Turf grass Recommendation

Good turfgrass management is essential for the growth of a healthy lawn. Diagnosing turfgrass problems is the first step in turfgrass management. The most common turfgrass problems are soil compaction, poor soil conditions (soil texture, pH, organic matter), nutrient deficiency, water stress or over-watering, and pest problems. In order to diagnose these problems, professional assessments of plant growth, soil and weather conditions should be carried out routinely. A good management program considers and integrates various aspects, including proper irrigation, proper pesticide and fertilizer application and proper use of other cultural practices (mowing, aeration, top-dressing). In this guide, we outline the most common turfgrass problems and explain why a tailor-made recommendation can assist the maintenance of commercial lawn and golf course.

Common Turfgrass Problems

✧ **Compaction**

Compaction is common in lawn and golf course. A compacted soil layer of ¼ to ½ inch can impede water and nutrient penetration, and gaseous exchange between the soil and the atmosphere. Mechanical aeration using proper aerating machines produces pores which allow gaseous exchange and water / nutrient penetration. Aeration should be done in spring and fall. For areas subjected to heavy traffic, more frequent aeration may be needed.

✧ **Soil Conditions**

Soil conditions involve several factors, type of soil (loam, clay, sand), amount of soil organic matter, soil pH, etc. These factors either affect plant growth directly or indirectly by affecting nutrient availability and water holding capacity. A complete soil test can evaluate these factors. Based on the result of the soil test, we can provide a better recommendation on the amount and frequency of fertilizer application and irrigation, and whether new grass species should be introduced to the established lawn.

✧ **Soil Nutrients**

While deficient nutrients can lead to poor plant growth, improper application of nutrients is equally detrimental. For example, excessive application of N fertilizer can result in excessive growth, thus requiring more mowing and maintenance. It also increases shoot to root ratio, which is unfavorable under dry conditions. Application of large amount of concentrated fertilizers can also burn the lawn, resulting in poor aesthetic appearance. In addition, excess N can leak out from the soil layer, causing environmental pollution. Other nutrients, phosphorus, potassium, iron and magnesium are also essential for plant growth. Chemical analysis of the soil samples can provide useful information about the nutrient profile, and avoid all the guesswork in fertilizer application.

✧ **Irrigation**

A proper irrigation program can avoid the problem of water stress or over-watering. Water stress can inhibit plant growth and affect nutrient availability. Light and frequent watering encourages shallow root systems and weak plants, making them less tolerant to dry conditions and more susceptible to diseases and weeds. On the other hand, over-watering creates water logging condition, causing nutrient run-off and poor root and plant growth. A good irrigation program should consider all these factors: the grass species (whether they are drought resistant), soil type and local weather conditions (temperature, rainfall, sunshine, wind).

✧ **Insect/Disease/Weed**

Weak and thin turfgrass are more susceptible to insect and disease attack and weed problems. These problems can be alleviated by a good management program which encourages the growth of healthy and thick lawn. Occasionally, applications of chemical insecticides, fungicides and herbicides may be needed. There are many groups of pesticides, with different modes of activity and biological spectrum. Careful selection of pesticides and proper timing of application can reduce the chance of chemical resistance, improve efficacy of these chemicals and reduce environmental pollution. Our professional team can perform field visits and collection of plant samples to diagnose the insect, disease and weed problems. We can then recommend the proper chemical control and in some cases, cultural control for these problems.

Turfgrass management is not a simple task. As outlined above, many factors interact with each other to affect plant growth and the aesthetic appearance of a commercial lawn. Our professional analyses can help you to identify the problems, whereas our recommendation provides guidance and resources (pesticides, fertilizers, machinery) to solve the specific problems. Our ultimate goal is to assist our customers to establish a more efficient and effective turfgrass management program by providing professional and high quality services and products.

Soil Testing

Soil is the source of plant life. It provides nutrients, water for plant. Soil condition directly affects the growth of plants. However, the soil condition and the combination of substances are very different. To find out the problem during plants growing, understanding the soil condition is very important.

The information of soil structure and soil type can be obtained by site visit and observation. Most of the agronomist will find out that information before planting. They also base on the soil condition and the type of plant to modify the soil. Some time later, soil condition will slowly change due to the nutrients absorption from plant, washing out by water and climate change. Most of the changes are so small that cannot be recognized by surface observation. Chemical analysis is very useful tool to find out the composition of the soil.

In chemical analysis of soil, find out a complete composition of soil is not practical. Only certain parameters in soil testing are essential for plant growing. Basically, the analysis items are related to the plant nutrients. They are:

- **Marco nutrient**
  - Nitrogen
  - Phosphorus
  - Potassium

- **Micro nutrient**
  - Calcium
  - Magnesium
  - Sulfur

- **Trace element**
  - Boron
  - Zinc
  - Manganese
  - Iron
  - Molybdenum
  - Copper

- **Soil pH**

- **Organic matter**

草坪管理建議

健康草坪是需要良好的草坪維護管理, 分析了解草坪的問題是良好管理的第一步. 一般草坪常見的問題多數是土壤結塊, 貧瘠 (土質, 酸鹼度, 有機物) 養份不足, 乾燥或過度澆灌, 蟲害, 病害及雜草問題. 認清這些問題. 應該定期對植物生長土壤及天氣情況進行專業的評估, 收集各方面的資料制定一套良好的維護管理計劃. 結合適當的灌溉, 施用合適的農藥和肥料, 及做好種植的工作(修剪, 透氣, top-dressing). 在這, 我們會介紹草坪的一般問題, 解釋度身訂制的建議, 能協助草坪的保養.

一般草坪常見的問題

土壤結塊

土壤結塊在高爾夫球場上是非常普遍的現狀. 1/4 至 1/2 吋的結實泥土能妨礙養料和水份的滲透, 和泥土與大氣間的空氣交換, 利用合適的器材打孔, 進行機械性疏氣法, 改善滲透及疏氣的問題. 可在春季和秋季進行打孔疏氣. 如該草坪的人流比較多, 打孔疏氣的工作便需加密進行.

泥土狀態

泥土的狀態主要有幾個因素: 土質(沃土, 黏土, 沙質土)有機物含量, 酸鹼值. 這些因素能改變可利用的水份和養料而直接或間接地影響植物的生長. 一次完整的土壤測試能評估泥土的狀態. 依據測試結果我們便會建議用戶施肥灌溉頻率或使用新草種等.

泥土養份

泥土養份是植物賴以生長的主要來源, 但不正確的施肥方法同樣地會傷害植物. 例如過多氮肥會令植物過度成長, 這樣便需要更多的修剪和保養工作, 而且植物的葉根比例會因此而提高, 令植物難以忍受乾旱的環境, 過度施肥會損害植物影響植物外觀. 而從泥土流走的多餘氮肥更會污染環境. 除氮元素外, 其他磷,鉀,鐵,鎂等元素也是植物生長的重要元素. 要避免錯誤估計及正確的施肥份量. 土壤分析的結果對種植專家建議的施肥計劃是很重要的.

灌溉

適當的淋灑可避免泥土乾旱或水份過多的問題. 缺水的泥土令植物難以吸收養份. 影響生長. 而頻密的淋灑, 植物的根部生長集中在泥土表面. 令植物變得柔弱及難以抵受乾旱的條件更會引發病害及雜草叢生, 另一方面, 過度淋灑會造成沖斷植物和養份流失的情況. 直接影響植物生長. 良好的灌溉計劃應考慮多個因素. 如草種(是否耐旱), 土質及當地天氣情況(溫度, 雨量, 日照時間, 風力).

蟲害.病害.雜草

幼弱的草坪是最容易引起昆蟲.疾病和雜草的問題. 好的保養方案能培養健康強壯的草坪. 要緩和這些問題. 定期地使用殺蟲劑殺菌劑和除草劑是有需要的. 現時有很多不同種類的農藥. 適當正確的施用. 能減低抗藥性. 改善農藥功效. 減少環境污染. 專業的種植學家能實地視察.收集樣本. 分析蟲害 病害及雜草問題並建議最有效的方法對付這些問題.

草坪管理並非一件簡單的工作. 多個因素都是互相關連. 影響植物的生長. 歷佳化工有限公司的專業團隊能協助客戶認清問題所在. 設計合適的方案解決具體問題.

土壤分析

泥土是植物生命之源. 它為植物提供養料, 水份. 土壤的狀況直接影響植物的生長, 但泥土的結構及組合成份差別很大. 對土壤有更深入的了解, 便可從中分析, 了解植物生長時所面對的問題.

泥土的結構, 可從表面觀察得知土質類別, 大多數種植者都會在種植前了解土質. 並會因應泥土情況進行適當的改善. 隨著時間變遷, 土壤會因為植物的吸收養份, 雨水沖刷, 氣候環境轉變, 泥土的成份結構便會慢慢失去平衡而改變, 往往這些改變都是非常細微, 單憑表面觀察是無法清楚了解. 化學分析是一個非常有效的方法認清泥土的狀況.

進行泥土的化學分析, 把所有成份都測出是不切實際的. 針對不同品種的植物對土壤裏的養份要求, 我們建議以土壤養份為主要的分析項目,其中包括:

- ✧ 主要養份元素
  - 氮
  - 磷
  - 鉀
- ✧ 副養份元素
  - 鈣
  - 鎂
  - 硫
- ✧ 微量養份元素
  - 硼
  - 鋅
  - 錳
  - 鐵
  - 鉬
  - 銅
- ✧ 泥土酸鹼值
- ✧ 有機物