can we use to get playability and a linksy appearance? I'm especially fond of *Chrysopogon aciculatus*

and I think *Sporobolus indicus* is another suitable plant to have in these areas. *Paspalum notatum* can be a decent grass too. Otherwise, I would just let whatever grows, grow, mowing as needed. Grazing can be used to produce a suitable rough also, but that is impractical at most facilities.

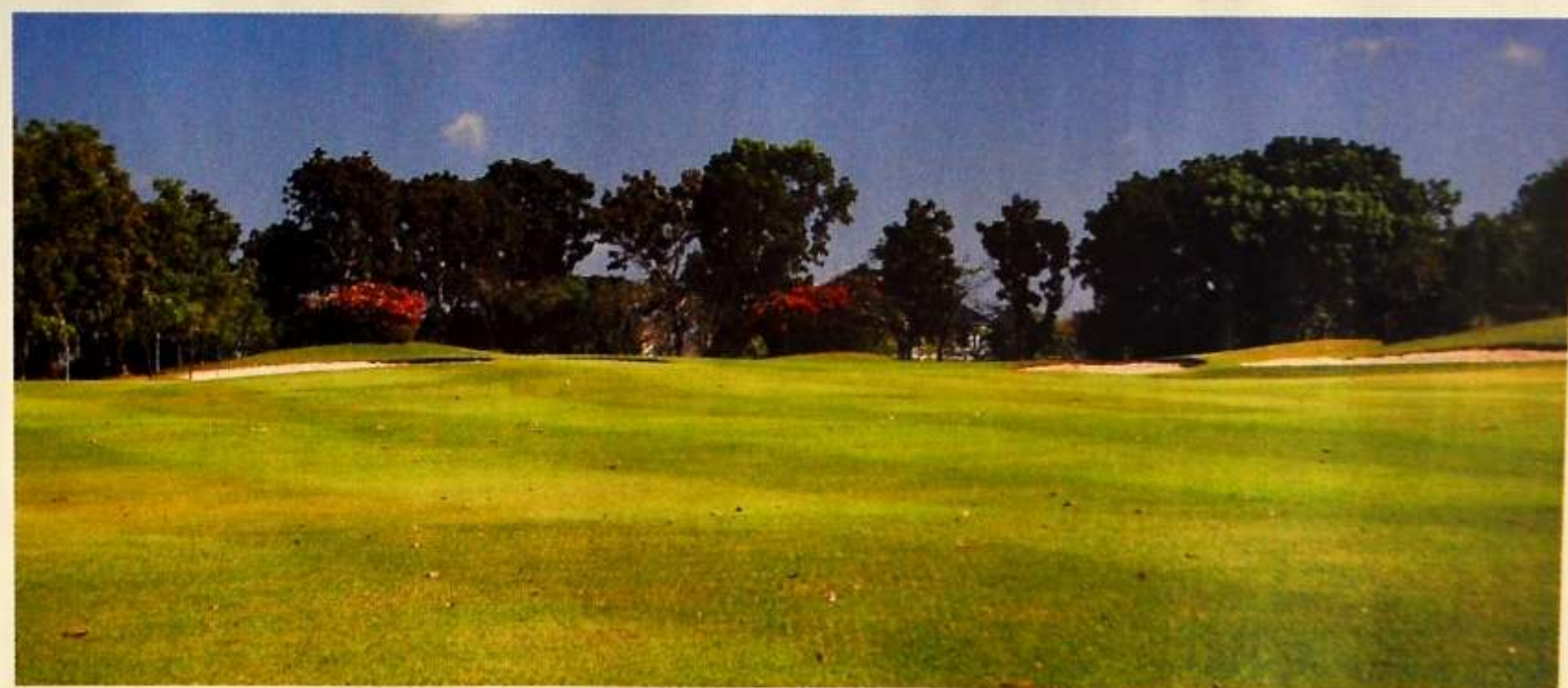
In addition to maintaining a slow growth rate with a grass that will not die, links-style conditions can be enhanced by sand topdressing, and of course good drainage is essential. Rather than focusing on growing grass, as I find many turfgrass managers

are inclined to do, and rightly so if they are trying to keep bermudagrass or seashore paspalum alive, I suggest shifting the focus to producing a certain type of playing surface, and that is of course a lot easier when growing grasses that won't die. **GCA**

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Dollar spot symptoms are severe on a seashore paspalum fairway with a slow growth rate in Hong Kong



Phoenix Golf and Country Club in Thailand was planted to bermudagrass about 20 years ago but that grass has died and has naturally been replaced by this manilagrass



This bermudagrass fairway at Rota Island near Guam shows the weed invasion that occurs when bermudagrass is not maintained at a rapid growth rate in Southeast Asia