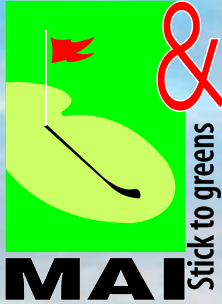


**GCS**

May, 2014



# Stick to Greens

## Attractions

- *GCS&MAI Green Keeping Seminar*
- *Anirban's first overseas win.*
- *Fertilizers for Golf Course: Tough Decision*
- *Playing Golf is a Wonderful Experience.*

**Golf Course Superintendents & Managers Association of India**

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# **GCS&MAI Green Keeping Seminar 2014**

*Kodaikanal Golf Club, Kodaikanal, Tamilnadu  
18-20 Jul 2014*



## **Special Attractions :**

- **Machinery Training Program**
- **Green Keeping Seminar**
- **Golf Products**
- **Golf Tournament**

**For details : [admin@gcsmai.com](mailto:admin@gcsmai.com) +919811503398**



(Picture Courtesy: Asian Tour)

glory was the 20-foot eagle conversion on the par-5 18th hole. The eagle on the closing 18th helped Lahiri come from one stroke behind and overhaul Baek Seuk-hyun's 16-under total.

"I had an awkward lie on 13. During the rain delay I was just thinking that I have to get up and down there. I got a bad break there but I know Lin Wen-tang dropped a shot as well. Unfortunately I got a double bogey there but I am glad I came back strong," said Lahiri.

He added, "My mind was blank when I prepared for the last putt on 18. All I told myself was I had to get it into the hole. When I was walking up to the greens, I was actually thinking if I need to prepare for a playoff tomorrow morning."

"It's really great to get my first win outside of India. I have missed out on it for a long time and I am so glad I managed to do it today. I need the world ranking points so I'm really happy I could win this week," said Lahiri.

Lahiri, currently ranked no. 102 in the Official World Golf Rankings, has a good chance of making his way back into the top-100 once the updated rankings are released on Monday. The Bangalore-based professional had achieved his career-best ranking of 99 last month.

The 26-year-old Anirban had won all three of his previous Asian Tour titles on home turf in India at the Delhi Golf Club. Lahiri's win on Sunday was the 60th international win by an Indian. It was also the second title triumph by an Indian in the 2014 Asian Tour season as Rashid Khan had won the SAIL-SBI Open in March.

Two-time European Tour winner SSP Chowrasia returned a four-under-68 in round four to be the second Indian in the top-5. SSP's final round featured five birdies and a bogey.

Rookie Rashid Khan carded a one-under-71 to occupy ninth place and continue his rich vein of form. Rashid's final round was a mixed bag of five birdies and four bogeys.

Jyoti Randhawa ended up in tied 13th with a total of 11-under-277 and Rahil Gangjee finished tied 22nd at six-under-282.

Arjun Atwal had a tally of two-under-286 and claimed tied 39th place while Sujjan Singh finished 66th at nine-over-297.

Mr. Padamjit Sandhu, Director, PGTI, congratulated Anirban Lahiri on his win, saying, "Hearty congratulations to Anirban for his first Asian Tour win outside India. Anirban's spectacular performances have taken him to the pinnacle of Asian golf and inspired many young Indian players to follow in his footsteps. We wish Anirban all success for the future."

(Content Courtesy : Professional Golf Tour of India)

Golf Course Maintenance is great challenge, very different from maintaining a Landscape or Horticulture or Open Field Cultivation. All basic elements are identical.

Primary Nutrients like *Nitrogen (N)*, *Phosphorous (P)* & *Potash (K)*

Secondary Nutrients like *Magnesium (Mg)* & *Sulphur (S)*

Micro Nutrients like *Zinc (Zn)*, *Copper (Cu)*, *Manganese (Mn)*, *Iron (Fe)*, *Molybdenum (Mo)*, *Boron (B)*

Turf is a typical plant which is cut at low height very frequently & has to stay alive & green.

### Common Issues

1. Co-ordination between User & Purchaser: Choosing the right product is tough task for Green Keepers & Purchase Managers – Little knowledge of Products and Chemistry, Turf requirement and Agronomy & also unfair Price Comparisons make the task more difficult. Most Green Keepers are Golfers with no education in Fundamentals of Agronomy. They largely decide by experience, consulting friends in Golf Industry or depend heavily on uneducated gardeners. Purchasers are not expected to be perfect in each & every product – they can check only commercial aspect & without proper guidance from User, the ultimate result is zero. Many Green Keepers are doing very impressively due to their proximity to Foreign Designers, Passion to spend maximum time personally in Golf Course during agronomical practices, updating with various Green Keeper programmes in India or Overseas, collecting & reading Reference Books & Articles on Turf Maintenance, listening to each serious discussion on Golf Course Maintenance very sincerely & having extensive On Job Experience. These Golf Course Superintendents are Path Guides & *I salute their contribution to Indian Golf Course Industry as whole.*

2. Subsidy Fertilizers: Some fertilizers are available in India at very economical price due to Govt Subsidy like *Urea*, *DAP*, *SSP*, *MOP* & few granular *NPK* combinations like *12:32:16*, *20:20:00*. These are extensively used in open field cultivation. The cost of production is further reduced

due to large production volumes & cheap raw material inputs. The Govt subsidy is provided to help farmers at large & to support food requirement of the country. These products may be suitable for Horticulture but not for Golf Course always due to impurities of *Sodium* & *Chloride* salts in its composition, variable granular size & unsuitable *NPK* ratios. Availability of these products at low cost always puts pressure on pricing of *Specialized NPK Fertilizers* especially meant for Golf Course.

3. Open Field Cultivation Fertilizers: Many imported or Indian Water Soluble *NPK* & Micronutrients, available under Brands have label support for agriculture. Volumes are high & the target market is Open Field Cultivation. To keep the price economic for general farmer & face market competition, these fertilizers are processed at lower grades of purity to make them just pass thru Fertilizer Control Order Specification. These are not fit for use on Turf.

4. Industrial Chemicals, By Products or Urban Wastes : Similarly, many items are available in the market like *Ammonium Sulphate*, *Potassium Sulphate*, *Potassium Nitrate*, *Chelated Iron*, *Gypsum* or *Organic Manures*. Some are Industrial by Products, Intermediate Process Chemicals, Untreated & unhygienic Urban Garbage, Semi processed Polluting Industrial Waste or Commercial grades Chemicals. These are highly acidic or alkaline; contain heavy metals like *Lead*, *Arsenic* or *Cadmium*, plastics or everything or anything on earth. These may contain many unknown impurities which are Hazardous to Man, Machine or Environment and harmful to Soil or Turf. These chemicals are meant for Industry as raw material or reprocessing or refinement but not for Golf Course. Product labels are mostly do not support Agriculture Use or Golf Course applications.

5. Indian Fertilizer Control Order : FCO is meant to regulate fertilizers for Open Field Cultivation with no focus on Turf of Sports Grounds or Golf Course, obviously. Some Specialized Fertilizers are recently introduced but lot of work need to be done. Demand for Specialized Fertilizers for Turf in Golf Courses & Sports field is growing & is mostly met thru Open Field Cultivation inputs. These affect the Turf very adversely, resulting in numerous Problems in Maintenance, Low Performance & frequent Reconstruction.

Fertilizers used in Golf Courses can be divided in following categories  
Soil Conditioners



Gypsum: Mining Origin natural Gypsum properly grinded & packed, backed by *Calcium Sulphate* analysis report. Store in proper godown to avoid rains & lumping formation during storage. Please avoid Industrial by products like *Phospho Gypsum* or Sand without Analysis Report from Rajasthan fields.

Organic Manure : Vegetable origin ( Sugar Cane Press Mud or Cocopeat Fibre or Fruit & Vegetable market garbage, Animal Dung or any other low cost input) fully composted with bio agents for 45 days minimum, finely sieved, grinded & packed with 15% moisture(approx) content. Please avoid City Compost, Okhla Manure, Untreated silt of Leather, Paper, Sugar Mill or any other Industry & uncomposted FYM etc. Vermi Compost is not ideal for Golf Course as it carries earthworm population.

Growing Media: *Cocopeat, Neem Cake, Castor cake, Mustard cake, Perlite, Rice Husk or Bird Droppings*. Pure Form & finely grinded & packed. Proper Analysis Report to ensure quality. Please ensure Termite Control before using any Raw Vegetative origin Growing Media.

NPK Fertilizers



Control or Slow Release NPK Fertilizers: These are ideal for Greens & Tees. These are available in grades suitable for Turf & need Quarterly or biannual application. These are highly efficient; ensure constant and even growth, Better colour of Turf Grass and excellent ground cover, lowest salt index / no scorching, healthier Turf for even nutrition, lowest nitrogen leaching, even in pure sand, better rooting & improved

resistance to wear. These also contain all vital macro and micro elements in the same ratio in each granule. Fine Granules set near root zone & not picked by Lawn Mower at low height cut. Similar Slow Release fertilizers with larger granule size & economically priced may be selected for Fairways or Rough area.

Water Soluble NPK Fertilizers : *19:19:19, 20:20:20, 18:18:18, 20:05:09, 16:08:24, 13:00:45, 00:00:50(SOP) , 13:00:45, 12:61:00, 00:52:34* etc. These contains all three, two or single Nutrient. Grade is selected as per Turf Requirement at the time of application. These can top dressed or sprayed dissolved in water. N fertilizers with Calcium or Sulphur: *Calcium Nitrate* (Both prilled & crystal Forms), *Ammonium Sulphate, Neem or Sulphur Coated Urea, UAN*

Other Fertilizers

Liquid Fertilizers: *Liquid Potash, Liquid Phosphorous, Liquid Nitrogen, Liquid Calcium, Liquid Organic-Mineral Bio Stimulants* etc. These are ready made products to be diluted & sprayed as per Designers' recommendation. These improve root growth, Vitality & protection against and curation of diseases.

Liquid & Granular Growth Promoters: *Humic Acid, Seaweed* and or *Amino Acids* based formulations in Granular form for top dressing or spray have found good response on Turf. Please avoid local products without proper MSDS or Technical Label support. Imported High Research *Kelp* based products with natural origin *Chelated Micro Nutrients* are also available.

Bio fertilizers: *Azotobactor, Micorrhiza, Phosphate Solubilising Bacteria, Rhizobium* etc are available with proper FCO backed specification. Agri educated Green Keepers confidently use & maintain Golf Course organically on reduced cost

Usage of Bio Fertilizer



Secondary & Micro Nutrients : *Elemental Sulphur Powder & Granular, Single Micronutrients or Mixture of Multiples or EDTA salts* in granular/powder form for Top Dressing , Liquid and/or powder Form for foliar application are available containing nutrients in various grades..

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# GCS&MAI Green Keeping



# Seminar 2014 (New Delhi)



Playing Golf is a wonderful experience best understood by the fraternity of players who have enjoyed it for many years. In the past, most of these players would play an 18 hole Course given the choice, and most would try to find the best 18 hole Course in their area that they could afford. Times have changed for these same people who now have less time and a lot less money than before, and as a consequence their views have changed as well regarding the type of Courses they would play. On the other side of the Golf world are the beginning players who seek any Golf Course that is convenient to them in order to pursue their new interest. Like the veteran players, the beginners probably have less time and less money to devote to their new hobby and this defines their view of the type of Courses they would play as well. Interestingly, there may be a convergence of these two polar opposites of the Golf world at the same Golfing facility and the savvy Golf Course owner should be looking to make accommodations for both.

Without question, most Golfers are interested in Golf Courses that are well maintained (specifically the greens), have reasonable green fees, and aren't plagued by slow play. That is a tall order to fill for some Courses, but accomplishing those three goals can help a Golf Course attract the most customers. There are other virtues worth striving for that are needed to make any Golf Course attractive to the beginning Golf, the familiar Golfer, and every type of Golfer in between.

Every Golf Course should be designed to fit in with the site's natural features. This can be the distinguishing feature separating it from other local Courses. Taking this approach could mean the number of holes may be less than 18, or it may allow for 18 holes, but at an overall playing distance much less than what is considered average today. The trend is changing now, there are 6 / 9 / 12 hole executive Golf Courses are pop up all over the world. The Golf Course with fewer holes that fits in well with the land by preserving the natural features may be more attractive than a Course that obliterates the land's natural features while trying to meet the "rule" of 18 holes. What if the land is featureless? This is a delicate subject to discuss because in our experiences land deemed featureless has in fact proven to have many wonderful and subtle features worth preserving and incorporating into the design of the Course. If the land is truly featureless, maybe a distressed site abused by previous development, there may be a strategy worth exploring. If the Golf Course land is within a developing area then let the



bulk earth movers deposit their excess soil and shape and misshape the soil in any way they see fit. At the appropriate time the architect can visit the site and see what kind of Golf Course can be found on the "naturally" manmade site. This approach certainly takes a leap of faith but it could result in an intriguing layout not possible with a more conventional approach.

For the Golfers fewer holes means it takes less time to play, and costs less money to play. These benefits can be attractive to many Golfers. But in many communities the most successful Golf Course will provide Golf holes with a heightened standard of strategy and interest which will be attractive to Golfers of all abilities. Golf holes with interesting natural features, and more importantly, with exciting strategic challenges can make any Golfer forget the number of holes. Fewer holes are not the only feature that may prove attractive to all Golfers. Shorter Courses help the

better player fine tune their short game; shorter Courses can be less intimidating to the beginning player; and, shorter Courses with variety, like a hole or two that can play as a par 3 one time and a par 4 the next time, and holes that captivate and challenge Golfers with intriguing strategic qualities can make a Golf Course the most attractive

alternative in many Golfing communities. For the developers fewer holes means construction and maintenance costs are lower. For communities fewer holes means less demand on local water resources and less of an impact on local natural features.

The position of the Golf Course property within the community is another important matter that deserves a post devoted to it. But, it is important to leave this post with the declaration that any Golf Course would do well to be integrated within the boundaries of a community, within walking distance of many of its residence so that it can be regarded as an indispensable feature within the community. Less important are the number of holes and the length of the Course; more important is a Golf Course that locals support and in a sense take "ownership" of the Course as a source of pride and source of indispensable joy in their lives.

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# Green Keepers Conversion Table

to Convert	Into	Multiply by	to Convert	Into	Multiply by
<b>A</b>					
Ampere-hours.....	Faradays .....	0.03731	Gallons (US) .....	gallons (Imp) .....	0.83267
Are.....	acre (US) .....	0.02741	Gallons of water.....	pounds of water .....	8.3453
Ares.....	sq yds.....	119.60	Gallons/min .....	cu ft/sec .....	2.228x10-3
Ares.....	acres.....	0.2471	Gallons/min .....	liters/sec .....	0.06308
Ares.....	sq meters.....	100	Gallons/min .....	cu ft/hr .....	8.0208
Atmospheres.....	ft. of water (at 4C)....	33.90	Gallons (US)/min.....	cu m/hr .....	4.4025
Atmospheres.....	in. of mercury (atC)....	29.92	Grams .....	ounces(avdp) .....	0.03527
Atmospheres.....	kgs/sq meter.....	10.332	Grams .....	pounds .....	2.205x10-3
Atmospheres.....	pounds sq in.....	14.696	Grams/cu meter .....	grains/cu ft .....	0.437
<b>B</b>					
Bags (sacks-cement)	pounds -cements.....	94	Grams/cm .....	pounds/inch .....	5.6x10-3
Bags (British).....	bushels.....	3	Grams/sq m .....	ounces/sq yd .....	0.02949021
Barrels (cements).....	pounds - cement .....	396	Grams/sq in .....	pounds/sq ft .....	2.0481
Barrels (USLiquid)....	gallons .....	31.5	<b>H</b>		
Barrels (oil).....	gallons (oil) .....	42.0	Hand.....	in .....	4
BTU.....	foot-lbs .....	778.6	Hand.....	cm .....	10.16
BTU.....	gram -calories .....	252.0	Hectares.....	acres .....	2.47
BTU/hr .....	foot-pounds /sec.....	0.2162	Hectares.....	sq feet .....	1.076x105
Bushels .....	cu ft .....	1.2445	Horsepower.....	Kg-calories / min .....	10.68
Bushels .....	cu in .....	2,150.4	Horsepower.....	Kilowatts .....	0.7457
<b>C</b>					
Calories Int'l steam table..	joules .....	4.1868	Horsepower.....	watts .....	745.7
Candle/sq cm.....	lamberts .....	3.142	Hundredweights(long)....	pounds .....	112
Carat (precious stones)....	mg .....	200	Hundredweights(long)....	tons (long) .....	0.05
Centigrade .....	fahrenheit .....	(Cox9/5)+32	Hundredweights(short)....	pounds .....	100
Centimeters.....	inches .....	0.3937	Hundredweights(short)....	tons (metric) .....	0.0453592
Centimeters.....	kilometers .....	10-5	<b>I</b>		
Centimeters.....	meters .....	0.01	Inches.....	centimeters .....	2.540
Centimeters.....	miles .....	6.214x10-6	Inches.....	meters .....	2.540x10-2
Centimeters of mercury...	millimeters .....	10	Inches.....	miles .....	1.578x10-5
Centimeters of mercury...	atmospheres. ....	0.01316	Inches.....	millimeters .....	25.40
Centimeters of mercury...	pounds/sq in .....	0.1934	Inches.....	miles .....	1,000]
Centimeters sec.....	feet/min .....	1.1969	Inches.....	yards .....	2.778x10-2
Centimeters sec.....	knots .....	0.1943	Inches.....	atmospheres .....	0.03342
Centimeters sec.....	meters/min .....	0.6	<b>J</b>		
Centimeters sec.....	miles/hr .....	0.02237	Joules.....	btu .....	2,150.4
Centimeters sec.....	miles /min .....	3.728x10-4	Joules.....	ergs .....	9.480x10-4
Centimeters /sec/sec.....	feet/sec/sec .....	0.03281	Joules.....	foot-pounds .....	0.7376
Centimeters /sec/sec.....	kms/hr/sec .....	0.036	<b>K</b>		
Cubic meters.....	cu feet .....	35.31	Kilograms.....	grams .....	1000
Cubic meters .....	cu inches .....	61.023	Kilograms.....	pounds .....	2.205
Cubic meters .....	cu yards .....	1.308	Kilograms.....	tons (long) .....	9.842x10-4
Cubic yards .....	cu feet .....	27.0	Kilograms.....	tone (short).....	1.102x10-3
Cubic yards .....	cu inches .....	46.656	Kilograms/cu meter.....	pounds/cu ft .....	0.06243
Cubic yards .....	cu meters .....	0.7646	Kilograms / sq cm.....	pounds/sq in .....	14.22
<b>D</b>					
Days .....	seconds .....	86.400	Kilograms/sq meter.....	pounds/sq in .....	1.422x10-3
Decimeters .....	meters .....	0.1	Kilograms meters.....	foot-pounds .....	7.233
Degrees (angle) .....	seconds .....	3,600	Knots.....	feet/hr .....	6.080
Degrees/ sec .....	revolutions/min .....	0.1667	Knots.....	kilometers/hr .....	1.8532
Dynes /sq cm .....	inch of water at 4o C	4.015x10-4	Knots.....	nautical miles/hr .....	1.0
Dynes .....	joules/cm .....	10-7	Knots.....	statute miles/hr .....	1.151
<b>F</b>					
Furlongs .....	miles (US) .....	0.125	Knots.....	feet/sec .....	1.689
Furlongs .....	road or poles .....	40	<b>L</b>		
Furlongs .....	feet .....	660	League.....	miles (approx) .....	3.0
<b>G</b>					
Gallons .....	cu cms .....	3,785	Light year.....	miles .....	5.9x1012
Gallons .....	cu feet .....	0.1337	Liters.....	cu feet .....	0.03531
Gallons .....	cu inches .....	231	Liters.....	gallons (US liq) .....	0.2642
Gallons .....	cu meters .....	3.785x10-3	Meters.....	feet .....	3.281
Gallons .....	cu yards .....	4.951x10-3	Meters .....	yards .....	1.094
Gallons US liquid)....	liters .....	3.785	Meters .....	feet .....	6,080.27
Gallons (Imp) .....	liters .....	4.546	Miels (naut).....	yards .....	2.027
			Miels (naut).....	kilometers.....	1.609
			Miels (statute).....	meters .....	1,609
			Miels (statute).....	yards .....	1,760
			Miles/hr .....	cms/sec .....	44.70
			Miles/hr.....	feet/min .....	88

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