

GUANO PLUS Affect on Microorganisms in soil¹
Millions per gram of soil

	<i>GUANO</i>	Fertilizer	Compost
Total Bacteria	89	77	46
Actinomycetes	120	81	40
Fungi	6	4.5	3.9
Nitrogen Fixers	94	43	24
Total Anaerobe	52	25	7.6
Total	361	230.5	121.5

1= University of Arizona, Arizona Citrus Agricultural Center

Guano Plus™

Carbohydrate based plant food

For Further information contact:

GUANO PLUS Affect on Microorganisms in soil²
Millions per gram of soil

	Pre application	Post application
Total Bacteria	36	270
Actinomycetes	1.4	1.6
Fungi	.17	.10
Nitrogen Fixers	20	43
Total Anaerobes	5.4	13
Total	63	327

2 = BBC Laboratories, Soil source Mettler, CA.

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CARBOHYDRATE BASED PLANT FOOD

“BioScientific’s *Guano Plus* is a liquid carbon containing fertilizer and microbial nutrient that significantly improves the effectiveness of conventional inorganic fertilizer programs. Unlike modern inorganic fertilizers, the convenient addition of *Guano Plus* greatly enhances the nutrient release and carbon cycles of soil for improved productivity.”

Guano Plus is a fine filtered, liquid carbonaceous fertilizing material which is also referred to as a “liquid compost.” *Guano Plus* contains a balanced content of organic materials, known as carbohydrates, that are used by chemical and microbial processes to enhance soil fertility. *Guano Plus* is compatible with most liquid fertilizers and add balanced nutrition to your fertility program.

CARBON NUTRITION

Just as carbohydrates are important to animal nutrition, carbohydrates are important to plant nutrition. However, the mode of action is a little different. This is based in the need for these carbon containing material to be converted to carbon dioxide by heterotrophic microorganisms in the soil, first. In this process these carbon containing materials are used as energy for microbial processes. In these processes the microbes provide many useful benefits to

plant growth. These include:

- Organic matter decomposition
 - Faster residue breakdown
 - Nutrient availability
- Nutrient Cycling.....
 - Nitrogen Fixation
 - Immobilization
 - Mineralization
- Physical Properties
 - Tilth, flocculation, aeration, drainage, infiltration improvement.
- Balance
 - Synergistic activity between organic and inorganic fertility components.

Pure chemical inorganic fertilizers do not contain organic materials to “feed” the carbon cycle in soil. Likewise, many growers have abandoned organic material additions (manuring), because of convenience, cost or availability.

Over the last few decades of growing without regular organic matter additions, organic materials have been mined out of soil, compounding the problem.

BALANCE

Including *Guano Plus* in your fertilizer programs balances the organic processes in soil by stimulating a diverse and prolific soil microbial population (see result table). *Guano Plus* does not replace your fertility program. *Guano Plus* will help make your existing soil fertility and plant nutrition program work more effectively.

NUTRIENT RELEASE ON DEMAND

Guano Plus enhances organic matter additions.... When applied in conjunction with organic fertilizer additions and crop residue incorporations, *Guano Plus* accelerates the release rate of nutrients by enhancing the Decay Series. The Decay Series is the rate by which nutrients are released from organic fertilizer additions. The rate of “Decay” or “mineralization” from organic matter is a function of microbial activity. *Guano Plus* will enhance microbial decomposition over that rate experienced with compost or manure alone; making organic additions less of a nuisance and of more value.

USE RATES

Apply the first *Guano Plus* application as the primary inoculant in a preplant application on annuals and in the late fall through early winter on perennials. This is usually accomplished through the most convenient delivery means: sprinkler, drip, banded or broadcast. The customary rate is 15 gallons per acre.

Once the primary inoculant has been applied and after planting, subsequent applications are merely a matter of a maintenance program to further assist the beneficial activity. This is usually accomplished through water-run or side dress applications tank-mixed with fertilizers. The standard program includes at least two 5 gallon applications.