



India's Oxford Golf Club is literally an oasis, surrounded on three sides by dry rocky hills on the outskirts of Pune

Indian Oasis

AGCSATech senior agronomist Bruce Macphee looks back on his recent trip to India which afforded him the chance to visit some of the country's unique golfing establishments.

In April I was fortunate to visit both India and China, attending the 2019 India Golf and Turf Expo as a guest speaker before heading to Shanghai to complete a pre-match inspection of Jiangwan Stadium prior to the Round 11 AFL Premiership clash between St Kilda and Port Adelaide.

The Indian conference was hosted by the Golf Industry Association (GIA) and the Golf Course Superintendents and Managers Association of India (GCS&MAI) who organised the seminar at Tyagraj Stadium, New Delhi from 27-28 April. The AGCSA has had a long held relationship with the GCS&MAI which was forged through the efforts of the late Colonel K.D. Bagga, the association's founding president. This has seen several visits over the years by AGCSA Board members and agronomists to present at the annual conference.

This year's conference included a trade show and two days of lectures from both local and international speakers on a wide range of topics, from turf management through to promotion and increasing participation in the game. It was a great opportunity to meet superintendents and see the challenges faced across the industry are universal.

During my time in India I was also given the opportunity to visit several golf courses including top ranked Oxford Golf Resort and The Poona Golf Club in Pune, about a two-hour drive from Mumbai.

Oxford Golf Club is set in a valley surrounded on three sides by rocky hills with the main access road dropping down into the valley. The view of the course as you reach the top of the pass is breathtaking, with the green, striped fairways providing such a contrast to the surrounding rocky hills which appear dry and desolate.

The Pacific Coast Design-designed 18-hole course is laid out over 6420 metres with seashore paspalum on tees, fairways and greens. The course itself has been open since 2009 with construction starting in 2004. During that time an extensive amount of rock was moved to form what is truly a spectacular course in a unique setting.

The course has not been short of challenges in the past years, with difficult-to-manage microclimates, poor water quality and two distinct seasons of weather. The monsoon season brings prolonged periods of wet weather and low light, while the long dry season sees temperatures regularly in the 40s and deteriorating water quality. Agronomist John Neylan has worked with several clubs in India over the last five years and has assisted greatly in setting up Oxford Golf Club's maintenance programmes and to manage its water quality issues.

Towards the end of the dry season, irrigation water can return pH readings above 8.5 which is strongly alkaline. With the high pH comes high concentrations of carbonates and bicarbonates in the water. Bicarbonate and carbonate ions combine with calcium and magnesium which will precipitate (form a solid) as calcium carbonate (CaCO_3) or magnesium carbonate (MgCO_3) as the soil dries. This can cause a slight cementing of the sand particles which can form in layers within the greens profile.

This process causes a decrease in the concentration of calcium and magnesium and results in an increase in the relative proportion of sodium. The impact of the water quality on the soils will be;

- An increase in soil pH which reduces the availability of important nutrients;
- A change in the soil structure resulting in a harder soil that restricts root growth;
- Increase in soil sodium which causes a nutrient imbalance;
- General nutrient imbalances.

The only means by which the water could be improved in this situation was by introducing acid into the supply. Sulphur burners are becoming the preferred method of acidifying water because there are fewer hazards compared to handling acid directly.

A sulphur burner was set up in 2016 at Oxford Golf Club to treat their irrigation reservoir. The unit pumps in water from the reservoir, acidifies it and then returns it to the reservoir. The unit burns granular sulphur (stored in an attached hopper) to form sulphur dioxide (SO_2). The sulphur dioxide is then mixed with the water stream and ultimately forms sulphuric acid.

The acid lowers the pH of the water, which is then returned to the reservoir improving the pH and quality of the water. Regular monitoring of pH levels within the irrigation reservoir has allowed the staff to programme the duration the sulphur burner is required to operate each day throughout the irrigation season.

TOPDRESSING AND CONSTRUCTION SANDS

Recently AGCSATech has received a large volume of enquiries in relation to sourcing of topdressing and construction sand. After many years, one of the largest sand suppliers to the Melbourne and surrounding areas has ceased production at its Langwarrin quarry.

While there are other options available, before selecting a new supplier there are a number of points to consider;

- It is important to assess the physical characteristics of your current profiles, so a sand can be selected that best matches your existing conditions;



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Since the introduction of the sulphur burner there has been significant improvements in water quality, soil conditions and overall turf quality. Soil pH has stabilised and started to reduce, in some instances from 8.4 to 7.9. It is important to note that the pH scale is logarithmic and that a reduction of one unit is actually a 10-fold reduction.

Oxford course superintendent Sanjay Kulkarni and his three assistants run a highly organised operation with an exceptional level of presentation throughout the course. One of the key points I observed was the meticulous monitoring and record-keeping undertaken. This has provided some solid figures that can be used in support of implementing management programmes and equipment purchases.

There are some great contrasts between maintenance practices undertaken in India and Australia, with the significantly lower wage costs in India meaning manual labour is used where mechanical methods would otherwise be the norm.

The AGCSA looks forward to its ongoing involvement with the GCS&MAI and providing assistance to Indian superintendents. As part of that relationship, the GCS&MAI, together with Rain Bird, has afforded one of their superintendents the opportunity to attend the Brisbane conference. Shraboni Das Arora, from Belvedere Golf and Country Club in Ahmedabad, will be a delegate as well as visit a number of courses during her stay. 🙏