COMPLETE TOTAL NUTRIENTS

ANALYSIS

COMPOST/ORGANIC MIX

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Client No: 2996
Lab No: 49227

Customer: Barefoot Organics
Address: 1340 Oak Industrial Lane, Suite 200
Cumming, Georgia 30041-

Date: April 29, 2019

Sample ID: Compost Plus

Variable Measured	As Sent	Dry Wt.	lbs/ton Dry Wt.	Notations
Moisture (%)	22.27	! ! ! ! ! ! !		TMECC 03.09-A
Dry Matter (%)	77.73	! ! ! ! ! ! !		TMECC 03.09-A
Nitrogen (%N)	1.31	1.69	33.74	TMECC 04.02-A
Nitrate (ppm NO_3)	176	227	0.45	
Phosphorous (%P)	1.01	1.30	26.05	TMECC 04.12-B
Total Phosphate(% P_2O_5)	2.32	2.98	59.68	
Phosphate (ppm PO_4)	5859	7537	15.07	
Potassium (% K)	2.27	2.93	58.52	TMECC 04.12-B
Total Potash(% K_2O)	2.74	3.53	70.51	
Sodium (% Na)	0.73	0.94	18.80	TMECC 04.12-B
Calcium (% Ca)	3.75	4.83	96.53	TMECC 04.12-B
Magnesium (% Mg)	0.74	0.96	19.16	TMECC 04.12-B
Zinc (ppm Zn)	246	317	0.63	TMECC 04.12-B
Iron (ppm Fe)	4108	5285	10.57	TMECC 04.12-B
Manganese (ppm Mn)	167	215	0.43	TMECC 04.12-B
Copper (ppm Cu)	36	46	0.09	TMECC 04.12-B
Boron (ppm B)	24	31	0.06	TMECC 04.12-B
Cobalt (ppm Co)	3.40	4.38	0.01	TMECC 04.12-B
Molybdenum (ppm Mo)	13.98	17.99	0.04	TMECC 04.12-B
Selenium (ppm Se)	0.06	0.07	0.0001	TMECC 04.12-B
Sulfur (% S)	0.72	0.92	18.50	TMECC 04.12-B
Interpretations & Recommendations:				
Nitrogen (% N)		1.69		
Phosphate (% P2O5)		2.98		
Potash (% K2O)		3.53		

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Suitability of Use – Understanding Compost Test Results

Composts are complex mixtures of feedstocks that have been decomposed by microbes. Composts have several biological, chemical, and physical properties that may be beneficial for growing plants and improving soil, but some properties may limit their use. Accordingly, a range of tests have been performed on your compost to determine whether any of its properties might limit use of the product.

Chemical Properties

Carbon: Composts contain mostly organic carbon composed of the remains of the feedstock materials and newly produced molecules generated by the microbes. Carbon compounds are the fuel microbes use to cycle the nutrients in the soil. Some carbon compounds are very easily broken down, others take some time. Generally, easily broken down molecules are more prevalent at the beginning of composting than at the end. This is what stabilization means; most of the carbon remaining in the compost at the end is not easily broken down by microbes. Loss On Ignition (LOI) tests how much of the compost's mass is organic matter (containing organic carbon). Common numbers range from 10% to 65% of dry compost. The remaining part is considered "ash" and contains minerals left over from the high temperature treatment the compost has undergone.

Nitrogen: Most nitrogen in composts is in organic forms that will be released for plant use only after microbes decompose the organic compounds. Generally, 20% to 40% of the organic nitrogen becomes slowly available to plants in the first year of compost application. A common range for nitrogen in composts is from 1% to 7%.

Phosphorus: Usually, much of the phosphorus in composts is also held in organic forms. However, some compost contains significant amounts of inorganic phosphorus held in more slowly soluble forms in association with calcium or magnesium. Release of the organic portion works similarly to that of organic nitrogen. Release from the inorganic forms depends largely on soil pH. Greatest solubility is seen in the region around neutrality (6.2-7.2); pH extremes reduce phosphorus solubility rapidly. Organic phosphorus can be slowly available over the first year following compost application. Common ranges for compost phosphorus run from 0.2% to 2%.

Potassium: In contrast to nitrogen and phosphorus, potassium is not held in organic forms, but becomes more loosely associated with the backbone of organic compounds. It does not require microbial activity for release, so it becomes available to plants at a higher rate. Most of the element becomes available for plant uptake in the first three months following compost application. A common range for potassium in composts is from0.2% to 3%.

Calcium, Magnesium: These nutrients also do not form organic compounds but rather are present in compost as either free or in the form of inorganic compounds. Release of these for plant use mainly depends on how soluble in water soluble the inorganic compounds are. This in turn depends largely on the pH of the soil to which the compost is applied. A more acidic pH (less than 7) favors faster release of these minerals. About half of these become plant available in the first three months following compost application. Common ranges for calcium and magnesium in composts are from 1% to 10% for calcium, and from 0.5% to1% for magnesium.

Sulfur: This important nutrient forms organic compounds, and also has an inorganic phase in the soil. This means that some is readily available and some is released over time, as in the case for nitrogen and phosphorus. A common range for sulfur in composts is from 0.02% to 0.5%.

Trace Elements: Small amounts of other elements are found in composts. These are there mainly because they were contained in the feedstocks. Occasionally, the levels of some of these can be too high, and can be a limitation to using the compost in certain ways, i.e. for growing crops destined for human consumption. The main elements analyzed and common ranges (in parts per million) in compost are: zinc, 15-250; manganese, 40-200; iron, 500-5000; copper, 10-250; boron, 20-75; chloride, 20-300; and in special cases, arsenic cadmium, mercury, lead, selenium and others. Some of these have legal limits (printed on the report form) which, if exceeded, will render the compost unusable for food crops. Compost can be a good source of trace elements for plants because the organics in composts aid in keeping the nutrients in a soluble, plant available form.

pH: A measure of acidity used to predict whether the compost might have an affect on soil pH. Composts commonly range in pH from 6-8. Changes in soil pH can affect the solubility of nutrients. Composts greater than pH seven probably contain liming agents which may affect crop management over time.

Physical Properties

Sieve sizing: Composts naturally contain particles of different sizes. The average particle size will suggest the practicality of using the compost for a particular application. Fine sized (< 0.25 inch) particles are well suited for golf greens, potting media, and other applications where soil incorporation is not feasible. In contrast, larger particles can be easier to distribute on soil and incorporate. Composts are often screened to produce more homogeneous particle size distributions. High quality composts commonly have an average particle size < 0.5 inch.

Soluble Salts: Some feedstocks contain appreciable concentration of salts and these can increase as the volume of the pile decreases during composting. Usually, if the salts are high, they leach away over time. However, until the salts most leach away, they may adversely affect plant growth. A reading of ≤ 5 dS/m suggests compost salinity should have only a marginal affect on plants.

Inerts: It is not uncommon for composts to contain remnants of plastic, glass and metal that comes from contamination of feedstocks with foreign matter. They may be removed by screening, but some smaller pieces may come through. For mainly aesthetic reasons, inerts are not desired in composts.

Biological Properties

Stability: These tests determine whether most of the readily decayed compounds in the feedstocks have been destroyed by the compost microbes. Determining microbial CO_2 respiration rates is commonly used to indicate how much residual microbial activity is occurring, and thus the amount of undecomposed compounds that remain. CO_2 rates of <1 indicate the compost is sufficiently stable to use.

Maturity: This is an important test because some of the undecomposed compounds left over from composting can inhibit seed germination. Sensitive plant seeds are exposed to the compost and then allowed to germinate and grow to see whether the compost may have inhibited them. Normal ranges are from 75% to 100%, indicating little or no adverse effects of compost exposure.

Pathogenic bacteria: Some composts need to be tested for the presence of intestinal bacteria, indicating fecal contamination. Contamination often comes from incompletely composted animal manure, or biosolids. If the compost exceeds limits printed on the report, it should be allowed to cure for a period of time and tested again before use.

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