

August 08, 2007

## Humates in Turfgrass Management

Do you want to improve your soil water retention capacity? Are you having problems with limited nutrient availability in sandy soils?

Professional turf grass is often grown on sand-based profiles. While this provides good physical characteristics in terms of water movement, these root-zones are missing many essential components of fertility required to support healthy turf grass growth, including carbon and active microbe populations. Carbon is the basic element for all life forms, including soil microbes. Soil microbes have an essential role to play in turf grass root-zones that includes; breaking down residual organic matter (thatch) into humus; supplying proteins, vitamins, and growth regulators; holding onto, making available and delivering nutrients to the turf grass; restricting pathogenic fungi proliferation; deactivating toxins; and improving soil structure. Without carbon and therefore soil microbial activity, a significantly greater amount of inputs (therefore costs) are required to maintain quality turf grass.

### Humic acid affect on N uptake in bermuda grass

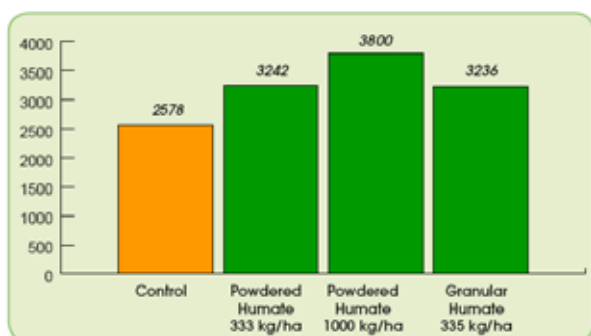


Figure 5. Nitrogen uptake of bermuda grass in response to application of varying rates of powdered and granular humic acid (J.B Sartain).

These essentially missing components of fertility can be added to an infertile turf grass root-zone through the regular application of high quality humates, without affecting the

desirable physical characteristics (water movement) that a sand profile provides.

## What are Humates

They are highly biodegraded and compressed remains of ancient plant and animal materials. Simply put, they are highly decomposed organic materials that have fossilized over a period of millions of years.

### Humic acid affect on bermuda grass biomass (kg/ha)

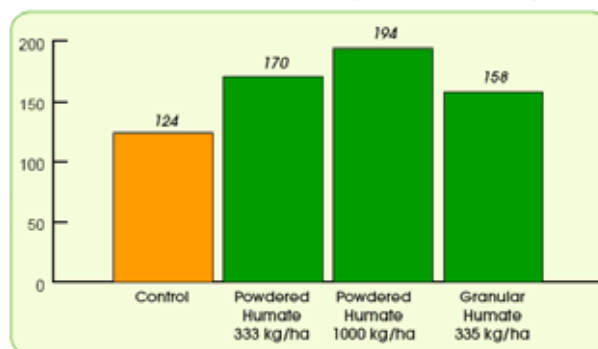


Figure 4. Response of bermuda grass yield to application of varying rates of powdered and granular humic acid (J.B Sartain).

## How do they work?

- Humates provide an available long chain carbon material to the soil root-zone. This carbon matrix thus promotes enhanced soil microbial activity for both indigenous bacteria and fungi (of the beneficial kind) and those added to the soil.
- They provide a full spectrum of organic acids that are essential to plant development. Specifically these include **Humic** and **Fulvic** acids. These act as organic complexing agents that enhance the uptake and utilisation of vital plant nutrients contained in both organic and conventional fertilisers. Due to humic acid's both positive **and** negative charge, these organic acids increase the Cation as well as Anion exchange capacity (CEA & AEC) of the soil, which enhances the ability of the root-zone to hold onto essential nutrients for turf grass to access.



## What do they do?

Used in conjunction with a balanced fertility program quality humates will:

- Enhance the overall performance of the fertilisers to a point that an actual reduction of basic N-P-K rates may be appropriate over time.
- Stimulate the development of soil microbe populations.
- Improve the success of seed germination and overall turf development.
- Assist plant resistance to stress factors, and promote general health of turf.

## How to determine the best source of humates to use

Years of university and field research has found the best sources of granular humates are those that are mined from fresh water deposits. These geological materials are composed of a sand matrix, contain fresh water diatoms, and have a salt content of less than 0.5%. They also have a very consistent level of humic acids.

Figure 2 below shows that humic acid is successful at increasing phosphorus availability to turf growing in sand

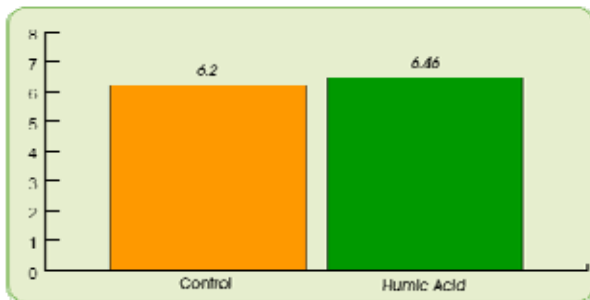


Figure 3. Phosphorus availability concentration in sand with and without humic acid after application. (Comparative Humic Substances and creating landscape growth 1999)

## How much to use and when

A general rate is 5 to 10 kg per 100m<sup>2</sup> per application. Depending on the area being treated, the soil analysis, the level of fertility used in conjunction with the humate, and the frequency of application will determine the exact rate to apply. The higher rate can occur in conjunction with coring at renovation, with the lower rate being applied to the surface during normal maintenance. At least 4 applications per year at 5 to 10 kg per 100m<sup>2</sup> are required to build fertility in high sand content profiles. As a general rule of thumb, a target of 2% Organic Matter as humus is sought for turf grass profiles.

Humate is available in either a highly concentrated granular form, Agrolig, or liquid form, Supa Humus.



Let agrichem help to improve your turf performance

## Turf Grower Testimony

Paul Spencer (turf grass agronomist for Greenway Solutions) reports turf managers consistently using either Agrolig or Supa Humus, have discovered:

“More stable and predictable turf grass growth”

“A lower requirement for inputs such as fertilisers, wetting agents, and even fungicides”

“A lower water requirement”

“An overall increase in plant health and ability to handle stress”

## Agrichem Humic Products



**SUPA HUMUS**

12% liquid humic acid

**Agrolig**  
75% Organic Matter in dry slow release angular granules



**agrichem**

