

Material Safety Data Sheet

Company name: Bioonat

Date issued: 26/6/2023

Product Name: BIOSOIL

Manufacturer: BIOONAT

Product Type: Organic Liquid Fertilizer

Product Use: Agricultural Production

Product Description:

BioSoil is a ground-breaking alternative & soil amendment to chemical fertilizer applications at the commercial production level. It is a soil amendment having biological function under the scope of regenerative agriculture. BioSoil facilitates and encourages biochemical reactions in the soil to increase nutrient availability, uptake and assimilation. BioSoil does so by promoting two phenomenon which naturally occur in the soil - Cationic Exchange Capacity & Isomorphous Substitution.

Isomorphous Substitution is the process by which ions and ionic compounds trade places amongst each other on the surfaces of soil and root surfaces. Farmers misinterpret this phenomenon when they add chemical fertilizer, attributing the increase in productivity to the increase of fertilizer application. This is wrong. It is the effect and not the cause of that productivity. Excessive synthetic fertilizer application has proven to be ineffective in maintaining the yields our grandfathers saw witness to during the Green Revolution of the 1960s.

Cationic Exchange Capacity is the limit to which Isomorphous Substitution can occur. It represents the total amount of positively charged particles which plants may use at any given time. And since almost all ions and ionic compounds which plants utilize are positively charged, facilitating CEC without excessive salts made by industry is crucial to preserving soil health, biodiversity, resilience to pathogenic disease, low pest populations and sustainable yields.

BioSoil improves humification, the process by which Organic Matter is converted into Humus. Improvement is a direct result of BioSoil biological function, the process by which several families of beneficial microorganisms all work together to convert Organic Matter into Humus. These beneficial microorganisms are a result of our patented fermentation process. Because their goat manure and seaweed, they conform to the biodiversity of microbiota. As such, they are not antagonistic to one another and will antagonize unfamiliar or harmful microorganisms. The biological mechanism by which BioSoil functions thus provides preventative protection from soil-borne pathogens. BioSoil also adds organic matter to the soil, ensuring the humification process occurs consistently. Humus is what Organic Matter eventually transforms into. BioSoil quickens the biochemical reactions facilitating the conversion process, and it does so through biological function. Humus is what carries useful elements and minerals into the plant.

Naturally, there is also a mineral component to BioSoil. All manure used in the fermentation process is procured from Free-Range farms only. We only procure goat manure between the Spring and Winter and not in the cold months. This is to ensure no concentrates are present in the manure we harvest, as fresh grass is only available between Spring and Winter. All nutrient levels have been verified at the American University of Beirut. All minerals and ionic compounds are available in freely available, soluble & chelated forms.

BioSoil also has a cross-component aspect to it. Combining biological and mineral components, BioSoil provides economical solutions for what would otherwise be a costly rehabilitation process for agricultural land abused by chronically excessive application of chemical fertilizer. The microorganisms living in BioSoil actively seek out the excessively applied chemical fertilizer and solubilize them. As a result, ionic compounds previously unavailable to the plant become less unavailable. The increase in availability encourages plant root proliferation, as the plant now knows where in the soil its roots must go to procure easily assimilable minerals. It also facilitates the breaking up of compacted layers of Potassium or Phosphorous. Tilling thus becomes less necessary and eventually optional. This means BioSoil directly cuts cost of fertilization in a commercial setting while preventing the pollution of fertilizer to the environment. The microorganisms contained within BioSoil act on compounds containing Nitrogen, Phosphorous, Potash, Sulfur, Zinc, Copper, Iron, Boron, and Molybdenum. BioSoil is reinforced with amino acids to increase protein assimilation in fruiting bodies.

The benefits of this product are as follows:

- Improves soil texture & structure
- Increases Organic Matter
- Activates biochemical processes facilitating humification
- Increases water retention
- Increases soil porosity
- Encourages root proliferation
- Increases overall plant biomass
- Improves CEC & Isomorphous Substitution
- Decreases shedding of flowers & blossoms
- Promotes flowering & fruiting occurrence
- Improves vegetative growth
- Increases yields in all crop types
- Improves fruit texture, taste & aroma
- Increases size of vegetables
- Creates competition for soil-borne pathogens
- Saves money on chemical fertilizer use
- Compatible at the field, nursery & greenhouse levels
- Facilitates healthy transition to organic or no-till farming from conventional agriculture
- Performs best under Nursery conditions

Composition/Information on Ingredients

Goat manure and Seaweed: Derived from goat manure and seaweed, BioSoil is the only locally-produced & locally-sourced product of its kind in the agricultural market. It restores life to the soil biome. It is this life which will cut your costs of production down - by literally saving the planet.

Inter-irrigation dilution needed:

No. For example, in one hour of irrigation pumping, the first and last 20 minutes are often reserved for clean water, whereas the middle 20 minutes period is when the product is applied. In our case, this is not necessary. EC will be reduced sufficiently at field capacity. In reality, EC will be further reduced due to the pre-existing availability of moisture in the soil resulting from agricultural operations. This product will not burn plants.

The following table is a dilution prior to application:

Application Rates of BioSoil on a Situational Basis		
Per Greenhouse Sized 380-420 square meters	2 to 3 applications over the entire season	5 Liters per application
For Outdoor Production sized at 1000 square meters	2 to 3 applications over the entire season	10 Liters per application
For Orchard Production	2 to 3 applications over the entire season	1 Liter Per Tree Per Application
For Plant Nurseries	2 to 3 applications prior to transplanting	2 liters per 200 liters of water

NB: For BioSoil, follow the lifecycle of the plant.

Do not mix BioSoil with chemical fertilizer.

Below are tables summarizing the AUB lab test results for BioSoil Liquid Fertilizer:

EC (1:10)	10 mS/cm	Total Calcium (Ca ²⁺)	24,530mg/kg	Total Fecal Coliform	Not Present
PH(1:10)	7.14	Total Mg (Mg ²⁺)	11,647mg/kg	Total Coliform Count	50 CFU/ml
TOTAL N	1,089 mg/kg	Organic matter	3.3%	Total Aerobic Microorganism Count	6.2x10 ⁹ / Liter
TOTAL P ₂ O ₅	2,782 mg/kg	Chelated EDTA Iron (Fe)	228 mg/kg		
Total K ₂ O	3,764 mg/kg	Chelated EDTA Zinc (Zn)	12 mg/kg		
Ammonium(NH ₄ ⁺)	495 mg/kg	Chelated EDTA Copper Cu)	225 mg/kg		
Nitrate (NO ₃ ⁻)	269 mg/kg	Chelated EDTA Manganese(Mn)	231 mg/kg		
Total chloride (Cl ⁻)	1,207 mg/kg				

PHYSICAL AND CHEMICAL PROPERTIES

Flammability Limits: NO

Odor: NO

Odor Threshold: Unknown

Vapor Pressure: Unknown

Vapor Density: Unknown

Flammability: Unknown

Melting Point: Unknown

Freezing Point: -10 degrees

Solubility in Water: yes

Initial Boiling Point: Unknown

Flash Point: Unknown

Viscosity: liquid

Hazard Group: Health

Hazard Classes: Skin Corrosion/Irritation (Category 2) Serious Eye Damage/Eye Irritation (Category 2A) May be harmful if swallowed and enters airways.

May cause an allergic skin reaction Warning.

May be harmful if inhaled.

May cause respiratory irritation.

Precautionary Statements Prevention

Wash skin thoroughly after handling

Avoid breathing dust.

Use a particle mask and nitrile gloves under normal conditions Response.

If on skin: wash with plenty of soap and water

If inhaled: remove person to fresh air and keep comfortable for breathing.

If in eyes: rinse cautiously with water for several minutes

If skin irritation or rash occurs, wash area thoroughly and receive medical attention Storage.

Store in a dry place. Avoid excessive humidity or moisture. Disposal

Dispose of contents in a compost pile, garden, or landfill in accordance with local, state, and federal regulations.

Handling and Storage

Safe Handling: Wear gloves and a particle mask when handling and transporting. Avoid excessive humidity, contact with moisture, and extreme temperatures to retain product functionality. There are no known incompatibilities with this material.

Stability and Reactivity

Reactivity: No specific test data is currently available

Stability: Product is stable under normal temperatures and conditions

Conditions to Avoid: Extreme temperatures and excessive moisture.

Required Stabilizers: None

Incompatibility: None currently known

Hazardous Decomposition: None currently known.

Hazardous Polymerization: Will not occur.

Hazardous Reactions: None currently known.

Ecological Information

Ecotoxicity: Currently unknown

Bioaccumulation Potential: Currently unknown

Mobility in Soil: Currently unknown

Other Adverse Effects: No other adverse environmental effects are expected from this product.

Transport Information

DOT: Not regulated as dangerous goods

Transport Hazard Class: Not regulated as dangerous goods.

Environmental Hazards: None known.

Guidance on Bulk Transport: Use best known practices when shipping in bulk.

Special Precautions: None known.

Possibility of packing & filling: 5L , 20L, up to 1000L tanks.

Other Information

The information provided in this Safety Data Sheet is correct to the best of our knowledge at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal, and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.