

# BioPlex SYNERGIZED BIOCARBON™

An Engineered Plant, Soil, Root & Rhizosphere SOIL AMENDMENT

80G



## An Engineered BIO-COMPOST/CARBON Soil Amendment

### \*GUARANTEED ANALYSIS:

Composted Poultry Litter.....	23.63%
Total Nitrogen (N):.....	0.4%
0.10% Ammoniacal Nitrogen	
0.03% Nitrate Nitrogen	
0.10% Water Soluble Nitrogen	
0.17% Water Insoluble Nitrogen*	
Available Phosphate (P2O5):.....	0.4%
Soluble Potash (K2O):.....	0.4%
Calcium (C):.....	3.0%
Sulfur (S):.....	2.0%
Boron (B):.....	0.017%
Copper (Cu):.....	0.05%
.05% Water Soluble Copper (Cu)	
Iron (Fe):.....	0.06%
.06% Water Soluble Iron (Fe)	
Cobalt (Co).....	0.0003%
Magnesium (Mg):.....	0.6%
.06% Water Soluble Magnesium (Mg)	
Manganese (Mn):.....	0.06%
.06% Water Soluble Manganese (Mn)	
Molybdenum (Mo):.....	0.0004%
Sodium (Na):.....	0.07%
Zinc (Zn):.....	0.02%
.02% Water Soluble Zinc (Zn)	

### Derived From:

Composted Poultry Manure, Elemental Sulfur, Manganese Sulfate, Ferrous Sulfate, Copper Sulfate, Cobalt Sulfate, Molybdenum Oxide, Zinc Sulfate, Boric Acid & Sulfate of Potash.  
\* Slow Release Nitrogen from Poultry Manure

### BIOLOGICAL ACTIVE INGREDIENT(S):

Live Beneficial Microbes ..... 0.48%

Arthrobacter globiformis	1X10 <sup>12</sup> CFU/gram
Azospirillum brasilense	1X10 <sup>12</sup> CFU/gram
Azospirillum lipoferum	1X10 <sup>12</sup> CFU/gram
Azotobacter chroococcum	1X10 <sup>12</sup> CFU/gram
Azotobacter paspali	1X10 <sup>12</sup> CFU/gram
Azotobacter vinelandii	1X10 <sup>12</sup> CFU/gram
Bacillus amyloliquefaciens	1X10 <sup>12</sup> CFU/gram
Bacillus atrophaeus	1X10 <sup>12</sup> CFU/gram
Bacillus licheniformis	1X10 <sup>12</sup> CFU/gram
Bacillus megaterium	1X10 <sup>12</sup> CFU/gram
Bacillus pumilus	1X10 <sup>12</sup> CFU/gram
Bacillus subtilis	1X10 <sup>12</sup> CFU/gram
Bacillus thuringiensis	1X10 <sup>12</sup> CFU/gram
Brevibacillus brevis	1X10 <sup>12</sup> CFU/gram
Cellulomonas fimi	1X10 <sup>12</sup> CFU/gram
Lysinibacillus sphaericus	1X10 <sup>12</sup> CFU/gram
Micrococcus luteus	1X10 <sup>12</sup> CFU/gram
Phanerochaete chrysosporium	1X10 <sup>12</sup> Prop./gram
Pseudomonas fluorescens	1X10 <sup>12</sup> CFU/gram
Pseudomonas putida	1X10 <sup>12</sup> CFU/gram
Rhodobacter sphaeroides	1X10 <sup>12</sup> CFU/gram
Rhodopseudomonas palustris	1X10 <sup>12</sup> CFU/gram
Rhodospirillum rubrum	1X10 <sup>12</sup> CFU/gram
Streptomyces griseus	1X10 <sup>12</sup> CFU/gram
Trichoderma reesei	1X10 <sup>12</sup> Prop./gram

### NON-PLANT FOOD INGREDIENT(S):

EctoMycorrhiza (11 Species)..... 0.38%

Rhizopogon villosulus
R. luteolus
R. amylopogon
R. fulvigleba (38 million prop./lb each)
Pisolithustinctorius (227 million prop./lb)
Laccaria bicolor
L. laccata (15 million prop./lb each)
Scleroderma cepa
S. citrinum (76 million prop./lb each)
Suillus granulatus
S. punctatapius (47 million prop./lb each)

EndoMycorrhiza (9 Species) ..... 0.31%

Glomus intraradices
G. mosseae
G. aggregatum
G. etunicatum (2,360 prop./lb each)
G. clarum,
G. deserticola
Gigaspora margarita
Paraglomus Brasilianum
G. Monosporum (454 prop./lb each)

Humic Substance:.....	4%
Fulvic acid:.....	1.4%
Ascophyllum nodosum seaweed:.....	0.8%
L Amino acid:.....	1.0%
BioChar (Carbon 88%).....	68.0%

## NET CONTENTS: 1 Cubic Foot

Approximate Net Wt. - 40 Pounds (18.14 Kilograms)

**CONTAINS LIVE SOIL MICROBES:** Store below 120 degrees F. Keep out of direct sunlight. Store unused dry contents in tightly sealed package.

**WARNING:** KEEP OUT OF THE REACH OF CHILDREN. DO NOT INGEST. Avoid contact with skin and eyes. Wear appropriate protective clothing when using this product. Direct exposure may cause irritation to skin, eyes, and mucous membranes. In the event direct contact is made with skin, eyes, or other exposed body parts, IMMEDIATELY wash the contact area with copious amounts of clean water. Optimal storage temperatures, 40-80 degrees Fahrenheit.

**NOTICE:** BioPlex Organics warrants that the product conforms to its chemical description and is suitable for the purposes stated on the label when used in accordance with the directions under normal conditions of use. BioPlex Organics will not be held responsible for incidental or consequential damage resulting from the use of this product contrary to instructions or under abnormal conditions or under conditions and circumstances not reasonably foreseeable to BioPlex Organics.

**CAUTION:** The application of fertilizing materials containing Molybdenum (Mo) may result in forage crops containing levels of Molybdenum (Mo), which is toxic to ruminant animals. Information regarding the contents and levels of metals in this product is available on the internet at: <http://www.aapfco.org/metals.htm>

**WARRANTY:** BioPlex LLC (div. Turf Chemicals Plus, Inc.) warrants that this product conforms to the analysis on its label. When used in accordance with label directions, under normal conditions, this product is reasonably fit for its intended purposes. Since timing, method of application, weather, plant, and soil conditions, mixture with other chemicals, and other factors affecting the use of this product are beyond our control, no warranty is given concerning the use of this product contrary to label directions or under conditions that are abnormal or not reasonably foreseeable.



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Application Rates for Turf & Ornamentals | Technical Assistance @ 1-800-441-3573, eMail @ [bioplex@earthlink.net](mailto:bioplex@earthlink.net)

The general advice in the biochar community is that a healthy soil will have ~10% BioPlex SYNERGIZED BIOCARBON 80G in the planting area surrounding root zone area and down below the roots of your vegetables, flowers, grass, trees or shrubs. It doesn't all have to go into the soil all at once. When you add BioPlex SYNERGIZED BIOCARBON 80G to an area and mix it into the soil, it isn't going away any time soon.

### PRODUCT USE T/O BENEFITS

- Increased plant growth and root fibrosity.
- Decreased potential for root related diseases.
- Increased drought tolerance.
- Increased soil aeration - reduce compaction.
- Increase soil health - microbial populations.
- Increased fertilizer efficiency by 30%.
- Increase the biological nitrogen fixation from 50 – 72%.
- Strong ability to retain hydrocarbons and other organic compounds.
- High Cation Exchange Capacity (CEC) – Increased by as much as 50%.
- Able to maintain soil structure as a stable lattice network.

### PRODUKT USE DIRECTION GUIDELINES - 40 Lbs = Approx. 1 cu. ft.

\*Ornamental Trees & Shrub Installation: 4 oz. = 1/4 lb

Use BioPlex SYNERGIZED BIOCARBON 80G in the area around and below the tree's root zone as best as possible. For new ornamental installations, incorporate into backfill soil at a rate of 4-6 ounces of BioPlex SYNERGIZED BIOCARBON 80G per EACH 1 inch caliper trunk diameter. Mix thoroughly into the entire volume of backfill soil surrounding root ball. For multi-stemmed plants, incorporate into backfill soil at 4-6 ounces per EACH 18-24" of plant height OR plant width - use whichever measurement is greater. For seedlings you will want to consider the area the roots will grow into and for trees planted with the burlap bag and ball of roots make your hole considerably larger than the ball and backfill with a combined soil mix.

### Nursery - Mulch Beds to Heal-in Ornamental Inventory:

Thoroughly mix BioPlex SYNERGIZED BIOCARBON 80G into any well composted mulch at a rate of 3-5% by weight with composted mulch. One application should last 1-2 years minimum. Drench monthly with BioPlex ALL Ocean fertilizer.

### \*\*Vertical Mulch - Construction Root Damage - Established Tree & Shrub Maintenance:

Augar (3"x10") holes, on 3 foot centers, 2 feet inside and 2 feet outside the defined dripline of the overhead branching canopy. Offset and stagger bored holes 3" wide by 10" deep and fill to top. Tamp lightly to complete. It will require approximately 1.5 pounds of BioPlex SYNERGIZED BIOCARBON 80G to fill EACH hole. One 40 lb box will fill approximately 27 (3"x10") holes.

### Landscape Bed Construction/Renovation:

Apply 25-40 lb BioPlex SYNERGIZED BIOCARBON 80G per 100 sq.ft. area and physically incorporate it into the top 4-6" of soil depth. Attempt to distribute the product as evenly as possible and incorporate thoroughly with appropriate mechanical equipment if possible. One application will remain effective 5-8 years.

### Container Soilless Soil-mix Ingredient Supplement:

Incorporate BioPlex SYNERGIZED BIOCARBON 80G into potting soil aggregate ingredients at 3-5% by weight of BioPlex SYNERGIZED BIOCARBON 80G. Mix thoroughly. Utilize in combination with a sound fertility program. Add BioPlex SYNERGIZED BIOCARBON 80G to soilless mixes by substituting the peat moss, some of the vermiculite and possibly perlite which are the three main ingredients of most growing mixes. The addition of BioPlex SYNERGIZED BIOCARBON 80G can eliminate the need to add a wetting agent to the typical current soilless aggregate mix.

### Top Soil Amendment & Depleted Soils:

If your soil is severely depleted of organic matter we recommend making sure you add additional compost or mulch as a priority with BioPlex SYNERGIZED BIOCARBON 80G. You need the immediate support of some kind of additional organic material. Consider a 50:50 mix of BioPlex SYNERGIZED BIOCARBON 80G and compost and applying at 1/4 lb per square foot. You will see that is much less than 5% biochar but it is the correct "first step" in reclaiming your land for planting.

### GC Green-Tee Construction:

Evenly distribute BioPlex SYNERGIZED BIOCARBON 80G at a rate of 666 lb (16.65 cu.ft.) per EACH 1,000 sq.ft. area. Incorporate evenly into top 2" of soil substrate. For best results, follow-up annually with aeration/top-dressing applications of BioPlex ULTIMATE ROOT ZONE Rx.

### Gardens and Flower Beds:

Apply 25-40 lb BioPlex SYNERGIZED BIOCARBON 80G per 100 sq.ft. area and physically incorporate it into the top 4-6" of soil depth. Attempt to distribute the product as evenly as possible and incorporate thoroughly with appropriate mechanical equipment if possible. One application will remain effective 5-8 years.

### New Lawn Seeding:

Ideally for new lawns, mix 10-15 pounds per 100 sq.ft. of BioPlex SYNERGIZED BIOCARBON 80G into the top 2-4" of soil. Gently rake and turn the seed into the soil so that it is covered. Watering and additional coverage with straw is determined by the grass seed, and amount of rain you think you are going to get.

### Athletic Fields:

BioPlex SYNERGIZED BIOCARBON 80G is not considered a topical treatment for lawns. For aeration/top-dressing existing turf, choose BioPlex ULTIMATE ROOT ZONE Rx. We do have research that shows for tall fescue lawns ONLY, you may want to use closer to 2% BioPlex SYNERGIZED BIOCARBON 80G mixed down to the root zone of your grass. Otherwise target longterm incorporation rates of 5% by volume. See "New Lawn Seeding" for new athletic field construction.



## Product Use and Application Label Addendum:

**BioPlex SYNERGIZED BIOCARBON 80G** has the potential to be a major factor in sustainable carbon sequestration. The stable carbon that is found in **BioPlex SYNERGIZED BIOCARBON 80G** removes the potential release of carbon dioxide into the atmosphere. In addition, **BioPlex SYNERGIZED BIOCARBON 80G** works in the soil to hold fertilizers and reduce the amount of nitrous oxides that are emitted. Nitrous oxides are a major greenhouse gas, too. Nitrous oxide (NO<sub>x</sub>), is even more destructive than methane or CO<sub>2</sub> as a GHG (approx. 300 times worse than CO<sub>2</sub> and erodes the ozone layer), is also significantly curtailed when **BioPlex SYNERGIZED BIOCARBON 80G** is added to soils. NO<sub>x</sub> emissions are largely related to fertilizer use, so using **BioPlex SYNERGIZED BIOCARBON 80G** mean less fertilizer needs which leads to less leaching and a reduction of NO<sub>x</sub> soil emissions by 80 – 100%.

Average effective carbon sequestration metrics: 1 cu. ft. box of **BioPlex SYNERGIZED BIOCARBON 80G** contains 21.76 lbs of carbon - this translates to 64.41 lbs of sequestered CO<sub>2</sub>.

**Golf Course Turfgrass:** **BioPlex SYNERGIZED BIOCARBON 80G** can be used throughout the course. There would be added benefits with the **BioPlex SYNERGIZED BIOCARBON 80G** holding the fertilizers near the roots and preventing the leaching of chemicals into the ground water, ponds and other waterways. In general, there would be a reduced need for watering with the addition of **BioPlex SYNERGIZED BIOCARBON 80G** and it would be safe for plants, animals and people on the course. **BioPlex SYNERGIZED BIOCARBON 80G** would be very easy to integrate during the original construction of a golf course/ tee/ green when it could be mixed with the soil, compost, and fertilizers. **BioPlex ROOT ZONE Rx** could be effectively applied onto existing turf as a top dressing during a maintenance period, i.e. along with aeration of the course. In general, 1 cubic foot of biochar can be used for top dressing 375 sq. ft. of turf.

**Sports Turf:** Focusing **BioPlex SYNERGIZED BIOCARBON 80G** in areas with compacted soil, areas of high traffic (in front of a soccer goal area or down the middle of a football field), or areas where grass has trouble growing is a possible targeted application area. **BioPlex SYNERGIZED BIOCARBON 80G** will enhance desirable root characteristics and will help keep grass healthier in areas of high traffic. It will break up compacted soil and allow for water to move into the soil resulting in safer playing conditions.

**Sod:** Using it with the sod grower will create a sod that will handle the stress better. This will give a better looking sod during application and give the roots a better chance to grow into the existing soil bed. For customers that don't water regularly, having a layer of **BioPlex SYNERGIZED BIOCARBON 80G** in the sod during application will give some added drought tolerance to the sod. It will create a healthier field for the sod to grow in. Optimal amount is 2.5 to 5 super sacks (1400 lb/ 15 cu yd.) per acre mixed 4 to 5 inches deep.

**Tree Transplantation:** Similar to sod, having a strong root ball is important to giving the tree the ability to better handle the stress of transport and planting in a new soil types. I would recommend 1/4 lb (plus or minus) of **BioPlex SYNERGIZED BIOCARBON 80G** per tree into backfill soil during planting. If not in the soil during the original planting, I would recommend the customer be offered one pound bag of **BioPlex SYNERGIZED BIOCARBON 80G** to be mixed with the soil around the new site to improve the soil conditions and aid in the plant transition and future growth.

**Tree Maintenance:** You can use various techniques for tree maintenance. You can dig trenches or use drilled holes around the tree and mix **BioPlex SYNERGIZED BIOCARBON 80G** with soil and fertilizers/treatment solutions. You could also apply the **BioPlex SYNERGIZED BIOCARBON 80G** on the soil surface as a top dressing and allow it to work its way into and through the soil over time.

**Nursery-Grower:** At an estimate of approximately 315 containers per cubic yard of soil, if a grower replaced 10% of the yard with **BioPlex SYNERGIZED BIOCARBON 80G**, that would therefore reflect 3150 containers per cubic yard of **BioPlex SYNERGIZED BIOCARBON 80G**.

**Landscape Contractor:** In general, contractors can use **BioPlex SYNERGIZED BIOCARBON 80G** for many applications: flower beds, raised bed gardens, planters, in flat bed gardens, mixing into the soil prior to laying new sod or planting grass seed, roof top gardens (Using **BioPlex SYNERGIZED BIOCARBON 80G** reduces the overall weight of the garden. It holds the nutrients in the roof top container and prevents fertilizers or other chemicals from being lost. It will hold water better and require less water to maintain the garden. **BioPlex SYNERGIZED BIOCARBON 80G** is a great way to conduct waste remediation on roof tops, too).

**Greenhouse:** One advantage to note is that plant yields tend to increase from 10% to 150% depending on the plants. In a greenhouse, you would get greater production per square inch which can be very advantageous.