

Heat Dried Biosolid Fertilizer (HDBF)

Automation Nation helps environmentally conscious municipalities produce and distribute heat-dried biosolid fertilizer. a fertilizer that naturally promotes sustainable agriculture. Soil health and productivity becomes perpetual when the natural systems in the soil are encouraged. There is a symbiosis between the crops, the soil and urban centers. It is the natural food cycle within our society. The soil organisms, higher order plants and higher order animals (including people) are locked in the chain and depend on this natural cycle. When the cycle is ignored or circumvented the soil organisms starve, the soil compresses, and soil nutrients become unavailable. As a result the entire food chain weakens. When the cycle is encouraged and stimulated the benefits are widespread and significant. Using HDBF products is an effective and safe way to maintain this critical cycle.

HDBF Production

HDBF is a purified concentrated fertilizer made from municipal sewage as part of the wastewater treatment process. Organic solids are heat dried, sterilized and pelletized to produce a fertilizer that is clean, easy to handle and nutrient rich. Millions of dollars and thousands of hours are spent to produce a safe and effective fertilizer product. The wastewater is monitored and regulated by inspectors to ensure that the inputs are non-toxic. The wastewater is collected in large tanks and inoculated with microorganisms. The microbes feed on the sewage helping the solid matter to coagulate and settle. The water and substances that weigh less than water are extracted from the top of the tanks for further water treatment and discharged into a natural water way. The organic solids are removed from the bottom of the tank and heat dried destroying all pathogens and seeds. The resulting product is a safe dry granular fertilizer. It is tested daily to ensure that the product meets the EPA's highest standards for unrestricted use. This fertilizer can be used on any crop, at any time, in any quantity.



Nutrients	Micro Nutrie	ents	^{50%} ⊤
Nitrogen	6.10% Sulfur	0.500%	40% +
Water Insoluble	5.70% Boron	0.002%	
Water Soluble	0.40% Cobalt	0.003%	30% +
Phosphorus (P205)	3.10% Chlorine	0.030%	20%
Potash	0.50% Copper	0.030%	2075
Carbon	22.0% Iron	1.000%	10% +
Calcium	1.30% Manganese	0.010%	
Magnesium	0.40% Zinc	0.070%	1 2

HDBF Nutrients

The above chemical analysis shows that HDBF contains substantial nutrients and micro-nutrients in organic forms. The availability of the nutrients closely matches the needs of a growing plant. These nutrients become available, over several months, as the organic material is digested by the organisms in the soil. When the soil is cool and the plant is not growing the soil organisms are less active and the digestion process slows (see above graph). Nutrients that are not used by the plant remain in the digestion process building soil humus. This reduces loss of the nutrients due to leaching, and volatilization, which can be a common problem with chemical fertilizers.

Unlike chemical fertilizers, HDBF is a nontoxic complete soil food containing all the nutrients required to feed the multitude of organisms in the soil. Earthworms and other organisms can digest over 400 tons/acre/year of soil. These organisms move through the soil grinding and digesting minerals and nutrients in search of food. The activity produces countless pathways lined with adhesive like nutrient rich substances. The pathways improve water and air infiltration. The earthworms redistribute the partially digested minerals and organic mater throughout the soil. Beneficial microbes thrive in this soil. One handful will contain billions. The microbes help to further digest the soil creating complex organic and inorganic compounds used by higher-plants. Many of the soil organisms form a symbiosis with the higher-plants antagonizing and destroying non-beneficial organisms. In this environment the plant exudes nutrients that feed



Cool
 Soil

Warm

Soil

3

Months

their symbionts thereby determining the type of microbe population in that plants root zone. This perpetual digestion process produces humus, a very complex organic substance. It is formed and continually evolves as the organisms in the soil live, eat and die. It is the brown sticky porous material throughout healthy soil. Its many important properties include dramatically increasing the soils ability to hold nutrients and water. Plants are healthier and more productive in soils that are alive with a multitude of organisms and rich in humus. They require less fertilizer, water and pesticides. Crops grown in these soils have higher nutrient levels making people and grazing animals healthier.

HDBF Benefits

The many benefits of using a high quality HDBF fertilizer are shown in this cause and effect diagram. HDBF is a high quality food source for the soil organisms. It increases the biological mass and activity improving the soil in many ways. It is a perpetual cycle with the continued application of a high quality natural food source like HDBF. These benefits ultimately include healthier animals and people, reduced pollution and increased profits from agriculture.





The above graph shows the results of Texas A&M research where HDBF out-performed chemical fertilizer, turkey litter and dairy manure in terms of yield and protein content of Bermuda grass.

Applications Over 40,000 tons Sold Annually

- Custom Fertilizer Blends
- Many Food Crops
- Pasture Land
- Lawn & Garden
- Sod Farms
- Golf Course

Automation Nation HDBF Product Names



Richard Kendall P.E., President



Heat Dried Biosolid Fertilizers 6-3-0 With Micro-Nutrients for

Sustainable Agriculture

- All Season
- Slow Release
- Improved Soil
- Improved Yield &
 Nutrition
- Improved Environment
- Reduced Irrigation
- Reduced Cost
- Nontoxic

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