greenmarket SOLUTIONS

GMS SOIL OPTIMIZER

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GMS Soil Optimizer

Benefits

GMS Soil Optimizer converts high clay content soils into a more useable form. The application of Soil Optimizer:

- Improves soil water drainage.
- Improves soil aeration.
- Improves open soil to hinder associated fungal/bacteria problem by preventing water retention in holes.

GMS Soil Optimizer has been laboratory-tested and is environmentally-safe to soil and groundwater.

Uses of GMS Soil Stabilizer

Treatment of soils for:

- Bioswales
- Phytoremediation Project Sites
- Healthy Lawns
- Greenspaces
- Tree Plantings
- Golf Courses
- Eco-roof
- Groundwater Mitigation in New Construction

GMS Soil Optimizer Process

The GreenMarket Solutions (GMS) Soil Conditioning Process utilizes GMS Soil Optimizer, GMS' proprietary product. The application of the product converts heavy, or high clay content soils into a more useable form.

What the GMS Soil Optimizer Does

The process breaks up clay and compacted soils by affecting the clay particles in the soil so that they can aggregate and behave more like normal soil particles. It is a safe, convenient, and effective way to obtain more useable soil and provides better utilization of existing soil nutrients. The variety of uses includes but is not limited to:

Improved Soil Drainage – Heavy and clay soils with poor drainage characteristics can be vastly improved with the process treatment. In hot climates, soils will not have a tendency to crust or bake over, and in saturated, boggy areas, the resulting improved drainage will increase the potential and viability of the land.

Healthy Lawns – A frequent abuse of lawn maintenance is over-watering, which results in soggy surfaces and poor drainage. This can support the growth of moss and disease. The soil conditioning process increases drainage potential dramatically, which leads to the absence of surface water, killing moss and reducing the chance of disease. In warmer climates, it reduces the tendency of the surface to harden or bake over, thereby enabling water to penetrate.

Tree Planting – The process enables trees and plants to establish root systems more rapidly than untreated soil, thereby increasing survival rates.

Golf Courses – Surface water problems are reduced with the process, as it enables improved drainage for extended periods.

WINDMASTER CORNER HOOD RIVER, OR
Septic Remediation and Restoration

At Windmaster Corner, GMS Soil Optimizer was applied to a drainfield to convert the dense clay soil and hardpan to a loamy, draining soil.

The Way GMS Soil Optimizer Works

Clays and clay soils are characterized by the ability to attract and bind water molecules and other elements to the surface of the platelet. However, this results in a number of undesirable conditions:

- Slipperiness occurs as the clay takes on the physical characteristic of plasticity due to the bound water acting as a lubricant between the platelets.
- Clays, being soft, easily compress as the bound water lowers the bulk density of the soil. This is due to the water having a lower specific gravity and taking up volume that could otherwise be occupied by heavier soil particles.
- Many elements and molecules, including fertilizer components like NH4, K+, Ca++ and Mg++ are readily bound to the clay platelet. This makes them unavailable to plants. The molecules are held to the platelet by forces weaker than forces associated with ionization.
- Untreated soils containing large amounts of humus and organic matter that is not properly digested or reduced can produce an environment that encourages disease and organisms that can attack even healthy plants.

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The process involves the application of the GMS Soil Optimizer product by trained staff via injection, boom sprays, irrigation equipment, sprinklers, or similar methods. The GMS Soil Optimizer, when applied via the injection process, is effective for deep soil conditioning needs related to bioswales and construction sites. The GMS Soil Optimizer may also be sprayed on soil, lawns, trees, shrubs, or flowerbeds and will not harm or burn living plants or organics found at surface level. The Soil Conditioning Process requires water to be active and permeate the soil. Its reaction with the soil is downwards with very little lateral movement. Therefore, it is important to saturate the soil to the depth required to be treated. It is best to apply the product as droplets rather than misting or atomizing, and application for three consecutive days is recommended.

Due to its composition, GMS Soil Optimizer possesses an immense potential for an ion exchange (ionization). Small amounts of GreenMarket Solutions Soil Optimizer, when mixed with water, activates water molecules to H+, OH-, and H30+ ions, causing the water to become a highly ionized solution. The result creates a vigorous exchange of electrical charges in the soil/clay particles, effectively neutralizing the ability of the platelet to attract and bind water, elements, and molecules. The clay soils then behave more like a loamy soil.

Results

The ion exchange occurs immediately and is carried into the soil as deep as the water penetrates. Soil conditioning utilizing the injection method of application will enable a deeper penetration of the product into the soil. The resulting soil conditions accelerate the natural aerobic bacterial growth and allow natural soil conditions to take place rapidly and more efficiently than before treatment. The structure of heavy clay soils will improve and promote granulation. Soil drainage increases, enabling plant roots to grow more extensively, increasing the decomposition of organic matter, decreasing particulate water retention, and encouraging desirable micro-organisms while suppressing harmful soil bacteria.

Aerobic organisms encouraged in treated soils often become a natural defense against infection and disease. More elements and minerals will be made available, which results in improved, stronger plant growth.

Notes on GMS Soil Conditioning Process

- Flash Point – Non-Flammable
- Environmentally safe!
- pH=0.9 at the concentrated form.

Case Studies

Hokkaido University, Agriculture Department

An earlier generation of the GMS Soil Optimizer product was applied to greenhouse plants, such as summer spinach. The tests determined the effect of salt content in the plants and the effect of the product application. Three separate sections were tested: a non-treated section, a section treated with Soil Optimizer, and a section with irrigation control. Soil Optimizer proved to be effective in reducing the amount of salt in the soil.

At the time of harvest the crop of plants were better in the section treated with the Soil Optimizer. A soil analysis was done and no definitive difference was found among the nutritional contents among the three sections.

The product promoted the removal of salts in the soil which allowed the root system to move more freely. This produced an increase in the size and quality of the crop at harvest.

Agricultural Test Station of Aomori Prefecture

Soil Optimizer was used to examine the effect of the product on the growth of radishes in a sand soil area. The testing was conducted while the vegetable was still growing. Upon completion, the growth of the non-treated section was poorest, while the section treated with Soil Optimizer x 500 (1 part Soil Optimizer per 500 parts water) had the best growth, followed by the section treated with Soil Optimizer x 200. The section of plantings with the least amount of damage was the section treated with Soil Optimizer x 600, while the non-treated section showed significant damage to the plants.

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Site preparation

In-situ injection of GMS products

Post-application period

Landscaping phase 2 - in progress