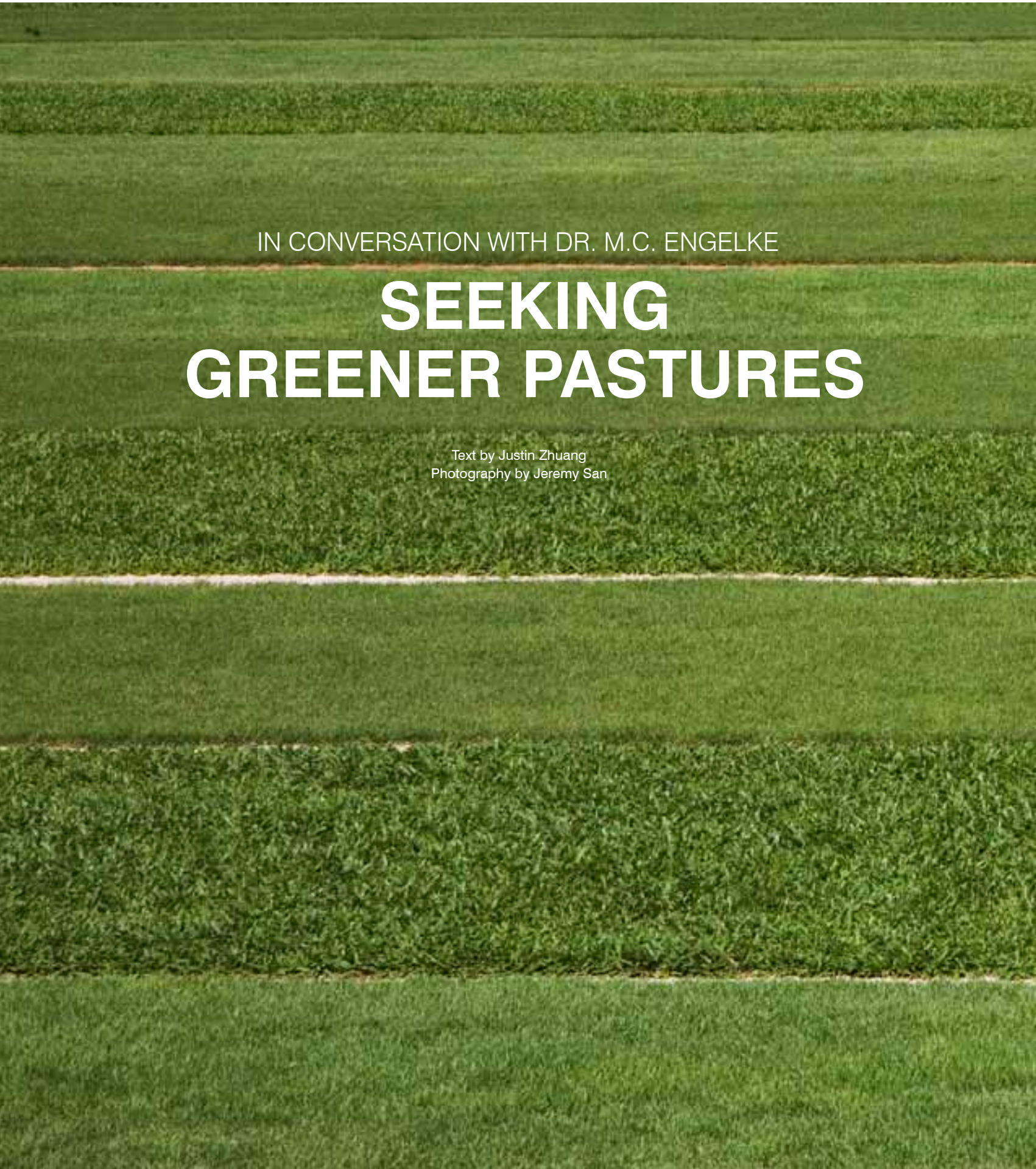
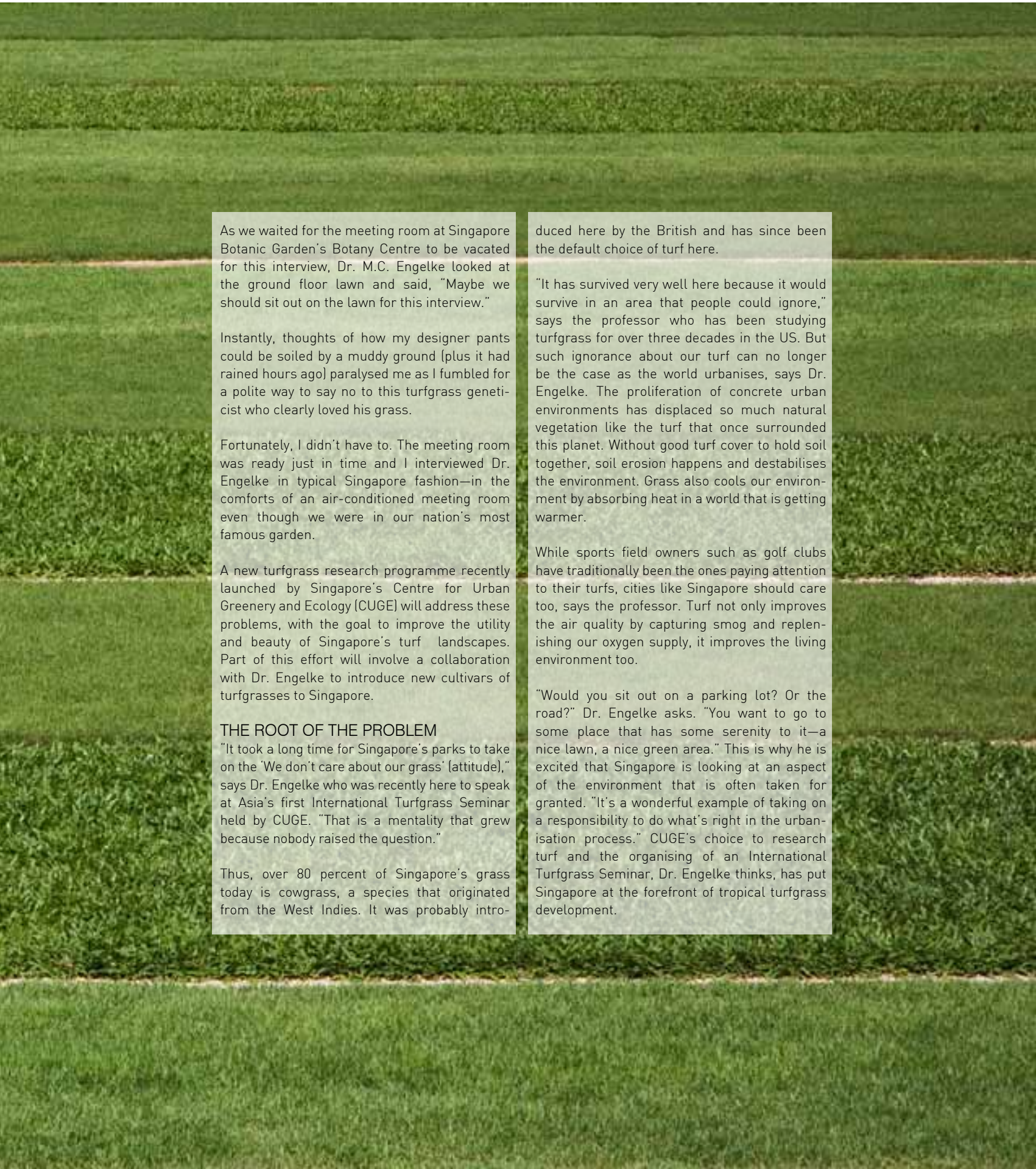


IN CONVERSATION WITH DR. M.C. ENGELKE

SEEKING GREENER PASTURES

Text by Justin Zhuang
Photography by Jeremy San



As we waited for the meeting room at Singapore Botanic Garden's Botany Centre to be vacated for this interview, Dr. M.C. Engelke looked at the ground floor lawn and said, "Maybe we should sit out on the lawn for this interview."

Instantly, thoughts of how my designer pants could be soiled by a muddy ground (plus it had rained hours ago) paralysed me as I fumbled for a polite way to say no to this turfgrass geneticist who clearly loved his grass.

Fortunately, I didn't have to. The meeting room was ready just in time and I interviewed Dr. Engelke in typical Singapore fashion—in the comforts of an air-conditioned meeting room even though we were in our nation's most famous garden.

A new turfgrass research programme recently launched by Singapore's Centre for Urban Greenery and Ecology (CUGE) will address these problems, with the goal to improve the utility and beauty of Singapore's turf landscapes. Part of this effort will involve a collaboration with Dr. Engelke to introduce new cultivars of turfgrasses to Singapore.

THE ROOT OF THE PROBLEM

"It took a long time for Singapore's parks to take on the 'We don't care about our grass' (attitude)," says Dr. Engelke who was recently here to speak at Asia's first International Turfgrass Seminar held by CUGE. "That is a mentality that grew because nobody raised the question."

Thus, over 80 percent of Singapore's grass today is cowgrass, a species that originated from the West Indies. It was probably introduced here by the British and has since been the default choice of turf here.

"It has survived very well here because it would survive in an area that people could ignore," says the professor who has been studying turfgrass for over three decades in the US. But such ignorance about our turf can no longer be the case as the world urbanises, says Dr. Engelke. The proliferation of concrete urban environments has displaced so much natural vegetation like the turf that once surrounded this planet. Without good turf cover to hold soil together, soil erosion happens and destabilises the environment. Grass also cools our environment by absorbing heat in a world that is getting warmer.

While sports field owners such as golf clubs have traditionally been the ones paying attention to their turfs, cities like Singapore should care too, says the professor. Turf not only improves the air quality by capturing smog and replenishing our oxygen supply, it improves the living environment too.

"Would you sit out on a parking lot? Or the road?" Dr. Engelke asks. "You want to go to some place that has some serenity to it—a nice lawn, a nice green area." This is why he is excited that Singapore is looking at an aspect of the environment that is often taken for granted. "It's a wonderful example of taking on a responsibility to do what's right in the urbanisation process." CUGE's choice to research turf and the organising of an International Turfgrass Seminar, Dr. Engelke thinks, has put Singapore at the forefront of tropical turfgrass development.

RETURNING TO OUR ROOTS

Dr. Kenneth Marcum, Senior Turfgrass Scientist, heading up the CUGE turfgrass programme, will be working with a team of scientists from the Texas AgriLife Urban Solutions Center, where Engelke is the Associate Center Director, to introduce new grasses for potential use by NParks. Dr. Marcum's focus will be to develop new management protocols for both existing and potentially new turfgrasses to enhance Singapore's many parks and other public areas.

CUGE has just signed a Memorandum of Understanding with Parks and Leisure Australia, and will soon sign one with Texas A&M University AgriLife Urban Solutions Center. Dr. Engelke sees a great potential for future research collaboration among the three centres, focusing on both turfgrass and landscape issues.

One major issue that CUGE is considering in their turfgrass research program is the choice of turfgrass species here.

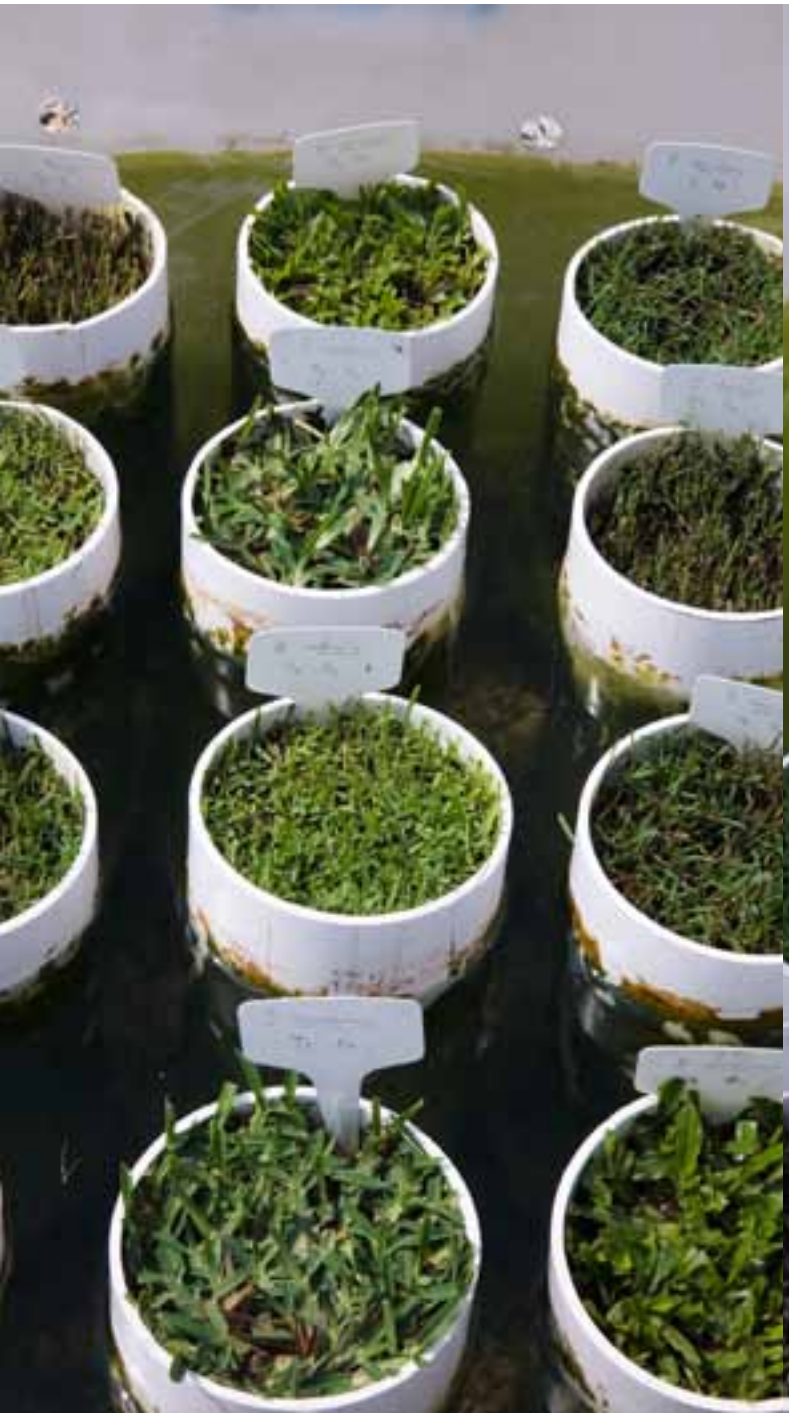
Cowgrass does not hold soil together properly and thus creates uneven surfaces. "We've walked on some parks here and it would be very easy to twist an ankle just walking in your parks," Engelke says.

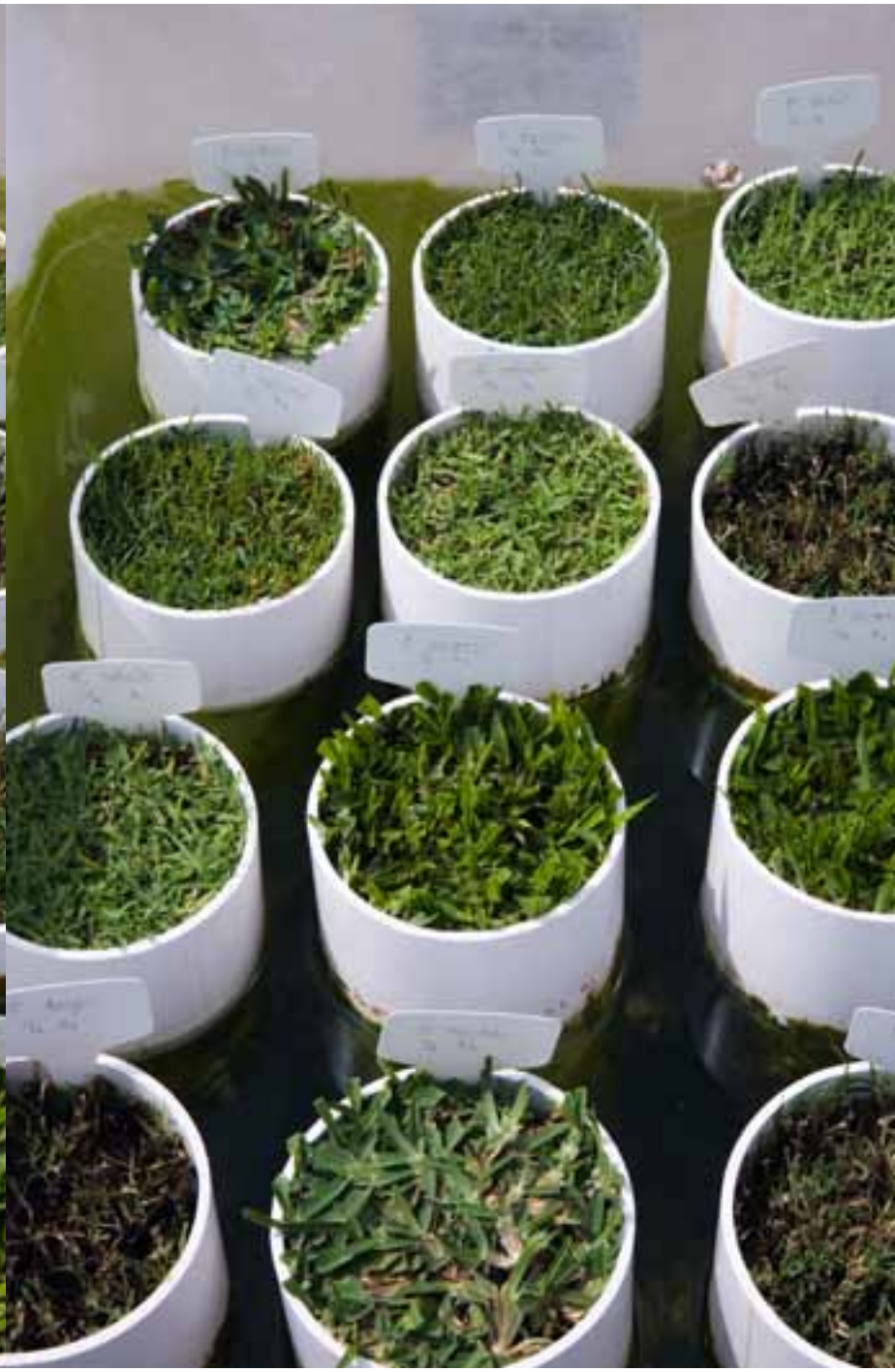
A solution might be to return to our roots and use zoysiagrass instead, a species native to Southeast Asia. Unlike the imported cowgrass, zoysiagrass is more resistant to trampling, says Dr. Engelke, who focuses on this species and has developed new cultivars through genetic modification. A number of these cultivars will be tested in CUGE turf plots to see if they will do will here.

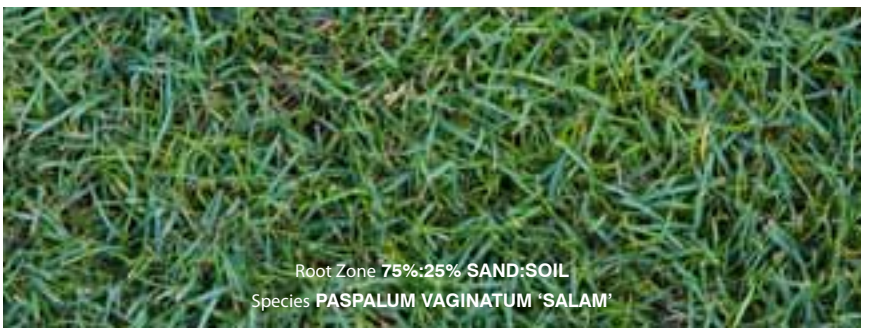
"We are going to need a plant that is going to be able to handle more traffic," he says. "Unlike a hundred million years ago, you've now got 4.7 million people here that want to sit out on that yard." Agreeing with him, Dr. Marcum adds that trampling and associated soil compaction is severe in Singapore, due to the high density of use, coupled with high rainfall and poorly draining soils, often creating muddy patches.

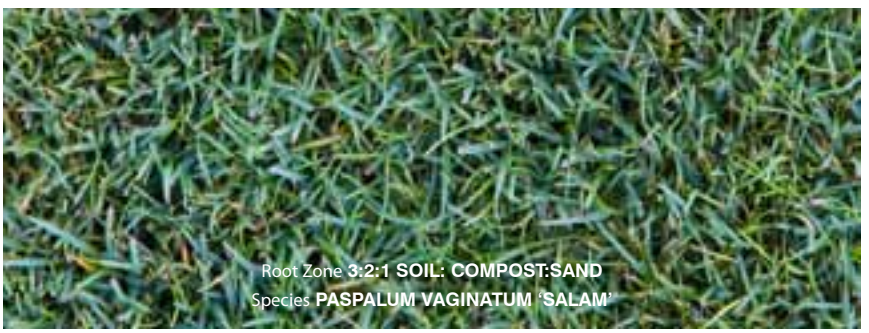
Another reason to go native is that it improves the biodiversity, says Dr. Engelke. Native plants have evolved over the centuries with the environment so they are better suited to grow here. But even so, there are limitations. Thus, genetic modification can be used to give the grass an added advantage with little harm to the environment, says the professor who has created 19 new turf cultivars to date.

ABOVE A number of turfgrass species are being tested or tolerance to wet soils at the Centre for Urban Greenery and Ecology in Singapore.









GRASSROOTS REVOLUTION

Improving the turf is not all about cutting-edge genetics. Turf management matters too. According to Dr. Marcum, not much is known regarding tropical turfgrass management, putting Singapore at a disadvantage relative to temperate regions. One of CUGE's aims is to optimise the management of turf here in a cost-efficient manner. To achieve improved turfgrass quality in our parks may require more management in the form of improved mowing practises, fertilisation, and cultivation. The goal will be to find the minimum, most cost effective levels possible.

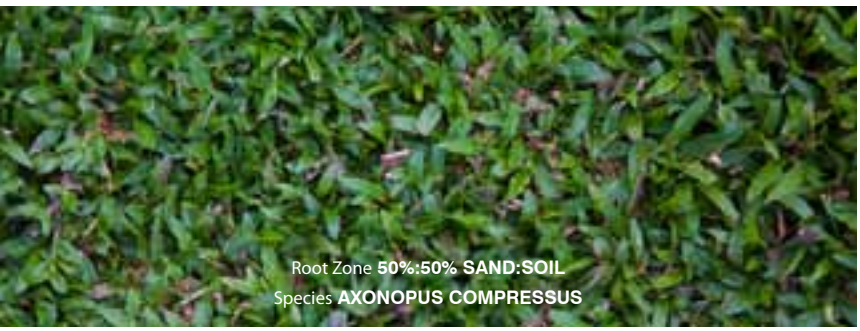
Dr. Engelke thinks that relatively modest changes in management may reap large benefits in turf lawn utility and quality. For instance, holes may be poked into the grounds, a process called tining, which may temporaily reduce compaction while improving drainage, allowing water to penetrate more deeply into the rootzone, which increases root water uptake.

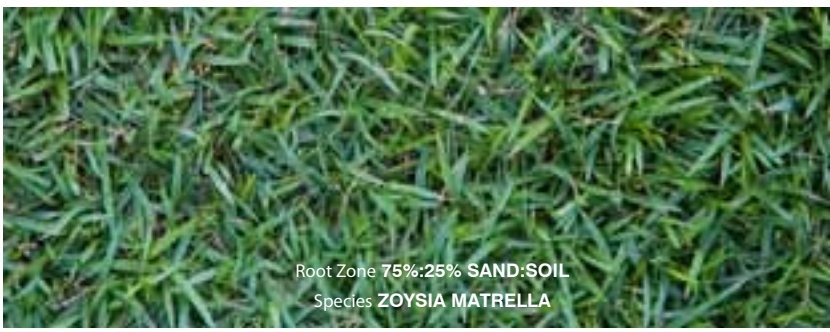
Ultimately, the aim is not for more management but a livelier grassroots, says Dr. Engelke. "Part of what we're trying to do here is to bring some of the newer technology that is going to give us better quality without putting a lot of management in it."

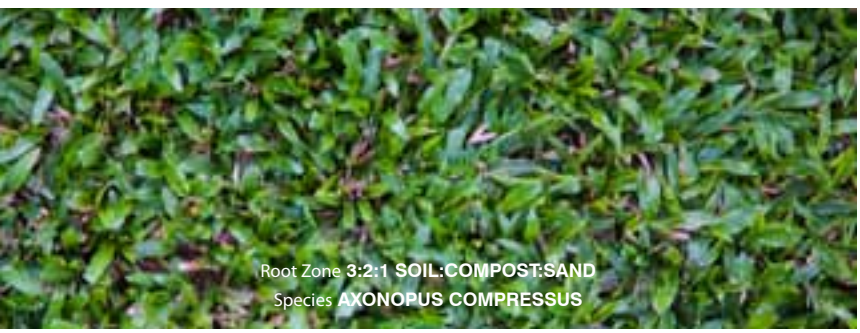
With these measures in place, he is convinced that in time to come, CUGE's research will give Singapore better turfs. Good turf cover helps to cool and clean the environment, but most importantly, it will attract people to come out and play.

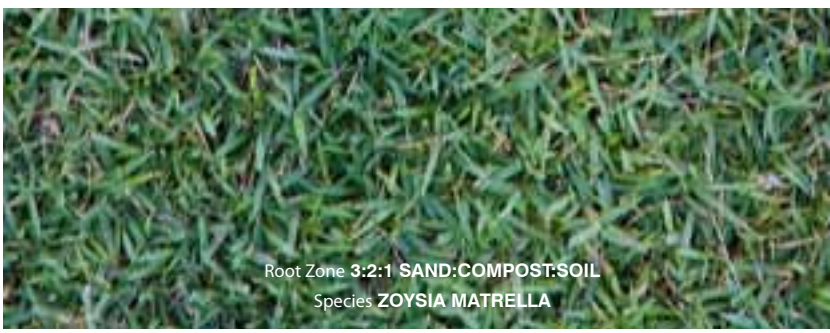
"The goal is smooth and firm turf. If my kids fall down they may say 'Ouch!' but not cut their heads on a rock hidden in the turf or break their leg by falling into a crack," he says.

In a society that is increasingly becoming cooped up in the built environment, such parks and sports fields will become attractive social venues to bring children and families out into the open. And as more and more people utilise park lawns, we will fully appreciate the fact that we live in Singapore, the City in a Garden.









Dr. M.C. Engelke, is a Professor and TAES Faculty Fellow at Texas A&M University, and currently serves as Associate Center Director and Research Coordinator of the Urban Solution Center of the Texas AgriLife Organization. Dr. Engelke holds a Bachelor and Masters of Science (Technical Agriculture & Agronomy) from Wisconsin State University and a Ph.D. from University of Wisconsin-Madison focusing on Plant Breeding and Genetics.