

AgroBIOTICS

the science of plenty

THE ADVANTAGES OF SUSTAINABLE CARBON-BASED FERTILITY

Perfect Blend, LLC

US PATENT 8,246,711 B2 (2012)

US PATENT 8,425,648 B2 (2013)



The Unique **ADVANTAGES** of Perfect Blend AgroBiotics Fertilizers in Building Soil Health

Complete Biotic Nutrition

AgroBiotics formulations are nutritionally balanced and complete with primary, secondary, and trace mineral nutrients all necessary to achieve the highest level of soil microbial growth. As a result, slow patterns of stop-and-start growth of microbial populations are avoided.

pH-Balanced Formulations

AgroBiotics biotic fertilizers use proprietary stepped algorithms to lower the pH of the manure feedstock to the low-six range that is ideal for use by soil microbes and more favorable than unbalanced blended or mono-ingredient formulations.

Homogenized Formulations

AgroBiotics fertilizers maximize transformation efficiency from a solid state into forms that are microbial accessible by homogenizing its formulations, and not simply blending it.

Chelated Nutrients

Mineral nutrients in AgroBiotics fertilizers are chelated during manufacturing, allowing them to be immediately available in an ionic form for use by plants and soil microbes. This avoids a need for in-ground chelation, which is a transformation step required of other fertilizers and soil amendments.

The **BENEFITS** of Soil Acids


Soil Acids Store Nutrients from decomposed organic matter until they are needed by plants or soil organisms.

Trans-Cellular Fulvic Soil Acids Feed Plants Directly by passing into a plant's roots, carrying with it the stored primary, secondary, and trace mineral nutrients critical to a plant's health.


Soil Acids Feed Plants Indirectly and are the prime source of food for soil microbes when they reproduce and die, leaving behind protein-rich bodies which contain 14% N and the complete spectrum of plant nutrients.

Soil Acids Enrich and Protect the Soil by collecting and holding up to 98% moisture in their structures that form gels that separate soil particles, open up the soil, and help reduce erosion during periods of heavy rain.

Soil Acids Become Primary Chelating Agents that render elemental minerals into a chelated carbon molecular form that plants and microbes can readily access and use.



The importance of soil acids cannot be overestimated. These powerful humic substances are the foundation of all fertile soil. Soil acids, and their moisture-rich forms, soil acid gels, are universally found in healthy topsoil in all climates of the world, with soil benefits that are staggering in scope.





Perfect Blend **CONVENTIONAL** AgroBiotics Fertilizers

The AgroBiotics Fertilizer Advantages

Over Conventional NPK Fertilizer

HIGHER PROFITS

- Increased yields – up to 20% over NPK programs
- Priced competitively to conventional NPK & micro nutrients
- Increased reliability for more dependable ROI
- Increased resistance to drought or heat stress

BETTER CROP QUALITY

- Highest quality produce - increased density, solids, bruise-free
- Increased storage quality, duration, & shelf life
- Increased percentage of acceptability / payables
- Increased nutrient density (Brix)
- Increased overall crop health

IMPROVED SOIL HEALTH

- Highly effective in any soil type
- Increased organic matter & holding capacity of sandy soils
- Loosens & improves tilth of heavy soils
- Reduced compaction & water run-off
- Increased water penetration & fertilizer retention
- Formulated to feed & multiply soil microbes
- Sustainable fertility / rebuilds soil humus & microbiology





Biotic CONVENTIONAL CARBON-BASED Fertility Products

The fusion of chemistry and biology

BIOTIC 8-5-5

Guaranteed Analysis

Total Nitrogen (N).....	8.00%
1.76% Ammoniacal Nitrogen	
0.04% Nitrate Nitrogen	
3.20% Water Soluble Nitrogen	
3.00% Water Insoluble Nitrogen	
Available Phosphate (P ₂ O ₅)	5.00%
Soluble Potash (K ₂ O)	5.00%
Calcium (Ca)	7.0000%
Total Magnesium (Mg)	0.7000%
Sulfur (S)	3.0000%
Boron (B)	0.0200%
Cobalt (Co)	0.0005%
Copper (Cu)	0.0500%
Iron (Fe)	0.1000%
Manganese (Mn)	0.0500%
Molybdenum (Mo)	0.0005%
Sodium (Na)	0.1000%
Zinc (Zn)	0.0500%

Derived From:

Chicken Manure, Cobalt Sulfate, Copper Sulfate, Ferrous Sulfate, Urea, Manganese Sulfate, Molybdenum Oxide, Sulfate of Potash, Potassium Chloride, Sulfuric Acid, Liquid Fish, Boric Acid*

ALSO CONTAINS NON-PLANT FOOD INGREDIENTS

Mycorrhizal spore species:

Glomus intraradices	0.86 propagules per gram
Glomus aggregatum	0.86 propagules per gram
Glomus mosseae	0.86 propagules per gram

Chlorine (Cl) not more than0.1000%

F1542

Information regarding the contents and levels of metals in this product is available on the internet at <http://www.aapfco.org/metals.htm>

MADE IN USA

BIOTIC 4-4-4

Guaranteed Analysis

Total Nitrogen (N).....	4.00%
0.40% Ammoniacal Nitrogen	
0.03% Nitrate Nitrogen	
1.50% Water Soluble Nitrogen	
2.07% Water Insoluble Nitrogen	
Available Phosphate (P ₂ O ₅)	4.00%
Soluble Potash (K ₂ O)	4.00%
Calcium (Ca)	7.0000%
Total Magnesium (Mg)	0.7000%
0.70% Water Soluble Magnesium (Mg)	
Sulfur (S)	3.0000%
3.00% Combined Sulfur (S)	
Boron (B)	0.0200%
Cobalt (Co)	0.0005%
Copper (Cu)	0.0500%
Iron (Fe)	0.1000%
0.10% Water Soluble Iron (Fe)	
Manganese (Mn)	0.0500%
Molybdenum (Mo)	0.0005%
Sodium (Na)	0.1000%
Zinc (Zn)	0.0500%

Derived From:

Chicken Manure, Elemental Sulfur, Manganese Sulfate, Ferrous Sulfate, Copper Sulfate, Cobalt Sulfate, Molybdenum Oxide, Muriate of Potash, Liquid Fish, Boric Acid*

ALSO CONTAINS NON-PLANT FOOD INGREDIENTS

Mycorrhizal spore species:

Glomus intraradices	0.86 propagules per gram
Glomus aggregatum	0.86 propagules per gram
Glomus mosseae	0.86 propagules per gram

Chlorine (Cl) not more than0.1000%

F1542

Information regarding the contents and levels of metals in this product is available on the internet at <http://www.aapfco.org/metals.htm>

MADE IN USA

BIOTIC 4-4-2

Guaranteed Analysis

Total Nitrogen (N).....	4.00%
0.40% Ammoniacal Nitrogen	
0.03% Nitrate Nitrogen	
1.50% Water Soluble Nitrogen	
2.07% Water Insoluble Nitrogen	
Available Phosphate (P ₂ O ₅)	4.00%
Soluble Potash (K ₂ O)	2.00%
Calcium (Ca)	7.0000%
Total Magnesium (Mg)	0.7000%
0.70% Water Soluble Magnesium (Mg)	
Sulfur (S)	3.0000%
3.00% Combined Sulfur (S)	
Boron (B)	0.0200%
Cobalt (Co)	0.0005%
Copper (Cu)	0.0500%
Iron (Fe)	0.1000%
0.10% Water Soluble Iron (Fe)	
Manganese (Mn)	0.0500%
Molybdenum (Mo)	0.0005%
Sodium (Na)	0.1000%
Zinc (Zn)	0.0500%

Derived From:

Chicken Manure, Elemental Sulfur, Manganese Sulfate, Ferrous Sulfate, Copper Sulfate, Cobalt Sulfate, Molybdenum Oxide, Liquid Fish, Boric Acid*

ALSO CONTAINS NON-PLANT FOOD INGREDIENTS

Mycorrhizal spore species:

Glomus intraradices	0.86 propagules per gram
Glomus aggregatum	0.86 propagules per gram
Glomus mosseae	0.86 propagules per gram

Chlorine (Cl) not more than0.1000%

F1542

Information regarding the contents and levels of metals in this product is available on the internet at <http://www.aapfco.org/metals.htm>

MADE IN USA



Perfect Blend **ORGANIC** AgroBiotic Fertilizers

Organic AgroBiotics Fertilizer Advantages

Over Compost or Manure Programs



HIGHER PROFITS

- Increased yields – up to 20% to 40% over compost or manure
- Increased reliability for more dependable ROI
- Increased resistance to drought or heat stress

BETTER CROP QUALITY

- Highest quality produce - increased density, solids, bruise-free
- Increased storage quality, duration, & shelf life
- Increased percentage of acceptability / payables
- Increased nutrient density (Brix)
- Increased overall crop health

IMPROVED SOIL HEALTH

- Highly effective in any soil type
- Increased organic matter & holding capacity of sandy soils
- Loosen & improves tilth of heavy soils
- Reduced compaction & water run-off
- Increased water penetration & fertilizer retention
- Micronutrients balanced to feed & multiply soil microbes
- Sustainable fertility / rebuilds soil humus & microbiology

EASE AT APPLICATION

- Increased uniformity & stability - no burning or salt issues
- Flowable granular - uniform applications with Airmax or spinner
- Pathogen free - no food safety issue or pre-harvest restriction





Registered **ORGANIC** Fertility Products
The fusion of chemistry and biology



ORGANIC 4-4-4 FA

Guaranteed Analysis

Total Nitrogen (N).....	4.00%
0.40% Ammoniacal Nitrogen	
0.03% Nitrate Nitrogen	
1.50% Water Soluble Nitrogen	
2.07% Water Insoluble Nitrogen	
Available Phosphate (P_2O_5)	4.00%
Soluble Potash (K_2O)	4.00%
Calcium (Ca)	7.0000%
Total Magnesium (Mg)	0.7000%
0.70% Water Soluble Magnesium (Mg)	
Sulfur (S)	3.0000%
3.00% Combined Sulfur (S)	

Derived From:

Chicken Manure, Elemental Sulfur,
Sulfate of Potash, Liquid Fish, AZOMITE®

Chlorine (Cl) not more than0.1000%

F1542

Information regarding the contents and levels of metals in this product is
available on the internet at <http://www.aapfco.org/metals.htm>

MADE IN USA



ORGANIC 4-4-2 FA

Guaranteed Analysis

Total Nitrogen (N).....	4.00%
0.40% Ammoniacal Nitrogen	
0.03% Nitrate Nitrogen	
1.50% Water Soluble Nitrogen	
2.07% Water Insoluble Nitrogen	
Available Phosphate (P_2O_5)	4.00%
Soluble Potash (K_2O)	2.00%
Calcium (Ca)	7.0000%
Total Magnesium (Mg)	0.7000%
0.70% Water Soluble Magnesium (Mg)	
Sulfur (S)	3.0000%
3.00% Combined Sulfur (S)	

Derived From:

Chicken Manure, Elemental Sulfur, Liquid Fish,
AZOMITE®

F1542

Information regarding the contents and levels of metals in this product is
available on the internet at <http://www.aapfco.org/metals.htm>

MADE IN USA



ORGANIC 7-2-2 A

Guaranteed Analysis

Total Nitrogen (N).....	7.00%
0.60% Ammoniacal Nitrogen	
0.04% Nitrate Nitrogen	
4.89% Water Soluble Nitrogen	
1.50% Water Insoluble Nitrogen	
Available Phosphate (P_2O_5)	2.00%
Soluble Potash (K_2O)	2.00%
Calcium (Ca)	7.0000%
Total Magnesium (Mg)	0.7000%
0.70% Water Soluble Magnesium (Mg)	
Sulfur (S)	3.0000%
3.00% Combined Sulfur (S)	

Derived From:

Chicken Manure, Feather Meal, Elemental Sulfur,
Liquid Fish, AZOMITE®

Chlorine (Cl) not more than0.1000%

F1542

Information regarding the contents and levels of metals in this product is
available on the internet at <http://www.aapfco.org/metals.htm>

MADE IN USA



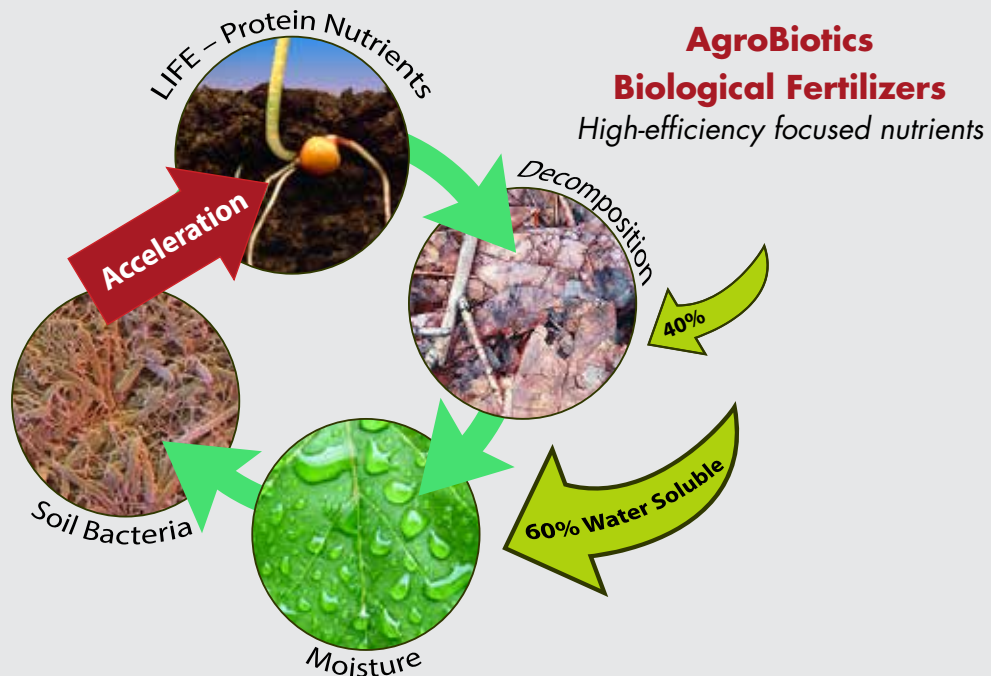
AgroBIOTICS

Fertilizer by Perfect Blend

Perfect Blend AgroBiotics have the ability to accelerate the soil's natural protein cycle in order to benefit both soil and plant life in the most efficient manner.

Perfect Blend AgroBiotics are the most efficient, effective, humus-building, soil-rebuilding fertilizers available. Why just feed your crop when you can do that while rebuilding your topsoil health and tilth too.

Accelerated Regenerative Protein Cycle



When compared to manures or compost, Perfect Blend's patented fertilizers promote many months of natural conversion in a couple of hours. The acceleration continues when the converted and complexed Biotic nutrients speeds up soil life in to overdrive. Microbes then efficiently convert the PB into humic and fulvic acid compounds without the massive expenditure of energy needed to convert composts or manures into available nutrition.

BIOTIC BIOLOGICAL FERTILIZERS HIGH-EFFICIENCY FOCUSED NUTRIENTS

- **Acceleration of soil fertility better than natural humification**
- **Complete nutrient balance**
- **More efficient than conventional NPK, compost, raw manure or other manure-based products**

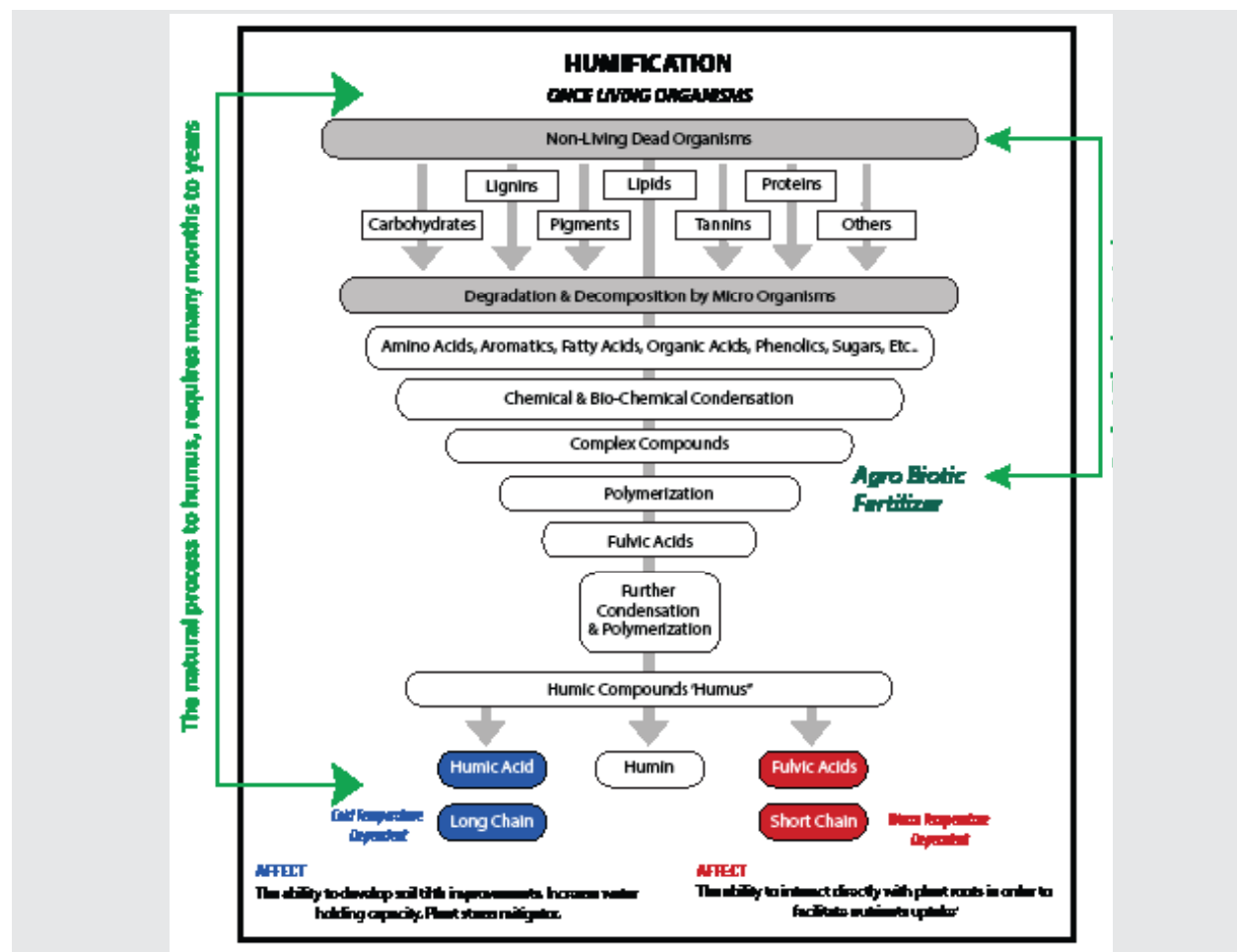
AgroBIOTICS

Fertilizer by Perfect Blend

The natural humification process that converts crop residue, compost, or manures into humic acids, fulvic acids, humus, and humin, normally takes months, or years. **Complex compounds produced by soil microbiology are the basis of all truly fertile productive soils.**

See the chart below from Dr William R Jackson's book.

Perfect Blend AgroBiotics performs over half of this natural conversion via our patented state of the art manufacturing process which introduces the AgroBiotics fertilizer into the soil as a finished complexed and polymerized product, providing greater efficiency and effectiveness of composts or manure.



In late Spring, Summer, & early Fall warm soils, PB is highly available plant and microbe food. Microbes rapidly & efficiently convert Biotic nutrients to stable but reactive high energy short chain, fulvic acid-based natural fertility that is highly interactive with the plant roots.

In Fall, Winter, and early Spring in cool soils, PB is "soil food." Microbes convert the Biotic nutrients to very stable, yet highly available, long chain, humic acid-based natural fertility. This nutrition is released as the plants need it and is a "reserve battery" against any stress the entire crop season.



The **SCIENCE** Of AgroBiotics Fertilizers

The science behind the mechanisms of biotic fertilizers is well established. The basis of all natural soil fertility is results from soil microorganism life cycle remains which become stable carbon plant nutrients full of ionic minerals, carbohydrates, and other complex plant foods that nature stores in the topsoil as acid gels.

Perfect Blend research and development into biotic fertilizer began in 2001. Today, we understand the mechanisms that enable Perfect Blend fertilizers to be efficient, effective and predictable with nutrient and fertility programs.

AgroBiotics fertilizers are sterilized, nutrient balanced, homogenized, pH balanced, and altered on a molecular level to create a highly water soluble carbon-linked nutrient. The elemental nutrients in a Perfect Blend biotic fertilizer have been subjected to a process that creates a microorganism nutrient that has no equal in the commercial fertilizer world. These procedures are captured under US Patent #US 8,246,711 B2 (2012)



"Perfect Blend is the world leader in biotics for one simple reason . . . their science performs!"

AGROBIOTICS FERTILIZER NUTRIENTS:

Found in all Perfect Blends AgroBiotics formulations

Primary Nutrients

Nitrogen
Phosphate
Potash

Secondary Nutrients

Calcium
Sulfur
Magnesium

Trace Minerals

Boron
Chlorine
Cobalt
Copper
Iron
Manganese
Molybdenum
Sodium
Zinc

Amino Acids

Aspartic Acid
Threonine
Serine
Glutamic Acid
Proline
Glycine
Alanine
Cystine
Valine
Methionine
Isoleucine
Leucine
Tyrosine
Phenylalanine
Histidine
Lysine
Arginine
Tryptophan

Vitamins

B-6
B-12
Biotin
Folic Acid
Niacin
Pantothenic Acid
Riboflavin
Thiamine
Vitamin E

Enzymes

Auxin Group
Zeatin

Fish Oils

Omega 3
Omega 6
Omega 9
Eicosapentaenoic acid (EPA)
Docosahexaenoic acid (DHA)





BIOTIC MECHANISMS

How Perfect Blend AgroBiotics Fertilizers Work in the Soil

1 - DUAL FERTILITY ACTION

Biotic fertilizers provide plants and soil bacteria with highly water soluble “plant and bacteria ready” chelated water soluble nutrients.

2 - PRIMARY BACTERIA BLOOM

Bacteria are the first topsoil microorganisms to take advantage of the nutrient-rich biotic fertilizer liquids as they enter the topsoil.

3 - SECONDARY MICROORGANISMS BLOOM

Immediately after the bacteria bloom a secondary bloom of soil microorganisms occurs which feeds off the bacteria.

4 - SOIL ACIDS FORM

The remains of the bacteria and secondary microorganisms create stable nutrient rich soil acids.

5 - COMPLEX SUGARS INCREASE

Increased bacteria populations accelerate consumption of cellulose and lign in structures of roots and plant detritus, creating more soil acids and increasingly complex sugars.

6 - FUNGUS LEVELS ACCELERATE AND BALANCE

As fulvic acid increases so does mycorrhizae fungus, which feeds off the fulvic acid.

7 - SOIL ACID GELS FORM

Highly hygroscopic soil acid structures absorb moisture and develop into gels, which can retain up to 98% of their weight in moisture and protects the soil against erosion.

8 - LARGER SOIL INHABITANTS

A nutrient rich topsoil structure attracts and accelerates a habitat for earthworms, spiders, and other beneficial ground dwellers.

9 - TOPSOIL FERTILITY LEVELS HAVE BEEN INCREASED

As a result of biotic mechanisms a beneficial topsoil microcosm can be established that provides crops with a steady source of “plant ready” nutrients in a chelated ionic form.





TESTIMONIAL

No more worries about field crashes!

"Since starting this Perfect Blend based program in 2008 on all of our potato acres we have not seen a single field crash. Not one circle has gone down early in August. They have all stayed healthy and bulking for the full season."



"Potato quality, payables, incentives, bruise-free, storage quality, and longevity are all maximized with this program."

Nick Johnson, Johnson Agripriizes - Connell,

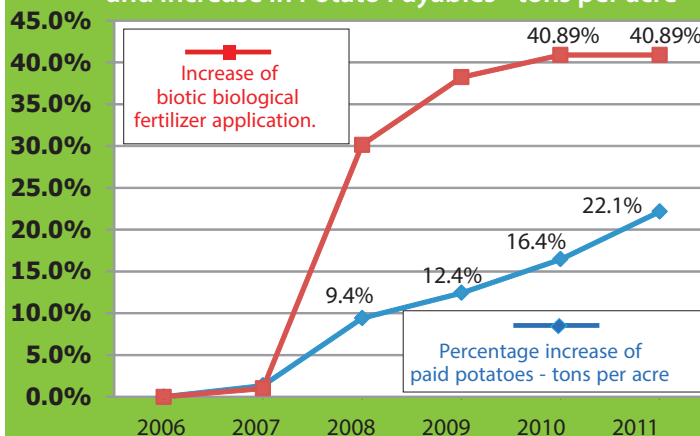
WA District 1 Commissioner, Washington State Potato Commission

"A very HIGH level of success!"

"Use of Perfect Blend AgroBiotics fertility in our program has resulted in our potato growing practice achieving a very high level of success. Our potatoes stay greener longer - that allows for maximized bulking. This produces higher yields and subsequent return on investment."

"By mid-August, our potatoes are pushing ½ ton per day per acre increases, or about 3.5 tons per week."

Comparison of Biotic Biological Fertilizer Applications and Increase in Potato Payables - tons per acre





Another remarkable innovation from Perfect Blend AgroBiotic

BioticCalcium™

US PATENT 8,425,648 B2 (2013)

Introducing AgroBiotics gypsum, a unique hybrid combination of high grade gypsum and biotic fertilizer processed together with Perfect Blend's patented technology.

INTRODUCING AgroBiotics Calcium

Introducing unique high calcium biotic fertilizers in a machine spreadable granule form. A revolutionary new product from Perfect Blend! **BioticCalcium™** marries the incredible topsoil carbon sequestration benefits of biotics with the well-recognized benefits of gypsum.

Why can **BioticCalcium™** be the best gypsum product you have ever applied? The answer is in the topsoil. By combining biotic nutrients focused on growth of soil microorganisms with additional gypsum to supply calcium and sulfur, soils receive the best of both chemical and biotic fertility, with increases in the uptake mechanism for many other minerals, including nitrogen, phosphates, potassium, iron, zinc and other trace minerals.

BioticCalcium™ is soil conditioner that provides additional free calcium ions which flocculate soil particles to open up and make soils more porous. Gypsum is particularly effective in breaking up compacted soil caused by sodium and clay to allow less tillage and increasing topsoil depth.

Water Efficiency - Gypsum promotes water infiltration, retention and conservation which allows water to become more available in chemical terms. Tests show farmland treated with gypsum can require up to 33% less water. This savings alone can pay for the cost of application of **BioticCalcium™**

BioticCalcium™ is the most advanced, topsoil efficient, next generation product manufactured by Perfect Blend. Growers have used gypsum for over 200 years, but the marriage of these two products creates a remarkable new soil nutrient.

BioticCalcium™ is made using the biotic fertilizer nutrients which are then chemically bonded to a highly efficient calcium source. The result is a unique agglomerated granule product.



BioticCalcium™

Pathogen Free - The unique Perfect Blend AgroBiotics process provides triple assurance that there is no possibility of viable human pathogens in our fertilizers after the manufacture process. The most sophisticated program of kinetic, chemical and heat process in the industry is used to eliminate any possibility of human pathogens. Perfect Blend does not use dangerous low technology composting to manufacture its fertilizers.

Maximum Efficiency of

Transformation - The 6.0 - 6.1 pH formulation process promotes rapid soil microbial growth. Altered molecular structure of feedstock increases solubility and rapid transformation into humic substances. Homogenous granules assure rapid protein acceleration in soil microbial populations. Perfect Blend AgroBiotics fertilizers are balanced nutrition high in chelates for direct uptake by plants. Mycorrhizal inoculates replenish depleted fungal colonies.

BioticCalcium™

NUTRIENT	ANALYSIS %	NUTRIENT POUNDS PER TON
Nitrogen	2.5	50
Phosphorous	2.5	50
Potassium	1.5	30
Calcium (Gypsum)	15.5	310
Magnesium	0.6	12
Sulfur	7	140
Boron	0.01	0.2
Copper	0.025	0.5
Iron	0.1	2
Manganese	0.025	0.5
Zinc	0.025	0.5
Hi-Sol Carbon		1,126
Moisture	10	200
TOTALS 2000		



CONTACT US

Dave Horn

tel. 509.713.3644

e-mail. dhorn@perfect-blend.com

Justin Leavens

tel. 805.216.5260

e-mail. jleavens@perfect-blend.com

tel. +1.425.456.8890
info@perfect-blend.com
www.perfect-blend.com