

Handout with supplemental information for Malaysia International Golf Symposium 2013

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Nutrient Requirements for Golf Courses in Asia

These presentation slides are available for download at http://www.files.asianturfgrass.com/20131022_malaysia_nutrient.pdf.

Turfgrass nutrient requirements are not difficult to estimate, because we can estimate what is in the leaves, and we can estimate how much the grass is growing. The presentation covers these general points:

1. Nitrogen controls the growth rate and nutrient uptake.
2. If there is enough of an element in the soil, none of that element is required as fertilizer.
3. Without doing any soil testing, one can apply nutrients in an amount equivalent to what the grass uses. This will usually result in the application of more fertilizer than is required, and will result in higher fertilizer costs.
4. A better approach is to test the soil, and apply only enough of the necessary elements to keep the soil at or above the minimum levels for sustainable nutrition (MLSN) guidelines.

For additional information, example calculations, and links to articles mentioned in the presentation, see:

- http://www.files.asianturfgrass.com/20130311_woods_handout_nutrient_requirements_tropical_turfgrass.pdf.
- http://www.files.asianturfgrass.com/20130313_woods_handout_fertilizer_choice.pdf
- The article by Kussow et al. on nitrogen controlling nutrient demand: <http://www.hindawi.com/isrn/agronomy/2012/359284/>.

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- The article by Zontek et al. from the *Green Section Record* entitled **Does the Grass Know the Cost?**: <http://gsr.lib.msu.edu/2010s/2010/100532.pdf>.
- The MLSN guidelines http://www.paceturf.org/journal/minimum_level_for_sustainable_nutrition and the MLSN guidelines page on Facebook <https://www.facebook.com/mlsnturf>.
- A YouTube video with Dr. Larry Stowell and I discussing the MLSN guideline for calcium: <http://www.youtube.com/watch?v=YiKTdobQjKU>.
- The Global Soil Survey (GSS) is a new citizen science project designed to validate and improve soil nutrient guidelines for turfgrass. Full details are here http://www.paceturf.org/journal/global_soil_survey and this is the GSS Facebook page: <https://www.facebook.com/globalsoilsurvey>.

Selection of Grass

In this presentation, the attributes, adaptation, and performance of various grasses were discussed. The presentation slides are available for download at http://www.files.asianturfgrass.com/20131022_malaysia_grass_selection.pdf. Links to websites and reports in the presentation are listed below.

- An explanation of the climate charts and the influence of weather on grass in Southeast Asia: <http://www.asianturfseminar.com/woods-weather-handout.pdf>.
- The climate charts website: <http://climate.asianturfgrass.com/node/3>.
- Three videos showing and explaining the Greenstester and the Holing Out Test: <http://www.youtube.com/watch?v=giB1KzEnVMk>, <http://www.youtube.com/watch?v=HxgDXsBtIU8>, and <http://www.flickr.com/photos/asianturfgrass/9613580638/>.
- This report contains a preliminary report on the green speed (and a lot of other performance data) of different grass species used on putting greens, as measured in a number of countries: http://www.files.asianturfgrass.com/20120802_data_report.pdf.

Additional Turfgrass Information

For more about turfgrass selection and management in Asia, see these links:

- Many articles on a range of turfgrass topics available for download: <http://www.asianturfgrass.com/turf-information.html>
- Viridescent, the Asian Turfgrass Center blog: <http://www.blog.asianturfgrass.com/>
- Photos, links, and lots of turfgrass info: <https://twitter.com/asianturfgrass>