

PURE GREEN II-B

Bio-Stimulant for Golf Course Applications

Product Manual FOR THE BLACK LAYER, HARD PACK, FUNGUS & BARE SPOT SOLUTION



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THE NATURAL SOLUTION

PURE GREEN II-B Contains a concentrated blend of humic and fulvic acids, enzymes, amino acids, vitamins, and nitrogen. This rich combination both feeds and activates beneficial aerobic microbes to build better soil structure, reduce compaction and **BLACK LAYER**. Its organic acids buffer sodium to help leach it out of the root zone. It acts as a catalyst, which immediately stimulates the metabolism and growth of microorganisms, accelerating nature's biodegrading process at an exceedingly rapid rate. It acts by stimulating the metabolism of microorganisms. This stimulation is quite general and affects aerobic and controls anaerobic and facultative organisms. This enhanced metabolism enables bacteria to rapidly degrade contaminants in soil to carbon dioxide, water and simple salts.

PURE GREEN II-B also enables microorganisms to metabolize certain organic compounds such as phenolics, chlorinated hydrocarbons and amines, which are normally only very slowly metabolized. It contains certain nutrients that promote growth in the soil environment.

PURE GREEN II-B is an all natural blend of concentrated acids, enzymes, vitamins, and nitrogen. This robust combination of ingredients nurtures and acts as a catalyst for important microorganisms to build better soil composition, decrease compaction and the condition known as '**BLACK LAYER**'.

PURE GREEN II-B has been proven to increase antioxidant production and the capacity and respiration of photosynthesis. This action results in root growth that is deep and dense as well as enhanced drought stress. **PURE GREEN II-B** promotes aerobic bacteria growth. Aerobic bacteria growth contributes to healthy root structure.

PURE GREEN II-B used in a maintenance program can produce healthier grass and turf and make them more resistant to detrimental environmental issues and diseases such as **BLACK LAYER**.

The **BLACK LAYER** Solution

A major problem for golf courses worldwide is a condition called **BLACK LAYER**. The **BLACK LAYER** is the layer under the turf in the roots that has gotten saturated with too much water and consequently has rotted and died from the lack of oxygen. It can be diagnosed in one way by the smell that emits from the turf. It reminds one of the smell of rotten eggs. Sulfides in the soil create this odor.

These soil conditions typically occur when the soil becomes laden with too much water and there is not enough oxygen moving throughout the soil. Oxygen traveling through soil is much slower than oxygen traveling through the air. Any restriction at all creates an anaerobic condition that is not conducive to healthy soil or roots. Grass starved at the root level cannot grow properly.



As depicted in the illustration, there is a distinct dark, “black” layer in this core sample of a green. In addition to the condition described above, another contributing factor to the black deposits in the soil is the chemical reaction of elements being exposed to the metal in the soil.

The biological imbalance in soil systems is often induced by a lack of oxygen and the proliferation of unwanted anaerobic bacteria, as well as the accumulation of other organic matters. These conditions exist due to the lack of natural stimulation of favorable aerobic biosystems. These aerobic microbes will not thrive in environments unsuited to their growth and metabolic activities. The solution is to break the anaerobic chain by inducing the release and production of oxygen and other beneficial substances into the soil environment. **PURE GREEN II-B** is the solution to get the needed oxygen to the root system.

HARD PACK SOIL PROBLEM

Pure One Environmental is quite experienced in HARD PACKED soil since we produce the finest soil stabilizer for the building, repair and improvement of dirt roads in the world. We developed a product that binds soil particles together so that they make a compacted surface that is warranted for a period of eight years that services automotive traffic and is classified as a useable base capable of supporting an asphalt or concrete finish surface. What does this have to do with golf courses? Well, understanding hard pack soil to the degree of making a road gives use the knowledge and experience to reverse the process and provide a product that will allow water to penetrate into the soil easily and effectively. Our stabilizer, PURE CRETE binds the soil particles to make a road and our product **PURE GREEN II-B** works in an opposite manner to solve the hard pack problem that is common on golf courses and athletic fields.

HOW DOES IT WORK

PURE GREEN II-B is completely soluble so when mixed with water and spray, it absorbs into the top layer of the soil. It is very common that compacted soil is due in part to high mineral content; adding to the compaction problem is the clay particles and the minerals that combine into the clay. First, our product chelates the mineral and frees up the soil particles from the compacted state. This is done by breaking the bonds that are holding the soil particles in that compacted state. Inclusive in the compacted soil is polysaccharides which are produced during the stimulation of the growth of anaerobic bacteria. So the aerobic bacteria are the common producers of polysaccharides for the rebuilding of a healthier soil structure. By modifying the soil structure, the chelation and bridging and building of a healthier soil through polysaccharides production, will increase the water absorption through the soil. This process is accomplished by an organic molecule grabbing and wrapping around a mineral ion in the soil. For example, iron and calcium have sites on their chemical structure where the chelant can grab hold of a mineral and pull it away from a clay particle or whatever it happens to be bound to at that site.

In order for the process to be successful, aerobic bacteria reduce the presence of anaerobic bacteria. This is done by introducing the presence of oxygen. An oxygen rich environment supports aerobic bacteria growth and reduces anaerobic bacteria growth. This increase in oxygen is achieved by freeing up oxygen from the water molecules that are present in the abundance of water that is applied and that is present in the sub surface area especially in the **BLACK LAYER** region. A derivative of this product comes from another product that we offer that is used in the aquaculture farming industry that has a primary function of producing dissolved oxygen from the pond water. **PURE GREEN II-B** contains a biocatalyst formula that stimulates water borne and soil borne microorganisms to produce several powerful chelating compounds in addition to polysaccharides. Another is known as poly proteins. This biocatalyst formula stimulates aerobic biological activity by enzymatically releasing oxygen through a unique system contained in the product. This enzyme known as H₂O Dehydrogenase, (HDH)

reduces the bonds between the oxygen and hydrogen atoms that comprise the water molecule. This subsequent release of elemental oxygen provides energy for the respiration of aerobic microorganisms and improves the bio-oxidation rate of carbon containing matters. The hydrogen remaining from the reaction acts to buffer the hydroxyl or alkaline components that are formed or released during the metabolic activities of these microbes. In a nutshell, the oxygen in the water that is mixed with **PURE GREEN II-B** and the water that is trapped in the ground is the source of the oxygen that propagates the growth of aerobic bacteria and releases hydrogen. This hydrogen release is a primary function of the sulfur burner process employed by some to aid in dealing with hard packed soil.

HOW LONG DOES IT TAKE?

In order for **PURE GREEN II-B** to prove that it is effective in penetrating the hard packed soil, there had to be some form of quickly, efficiently and definitively measuring the results of using the product. By demonstrating that **BLACK LAYER** can be eliminated by applying **PURE GREEN II-B** will prove without question that the hard pack soil problem can be solved by applying the product as directed. The length of time that it takes to eliminate the **BLACK LAYER** condition is the time that it will take to initially demonstrate the hard pack soil problem is being controlled. You will start to see a difference in from 3 to 8 applications. The time depends on weather, temperature, watering volume and product application rate. For severe hard pack and **BLACK LAYER** conditions, the prescribed amount can be increased to double the amount.

Advantages of PURE GREEN II-B

Applying **PURE ONE PURE GREEN II-B** on a prescribed basis promotes the release and formation of oxygen and beneficial substances, as well as the break down of organic matters which may have contributed to the undesirable condition. This improved soil environment provides a variety of benefits:

- Aides in the production of more oxygen from water
- Encourages growth and proliferation of essential aerobic bacteria
- Encourages a more active enzymatic system
- Accelerates the digestion of organic matters
- Precipitates dissolved minerals
- Aides healthy plant life and soil condition
- Saves money because it saves the life of the subsurface – Healthy roots equal healthy surface!

Uses for PURE GREEN II-B

- Putting Greens & Tees
- Fairways
- Turf
- Driving Ranges

PRODUCT CHARACTERISTICS

ANALYSIS:

Total Nitrogen (N)	6.0%
Urea Nitrogen	4.0%
Water soluble organic Nitrogen	2.0%

Derived from Urea, Protein Hydrolysate, Iron EDTA, Manganese EDTA and Zinc EDTA.

Contains:

All Natural Humic and Fulvic Acids, Surfactants, Protein Hydrolysate, Enzymes, Vitamins, Biostimulants and Buffers.

Physical Characteristics:

8.9 Lb/gal. pH 7.4 (0.48 lbs/gal.)

Storage:

Keep product in original container. Do not transfer into food or drink containers.

SHAKE OR STIR AFTER EXTENDED STORAGE.

APPLICATION INSTRUCTIONS

GREENS AND TEES

Apply 8 ozs. of **PURE GREEN II-B** mixed with 8 - 20 gallons of water per 1000 square feet. Perform normal watering immediately after application. Apply every 2 weeks until the **BLACK LAYER** condition does not exist. Monitor the progress of the application by taking a core sample on a weekly basis until the condition is determined not to exist.

It normally requires 2 to 6 weeks to clear up the condition if applied in warm weather and 4 to 8 weeks in cooler weather.

To maintain a **BLACK LAYER** free condition on Greens and Tees, apply 8 ozs. in 8 – 20 gallons per 1000 square feet of **PURE GREEN II-B** on a monthly basis along with the normal chemical applications

For severe **HARD PACK** Soil condition, double the application amount until condition is controlled to your satisfaction. If applied through a sprinkler system, ½ gallon per acre per month can be applied as a maintenance treatment

Do not apply in its concentrated form. Must be mixed at the rate prescribed above.

FAIRWAYS AND ROUGH

Apply ½ gallon of **PURE GREEN II-B** per acre mixed at a 100 to 1 ratio with water and applied every 2 weeks until the **BLACK LAYER** condition no longer exists. It usually requires 2 to 6 weeks during warm weather and 4 to 8 weeks during cooler weather to achieve complete success.

We recommend that a test area be selected to prove the effectiveness of the product first and the test application be performed by mixing ½ gallon of product with at least 50 gallons of water and applied at the rate of ½ gallon per acre every 2 weeks. Perform normal watering after applying the product.

For maintenance applications, apply through the sprinkler systems fertigation pump distribution system at a rate of ½ gallon per acre per month to maintain a **BLACK LAYER** free condition to your Fairways and Rough.

For severe **HARD PACK** Soil condition, double the application amount until condition is controlled to your satisfaction. If applied through a sprinkler system, 1 gallon per acre per month can be applied.

Do not apply in its concentrated, undiluted form unless applied through a pump distribution system.

Application of **PURE GREEN II-B** will not affect the effectiveness of any other fertilizer products that are presently being applied to the soil.

PURE GREEN II-B TEST EVALUATION PROTOCOL

- 1) Select a specific troubled area to be treated that has **BLACK LAYER**.



- 2) Calculate the area measurement of the troubled area and calculate the specific amount of **PURE GREEN II-B** to be used to cover that area.

Tees & Greens:

Apply 8 ounces per 1000 square feet in 5-20 gallons of water.

Apply 1/2 gallon per acre in 50-100 gallons of water every two weeks until the condition is normal.

Fairways:

Apply 1/2 gallon per acre once every 2 weeks with sprayer in 50 gallons of water or apply through a fertilizer injection system.

Apply 1 gallon per acre every 2 weeks 100 gallons of water if injection system is not used.

- 3) Take a core sample of the area prior to treating to determine the severity of the condition. Take a picture of the core sample and date it.



- 4) Mix the specified amount of **PURE GREEN II-B** product with the specified amount of water to cover that designated area.
- 5) For test purposes, select a previously unused sprayer and dedicate that sprayer for the application of **PURE GREEN II-B** only.
- 6) Apply **PURE GREEN II-B** to the specified area with the dedicated sprayer. This treatment is applied immediately prior to the normal watering schedule of the area.
- 7) Apply water immediately following the **PURE GREEN II-B** using the normal watering schedule and method.
- 8) Repeat every 2 weeks
- 9) Take a core sample every 7 days after beginning treatment. If possible, take the sampling on the same day each week and in close proximity of the previous sample. Take a picture of the sample and date it.



MATERIAL SAFETY DATA SHEET

PURE GREEN II-B

ALL NATURAL SOLUTION
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SECTION I: PRODUCT INFORMATION	
<ul style="list-style-type: none">• Trade Name:• Chemical Name:• Formula:• D.O.T. Proper Shipping Name:• D.O.T. Hazardous Class:• D.O.T. Identification Number:	PURE GREEN II-B Natural Enzymes Proprietary blend of Enzymes Pure Green II-B - Non-Hazardous Liquid Non-Hazardous Liquid Class 70 Sch. B Harmonizing Code 1212.20.0000
SECTION II: PHYSICAL DATA	
<ul style="list-style-type: none">• Specific Gravity:• Boiling Point:• Melting Point:• Vapor Pressure:• Viscosity:• Solubility in Water:• Appearance & Odor & Form:• pH:	(H ₂ O) 1.0 g/cm ³ 105° C -7 degrees C 9 m-bar 60 m Pa-s (Brookfield) Yes, 900 g/l Brown, Ammoniated Humus odor, liquid 7.7
SECTION III: HAZARDOUS INGREDIENTS	
NONE	
SECTION IV: FIRE & EXPLOSION	
Treat the same as water	
SECTION V: REACTIVITY DATA	
<ul style="list-style-type: none">• Stability:• Incompatibility:• Hazardous Polymerization:	Stable. Avoid high temperatures as this will neutralize the enzymes. Avoid low or high pH substances (i.e. acids, caustics). None. Product is compatible, will not polymerize nor create hazardous by-products. There are no specific conditions to avoid. Will not occur.
SECTION VI: HEALTH HAZARD DATA	
<ul style="list-style-type: none">• Eye Contact:• Inhalation:• Skin Contact:• Ingestion:• Non-Carcinogenic:	Avoid eye contact. If product gets in eyes, flush with water. None None Will cause slight laxative condition. No known conditions to avoid.
SECTION VII: PRECAUTIONS FOR SAFE HANDLING AND USE	
No special gloves No ventilation No exhaust No protective clothing No special equipment No respiratory protection	

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