



***SUMAGROW  
THE ALL-NATURAL  
ALTERNATIVE TO FERTILIZER.  
THE REVOLUTIONARY, NEW INPUT.  
THAT HAS BEEN PROVEN ...SCIENTIFICALLY,  
TO MAKE SOIL MORE FERTILE THAN EVER BEFORE.  
WHICH WILL PROVIDE ABUNDANT INCREASES IN YIELD.  
GROW YOUR INCOME... REDUCE YOUR COSTS SIGNIFICANTLY,  
AND ACCELERATE THE TRANSITION OF YOUR CROPS INTO 100%  
"TRUE", NATURAL, ORGANIC FRUITS, VEGETABLES AND GRASSES!***

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# THE BEST NEW PRODUCT IN AGRICULTURE

- SUMAGROW is the REVOLUTIONARY, ALL-NATURAL alternative to fertilizers, pesticides herbicides and fungicides. It has been proven SCIENTIFICALLY and is the most INNOVATIVE agricultural product of this century. SUMAGROW is... the KEY to modern farming. (See page76)  
WE KNOW IT WORKS...MOTHER NATURE DESIGNED THE PLAN.
- It was 1908 when Fritz Haber discovered ammonium, which led to the creation of synthetic based fertilizer, The Haber Bosch Process (see page 73), and now 100 years later, there is a true, completely natural 100% ORGANIC (not an “ALMOST ORGANIC”) input! Our company, BSEI, has been at the forefront of microbial technology for two decades nationally and internationally.
- SUMAGROW is MICROBIAL TECHNOLOGY...a unique, unprecedented, concentration and combination. A formulation designed to jump start biological or microbial ABUNDANCE, ACTIVITY and DIVERSITY. SumaGrow contains 30 multiple strains or varieties of naturally occurring, soil-borne, soil friendly MICROBES. They provide a microbial diversity, with complementary functionalities that will improve crop yields, plant and soil health... fruits, vegetables and grasses, with an abundance of VITAMINS and MINERALS, with never before available nutritional values. The overall nutrition, quality, taste and value of your fruits and vegetables will be greatly enhanced.
- SumaGrow is a highly concentrated, standardized, *NANO-LIQUID* formulation, cultivated under extensive laboratory conditions.
- SumaGrow is made to exacting standards, we perform over 90 quality control checks, from test tube to the 300 gallons, bioreactors.
- A variety of factors combine to create “QUALITY”, “UNIFORMITY” and “PURITY”, in OUR poly-microbial formulation.
- Using molecular tools we have reorganized many beneficial soil microbes to significantly improve crop performance.
- We can offer ample documentation from credible sources that our science has been validated and proven by dozens of leading universities and more than 800 successful field tests, domestically in 50 states of the U.S. and internationally in 40 countries around the world, in all types of conditions. Every type of plant life tested responded favorably to SumaGrow.
- SUMAGROW is also a BIO PROTECTANT, which virtually eliminates *ALMOST ALL* insect, pest and pathogen infestations and reduces fungal and bacterial infections and many diseases, creating a healthier environment for plant growth.
- SumaGrow has been Organic Material Review Institute (**OMRI**) listed since 2010. The OMRI company determines what products qualify to be certified ORGANIC by and for the **USDA**. OMRI lists SUMAGROW as acceptable for all forms of ORGANIC production, without limit.



**MORE THAN EIGHT HUNDRED EXTENSIVE FIELD STUDIES BY FARMERS AND RESEARCH BY UNIVERSITIES, IN THE U.S. AND FORTY COUNTRIES, HAVE DEMONSTRATED AND SHOWN THE EFFICACY AND THE “PROOF OF CONCEPT” OF SUMAGROW, EACH AND EVERY TIME!**

- It has achieved optimal crop performance on a spectrum of cropping systems, in diverse climates and soil conditions worldwide.
- SumaGrow is approved and registered in all, 50 U.S. states, including California and 20 countries!
- SumaGrow is a *perfected input*, the ideal fertilizer and pesticide solution!

# THE GLOBAL FERTILIZER MARKET

- The Global Fertilizer Market was expected to value at US \$155.8 billion in 2019.
- It is projected to register a Compound Annual Growth Rate (CAGR) of 3.8% during the FIVE-YEAR FORECAST PERIOD of 2019-2024.
- The Global Pesticide market is projected at \$81 billion in 2019 with a CAGR OF 6.9%.
- THAT'S A POTENTIAL MARKET OF **\$237 BILLION DOLLARS** FOR OUR REVOLUTIONARY INPUT!
- The Global Herbicidal market represents \$24 billion of that number!
- Asia-Pacific accounts for more than 90% of world rice production and consumption.
- In 2018, Asia-Pacific was the largest geographical segment of the market studied and...accounted for a share of around 60% of the overall market or \$90 billion DOLLARS!
- The use of the BIOLOGICALLY ORGANIC, SUMAGROW MICROBE FORMULATION will accelerate the transition from the synthetic, chemical-based farming practices of the 575,000,000 farms in the world, to more healthy food and sustainable agriculture.
- The growing demand for bio-based micro-nutrients which are essential inputs for the optimal growth of plants, are expected to drive the market to SumaGrow... JUST SUMAGROW IT!

# WHAT IS SUMAGROW?

- SumaGrow is a patent pending array of as many as 30 different strains or varieties of naturally occurring, living, soil microbes or microorganisms... (so tiny that a microscope is needed to see them) in a unique, highly concentrated, liquid formulation.
- A “Bio Protectant” with complimentary, synergistic and multi-functional, Award winning effects of beneficial microbes stimulating soil, plant and environmental health, which will reduce chemical fertilizer and pesticide applications.  
This group of SUMAGROW branded microbes include multiple, friendly strains or varieties of Bacillus, Enterobacter, Pseudomonas, Stenotrophomonas, Rhizobium, Trichoderma and more.
- Every crop and plant has different needs and are grown in a wide variety of soil and climate conditions. SumaGrow will benefit all ecosystems worldwide that present a myriad of different types of soil.
- To maximize results with a significant performance improvement, we require a Soil Analysis of your soil, then we create a customized, “*PLANT SPECIFIC*,” a specialized formulation” for each specific crop application, its environment and soil conditions.
- SumaGrow represents a NEW DIMENSION in farming that will also restore and revitalize land that is NO LONGER FERTILE, providing beneficial soil microbes with multiple functions for the job, these MICROBES harvest and mobilize nutrients from the soil and air, then deliver them to the plants.
- We have taken a fundamentally different path, focusing on the BIOLOGICAL LIFE of the soil (MICROBES), rather than the Chemistry of the soil (NUTRIENTS)... With results that outperform current practices with a TRUE sustainable future. We have copied Mother Nature’s Plan and grow crops in a Natural way.
- SumaGrow is poised to become the most widely used and recognized AGRICULTURAL BIOLOGICAL, in the world.

# MICROBES

- NOTHING GROWS WITHOUT MICROBES!
- There are THREE major groups of plant microbes: bacteria, fungi and viruses.
- All plants are supported by these three groups which live in and around their roots, stems, leaves, seeds, fruit and flowers (rhizosphere). They make the nutrient exchange between soil and plant more productive and make them more resistant and deter pathogens and diseases.
- Microbes ***Compete or Cooperate in*** response to ever-changing environmental challenges. They “earn a living” protecting plants from predators.
- Microbes have a high **saprophytic competence** that helps the SumaGrow microbes compete and overcome the native soil microbes and allows them to perform their intended, beneficial functions.

They mitigate the effects of every known environmental stress, affecting plants.

Crops, in all environments, benefit from the SOIL OPTIMIZATION ACTIVITY of their microbial partners.

SumaGrow has a unique approach to enhance productivity by repopulating the microbial universe of the plants soil with up to 30 different strains or varieties of microbes, that work synergistically to turbocharge the BIOLOGICAL ACTIVITY which will begin to heal and revitalize the health of the soil of the Earth! Microbes dramatically increase harvest results and maximize production, while providing the highest attainable yields and the fullest crop potential.

## MICROBES ARE NEVER OUT OF SEASON!

# MICROBES OR MICRO-ORGANISMS OR BIO-STIMULANTS... WHAT ARE THEY?

- Microbes are simple, living critters (animals) that continuously regenerate the soil with more and more beneficial, growth promoting, microorganisms. They convert and unlock the chemical bonds of the resources (nutrients or elements) naturally found in the soil and air, into a form that can be used by the plants and THEN deliver or transport the nutrients and moisture, along the “**soil highways**” they have created, to the root zone, to nurture the plants.
- Nitrogen, phosphorous, potassium (NPK) and other minerals like magnesium and calcium, lie locked or bound, not available for uptake, in an organic, greatly un-reactive form, rather than a reactive form that plants can utilize.
- The KEY function of SumaGrow inoculation is to release the Nitrogen fixation and Phosphorous solubility to plants as well as setting free or releasing many of the other micro-minerals. There are 16 very essential minerals.
- An application of SumaGrow microbes to the soil CONTINUOUSLY generates and supplies powerful, beneficial microorganisms to the root zone of the plant (rhizosphere), where they transport nutrients and make water available to the plant for increased root mass and optimal development.
- Microbes have a profound importance in EVERY chemical transformation in the air, soil, oceans and in our bodies.
- Microbes play a key role in soil fertility and crop yield... Also, in the creation and production of vitamins, minerals and nutrients in the fruits and vegetables from the substantial increase in the **BRIX** levels of the plants.
- SumaGrow is NOT a fertilizer, a synthetic growth hormone, or (GMO) Genetically Modified Organism.

# MICROBES...MORE INFORMATION

- Virtually every aspect of plant and human biology is affected by interactions with MICROBES!
- Without “*friendly*” microbes there would be no plants or animals or humans, as ALL life on Earth is dependent on microbes to provide many essential services.
- Microbes and plants are intimate partners in virtually every life process. Microbes act as “*nutrient cyclers*” making soil nutrients more bio-available to the plants.
- Our goal is to help all farmers obtain hardier crops with the highest attainable yields possible. Optimizing the microbial communities of plants with SUMAGROW offers an entirely new approach to enhancing the productivity of a grower. The result, significant performance improvement.
- We are now able to influence and control “plant microbe-communities”, predictably.
- THERE ARE MORE MICROBES IN A HANDFUL OF SOIL...(50 billion)...see Care and feeding of microbes THAN THERE ARE PEOPLE LIVING ON EARTH...(7.5 billion people)! (768+ billion microbes per gallon)
- The World’s farmers have trillions of potentials, microbe partners in every milliliter, of SUMAGROW, that can help achieve the ambitious goal of producing more food with fewer resources, a reality.
- Those NEW partners are the microbes contained in SUMAGROW.

***SUMAGROW USE IS INEVITABLE IF A GROWER IS TO STAY COMPETITIVE!***

# MICROBES HARNESSSED

- BSEI has been at the forefront of the microbial diversity revolution for more than two decades.
- The most significant advancements that we have made, are the harnessing of the innate functions of microbes or microorganisms, to improve the biological life of the soil with our “microbial solutions”.
- “It is microbial life that is central to the concept of soil health that plays a significant part in the ability of the soil to retain nutrients,” said Jim Fredricks, AG Source Laboratories’ Outreach and Education advisor.
- “Microbes are a living component of the soil, and are something that can be managed or enhanced, actually re-organized with molecular tools, to significantly improve crop performance along with other factors, for maximum benefit.”
- Fertile soil is fundamental for any healthy, productive crop and microorganisms are the foundation of healthy soil and efficient water usage which produces greater yields. Sumagrow microbes hold on to nutrients and moisture and reduce run-off of water, nutrients, and valuable topsoil, diminishing the deleterious impact growers experience worldwide.
- 
- 
- ***NOTHING grows without MICROBES...***  
but a plant can grow without fertilizer!



# MICROBES ARE BENEFICIAL

- We have selected “plant growth promoting microbes” based on the latest molecular and microbiological techniques. We have reorganized many of the microbes we consider beneficial. Our latest iteration for example, is from “*spore forming microbes*” that... DRAMATICALLY EXTEND THE “SHELF LIFE” of a fruit or vegetable PRODUCT.
- Microbes are live, simple animals. Some strains are compatible with one another, and others are NOT! Some are even cannibalistic, preying on each other.
- Our “Barrier to Entry” is two-fold, the number of microbes (30) we have identified and how we tamed them!

SumaGrow is a formula rich with up to 30 different microbe strains that live and reproduce while performing multiple functions. They convert resources, nutrients, naturally found in the soil and air into a form that can be used by plants. Nitrogen, phosphorous and minerals like magnesium and calcium can lay, locked in the soil, UNTIL... SumaGrow releases them, while maintaining an optimal soil Ph. Anhydrous ammonia has a Ph of 11.37.

Rhizobium directly inhibit plant pathogen growth mainly from the extracellular compounds that they produce.

There are different genera of Rhizobium isolated from different regions that promote different actions such as, fast growing, slow growing, photo-synthetic, growth promoting, disease suppressing and degraders of toxic pollutants. They represent, **A New Dimension** in plant protection. 24 August 2015 by Sai Shiva Krishna Prasad Vurokanda

They provide many other beneficial effects like an increase in plant health and BRIX values, host resistance, increased root and soil health. These are all very important to reduce pest and disease attack. Microbes, such as Fungi, accumulate toxic, heavy metals, rid soil of other toxins and actually utilize them as food.

# MORE MICROBE BENEFITS

- Microbes extract NITROGEN and MOISTURE from the atmosphere increasing nutrient availability and uptake.
- Microbes mobilize “*nutrient uptake*” in the soil and from the atmosphere or AIR, unbinding the nutrients and delivering them to nourish the root system of the plants so they reach their fullest potential. There are **37,000 pounds of Nitrogen** over each acre of land in the world.
- An acre is about the size of a football field.
- Microbes release crop nutrients locked in the soil, NPK, Magnesium, Calcium, and Iron.
- Microbes stimulate microbial activity, communicate, share nutrients, and sustain each other.
- Microbes raise stress resistance.
- Microbes will ameliorate and improve soil structure, tilth (cultivated soil), and productivity.
- Microbes stimulate the inbuilt immune system of a plant improving overall plant health.
- Microbes decay organic matter. The “*saprophytic action*”.
- Microbes cycle unavailable nutrients from the soil and atmosphere, back into forms plants use.
- Microbes unlock chemical bond in nutrients and make them available to plants.

# MICROBES... PLANT BODYGUARDS

- Mycorrhizas and endophyte fungi (microbial flora) grow into plant roots and form a symbiotic relationship in which the fungus donates nutrients (principally phosphates and nitrates) to the plant in exchange for a supply of carbon. They can be thought of as "**PLANT BODYGUARDS**" which reduce the growth of many insects by increasing the plants chemical response.  
A natural, pest protection alliance for the plants, in addition to the BRIX increases.
- Mycorrhizal fungi extend plant roots, they create fine roots, hyphae, tiny, hairlike fungi strands that extend plant roots and access a much larger volume of the soil, they are also ... very efficient at grabbing nutrients.
- Fungi require less carbon as fuel (lower mpg).
- Fungi unlock chemical bonds to release Phosphorous, Sulfur, Nitrogen.
- Fungi take up Phosphorous six times faster than root hairs and concentrate phosphorus and other minerals at the plant roots.
- Fungi connect roots from different plants.
- Fungi transfer Nitrogen and other nutrients from legume nodules to non-legume roots.
- Fungi communicate and are dynamic and powerful information processors.
- From the moment that SUMAGROW is applied to your soil billions of very tiny, live microbes begin reversing the harmful effects from previous applications of fertilizer, pesticide, fungicide inputs that will make your soil more and MORE FERTILE, HEALTHY and PRODUCTIVE. Not only will your yields improve substantially, in a short time your soil will give you true, 100% ORGANIC, fruits, vegetables and grasses!

# MICROBIAL SOIL INNOCULATION

- ***“IT IS PROVED”, scientifically, “that the inoculation of (SUMAGROW), a multi-functional microbial formulation, to the soil, improves soil quality and health, plant health and growth, yield and quality of a broad spectrum of crops, while reducing chemical fertilizer and pesticide inputs.”*** Excerpted from the Abstract of DR. Lalithakumari Janarthanam, the Soil Microbiology Scientist from Michigan State University, one of the oldest and largest Microbiology and Molecular Genetics departments in the U.S., and her team, that developed SUMAGROW.
- SumaGrow is a poly-microbial **“CELL FACTORY”**!
- SumaGrow enhances “stress tolerance” of plants and buffers soil Ph.
- SumaGrow increases **BRIX** Values significantly (usually more than 20%).
- SumaGrow promotes better water infiltration, soil aggregation and water retention, and reduces soil compaction. ..(26%). It is eco-friendly, user friendly and cost effective.
- SumaGrow builds soil Organic Matter (OM).
- SumaGrow increases resistance to attacks from pests and Disease.

# MICROBES CAN ELIMINATE TILLING

- NOW FARMERS WON'T HAVE TO TILL THEIR FIELDS IF SUMAGROW MICROBES ARE APPLIED INSTEAD OF SYNTHETIC FERTILIZER. (TILLING BRINGS AIR TO THE MICROBES).
- Let the SUMAGROW microbes do your tilling.
- ELIMINATING TILLING SAVES ONE TON OF CARBON DIOXIDE (CO2) PER ACRE!
- And a lot of time and energy!
- For every TON of carbon dioxide (CO2) captured by plant life above ground... TWO TONS are sequestered below ground. And with the deeper, broader roots, generated with SUMAGROW, likely more than TWO TONS will be sequestered. Carbon in the ground is also more permanent than in plant life. A tree can sequester carbon temporarily, but if there is a forest fire, the stored carbon releases.
- ADDITIONALLY, **REDUCED COMPACTION** FROM SUMAGROW USAGE SAVES ON TRACTOR FUEL SINCE THERE IS LESS RESISTANCE to the plow, FROM THE SOIL. LESS FERTILIZER INPUT WILL REDUCE THE AMOUNT THAT VOLATIZES INTO THE ATMOSPHERE, WHICH CONTRIBUTES TO SMOG AND GREENHOUSE GASSES!
- THE "**Hours per acre**", TIME, EFFORT AND ENERGY SAVED BY THE GROWER IS A MAJOR PLUS.

When you till it, you kill it.

# MICROBES REDUCE “GREENHOUSE GASSES”

- WHEN “TILLING” IS ELIMINATED FROM THE EQUATION IT SAVES ... ONE TON OF CARBON (CO<sub>2</sub>) PER ACRE.
- FOR EVERY TON OF CO<sub>2</sub> CAPTURED BY PLANT LIFE ABOVE GROUND, TWO TONS ARE SEQUESTERED BELOW GROUND.
- WITH THE DEEPER AND THICKER ROOTS THAT SUMAGROW USE CREATES, IT IS LIKELY EVEN MORE CO<sub>2</sub> IS SEQUESTERED.
- CARBON IN THE GROUND IS ALSO MORE PERMANENT THAN IN PLANT LIFE.
- A TREE CAN SEQUESTER CARBON... HOWEVER THE EARTH IS THE MOST PERMANENT STORAGE REPOSITORY, IT ISN'T GOING AWAY. BUT IF/WHEN A FOREST FIRE OCCURS, ALL THE STORED CARBON WOULD BE RELEASED BACK INTO THE ATMOSPHERE.

# MICROBES CAN FEED THE WORLD

- **20\*20\*20** Was the catchy name given to the plan of the 40,000 members, AMERICAN ACADEMY of MICROBIOLOGY at their conference in December of 2012, in Washington, DC, which was attended by leading agricultural biologists from around the world.
- They came up with a Grand Goal...which they considered to be very “ambitious” ... “a twenty percent yield increase with a 20% reduction in fertilizer, in TWENTY YEARS”! (BY THE YEAR 2032)!
- SUMAGROW had already achieved and surpassed that goal significantly in 2012, they were not aware of our success, way back then.

Growers using Sumagrow have achieved...20%, 51%, 130%, 316% YIELD INCREASES with an initial reduction of 50% less fertilizer.

**HAY, HAY, HAY!**

# SUMAGROW USAGE IS INEVITABLE

- Bio-Soil (BSEI) has been at the forefront of microbial technology and has manufactured microbials for two decades and we understand the fundamental role of microbes or microorganisms, taking SUMAGROW from Eco-farming to mainstream agribusiness. The interest in beneficial microbes for food production is exciting and portends a future when agriculture is more balanced and much less reliant on synthetic chemicals.
- The SUMAGROW microbial technology has demonstrated the unique ability to help maintain the necessary balance of **BIOLOGY** (microbes) and **CHEMISTRY** (or nutrients like NPK) and **PHYSICAL** (soil compaction, water holding capacity) in the soil system for increased crop performance, increased yields and the long-term health of the soil.
- SUMAGROW also promises to Transform and transition fruits and vegetables into tangible, “TRUE”, 100% ORGANIC foods without using any PESTICIDES, animal poop or sewage sludge. (See page 78)
- If a grower is to be successful and competitive in tomorrow’s marketplace the use of SUMAGROW is INEVITABLE!



# YIELDS INCREASED

- Farm yields with current growing methods have essentially peaked, hit the ceiling.
- Conversely, SUMAGROW usage has significantly increased crop YIELDS and productivity with each application...
- WELL BEYOND WHAT CONVENTIONAL FARMING METHODS ARE ACHIEVING NOW.
- YIELDS of SUMAGROWN RICE for example, hit 51.8% recently after only one application and other crops produced even higher yields.
- The **VALUE of increased yields is 3 to 5 times greater** than the cost of SUMAGROW.
- Growers have realized major SAVINGS from the reduced need for chemical fertilizers, pesticides, and irrigation due to more efficient uptake of minerals and water.
- PLUS, A LOT LESS TIME IN THE FIELD!
- True sustainable agriculture requires real and safe solutions enabling farmers to...SIGNIFICANTLY reduce toxic fertilizers, pesticides, fungicides, (all of the (“IDES”).
- SUMAGROW has reduced toxic PESTICIDE usage to virtually 90% in most field trials.
- AND LESS WATER is NEEDED, often reducing IRRIGATION needs 20% and more.

# MORE PROFIT FOR EVERYONE

- SUMAGROW USAGE WILL BOOST PROFITS BY INCREASING YIELDS AND LOWERING PRODUCTION COSTS. It will make the growers more competitive... and FREQUENTLY DOUBLES the BOTTOM LINE... FOR EVERYONE... IN THE BUSINESS OF FRUITS, VEGETABLES, CATTLE and FLOWERS...
- THE AGRO SUPPLIERS
- THE GROWER,
- THE MILLER
- THE WHOLESALER,
- THE RETAILER,
- THE EXPORTER.
- EVERYBODY IN THE "FOOD CHAIN" SHOULD REALIZE SIGNIFICANT ADDITIONAL INCOME.

# ORGANIC CROPS AND SOIL

- The Organic Materials Review Institute (**OMRI**) has listed SUMAGROW as a product that may be used in certified organic production or food processing and handling with **NO RESTRICTIONS**, according to the United States Department of Agriculture (**USDA**), National Organic Program Rule.
- SUMAGROW is an ORGANIC, poly-microbial blend of up to 30 soil beneficial microbe strains or varieties, (micro-organisms) in a revolutionary and proprietary liquid formulation.
- SUMAGROW IT! JUST POUR SOME SUMAGROW INTO YOUR IRRIGATION SYSTEM! AFTER A SEASON OR SO OF SUMAGROW USE YOUR CROPS COULD BE CERTIFIED ORGANIC.
- ORGANIC = Higher profit margins and lower costs to grow.
- Understanding and Managing Soil Quality is critical for a Successful Harvest. SOIL ANALYSIS will answer the question.
- No matter how much management, labor and fertilizer you apply and regardless of the quality of seed you plant, it's the "**SOIL'S BIOLOGICAL HEALTH**" (**microbe content**) that will determine how much food and fiber you produce. SumaGrow usage can change the existing reality.

# BRIX, THE NICE “FOUR-LETTER” WORD

- The BRIX Value has become the GOLD standard to measure plant quality.
- There are numerous advantages to a higher BRIX LEVEL... TASTE, AROMA, NUTRITION.
- Taste reflects nutrition. Higher BRIX VALUES significantly increase the taste, plant sugars, proteins, amino acids, minerals, and vitamins.
- Higher BRIX levels produce a sweeter tasting, more “mineral nutritious” fruit, vegetable, or feed for cattle with lower nitrates and water content and better storage attributes. Animals on high BRIX pasture are typically much healthier.
- Crops with higher BRIX VALUES will produce more alcohol from fermented sugars and be more resistant to insects resulting in a 90% decrease in pesticide and other “ides” usage.
- Crops with a higher BRIX content will have a lower freezing point and be less prone to frost.
- The higher the carbohydrates in the plant juice, the higher the mineral content of the plant, the oil content of the plant, and the protein quality of the plant.

# BRIX INCREASES NUTRITION!

- With the BRIX VALUES increased dramatically...
- THERE ARE SO MANY more vitamins and minerals contained in the fruits and vegetables that are grown with SUMAGROW. Every vitamin targets a specific mineral. Higher mineral content usually means an increase in vitamin content as well.
- The taste of any fruit, vegetable or grass IMPROVES as the BRIX values increases.
- Fruits and vegetables will taste better, sweeter and more flavorful, while providing MUCH greater nutrition, for the lucky consumer.
- SO MANY MORE, “friendly microbes” will now be contained in the fruits and vegetables. you eat

Your body will absorb these additional nutrients to the benefit of your health...and FILL YOUR BODY WITH MANY MORE vitamins and minerals!

# BRIX, WHAT DOES IT MEAN?

- The BRIX Scale is actually a summation of the pounds of sucrose, fructose, vitamins, minerals acids, proteins, hormones and other solids in one hundred pounds of any plant or vegetable.
- Taste reflects nutrition, IF the plant has a high BRIX VALUE, then it has everything it needs to produce maximum nutritional (Phyto-nutrients) as well as sugar.
- The highest BRIX fruits, vegetables “**KEEP BETTER**” , they will **dehydrate** while their low BRIX counterparts begin to **ROT!**
- Longer shelf life...(Shelf life often **doubles or triples** when using Sumagrow.)
- Our most recent breakthrough...a modification of all the “**spore forming microbes**” which dramatically extends the “shelf life” of a product, keeping products from rotting.
- Animals on high BRIX pastures are usually much healthier and grass-fed beef is more nutrient rich, tasty and profitable! ORGANIC BEEF ANYONE?!!
- SEE the Tallgrass beef study.

# BRIX, MORE INFO, NUTRIENT VALUES

- BRIX VALUE is also a measure of the nutritional value of a fruit or vegetable. The vitamins and minerals, the simple sugars and carbohydrates, the flavor and sweetness, the quality.
- We use a refractometer scale to measure BRIX values.
- Higher BRIX levels raise the nutrient density levels in your fruits and vegetables and **increases the nutrient absorption in the body.**
- Every VITAMIN targets a specific mineral, higher mineral content usually means an increase in vitamin content as well.
- Higher BRIX levels extend the “shelf life” of the fruits and vegetables. Our latest modification to “***spore forming microbes***” dramatically extends the shelf life of products.
- Higher BRIX levels ***Reduces Spoilage*** which is very beneficial if/when food distribution systems aren’t adequate to get crops to market in a timely manner.

# BRIX, THE PRIMARY PROTECTION SYSTEM OF THE PLANTS

- “**QUORUM SENSING**” and Higher **BRIX LEVELS** are two significant advantages that SUMAGROW usage creates.
- HIGHER BRIX LEVELS produce “**mineral density**” which reduces pest and disease attacks.
- The higher BRIX content in a plant produces an **ELECTRO-MAGNETIC FREQUENCY** which is referred to as “QUORUM-SENSING”, basically it tells insects to... “STAY AWAY... DON’T COME NEAR ME”. The higher the BRIX content, the stronger the signal that is emitted.
- Secondly...Sucking insects find higher BRIX plants less tasty even as higher order animals like us human people find them tastier.
- If sucking insects DO ingest the increased, high sugar content from the higher BRIX levels in the plants...the sugar goes directly into their stomach. The sugar stays in their stomach, FERMENTS, and creates holes in their gut (because insects don’t have livers to process and digest the sugars) and the pests die.
- Typically, SUMAGROW virtually reduces the need for pesticides at least 90%.

SUMAGROW is a cocktail of up to 30 different microbe varieties or strains which increase the BRIX levels dramatically.



# SUMAGROW IS A BIO-PROTECTANT

- SUMAGROW is a BIO-PESTICIDAL or a BIO-PROTECTANT containing...  
Multifunctional microbes or micro-organisms.  
Plant growth promoting rhizo-bacteria,  
N<sub>2</sub> fixing bacteria,  
Phosphorous solubilizers,  
Phytohormone producers and disease suppressive bacteria and fungi
- SUMAGROW is a New Dimension, in plant protection, that can eliminate almost ALL insect infestations and reduce fungal or bacterial infection and DISEASE, creating a healthier environment for plant growth. SUMAGROW has a “***Disease Suppressive Effect***”.
- SUMGROW provides a multi-functioal microbial Plant Protectant or “Bio-Protectant” for sustainable agriculture.

See the Abstract (on page 63) of the extensive paper written by Dr. “J” documenting the bio-pesticidal study that she performed with her team of Soil Microbiology Scientists at Michigan State University, one of the oldest and most prestigious agricultural institutions in the world.

Located in FACTS

# CHEMICAL PESTICIDE / HERBICIDE REDUCTION

- ;The abstract (page 63) written by the developer of SUMAGROW, (DR "J" ) or Dr. Lalithakumari Janarthanam, a Soil Micro-biologist scientist, while at Michigan State University, asserts that **"IN THE PRESENT... IT IS PROVED", that the inoculation to the soil of multifunctional microbial formulations (contained in SUMAGROW) improves soil quality, soil health, growth, yield, and the quality of a broad spectrum of crops, while also reducing chemical fertilizer and pesticide inputs significantly. The collective, synergistic effects of beneficial microbes stimulating soil, plant and environmental health reducing chemical fertilizer and pesticide application provides a NEW and different Dimension of Sumagrow as a Bio-Protectant. "A healthy plant doesn't require unwanted, poisonous chemical pesticides"**, said DR. "J"., "Degraded soils and groundwater pollution caused by chemical leaching resulted in unproductive land."
- The result is healthy crops with a corresponding increase in their yield." Dr."J" states that **"SUMAGROW CAN ELIMINATE "ALMOST ALL INSECT INFESTATIONS" "and reduce fungal or bacterial infections" "creating a healthier environment for plant growth."**
- **Pesticide residues** have raised food safety concerns among domestic consumers and pose trade impediments for export crops. Most recently Thailand and the U.S. have had disagreements.
- The "IDES" are reduced with SUMAGROW applications due to the increased BRIX levels and the BIO-PESTECANT, anti-insect activity of the solution.

# FERTILE SOIL IS FUNDAMENTAL

- Fertile soil is fundamental for any healthy crop and microbes, or *microorganisms* are the foundation of healthy soil and efficient water usage. SumaGrow structurally changes the soil when we increase the organic matter. It can be co-applied with other products.
- The soil should be teeming with life in the form of bacteria, fungi, protozoa, nematodes, earthworms, and insects.
- Without soil *Microorganisms* the soil cannot efficiently hold on to nutrients, inputs, water and valuable topsoil, but can lose them due to volatilizing and increased water run-off. Some farms in Southwest Iowa volatilize ... *15 to 20 tons of soil*, per acre, annually.
- Synthetic, Petro-chemical fertilizers and other conventional farming practices like tilling, damage and often destroy vital soil *Microorganisms*.
- Proper management of the soil's native microbial community is essential to mitigate ground-water contamination and promote water use efficiency to effectively "GROW" our available water resources.
- Sumagrow usage *REDUCES* the amount of excess Nitrogen that leaches from the fields into the water systems.
- Sumagrow treated soil experienced a **15% increase in soil moisture** over the control, in the root zone of the plant providing greater water retention and reducing soil compaction.

GROWING WATER

- HEALTHY SOIL HOLDS MORE WATER...20 TIMES ITS WEIGHT!

- BSEI has manufactured microbials for two decades (22years) and *WE* understand MICROBES and the fundamental role of microorganisms.

SEE SOIL REPORTS FOLDER

# WATER EFFICIENCY

- *Water efficiency* is the cornerstone that determines the success of the crops.
- Scientists tell us that fertilizers are necessary for abundant crop production, but they are also *detrimental* to long-term crop production and contamination of surface and ground water.
- Fertilizer has an affinity for water.
- Synthetic fertilizers *damage the soil's microbial population* and leave behind *salt residues*. It absorbs water and wicks away the moisture from thirsty crops. This decreases the soils inherent water holding capacity, so **more** irrigation water is needed to grow crops. Excess salts *mimic* drought conditions as they pull water out of plant tissue. If the salinity levels rise in the soil and if fertilizer use is continued, eventually the land will no longer be productive.
- Salinity also inhibits seed germination, seedling growth, and flowering.
- Some of the *SUMAGROW rhizobacteria microbes BIND* sodium preventing its uptake by the plant.
- *Approximately 50% of all fertilizer washes away, polluting streams and rivers often creating "DEAD ZONES" or VOLATIZES, releases into the AIR (ATMOSPHERIC LOADING), creating GREENHOUSE GASSES, or penetrates the soil down to the GROUND WATER and AQUIFERS to contaminate that water.*
- Crops must have nutrients and water. *Healthy soil increases the holding capacity and holds more water.*
- **The health of the microbial community in the soil determines water efficiency and moisture retention.**

# WATER CONSUMPTION REDUCED WITH SUMAGROW

- *Water usage is often reduced 20% or more due to the doubling and even tripling of the root system surface and the penetration of the roots into the soil more than twice or three times the depth of the control patch which adds to the absorption and infiltration of rain and irrigation waters.*
- *The microbial action produced with SUMAGROW applications creates “soil highways” or “micro-channels” in the soil structure, improving land water infiltration, decreasing water runoff and leaching by about half, reducing irrigation needs (around 20%). The microbes in the soil create reservoirs that retain and store rain and irrigation waters.*

*The plant’s ability to retain moisture is enhanced and makes the plant more resistant to extreme heat, cold or frost through the absorption of more minerals.*

- *SUMAGROW has demonstrated INCREASED soil water holding capacity by improving soil structure, reducing compaction which can inhibit root growth and water availability, which keeps earthworms and other vital soil fauna circulating freely creating a healthy soil environment teeming with life.*
- *Healthy soil holds MORE WATER...20 TIMES ITS WEIGHT!*
- *Therefore, irrigation needs are usually reduced considerably.*
- *Rice production is the largest consumer of fresh water worldwide.*

# RAIN WATER RETAINED & RUNOFF REDUCED



Microbes build "*SOIL HIGHWAYS*" or "*MICRO-STREAMS*" providing efficient transport and storage of nutrients, water and gasses. The water holding capacity, water harvesting and water retention of the soil are dramatically INCREASED. with Sumagrow use.

- Rain and moisture are captured by the soil, instead of remaining on the surface to volatize-off or run-off, or leach, causing contamination of ground water and surface water... Most likely taking valuable topsoil, nutrients and chemical inputs with it, into nearby streams and waterways causing more environmental problems.
- HEALTHY SOIL HOLDS MORE WATER... 20 TIMES ITS WEIGHT!
- Soil that has 5% organic matter can absorb an inch of rain water.
- Soil that has 1% organic matter will store 20,000 gallons of water.
- Microbes form "**water reservoirs**" in the soil reducing overall watering needs by 20% or more.
- The result is a moist, nutrient rich soil with reduced compaction which ensures optimal crop performance.
- Leaching has been reduced by up to 70% with SUMAGROW use.
- For the grower who is struggling with muddy, over wet soil, fertile ground dries out quicker as the water penetrates the soil through the micro-channels created by the microbes, instead of remaining on the surface, slowing down planting or damaging grasses or turf.  
Growers can get back in their fields sooner and return to farming.  
See the picture above as proof!

# SYNTHETIC, PETRO-CHEMICAL BASED FERTILIZER... RUNOFF PREVENTED

- SUMAGROW increases the HOLDING CAPACITY of the soil and has reduced leaching by up to 70%.
- See the NITRATE RUNOFF REDUCTIONS report of Arise Research facility conducted in Illinois where the amount of runoff water was decreased significantly.
- The total nitrates runoff was reduced 79.12% with SUMAGROW.
- The corn crop yield increased by 21.67%.
- **ALARMING...** To manufacture ammonium for synthetic fertilizer is an energy- intensive and costly process. Collectively, fertilizer manufacturing consumes 14% of the world's natural gas and 1% of all electricity produced globally. Today's production methods also release large amounts of CO<sub>2</sub>,... 400 metric tons of (GREENHOUSE GASSES), into the atmosphere, creating a large, negative impact on the environment... AND MORE PROBLEMS, LIKE THE EPLOSION RECENTLY IN BEIRUT, LEBANON.

# DROUGHT AVOIDANCE

- DROUGHT is one of the major constraints on agricultural productivity and environmental stress of the crops. Drought occurs when soil moisture is rapidly depleted. The soil dries out from the surface downward.
- PLANT GROWTH PROMOTING RHIZOBACTERIA (**PGRP**) in SUMAGROW play a significant role in alleviation of drought stress in plants, it increases the HOLDING CAPACITY of the soil and can reduce LEACHING by up to 70%. By altering the absorbency of the soil **DROUGHT TOLERANCE** is enhanced, runoff reduced.
- THESE BENEFICIAL MICROBES or MICROORGANISMS, COLONIZE THE RHIZOSPHERE and ENDO-RHIZOSPHERE OF PLANTS AND IMPART DROUGHT TOLERANCE.
- Microbes play pivotal roles in the lifestyles of the plant-world.
- NUMEROUS FIELD STUDIES HAVE SHOWN ...THAT with SUMAGROW, ROOTS grew more easily... due to LESS Compaction in the soil.
- The ROOT SYSTEMS DOUBLED, (MORE ROOT SURFACE TO ABSORB WATER AND MINERALS)
- Their PENETRATION tripled, reached deeper into the soil MORE THAN TWICE the DEPTH of the control or “grower’s standard”, into a zone which is MORE NUTRIENT RICH and MOIST, REDUCING WATER NEEDS 20%.

SOIL MICROBES increase considerably with SUMAGROW, sometimes 50 TIMES or more!

SumaGrow has **proven** agronomic performance and improved tolerance to seasonal drought conditions, observed in crops by plant growth promoting rhizobacteria. 24 August 2015 by Sai Shiva Krishna Prasad Vurokanda, Growing more sugarcane.

**A RISE IN SOIL ORGANIC MATTER OF 1% INCREASES THE WATERHOLDING CAPACITY of the soil 10%!**



# DISEASE REDUCED WITH SUMAGROW

- *SUMAGROW is both a DISEASE PREVENTATIVE and a CURATIVE ... THAT WILL PROVIDE SUSTAINABLE... long lasting DISEASE protection and improved profit potential.*  
Various plants have benefitted from the *defensive action* of and the *proven resistance* to numerous plant diseases it provides. *The healthier a plant is, the easier it can fight disease.*
- This ***“disease suppressive effect”*** associated with *Rhizobium*, allows the full potential of the living organisms in the *multi-faceted microbes and bio-inoculants* to benefit from this amazingly effective *technology* which *remediates soil contaminates* making them harmless or less toxic. The beneficial *Trichoderma* microbes or *“living organisms”* in Sumagrow will boost plant health and improve the growth, productivity, and disease suppression of crop plants, while reducing inputs of fertilizers, pesticides, and fungicides.  
*Healthy soil containing beneficial microbes has a capacity to increase immunity, suppress and defeat disease.*  
Plant growth promoting bacteria (**PGPB**) protect plants from disease and other stresses. *“They don’t give disease a chance to get a foothold.”* Kate Scow, UC DAVIS, PROFESSOR

- BANANAS
- COFFEE
- SUGAR CANE
- TOBACCO
- TOMATOES
- BLACK PEPPER
- TURF GRASS
- WHEAT
- Sigatoka, nematodes
- "ROYA' or leaf rust
- Root fungus
- Blue mold disease
- Powdery mildew
- Quick wilt
- Anthracnose, dollar spot
- Rust, fusarium

# “INVASION RESISTANCE” FROM PATHOGENS

Soil microorganisms both digest nutrients and protect against pathogens and other disease and threats. Bacteria form a Biofilm around the roots of a plant, so microbial pathogens and soil dwelling parasites cannot gain access. The beneficial microbes in the rhizosphere also get in the way and produce chemicals that act directly against pathogens.

We reintroduce microbial spores into the soil to repair the damage and restore healthy microbial communities that will sustain your crops and provide nutritious food to the root zone of the plant where they make nutrients available to the plants for optimal growth and development. They also channel nutrients and water down to the plant cells and generate electrical fields.

Plants actually communicate TO OTHER NEARBY PLANTS, through the root system. Microbes make compounds that alert neighboring plants to the presence of a threat. They connect plants, allowing them to communicate with each other and set up “defense systems.”

Mycorrhizae “fungus roots” have a symbiotic association between a fungus and a plant and brings nutrients to a plant.

Mycorrhizae fungal filaments act as a conduit for signaling between plants, they enable plants to talk to and alert each other by transmitting a “stress signal”, strengthening their natural defenses and trigger protective responses, like the closing of stomata, against pests.

This “**early warning system**” enables the plants to produce their defensive chemicals that repel pests.

*Several species of fungi are effective against certain plant pathogens.*

# BETTER GERMINATION RATES

- Faster germination times, earlier flowering, earlier maturation can be expected.
- This contributes to earlier harvests and greater earnings for the growers.
- Products treated with Sumagrow provide higher yielding plants and grasses while reducing fertilizer and irrigation costs.
- Production costs are often reduced 50% to 65% or more with significant yield increases.

# WEIGHT GAIN FOR THE CATTLE OF RANCHERS!

- The cattle gained about 8 to 10 pounds per month, MORE THAN FORTY (40+) MORE POUNDS DURING A NORMAL 150 DAY GRAZING PERIOD. YOU'LL HAVE BIGGER and HEALTHIER LIVESTOCK.
- Cattle eat more SUMA\*GRASS than normal pasture grass when grazing in this very favorable environmental profile and typically gain two (2) MORE POUNDS PER week and INCREASE their Raw Milk yield.
- MORE MEAT... MORE MILK... MORE PROFIT!
- Cattle and other animals always gravitate to HIGHER QUALITY FORAGE, with the highest BRIX levels, from the nutrition packed *SUMA\*GRASS*, which contains optimal levels of protein, minerals, fiber and other essential nutrients. This has been proven many times by observing which grass or hay the cattle eat first, when offered a choice.
- BRIX CONTENT increases significantly during the season long duration of forage. You can Better manage costs by maximizing your lowest cost feed source, your grazing acres. Increase your forage base with SUMA\*GRASS!
- The BRIX SCALE is correlated with taste and is a proxy for nutrient density.
- Twenty-one more grazing days were added. Consider Suma\*Grass for your next supplication season.
- All these advantages will increase the **ROI** for the cattleman.

**MAKE MORE MONEY FOR YOU WHEN YOU GO TO MARKET.**

# ORGANIC CATTLE AND CHICKENS

SUMA-GRAINS, SUMA-GRASS, SUMA-HAY provide healthier forages for greater livestock performance, improved weight gain, milk production and breed-back.

- After ingesting Suma-Grass, your cattle, chickens, goats and other animals...
- SHOULD QUALIFY, TO BE CERTIFIED ORGANIC!
- RECENTLY, a farmer in South Africa harvested a 130% YIELD increase in his alfalfa or lucerne pasture. That is a lot MORE nutrition for the animals and a lot more HAY!
- Significant commercial benefits may be derived from the High Brix levels which enhance the health of the soil and grass.

**MORE PROFIT TO EVERYONE!**

# THE BIRDS AND THE BEES!

- **70% OF CROPS** that HUMANS EAT, RELY ON BEES FOR POLLINATION!
- BEES are often exposed to pesticides in the agricultural landscape.
- There are 900 different registered pesticides in California.
- FRANCE has become the first country in Europe to ban all five NEONIC pesticides that are killing the bee population, birds and other pollinators. The ban was effective September 1, 2018.
- The use of neo-nicotinoids (neonics), which are powerful neurotoxins, has wreaked havoc on bee populations Worldwide with massive losses of these native pollinators (bees) over the past two decades.
- Other countries have and are now banning the use of neo-nicotinoids as a pesticide.
- To harm and kill the birds (which eat a lot of insects) and the bees to protect crops from pests is counterproductive!
- SUMAGROW acts as a bio-pestecant reducing harmful pesticide usage by 90% and more, in a way NO other product can or does.
- SUMAGROW provides exceptional resistance management for crop protection, it is Eco-friendly and attracts more, natural pollinators.

The success of **POLLEN DENSITY** is due to the High BRIX levels from Sumagrow use.

Like a JAMES BOND martini... JUST SHAKE or STIR SUMAGROW... No mixing required.  
THEN SIMPLY POUR IT INTO YOUR IRRIGATION EQUIPMENT.

**SUMAGROW IS SIMPLE AND EASY TO APPLY.**

# NITROGEN UNBOUND

- SUMAGROW IS CARRIED IN A LIQUID HUMATE BASE THAT SERVES TO BUILD SOIL ORGANIC MATTER, ACTS AS A SOIL pH BUFFER to PROVIDE A CARBON FOOD SOURCE TO THE MICROBES IN THE SOIL. HUMIC ACID is ORGANIC and OMRI CERTIFIED.
- Most soils have an ample supply of nutrients in a form that is un-available to the plants.
- NITROGEN is typically bound 95% to 99% IN THE SOIL in an organic form that is not available for UPTAKE by plants. Nitrogen is in a greatly UN-REACTIVE form rather than a REACTIVE form that plants can utilize. Mother Nature gave us THE ANSWER, the solution... MICROBES! NITROGEN MINERALIZERS turn organic matter into minerals and ammonium that plants need. Our microbial formulations unlock bound soil nitrogen into a reactive form that plants can utilize. The plants collect, and absorb nitrogen from the air and soil for optimal plant growth and development. This is another reason that Sumagrow increases yields so dramatically.
- SUMAGROW CONTAINS LITERALLY, TRILLIONS OF NITROGEN-FIXING MICROBES IN EVERY MILLILITER, THAT ARE A UNIQUE COMBINATION OF SYMBIOTIC AND NON-SYMBIOTIC, FREE,
- LIVING, NODULATING AND NON-NODULATING MICROBES.
- Microbes are some of the smallest creatures on earth. ONE TEASPOON of liquid SUMAGROW
- WOULD CONTAIN BILLIONS OF MICROBES WHEN VIEWED UNDER A MICROSCOPE.

**JUST CALL IT... NANOTECHNOLOGY FOR THE GROWERS!**

# NITROGEN HARVESTED FROM THE AIR

## **80% OF THE ATMOSPHERE OR AIR CONTAINS NITROGEN!**

- Floating above every acre of farmland in the world there are about 17,000 KILOS, 18 TONS, 37,000 pounds / of Nitrogen (N) in the air or atmosphere.
- *But there is a catch!*
- *To use this life-giving nitrogen your crops and grasses NEED one other element... Microbes, which are essential for breaking down the nitrogen or ("**FIXING**") it to make it available for your crops and grasses to uptake and use.*
- *Microbes are needed to unbind or (FIX) the Nutrients in the SOIL and from the ATMOSPHERE (AIR) and deliver them to the root system of the plants.*
- *Then the microbes cause the process of "denitrification" by which a nitrate becomes "molecular nitrogen" especially by the action of a bacterial microbe.*
- *MORE MICROBES = HIGHER YIELDS \*\*\*\*\* A LOT MORE MICROBES = A LOT HIGHER YIELDS!*
- *Another thought... the MORE MICROBES... the bigger and healthier your crops will grow. It has been proved, confirmed, validated a thousand times, that Sumagrow works, it works well!*

**SUMAGROW CONTAINS UP TO 30 DIFFERENT NITROGEN-LOVING, MICROBIAL STRAINS.**



# NITROGEN 99% UN-REACTIVE

- Nitrogen is 95% to 99% *Bound or un-reactive, bound in a greatly un-reactive form rather than a reactive form that plants can utilize.*
- *Plants can only use “FIXED” NITROGEN!*
- *Conversely the complimentary effect of the SUMAGROW formulation is to release and unbind the nitrogen in the soil (TO FIX THE “N”) and enable the plants to also absorb nitrogen from the atmosphere.*

*Soybeans, peas, and other legumes naturally pair with nitrogen-fixing microbes that associate with plant roots and uptake nitrogen from the soil and make it available to the plants.*

- *The more nitrogen a plant receives, the bigger, faster, and healthier it will grow.*
- *SUMAGROW usage usually reduces fertilizer inputs 50% or more initially and eventually may replace synthetic inputs completely because it harvests nitrogen both from the air and activates or chelates the nitrogen in the soil...AND DELIVERS THEM TO THE ROOT ZONE of the plant.*

**THERE ARE 16 ESSENTIAL ELEMENTS IN HEALTHY SOIL.** (see page 77)

- *NPK ARE THE THREE MACRO NUTRIENTS*
- *OTHER CHEMICAL FORMS THAT PLANT CAN UPTAKE ARE Calcium, Magnesium, Sulfur, Iron, Zinc, Manganese, Copper, and Boron.*

# FERTILIZER USE AND REDUCTION

- ***“The excessive use of fertilizer to provide “TEMPORARY NUTRIENTS” and inappropriate use of other agrochemicals has undeniably resulted in negative and sometimes irreparable effects on soil health and the environment.”*** espoused DR “J” in her abstract.
- *“Synthetic, petrochemical fertilizer has dramatically increased world food supplies, the issue or the problem is... it is not SUSTAINABLE.”*
- The heavy reliance on nitrogenous fertilizer, coupled with soil nutrition management, lack of complementary inputs, declining soil fertility, the increasing salinity of the soil from fertilizer and weak marketing and distribution systems, have all emerged as major restraints to improve fertilizer effectiveness.
- *CHEMICAL FERTILIZERS LEAD TO: Loss of organic matter, soil microbes, topsoil, water pollution. Depletion of soil minerals brings reduced nutrition and increased vulnerability to attack.*
- ***Our game plan*** is to balance inputs of Sumagrow and fertilizer working synergistically to...grow more and higher quality crops and grasses, to improve fertilizer efficiency.  
*Reduce fertilizer, add **Quality and Quantity** to your crops!*
- *Fertilizer use is cut in half with the initial application of SUMAGROW and reduces it even more with each subsequent application.*

## CUT FERTILIZER COST IN HALF

# SUMAGROW CONVERTS BOUND SOIL PHOSPHOROUS

- The microbes in SUMAGROW perform many key functions such as ***phosphorous solubilization*** which MAKES MORE PHOSPHOROUS AVAILABLE to the plants.
- SUMAGROW WILL MOBILIZE AND SOLUBILIZE PHOSPHOROUS (P) AT BOTH HIGH AND LOW SOIL pH ENVIRONMENT AND MAKE IT AVAILABLE FOR PLANT UPTAKE.
- The doubling of the root systems enhances the plants' ability to absorb nutrients, reduce chemical fertilizers, reduce irrigation needs (prox. 20%), and makes the plant more resistant to extreme heat, cold or frost through the absorption of more minerals which increases the yield and BRIX values dramatically, due to the increased biological activity of the microbes.
- "THE DOUBLING OF THE ROOT SYSTEM AND THE HUGE AMOUNT OF NITROGEN ACTIVITY IS JUST UNBELIEVABLE, SUMAGROW IS TRULY A "GAME CHANGER" stated... Mnr. Dreyer Senekai of the Van Senekai Famili Boerdery in South Africa.
- The World's largest, privately owned, 60,000-acre sugarcane farm.

# LEONARDO de VINCI ONCE SAID...

- MORE THAN 500 YEARS AGO, “next year will be 1523...”
- ***“WE KNOW MORE ABOUT THE MOVEMENT OF CELESTIAL BODIES, THAN ABOUT THE SOIL UNDER OUR FEET.”***
- What lies beneath our feet represents a true scientific frontier and is very under-studied. We spend more time characterizing overall performance than studying below-ground attributes.
- *“The invisible world underneath our feet is teeming with microbes that convert sun, water, CO2 and crop residue into INCOME. They are out of sight but very vital.”* DR. Allen Williams
- Though you never see them...90% of all organisms, on the seven continents live in the soil. There are 40,000 species of microbes in the rhizosphere.
- There are more microbes in one LITER of SUMAGROW ...than there are people on the EARTH!  
(There are now **7,594 billion** people in the world)

**HUMAN HEALTH IS CORRELATED WITH SOIL HEALTH.**

# SOIL ANALYSIS, FOR SUCCESSFUL FARMING

- What is a Soil Analysis? By definition, a **soil test** is a process by which elements (phosphorus, potassium, calcium, magnesium, sulfur, manganese, copper, and zinc) are chemically removed from the soil and are measured for their "plant available" content within the sample.
- *Simple Soil Analysis will boost your Profits, by increasing your crop/plant yields, your productivity, lower your costs, save you Money you do not have to spend on unnecessary inputs and soon, transform the Quality of your fruits and vegetables to ORGANIC!*
- *Awareness of the inherent potential and productivity level of a field or site is important when making wise, careful, conscious land and crop management decisions.  
Before we formulate SUMAGROW for your crops we will request a soil analysis from you.*
- *Our technical and scientific teams at the laboratory in Hattiesburg, Mississippi include... molecular microbiologists, environmental scientists, arborists and agronomists who will analyze and evaluate the exact composition of your soil biologically and chemically and determine it's "**PLANT AVAILABLE CONTENT**" (the NUTRIENTS IN THE SOIL).  
Soil Analysis will show the fertility and mineral density of the soil and determine...  
a "**SPECIFIC PLANT FORMULATION**" that will maximize results for the grower.*
- *(Biology... refers to and measures the microbes available in the soil and (chemistry)... refers to and measures the nutrients in the soil.  
With the chemistry info our laboratory team then knows what nutrients present and what nutrients are to input or reduce.*

**SOIL ANALYSIS TELLS US WHAT MICROBES AND MINERALS TO PUT IN YOUR SUMAGROW FORMULATION.**

# SOIL ORGANIC MATTER INCREASED

- **SOIL ORGANIC MATTER** is the fraction of the soil that consists of plant or animal tissue in various stages of breakdown (decomposition).
- SOIL ORGANIC MATTER has a direct influence on water holding capacity.  
AN INCREASE OF JUST 1% OF SOIL ORGANIC MATTER EXPANDS THE WATER HOLDING CAPACITY OF THE SOIL TEN TIMES!
- (An inch of rain can be absorbed when the Organic Matter is only 5%!)  
• IN A RECENT FIELD TRIAL WITH A BROCCOLI FARMER WHO ADDED SUMAGROW...  
the Soil Organic Matter increased 67.5%
- This also helps increase the cation exchange capacity (**CEC**) a useful indicator of soil fertility which shows the soil's ability to supply; calcium, magnesium and potassium, and the ability to resist changes in pH.
- SEE THE SOIL ANALYSIS 24 PAGE BROCHURE OF CHUCK GRANTHAM.
- (The Danforth Plant Science Center uses large-scale X-ray computed tomography imaging for non-invasive root measurements which records unseen processes without disturbing plant development. It is the first system in the U.S. Now we can actually see fungi infecting the cells of maize (corn) that access carbon from the plant and trade that for P and N and other nutrients.)

# SOIL COMPACTION REDUCED

- A study of SUMAGROW treated soil found a **26%** reduction in **SOIL COMPACTION**.
- Reduced soil compaction makes the soil softer and more aerated so the brace roots of (corn and sugarcane) can grow downwards more easily and reach deeper into the soil to tap the water and nutrients held within the subsoil, also keeping plants upright in winds.
- Roots should grow vertically, if they are growing horizontally, they are likely hitting hardpan (soil impervious to water) compaction. (A rock or a hard spot!)
- Aeration creates new channels to carry water through the soil to the plant roots helping them reach deeper into the soil. (In some cases, the roots not only doubled but tripled and reached 18 inches into the soil.) Providing more surface area for nutrient/water uptake.
- Soil erosion is also mitigated along with increased absorption which reduces RUNOFF of topsoil, nutrients and chemical inputs and fields do not become waterlogged.

# SOIL EROSION REDUCED

- MICROBES produce **GLOMALIN** "*Soil Glue*", Arbuscular mycorrhizal fungi (**AMF**) which creates soil aggregates vital to nutrient exchange and water movement that reduces ponding and runoff. Without "underground highways" created by Glomalin, crops would require more fertilizer to obtain the same yields.  
Microbes slow down the rate of water entering the aggregate.  
Soil aggregates are a "*Soil Carbon Valet*" that store carbon where "slow acting microbes" live.  
***Soil that has 5% organic matter can absorb an inch of rain.***
- ***WATERHOLDING CAPACITY goes up 10%. with a 1% increase in SOIL ORGANIC MATTER...***  
***We've got the pictures to prove it.***

**HEALTHY SOIL HOLDS MORE WATER!**



# PLANT NUTRIENT LEVELS INCREASED

- Being cognizant of the level and type of “**plant available nutrients**” by analyzing the soil, is KEY to assessing feasible yield goals, nutrient inputs required and a “**PLANT SPECIFIC**” formulation of SUMAGROW to maximize production, for each individual crop.
- New developments in agricultural technology or “soil science” enable us to measure porosity, compaction, moisture, fertility and ultimately soil health. (page 48).  
Also, the soil Biology (microbes) and Chemistry (NPK and other nutrients).
- The soil composition answers the question of how we can obtain the most significant benefits through the inoculation of SUMAGROW to your fields.
- **Soil...**perhaps our most important asset.
- BRIX VALUES, CHLOROPHYL, PLANT PROTEINS and MINERALS will significantly increase with each SUMAGROW application resulting in long term viability of your land and crops.
- Microbes are pre-selected to meet the needs of each plant, environment and soil conditions. Each crop will have specific needs.
- SUMAGROW supplies powerful beneficial microorganisms to the root zone of the plant where they make nutrients and moisture available to the plant for optimal growth and development.

# INPUTS REDUCED

- Fertilizers are typically reduced 50% with the first application of SUMAGROW and more with each subsequent input.
- SumaGrow harvests sufficient nitrogen, "**ANHYDROUS AMMONIA**" from the air and Nitrogen from the soil to accomplish and offset this reduction and more. (see page 42)
- Pesticides are often reduced by 90%.
- Recently (JUNE 2, 2020) DICAMBA usage was disallowed in the U.S. because of the propensity to "**drift damage**", volatilizing, far from the intended target area to **more than one million acres** of neighbor's farms from "**ATMOSPHERIC LOADING**" (*the un-wanted spreading*), **which caused substantial and undisputed crop damage.**
- (21.2.5 MEXICO is now banning GLYPOSATE)
- As Mies van der Rowe said many years ago, sometimes... "LESS IS MORE."
- BUT "**MORE**" is always "**MORE.**"

# COSTS REDUCED

- SUMAGROW IN YOUR SOIL CAN REDUCE FERTILIZER COST AT LEAST 50% to 60% IN THE FIRST YEAR of use AND MUCH MORE IN SUBSEQUENT YEARS.
- And perhaps...the best news is that SumaGrow is two thirds LESS EXPENSIVE than fertilizer.
- Your need to purchase other inputs may be reduced 60% which will save you more money also.
- SUMAGROW is a liquid, easy to apply, easy to ship and MUCH SAFER TO STORE THAN FERTILIZER, (remember Beirut, Lebanon!) takes up less than 10% of space needed for fertilizer storage, reduces material handling, application costs, lowers fertilizer program costs and SumaGrow can be co-applied with other products.
- YOUR "**HOURS PER ACRE**" or FIELD TIME and ENERGY expended will be reduced not having to apply fertilizer, pesticides, fungicides, and other inputs as often or at all.
- EXPOSURE to toxic carcinogens from inhaling, or TRANSDERMAL exposure on your skin when spraying will be eliminated!
- SUMAGROW usage could reduce a grower's costs by about one half to two thirds.

**FREQUENTLY THE BOTTOM-LINE PROFIT DOUBLES WHEN SUMAGROW IS USED AS AN INPUT.**

# CARBON SEQUESTRATION & PHOTOSYNTHESIS

- Photosynthesis is the process by which plants breathe in carbon dioxide from the air. The plant ***inhales carbon and exhales oxygen back into the air.*** The carbon then becomes the stock of the plant, the leaves and the roots. The carbon departs from the plant as EXUDATE (discharge) through the root system and into the soil. The carbon emissions are trapped and captured within the soil to offset what has been released into the atmosphere and stays there, properly sequestered as ORGANIC MATTER. It has been estimated that 30% of a plant's production of carbon actually leaves the plant as exudate into the soil.
- SUMAGROW usage will restore soil carbon, locking the carbon in the soil.
- A 2017 study estimated that Global croplands could store an additional 1.85 gigatons of carbon a year, equal to the annual emission of the GLOBAL TRANSPORTATION SECTOR!
- 
- ***Even a small amount of carbon stored has a large effect on offsetting Atmospheric Carbon or "Greenhouse Gas" emissions. (USDA 2005)***

# LEAF MASS INCREASED

- Sugarcane leaves treated with SUMAGROW were both longer and greener.
- This results in more photosynthesis confirmed by ***chlorophyll fluorescence*** measurements and additional growth over the remainder of the growing cycle until the sugarcane was harvested.
- ***Chlorophyll fluorescence*** was measured at an increase of **46.1%**
- See the sugarcane video for more information.

# HARVEST EARLIER

- Typically, HARVESTS are pushed up from normal maturation schedules, due to better and faster germination rates, earlier flowering, and earlier maturation from the SUMAGROW applications. Getting healthy plants above ground sooner and establishing robust root systems in the early growing season is advantageous.
- Earlier germination results in a longer reproductive period!
- MORE PROFITS!
- An earlier harvest has obvious benefits in terms of attaining a higher price for your goods in the marketplace.
- This financial side is a nice bonus to the farmer at the end of the growing season.

# STRESS TOLERANCE IMPROVED

*SUMAGROW PROVIDES SAPROPHYTIC COMPETENCY FOR THE SOIL AND SUPPORT AGAINST EXTREME ENVIRONMENTAL CONDITIONS...DROUGHT, INSECTS, DISEASE, TRANSPLANT, WIND...HIGH OR LOW SOIL Ph, SOIL OR MOISTURE ISSUES, SANDY, OR HEAVY CLAY SOILS, COMPETES WITH ANTAGONISTIC MICROBES AND...*

- **THE TERRIBLE "TOOS"!**
- **TOO HOT!**
- **TOO COLD!**
- **TOO WET!**
- **TOO DRY!**
- **TOO WINDY!**
- **TOO RAINY!**
- **TOO SNOWY!**
- **TOO CLOUDY!**
- **TOO SUNNY!**
- **TOO FLOODED!**
- **TOO MUDDY!**
- **TOO SANDY!**
- **TOO CLAY!**

## SumaGrow...

ALWAYS SOUNDS... TOO GOOD TO BE TRUE!

# BARRIER TO ENTRY

- The ability of SUMAGROW to combine and HARNESS up to 30 different microbe strains or varieties into one unique, proprietary formulation presents a significant...

***“Barrier to Entry”*** to any potential competitors.

The manufacturing process would be exceedingly difficult to determine.

- 90% of all inoculants have “NO PRACTICAL VALUE”! (JBROCKNELL & BOTTOMLEY, SOIL BIOLOGY and BIOCHEMISTRY, 1995)

The ***saprophytic conference*** helps SUMAGROW microbes to compete with native soil microbes that could be antagonistic and allows them to perform.

- BSEI, the manufacturer of Sumagrow has specialized in microbial products for two decades (20+ years) of developing microbial technology and manufacturing microbes, with more than 18 years’ experience with agricultural applications of microbes.
- There have been more than 800 field tests conducted in universities and by growers worldwide... The science is well accepted, university proven, validated domestically in every state in the U.S. and abroad in 40 countries ...we know it works every time.

**GROWERS NEED TO REDEPOSIT IN THEIR “SOIL BANK” ... WHAT THEY HAVE OVERDRAWN!**



# MORE SUMAGROW BENEFITS

- ABUNDANT CROP YIELD INCREASES
- INCREASED PLANT NUTRITION LEVELS
- INCREASED NUTRITIONAL VALUES OF THE FRUITS, VEGETABLES AND GRASSES
- INCREASED WATER AND NUTRIENT UPTAKE
- INCREASED SOIL HEALTH AND PRODUCTIVITY
- INCREASED SHELF LIFE OF END PRODUCT
- BETTER WATERHOLDING CAPACITY
- DECREASED WATER REQUIREMENTS
- DECREASED NUTRIENT RUNOFF (LEACHING)
- CROPS WILL TRANSITION TO ORGANIC
- INCREASED PLANT HEALTH, REDUCES PEST, PATHOGEN AND DISEASE ATTACKS
- NITROGEN AND PHOSPHOROUS UNBOUND AND MADE AVAILABLE
- INCREASED ROOT AND SOIL HEALTH, COMPACTION REDUCED
- SIGNIFICANT FERTILIZER REDUCTION
- CHEMICAL HERBICIDES AND PESTICIDES REDUCED AND/OR ELIMINATED
- EARLIER GERMINATION RATES
- BETTER STRESS TOLERANCE
- SOIL ORGANIC MATTER INCREASED
- FERTILIZER RUNOFF REDUCED
- SOIL EROSION REDUCED
- ELIMINATE TILLING
- CARBON SEQUESTRATION ENHANCED
- GREENHOUSE GASSES REDUCED

# KEY MICROBIAL ACTIONS

- SUMAGROW CONTAINS **NITROGEN FIXING MICROBES**,
- MICROBES THAT FUNCTION AS **PHOSPHATE SOLUBILIZERS**,
- MICROBES THAT ACT AS **NUTRIENT CYCLERS**
- MICROBES THAT ENCOURAGE KEY PLANT PHYTO-HORMONES.
- SUMAGROW IS DELIVERED IN A LIQUID HUMATE BASE THAT SERVES TO BUILD SOIL ORGANIC MATTER ,  
ACT AS A SOIL pH BUFFER,  
AND PROVIDE A CARBON FOOD SOURCE TO THE MICROBES.

# PUBLIC ENEMY NUMBER ONE

- There are now more than **260 toxic chemicals** that are prevalent in our food system.
- The JOURNAL OF AMERICAN MEDICAL ASSOC. (JAMA) said,  
***“These toxic chemicals pose large hazards to human health and the environment”.***
- "We have completely chemicalized the human experience and the planet itself, and so the level of toxicity has superseded the planet's capacity for life."  
Dr. Zach Bush, October 14,2019 interview published in Salon.
- INSECTICIDES are classified into 29 classes (by their mode of action).
- FUNGICIDES into 15 classes.
- Pesticides can enter the body via inhalation, ingestion, or absorption through the skin.
- Pesticide residuals raise food safety concerns from consumers who search for alternatives to agrochemicals contained in their food.
- The MINIMUM RESIDUAL LEVEL (**MRL**) presents **TRADE IMPEDIMENTS**, for export crops also.
- Dangerous chemicals have NO place in a healthy food system or a HEALTHY BODY!
- **CONCLUSION:**  
Exposure to pesticides was associated with an increased risk of ***“All-CAUSE”*** and cardiovascular disease mortality.

# THE HERBICIDE CHALLENGE

- There are currently **505** unique cases of HERBICIDE RESISTANT WEEDS Globally!
- 259 species of WEEDS have evolved resistance to 23 of the known herbicide modes of action.
- And to 167 different HERBICIDES.
- There are herbicide resistant WEEDS reported in 930 crops in 70 countries.
- PESTS have developed resistance to toxic plant phytochemicals.
- PESTS are developing RESISTANCE faster than new pesticides can be created.
- **OUR AGRICULTURAL PRACTICES ARE DUE FOR A SHIFT OF PARADIGM!**
- Paradigm is correctly spelled **S U M A G R O W**.
- The Global market for herbicides is \$24 billion.

# ABSTRACT FROM DR. "J"

Bioprotectant with multifunctional microorganisms

JBiopest 6(2):219-204

## Bioprotectant with multifunctional microorganisms: A new dimension in plant protection

Lalithakumari Janarthanam

### ABSTRACT

In the present investigations it is proved that the inoculation of multifunctional microbial formulation to the soil improves soil quality, soil health, plant health, growth, yield, and quality of a broad spectrum of crops reducing chemical fertilizer and pesticide input. These microbial populations consist of selected species including plant growth promoting rhizo-bacteria, N<sub>2</sub>-fixing bacteria, Phosphate solubilizers, phytohormone producers, plant disease suppressive bacteria and fungi. To make it very simple a different dimension as 'Bio Protectant' is given in this presentation to the collective synergistic effects of beneficial microbes stimulating soil, plant and environmental health reducing chemical fertilizer and pesticide application. A healthy plant does not require unwanted, poisonous chemical pesticides. Review of literature is focused in multiple ways on the growth promoting ability along with the biological activity of beneficial microorganisms. The present SumaGrow-F2 formulation contains multi-functional Rhizobium species, *Pseudomonas* spp., *Bacillus*, and *Trichoderma* spp. The recorded novel benefits of SumaGrow-F2 formulation in the Green House and Field are discussed here as microbes increasing plant health, soil health, and root health of a broad spectrum of crops. Not only can it eliminate almost all insect infestations and reduce fungal or bacterial infection, it also creates a healthier environment for plant growth. The result is healthy crops with a corresponding increase in the yield of fruits or vegetables or grains. Modern trend is to look for inspiring intelligent multi-functional microbial Plant protectant or bio protectant for sustainable agriculture.

**Key words:** Multi-functional, polymicrobial, plant growth promoters, microbial plant protectant, bio protectant

See the full abstract here <https://sumagrowintl.com/dr-js-12-page-abstract-on-the-benefits-of-sumagrow/>

# REGENERATIVE AGRICULTURE

- Regenerative agriculture refers to farming practices that not only protect our limited resources, but also repair, improve, and regenerate the soil.
- SUMAGROW enables “**BEYOND SUSTAINABLE**” and regenerative agriculture.
- SUMAGROW microbial inoculation technology has demonstrated the unique ability to help maintain the necessary balance of BIOLOGY (microbes) and CHEMISTRY (nutrients) in the soil system for increased crop performance.
- The routine application of SUMAGROW microbes to the soil continually delivers and supplies beneficial NUTRIENTS (NPK) and moisture / WATER to the root zone of the plant where they provide for optimum growth and development.
- SUMAGROW is safe and effective on all plant life, growing mediums and systems throughout all phases of the plant lifecycle.

**SUMAGROW IS NEVER OUT OF SEASON.**

# OCEAN WATER AND SUMAGROW MAY PROVIDE WATER TO IRRIGATE FIELDS EVEN DURING DROUGHT CONDITIONS

*Recently our research team used Pacific Ocean water from Long Beach, California combined with SUMAGROW and irrigated PECHAY (Bok choy) plants with the water... and in 23 days it was harvested successfully, a potentially AMAZING breakthrough that could...should...will... impact farming Worldwide by providing desperately needed water for crop irrigation and drought conditions, while saving other sweet water for the population.*

- Agriculture is the largest consumer of freshwater (70%) and a major cause of degradation of surface and groundwater resources. SumaGrow use can change that paradigm.

## **SUMAGROW CHANGES THE STRUCTURE OF SEAWATER, OCEAN WATER FROM A SALT CRYSTAL FORM TO A MINERAL FORM.**

 **URB Water – First Trial**  
by SumaGrow.info

On Sunday, November 10<sup>th</sup>, a 55 gallon drum was filled with seawater from a boat launch in Long Beach, California. On Monday, 200mL of URB Water (Pro-con as it is referred to in report) was added to a 5 gallon pail filled with seawater. The procedure was repeated two more times. The three 5 gallon pails were taken to Joyful Farms in Hemet, California.



On Tuesday, November 12<sup>th</sup>, more than 100 plants were doused with 1% URB Water seawater solutions. The plants (seen to the right) were thoroughly knocked down with the force and amount of seawater (5 gallons per row) that was administered to the plants in less than one minute. The goal of the watering was to see if the plants could survive the 1% URB. No additional water or nutrients were given to the plants. On November 25<sup>th</sup> it rained during the day and partly into the night.

This picture was taken on December 5<sup>th</sup>, which was 23 days after the 1% URB Water seawater treatment and. The plants, a member of the Bok Choy family, tasted good and no one had any negative side effects from the food.



Bok Choy plants were watered with 1% URB Water seawater and lived. The plants were harvested with the remaining untreated crops on December 6<sup>th</sup>, which are at the top of the picture to the left. Untreated seawater would have killed all the plants within 4 to 6 hours according to every agronomist that was consulted.

# VIETNAM FISH-POND WATER

## TREATED POND

Shared with me > Treated pond/ Ao đã xử lý ▾ 

Files



- The photos from a fishpond in Vietnam show incredible results when Sumagrow was applied to the water. The pond scum disappeared, the waters were visibly clearer, and the oxygen levels increased.
- The Sumagrow microbes “ate” the waste feed and the feces (of the pond grown fish) which had sunk to the bottom of the pond.
- There was a vast improvement in the appearance and clarity of the water.
- The fish were more nutritious and *tasted a lot better!*



# FARMING IS A SCIENCE

- And no two farms will have identical challenges in growing high quality crops and reducing harmful inputs. That is why we work with our producers/growers to deliver a **customized plan**, based on the needs of each individual farm. We select the appropriate microbes to meet the needs of the plant, environment, and soil conditions. Different crops have different needs. We will review your *Soil Analysis Report*, your soil, the type of crops grown, the current inputs, the previous inputs and your climate and make appropriate suggestions. Tank mixing and application is very easy and effective.

We understand that you need more than just a “product,” you want a “**SOLUTION**”!

How to reduce operating costs, grow higher quality, higher yielding crops.

reduce your irrigation costs (Save more of your *TIME and ENERGY*?)

- What about pests? Drought? Disease? Soil erosion?
- ***The farmer’s dilemma***...the overuse of synthetic fertilizer has worn out the soil it was meant to sustain, leading to a self-perpetuating cycle that requires even greater amounts of inputs into the soil which now is much less arable. The soil retains less water, continues to degrade and pollutant runoff leading to phenomenon like “the ***Dead Zone*** in the Gulf of Mexico which recently covered 8,000 square miles. Page 69.

**SUMAGROW USAGE WILL HELP YOU ANSWER MANY - IF NOT ALL - OF THESE CHALLENGES!**

# REHABILITATE YOUR DEAD, NON-PRODUCTIVE FARMLAND

- ***"Degraded soils and groundwater pollution caused by chemical leaching have resulted in land becoming unproductive". DR. "J" 2009 Abstract. (see FACTS)***
- ***"Farmland is decreasing and yields have been stagnating while demand for good food increases worldwide".***
- *The major reason is, fertilizers have **raised the salinity levels in the soil** until it is no longer productive and healthy enough, to grow a crop. SUMAGROW is environmentally safe and will remediate many soil contaminants, rejuvenate the ground, and provide for and maintain the long-term health and sustainability of the soil.  
Fundamentally revitalizing the land to make it profitable and sustainable again.*
- ***SUMAGROW CAN AND WILL HEAL THE LAND ...MAKE IT PRODUCTIVE again...***
- ***YIELDS WILL RESUME! SOIL HEALTH IS MORE THAN NPK and Ph!***
- ***SUMAGROW WILL RESTORE AND MAINTAIN SOIL HEALTH and FERTILITY.***
- ***ACCORDING TO THE EPA THE U.S. IS LOSING 3,000 ACRES OF PRODUCTIVE FARMLAND TO DEVELOPMENT DAILY!***
- ***China has abandoned 40% of their "wasted land". They are attempting to rejuvenate 167 million acres of "dead" unproductive land by 2022.***
- ***It is estimated that 15% of the world's farmland has been abandoned, because ... it is NON-PRODUCTIVE!***
- ***Worldwide... most observers believe we have reached "peak farmland", the UN projects that farm acreage will continually decrease.***
- ***Rehabilitating abandoned farmland may be SUMAGROW's "BIGGEST BENEFIT" after providing greater yield increases! SEE...CARE AND FEEDING OF SOIL MICROBES (page 4/6) ... ORGANIC FARMER (on SUMAGROWintl, website)***

We have developed a consortium of agricultural microbials (30 strains) to **REVITALIZE** and **REMEDiate** the soil with beneficial microorganisms that inherently increase soil fertility and water efficiency.

*Fortunately, we have the ANSWER... SUMAGROW. A new paradigm, which can change the existing reality, SUMAGROW IS a NEW DIMENSION in farming to RESTORE and REHABILITATE... problem soil, that was once FERTILE. Buckminster Fuller once said..."to change something, build a new model that makes the existing model obsolete." SUMAGROW is that NEW MODEL! SUMAGROW will structurally change the soil as we increase the ORGANIC MATTER and balance both the nutrients and ph. There is a distinctive earthy aroma to the smell of biologically, healthy, active soil. You can visibly see and smell the difference between good and bad soil.*

# MISSISSIPPI RIVER BASIN ISSUES

- ANOTHER MAJOR CHALLENGE WE HAVE IN THE U.S. ARE THE “**DEAD ZONES**” that have been created in the Gulf of Mexico, exacerbated from nutrient enrichment, particularly nitrogen and phosphorous, flowing from the discharge of the Mississippi River.
- Most of the nitrogen comes from the upstream runoff of fertilizer and soil erosion from the 32 states, whose streams and rivers, spill into the Mississippi River Basin.
- Watersheds from Montana to Pennsylvania and the major farming states extending southward along the Mississippi River, starting in Minnesota, Wisconsin, Illinois, Iowa, Missouri, Tennessee, Arkansas, Mississippi, and Louisiana.
- The “**DEAD ZONE**” along the Louisiana and Texas coast (from New Orleans to Corpus Christi, Texas), is approximately the size of New Jersey about 8,000 square miles and returns every year.
- Hypoxia (reduced oxygen in the water) alters the Nitrogen cycle and produces a Greenhouse Gas, NITROUS OXIDE, 300 times more potent than carbon monoxide, from the “DEAD ZONE”.

Recently, The “RED TIDE” plague in Florida closed beaches for more than a year, from Tampa Bay, southward to Fort Meyers, impacting tourist revenues \$150 million, along the West coast of the state.

- In Europe, 29 waterways were analyzed, and more than 100 pesticides were detected in the water.

# AWARDS RECEIVED BY SUMAGROW

- **Google** **“MOONSHOT WINNER” “SOLVE FOR X”** February 2015 Rutgers University (see the Winning presentation of Lou Elwell <https://www.youtube.com/watch?v=ThUat94OeOg> (FACTS))
- The ability of SUMAGROW to reduce chemical fertilizers 50% or more and increase the Quantity and Quality of foods and to Recover, Revitalize and Regenerate unusable land, while protecting water resources made SUMAGROW, **Number One in the 2015 competition.**
- SUMAGROW was the 2016 **“PITCH TANK WINNER”** at the Freedom Fest!  
Because SUMAGROW increases crop Quality, Yield and BRIX value while decreasing fertilizer and water usage in agriculture production it was named Number One.
- In 2011 SUMAGROW was named **“THE BEST of WHAT’S NEW”, GRAND AWARD** winner for Green Technology from POPULAR SCIENCE magazine.
- **FORBES.COM 2009** SUMAGROW Has original solutions to IMPROVE crop yields and reduce chemical fertilizer and pesticide usage.
- **AND MORE!**

# WHAT ELSE IS SUMAGROW?

- *SUMAGROW* is an ***all-natural alternative*** to fertilizer, pesticides, herbicides fungicides, et al, which will grow bigger, better, healthier more nutritious crops. At the grower level it will greatly increase your yields, decrease your operating and production costs and help protect the environment.  
*SUMAGROW is a liquid solution that can be easily applied with speed and efficiency. It is a premium product, with a PROVEN and VERIFIED performance track record.*
- *SUMAGROW IS A 100% NATURAL*, liquid input with an amazing array of benefits for your crops, plants, and grasses, such as...
- NITROGEN FIXATION (plants can only use '**FIXED NITROGEN**' which is often the limiting factor til now).
- PHOSPHOROUS SOLOBULIZER
- NUTRIENT MOBILIZATION
- PHYTOHORMONE PRODUCTION
- DISEASE SUPPRESSION FOR PLANTS
- *SUMAGROW, THE "SUPER FOOD", THAT YOUR CROPS AND GRASSES WILL DEVOUR, WHICH WILL TURN YOUR FIELDS INTO FERTILE, MICROBE and NUTRIENT RICH SOIL. True, balanced crop nutrition!*

***SUMAGROW PROVIDES FOR AN EASY TRANSITION INTO TRUE, 100% ORGANIC FARMING.***

# GROSS DOMESTIC PRODUCT (GDP)

- **GDP** is an “*economic snapshot*” the total *monetary value* of all goods and services produced in a country, in a specific time. *GDP* answers the question... *How much have we produced?*
- The *GDP* of the Philippines is \$356 Billion or One Trillion ph.
- Agriculture contributed prox. 10% to the *GDP* in 2019 which missed the government target of 2% growth in that sector by one percent.
- In 1975 agriculture contributed 31% of the *GDP of the Philippines, now only 10%*.
- *GDP* is calculated as the percentage of value added.

Thus, the importance of agriculture in the economy of the Philippines and other countries the target of Secretary William Dar is to grow the sector by 3% to 4% by the end of the Duterte administration and *achieve greater food security by ending a long period of weak growth.*

- *His VISION and ours is ANI AT KITA! Greater yields...More profits.*
- *The worldwide success of SUMAGROW to substantially increase crop yields, could very favorably position Secretary Dar to attain his goals and much more!*
- 
- ***Calculate what a 50%, or more increase in crop yield would equate to in your country!***

# THE HABER-BOSCH PROCESS

- *The Haber-Bosch Process extracted Nitrogen from the air...combined it with hydrogen, which became AMMONIA, the main component of fertilizer.*
- *The Haber-Bosch Process “FIXES” atmospheric nitrogen (N<sub>2</sub>) with hydrogen (H<sub>2</sub>) which forces a chemical reaction that produces ammonia (NH<sub>3</sub>).*
- *Plants can ONLY use “FIXED” NITROGEN.  
(Nitrogen in the soil is in an UN-REACTIVE state or “bound” almost 100%).*
- *Plants need “Nitrogen-nutrition” in the form of ammonium or ANHYDROUS AMMONIA to grow.*
- *Previously, before the Revolutionary SumaGrow was created there were two options, animal poop and then synthetic fertilizer.*
- *SUMAGROW has **LIVING NITROGEN FIXERS, THAT EXTRACT OR PULL NITROGEN FROM THE SOIL and ATMOSPHERE and deliver it to the roots of the plants for FREE!***
- *SumaGrow changes the Nitrogen into a “**REACTIVE**” and useful FORM, to grow more fruits and vegetables...therefore less fertilizer is needed!*
- ***Co-catabolism of arginine** (an amino acid) and succinate, drive symbiotic nitrogen fixation.  
Flores-Tinoco CE, June 2020, Molecular Systems Biology*

# HABER-BOSCH (CONTINUED)

- Nitrogen comprises and makes up about **80% of the atmosphere / air**.
- There are 17,000 KILOS/37,000 POUNDS of ATMOSPHERIC NITROGEN in the air/atmosphere above every acre of farmland. SUMAGROW plants, harvest this UNLIMITED SUPPLY of NITROGEN from the atmosphere 37,000 pounds per acre...for **FREE, NO CHARGE, NO COST!**
- SUMAGROW contains several Nitrogen-Fixing Rhizobia, microbes, that unbind the Nitrogen in the soil and also extract nitrogen from the atmosphere and convert the Nitrogen into ammonium nitrate. Then the microbes deliver the Nitrogen from both sources to the plants' roots, to feed the plants.
- The microbes in SUMAGROW transfer acidifying protons to the nitrogen molecules taken from the air and this produces ammonium!
- Ammonium is then conducted out of the Rhizobia, the bacterial cell, and passed on to the plant.
- Even today, SUMAGROW is the only product in the world to harness ***Rhizobia bacteria***, which then **converts the nitrogen (N) in the air to ammonia**.

Until SUMAGROW was available, farmers HAD to spread anhydrous Ammonia or Urea "FALSE" fertilizer on their fields, which also inhibits microbes.

- SUMAGROW makes agriculture more sustainable by reducing the farmers dependence on fertilizer. And without the "DISADVANTAGES", (see page 74).

***SUMAGROW HAS ECLIPSED AND IS THE CULMINATION OF WHAT the HABER\*BOSCH PROCESS, CREATED in 1908... MORE THAN ONE HUNDRED YEARS AGO!***

**SUMAGROW REALLY IS A "BETTER MOUSETRAP!"**



# THE HABER BOSCH DISADVANTAGES

- The Haber-Bosch Process has several **negative effects** on soil organisms and soil organic matter. Large amounts of fertilizer is lost from runoff after rains or it volatilizes, referred to as “*atmospheric loading*”, (a natural gassing off) into the air and “drift damage”.
- **Four+ billion pounds of pesticides** are spread on farm fields worldwide annually, to replenish key elements that crops have extracted and consumed during the growth cycle. (1.1 billion pounds in the U. S.)
- On the plus side, synthetic nitrogen fertilizer (anhydrous ammonia) is credited with feeding half of the present world population...thanks to the products the Haber-Bosch Process made possible.
- However, Fertilizer use has created grave imbalances in the nitrogen cycle, producing copious amounts of **GREENHOUSE GASES** in recent decades, which has become a public health hazard.
- Substantial high fossil fuel energy is consumed when manufacturing fertilizers and pesticides.... (Fertilizer production consumes 2% of the world’s Energy supply. 400 metric tons of Carbon Dioxide (CO<sub>2</sub>) or GREENHOUSE GASES are released into the atmosphere, which accounts for 1.6% of total GLOBAL CO<sub>2</sub> emissions! (See page 33).
- Runoff of chemical fertilizers causes “DEAD” ocean zones (page 69) worldwide. From the Gulf of Oman in the Arabian Sea, (a zone big as Florida), and in the Gulf of Mexico recently, 8,000 sq. miles as big as New Jersey...from New Orleans to Corpus Christi, Texas!

# “ALMOST ORGANIC” FALSE FERTILIZERS

- Organic farming TODAY is NOT ... *pesticide-free farming*.
- Foods claiming to be Certified Organic are “ALMOST” organic, but not quite... BECAUSE... PESTICIDES and these... “FALSE FERTILIZER” inputs below are spread on your fruits and vegetables as “fertilizer” so that they can be labeled “organic”...BUT THEY ARE NOT!
  1. DEHYDRATED COW MANURE PELLETS (POOP)
  2. COMPOSTED CHICKEN MANURE (POOP)
  3. BAT AND BIRD GUANO (POOP)
  4. COMPOST TEA (DECAYED ORGANIC MATTER THAT HAS ROTTED INTO A NATURAL FERTILIZER).
  5. BONE MEAL
  6. LIQUID SEAWEED
  7. FRESH SEAWEED (RINSED TO REMOVE THE SALT)
  8. GREEN SAND.
  9. **SEWAGE SLUDGE** (often unfit for human consumption) IS OFTEN SPREAD ON U.S. CROPS and on **50% of the crops of the EU**.
- IF YOU ARE WHAT YOU EAT...DO YOU REALLY WANT TO EAT SEWAGE SLUDGE? (See Page 77)
- Yes, even these “NATURAL”, so called, “organic” pesticides are highly toxic and present potential, serious health risks. T
- These “**False Fertilizers**” are not chemical free! They are dangerous to people, animals, birds, beneficial insects (BEES) and the environment.
- UNFORTUNATELY, ONCE PESTICIDES, et al... ARE USED BY THE GROWER, YOUR FOOD ISN'T TRULY ORGANIC ANYMORE!
- FUNGICIDES are routinely applied to fruits and vegetables when they are ocean shipped in containers...
- Maximum Residue Levels (**MRL**) remain and are still present on the skins of the fruits and vegetables when you purchase them!

***SUMAGROW IS THE ONLY, 100%, FULLY ORGANIC, ENVIRONMENTALLY SUSTAINABLE, ALTERNATIVE FERTILIZER PRODUCT AVAILABLE TODAY!***

# THE SIXTEEN ESSENTIAL PLANT NUTRIENTS

- CARBON (C)
- HYDROGEN (H)
- OXYGEN (O)
- NITROGEN (N)
- PHOSPHOROUS (P)
- POTASSIUM (K)
- CALCIUM (Ca)
- MAGNESIUM (Mg)
- SULFUR (S)
- BORON (B)
- CHLORINE (Cl)
- COPPER (Cu)
- IRON (Fe)
- MANGANESE (Mn)
- MOLYBDENUM (Mo)
- ZINC (Zn)
- These essential nutrients or chemical elements are necessary for the growth and development of a plant. SUMAGROW use *releases* these nutrients/elements that are bound in the soil minerals and salts and will maximize the efficient use of these residual plant nutrients.
- The criteria were established and formulated by D.I. Arnon and P.R. Stout in 1939.
- 1. An element is ESSENTIAL, if when deficient, the plant is unable to complete the vegetative or reproductive stages of its life cycle.
- 2. The deficiency can be prevented or corrected only by supplying the specific element causing the deficiency; and
- 3. That element is directly involved in the nutrition of the plant. Nothing grows without Microbes.

**REMEMBER... *AN ELEMENT NEVER FORGETS !***

# SEWAGE SLUDGE / “FOREVER CHEMICALS”

- Bio-solid based chemicals are the end-product of treated sewer sludge. They contain **PFAS** or PER- and POLY-FLUOROALKYL substances that are referred to as **SEWAGE SLUDGE**.
- PFAs are toxic chemicals that DO NOT breakdown as other compounds do. PFAs linger for years in the atmosphere, environment and even in our blood. PFAs are synthetic and will NEVER degrade in the environment. We only have information on the toxic effects of a few substances in the class.
- All of these fertilizers are made of at least 50% bio-solids.
- They are persistent, remaining in the environment and human body for a long time.
- "FOREVER CHEMICALS"
- Accumulation of these chemicals in the body has been linked to cancer and other adverse health effects.
- People have been unknowingly spreading these “*forever chemicals*”, on their lawns and gardens since 1926. (See the Milwaukee Journal Sentinel article about “Milorganite fertilizer”)

**FRUITS AND VEGETABLES FERTILIZED WITH SEWER-SLUDGE-CONTAINING FERTILIZER PRODUCTS SOAK UP THESE TOXIC CHEMICALS AS THEY GROW AND THEN WE PEOPLE CONSUME THEM!**

ARE YOU READY TO TAKE-OFF?  
LET'S GROW TOGETHER!



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- *Sumagrow International is a global marketing company for Sumagrow.*

*We seek to collaborate with companies and individuals (strategic partners) who would like to join us to implement this technology.*

**WOULD YOU LIKE TO COME ALONG FOR THE RIDE?**



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