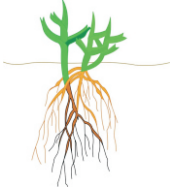


Olympic Golf - Rio 2016

The Olympic golf course will set a new standard for golf worldwide and should also set a new standard for efficiency and Sustainability.



“It will enable Rio to host important events in the international calendar and it will be an example of sustainability and preservation of an environmentally protected area,” said [President of Rio 2016, Carlos Arthur Nuzman](#).

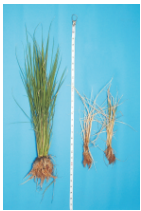
The golf course will be built at the Reserva de Marapendi in Barrada Tijuca, a coastal grassland that is environmentally protected. Additionally, Hanse Golf Design is designing natural dunes into the architecture for retention of the natural contours of the land.

All this brings the stewardship of Sustainable Golf into this project.

Sustainable Golf maintenance is becoming an accepted principle and it is simply driven by the economic values and practices of managing the plant and soil health. Together these two factors will produce the highest quality golf course at the lowest cost, while practicing environmental stewardship.

Water and Soil

The Olympic golf course is facing several major agronomic issues, as the water quality is marginal with high sodium levels and the soil has a very low pH. Both issues can be managed by proven products and practices through fertigation. This will treat the water and the soil together to build and maintain a great golf course.

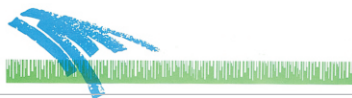


High Sodium Water

Sodium is a unique element since it will become locked into the soil with cation linkage, and it would build up in the soil if the water is not treated, and the soil would then become toxic. The best treatment would be to inject Sodium Blocker into the irrigation which will prevent the sodium from locking in the soil and keep it moving through the soil and away from the plant. This program has been done on many sites with high sodium in the water and soil. See attached Case Study for a City of Cerritos park.

Sodium Blocker

Sodium Blocker is a clear liquid product that will prevent the sodium from becoming locked in the soil. It will also release any sodium in the soil and flush sodium down below the root zone. It is made up of food grade calcium, a very special surfactant and a special enzyme for the plant. We shipped Sodium Blocker to India after the tsunami of 2004 to treat rice fields that were contaminated by sea water. Scientists used the product and tested the results. Please see the attachment.



Soil Health



The next area of importance for the golf course is the soil quality, with the low 5.0 pH level of the soil and a sand based soil. The best treatment would be to build the soil health, which is the promotion of ProBiotic biology in the soil. This is the same way nature builds healthy soils for grass lands, forests or the grasses of a coastal savanna. The soil biology will drive the biological engine in the soil to decompose the plant matter, dead roots or any organic matter and convert it into nutrients and humates for the plant. It will also build the organic content of the soil to improve water and nutrient retention.

Local soils have issues with the low pH and the lack of organics in the soil, but those issues can be corrected by building the soil health, ProBiotic biology in the soil. This can be done again using fertigation and injecting organic products like humic acid, organic composts and other organically extracted products. Many of these are available domestically In Brazil.



A healthy soil with great bio-diversity will create a soil balance that will support the plant well. Examples of this are everywhere and all we need to do is to help nature do its job. Additionally, with healthy plants and soil, the plants will grow better root systems and be more disease and insect resistant. This is a program promoting Sustainable Golf, which will deliver the best quality with the lease cost and labor.

Each issue can be addressed using proven practices and products, and together with fertigation, to lightly treat through the irrigation.

Additionally, the fertigation system will be an important tool to grow-in the golf course in the shortest time, as well as vegetate the difficult contoured sand areas like the dunes.



This will create an outstanding golf course for the Olympic competition in Brazil 2016.

References and data sheets are included with this paper.

Michael Chaplinsky
President - Turf Feeding Systems

