



SUSTAINABLE REGENERATIVE AND CARBON
FARMING



FERTILIZER IN THE WORLD

In the coming year 2050, meeting the world's food demands will require doubling our current agricultural productivity from the same amount of land. This ambitious goal necessitates significant innovation and advancements in farming practices. Undoubtedly, agriculture continues to play a central role in the global economy, as approximately 60% of the world's population relies on it for their survival.

THE DANGER AND DISADVANTAGE OF USING CHEMICAL FERTILIZER




Agriculture continues to hold a vital position in the world economy, with more than 4.2 billion people adopting conventional farming practices, heavily dependent on chemical fertilizers and pesticides.

The Disadvantage

- High cost
- High weight
- Storage
- Inferior crops
- Low yields
- Lower selling price
- Costly logistic

The Harm

- Health
- Environment
- Soil quality



HARMFUL EFFECTS OF USING CHEMICAL FERTILIZERS

The use of Chemical Fertilizers is a dated agricultural method we have seen implemented since the 1930s. Chemical Fertilizers or Inorganic Fertilizers are created to provide a number of nutrients that are found in natural soil, that are essential to plant growth. These synthetically manufactured materials aid in the growth of plants, but only for short periods of time, making Chemical Fertilizers a poor agricultural choice for long-term sustainable farming practices. We are beginning to see detrimental effects on the Environment, Human Health, along with Plant and Animal life, all caused by the use of these Chemical and Inorganic Fertilizers.

NATURE & THE ENVIRONMENT

- Chemical fertilizers contain inorganic and synthesized elements like Nitrogen, Phosphorus, and Potassium (NPK), along with various other nutrients and components.
- Although these minerals can promote plant growth, they entirely disregard the well-being of the soil, leading to the accumulation of these chemicals and nutrients, contributing to the severe environmental repercussions we witness today.



BODIES OF WATER

- Chemical fertilizers contain an abundance of inorganic and synthetic minerals and materials, which, when excessively used over time, pose significant harm to the environment.
- The toxic accumulation of these inorganic components is being released into bodies of water through rainfall and sewage, causing disruption and devastation to aquatic life.



HUMAN HEALTH

- An alarming consequence arising from the leakage of synthetic materials into our water systems is the severe contamination of groundwater and drinking water.
- Elevated levels of these chemicals in our drinking water have led to serious health problems, including Blue Baby Syndrome, various cancers, asthma, autism, learning disabilities, birth defects, reproductive dysfunctions, diabetes, as well as an increased risk of Alzheimer's and Parkinson's Disease.



CLIMATE CHANGES

- Chemical fertilizers lead to the emission of significant quantities of methane, carbon dioxide, ammonia, and nitrogen. These components have played a major role in the observed effects of global warming today.
- Nitrous oxide, a byproduct of nitrogen, stands as the third largest contributor to greenhouse gas emissions, trailing behind carbon dioxide and methane.



SOIL HEALTH & QUALITY

- It is advisable to conduct soil tests at least once every three years to ensure optimal fertilizer usage and prevent over-application.
- The use of chemical fertilizers can elevate soil acidity, which can have detrimental effects on the long-term productivity of the soil.
- This process contributes to the desertification of land, rendering it unable to support life-sustaining vegetation.



OUR SOLUTION

SUSTAINABLE REGENERATIVE AND CARBON FARMING

WHAT SETS IT APART?

Lightweight, simple, sustainable, and cost-efficient.

OMRI

Listed formulations designed for organic food and fiber production.

VISIBLE OUTCOMES

Noticeable results in less than 30 days.

EFFICIENT USAGE

Merely one 1kg unit needed per hectare, per crop, in contrast to 500kg of chemical fertilizer.



BENEFIT

- **COST-EFFECTIVE**

Significant savings of \$200-\$300 USD per hectare, per crop, leading to up to 50% reduction in input costs.

- **IMPRESSIVE YIELD INCREASE**

Enabling farmers to attain substantially higher income from their crops.

- **ENHANCED NUTRITIONAL VALUE**

Resulting in higher Brix levels for better-tasting fruits, commanding premium prices as organic produce, and promoting improved human and animal health.

- **MINIMAL TRANSPORTATION EXPENSES**

- **CONSERVING UP TO 50% WATER**

- **SAFE FOR HUMANS AND PETS**

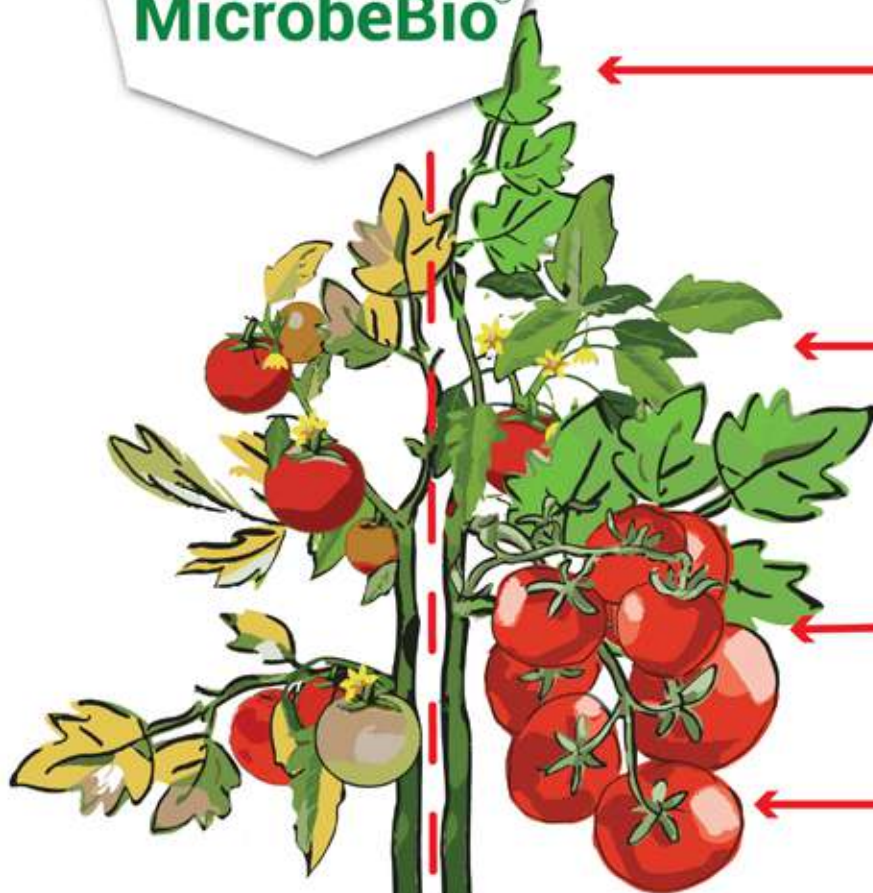
- **ECO-FRIENDLY**

Promoting better air, water, and soil quality.

- **SOIL REGENERATION AND PROTECTION FOR FUTURE GENERATIONS**

- **MAXIMIZING FARMER'S PROFITS**

MicrobeBio®



NON TREATED

TREATED

Environmentally Friendly - MicrobeBio® microbes play a crucial role in aerating and regenerating soil health, leading to enhanced absorption, reduced run-off, and significantly improved water efficiency. Unlike synthetic fertilizers, microbes do not cause run-off, leach through the soil, or harm aquifers, rivers, or lakes. These microbes are completely free from harsh chemicals or heavy metals, ensuring their safe application around humans and animals. Thanks to their organic and regenerative nature, microbes have a longer-lasting impact on the soil compared to traditional fertilizers. MicrobeBio Bioremediation actively works to reduce and eliminate pollution, resulting in cleaner water, air, and healthier soils for future generations. This creates a win-win situation for farmers, consumers, and, most importantly, the environment.

The Microbebio Symbiotic Cycle - Microbebio® products boost photosynthesis, delivering more sunlight energy as carbon compounds to enhance the transfer of proteins, carbohydrates, and nutrients to the roots. This nourishes the army of beneficial bacteria, protecting and stimulating crop growth. These products replenish and amplify beneficial bacteria coexisting in the soil for ages, enhancing the symbiotic cycle. For instance, microbes exchange essential elements like nitrogen and phosphorus for plant-provided carbon, acting as nutrient agents. This enables plants to absorb more bio-available essential nutrients from the soil, promoting growth, crop development, quality, and production, while improving the crop's color, size, and consistency.

Boost Yield - MicrobeBio® microbes play a vital role in liberating carbon and other essential nutrients by efficiently breaking down and increasing the organic matter in the soil. This process helps balance soil pH and reduce soil salinity, restoring them to biological circulation. Additionally, MicrobeBio® products provide crucial amino acids, which are the building blocks of proteins; not present in many other fertilizers. These amino acids are essential for maximizing growth and correcting nutrient deficiencies in plants.

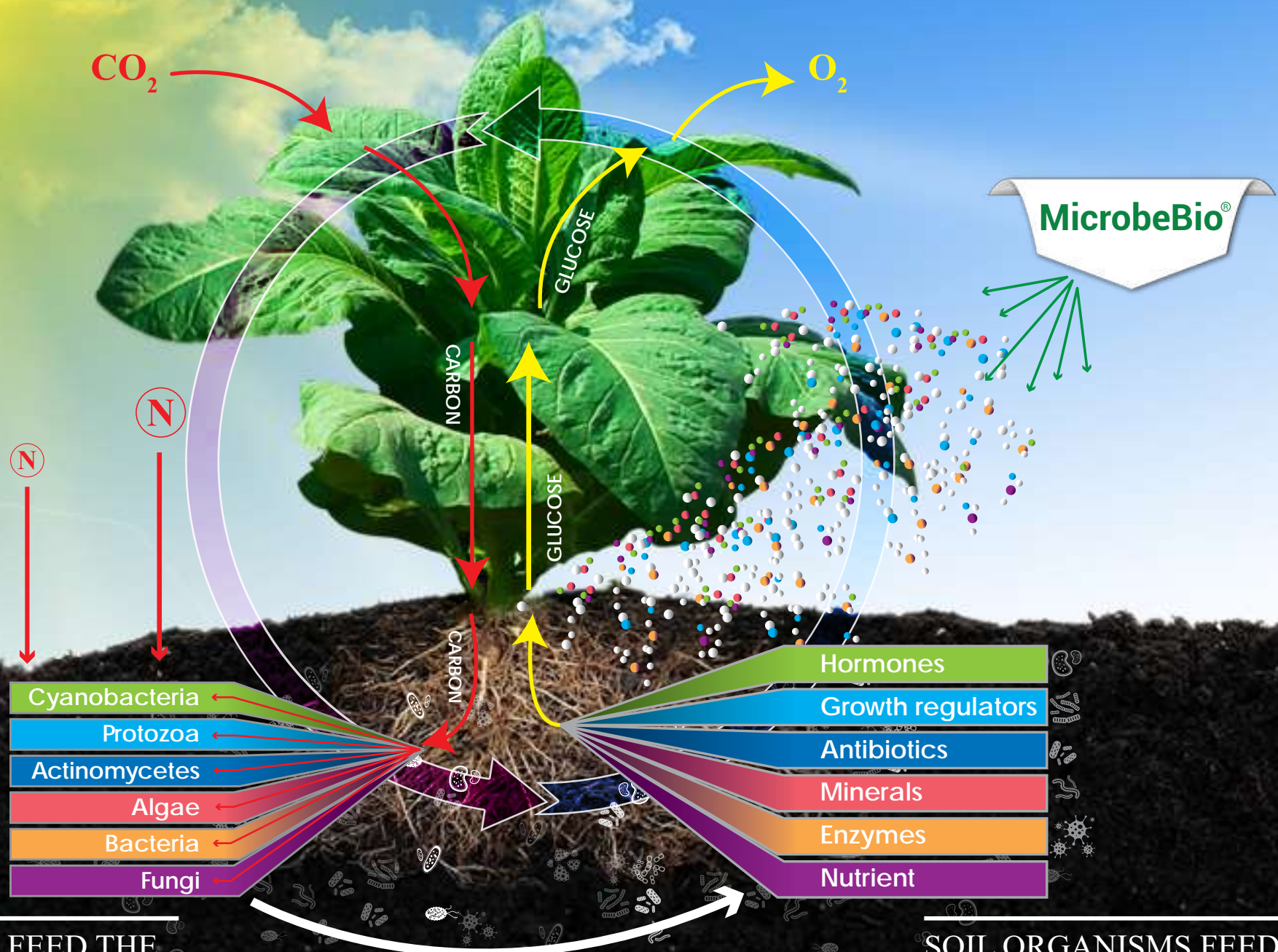
Bigger, Healthier, Faster - MicrobeBio® reintroduces billions of beneficial worker microbes with a singular mission: to improve the environment and rebalance the soil, enabling plants to thrive and grow bigger, healthier, and stronger. These helpful microbes transform into nitrogen, various nutrients, and organic phosphates in the soil, which the plants absorb to bolster their health and resistance to diseases and pests. As a result, the plants flourish, producing larger, healthier, and more flavorful fruits, requiring less maintenance.

Enhance Root Mass - MicrobeBio® microbes establish a diverse community of beneficial microorganisms in the root zone, effectively increasing the root mass. This expansion enables the plant to access deeper soil nutrients and enhances water absorption, leading to reduced watering requirements and improved drought resistance. The plant and microbes engage in a symbiotic relationship, where the plant provides sugar and carbon from photosynthesis to attract and nourish the microbes, fulfilling their nutritional needs. In return, the microbes form specialized structures called arbuscules, enabling the plant to receive essential nutrients like phosphorus, sulfur, nitrogen, and various micronutrients from the soil, air, and water, supporting the plant to achieve its optimal potential.



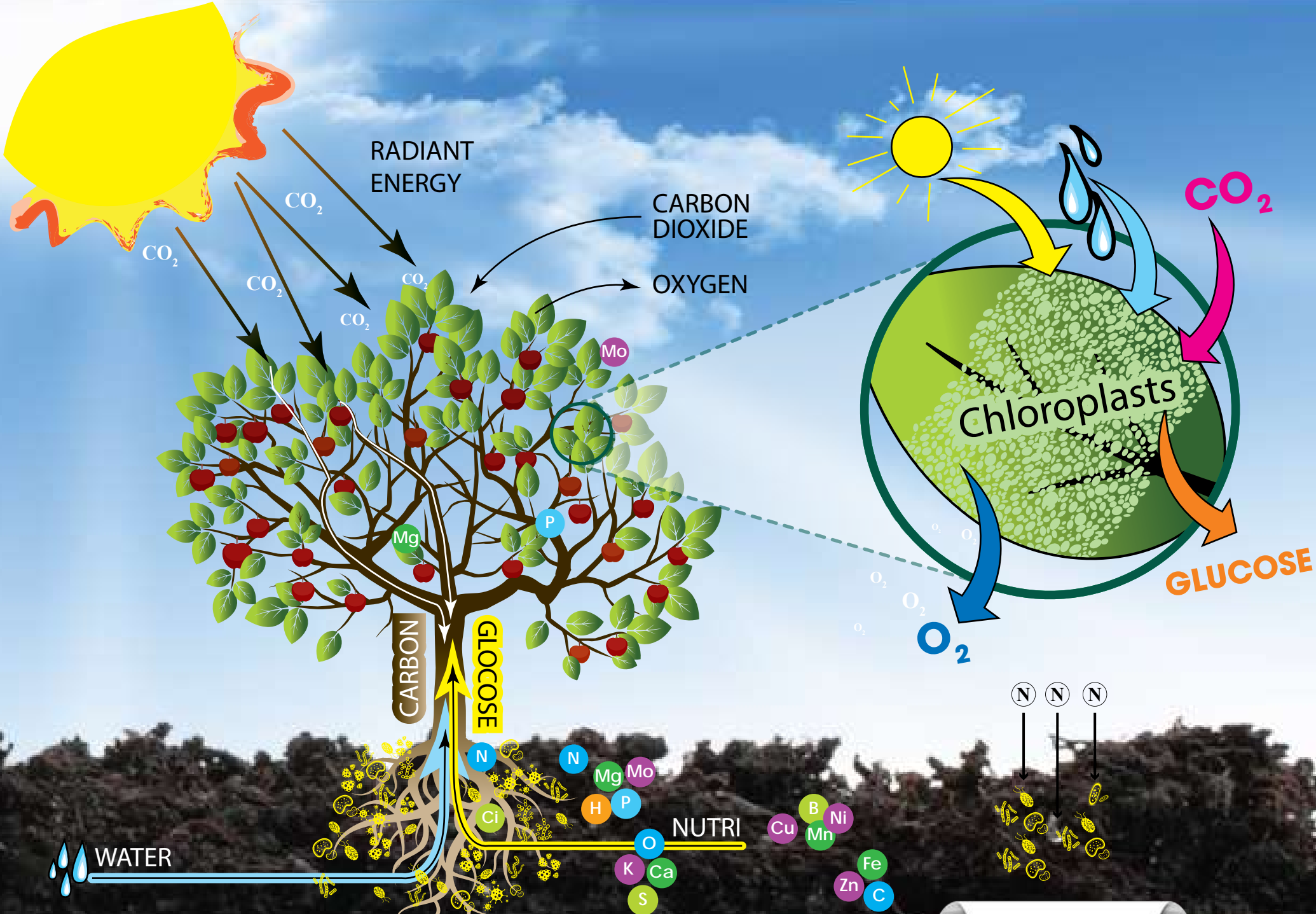
MICROBEBIO® SUSTAINABLE REGENERATIVE AND CARBON FARMING FOR MAXIMUM PROFIT

THE MICROBEBIO SYMBIOTIC CYCLE



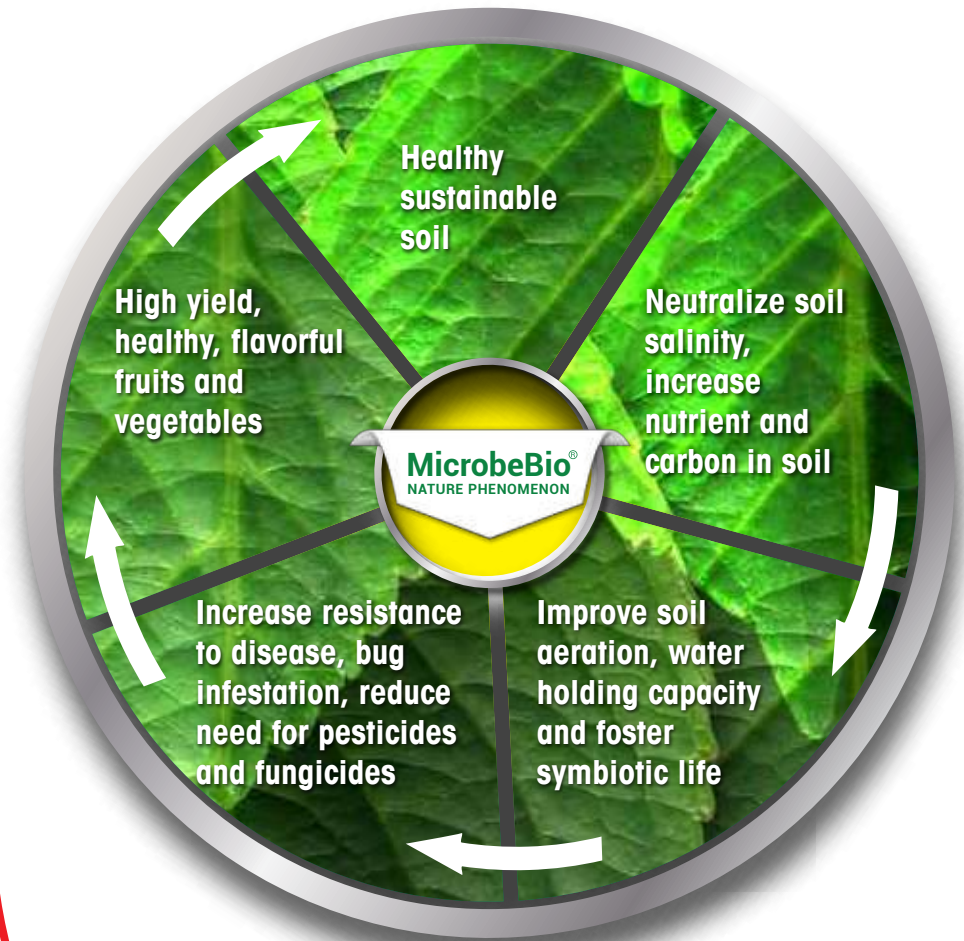
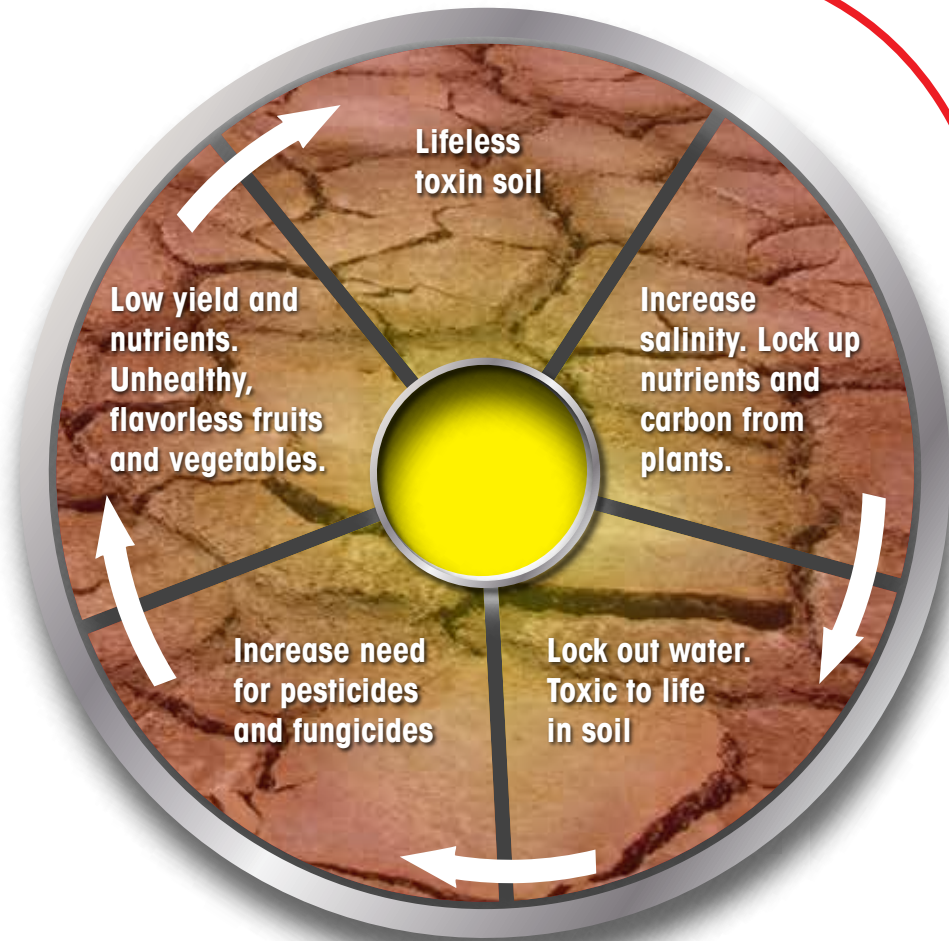
THE PLANT FEED THE
SOIL ORGANISMS

SOIL ORGANISMS FEED
THE PLANT



MicrobeBio®

USING CONVENTIONAL FERTILIZER



USING MICROBEBIO

LIGHTWEIGHT, SIMPLISTIC, SUSTAINABLE & COST EFFICIENT

- INCREASE QUALITY AND YIELD
- ENHANCED RESISTANCE TO DISEASE, PEST AND STRESS
- MAXIMIZE PROFITS FOR THE FARMER
- REVITALIZE AIR, WATER AND SOIL
- ENVIRONMENTALLY FRIENDLY
- MINIMAL LOGISTIC COSTS
- DECREASED IRRIGATION
- EXTENDED SHELF LIFE
- HUMAN AND PET SAFE

100%
ORGANIC



MicrobeBio®



**INCREASE ORGANIC
MATTER**



**ENHANCES WATER
HOLDING CAPACITY**



**IMPROVED ROOT DEPTH
AND DENSITY**



**STIMULATES
MICROBIAL ACTIVITY**



INCREASE CARBON



DECREASE IRRIGATION



REDUCE FERTILIZER



INCREASE YIELD



INTRODUCE MICROBEBIO SOLUTION

MicrobeBio® is an OMRI listed formulation specifically designed for organic food and fiber production. It constitutes a "bio-cocktail" containing over 50 beneficial soil microbes that significantly enhance soil life. Our exclusive blend of microbial strains operates in harmony, promoting enhanced nutrient uptake in plants, elevating plant vigor, and stimulating microbial and bio-diversity activity in the soil. These factors contribute to increased drought tolerance and enhanced overall plant performance.

MicrobeBio® works in synergy with organic nutrients, effectively improving soil sustainability. Each microbe strain in the chain plays a critical role, participating in regenerating the soil, facilitating decomposition (composting), and safeguarding against pathogens, all of which elevate plant vigor, soil quality, and crop yields.



OUR SOLUTION

MicrobeBio[®] is an OMRI listed formulation specifically designed for organic food and fiber production. It constitutes a "bio-cocktail" containing over 50 beneficial soil microbes that significantly enhance soil life. Our exclusive blend of microbial strains operates in harmony, promoting enhanced nutrient uptake in plants, elevating plant vigor, and stimulating microbial and bio-diversity activity in the soil. These factors contribute to increased drought tolerance and enhanced overall plant performance.

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HUMAN AND PET SAFE



NATURAL

*Chemical and GMO-FREE
100% Organic*

COMPLIES WITH NATIONAL ORGANIC PROGRAM FOR USE IN ORGANIC PRODUCTION



approved by

MINISTRY OF AGRICULTURE

ZAMBIA TEST

*Test and endorsed by
ministry of agriculture.*

MicrobeBio[®]



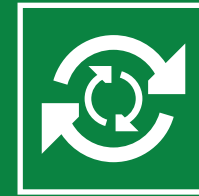
YIELD INCREASING

Our products can increase crop yields by up to 50%

100%
CHEMICAL
FREE

CHEMICAL FREE

Our products are chemical and GMO free



SUSTAINABLE

Improve soil fertility help build sustainable soil for future generation



LIGHTWEIGHT

1kg Box serves 1 Hectare of Land



AFFORDABLE

Flexible payment options and a viable price point



HIGHER PROFIT FOR FARMER

THE SCIENCES



MICROBEBIO® THE SCIENCES

NITROGEN FIXATION AT A BIOLOGICAL LEVEL

NITROGEN FIXATION AT A BIOLOGICAL LEVEL

– Microorganisms convert atmospheric nitrogen into organic compounds.

SOLUBILIZATION OF PHOSPHATES

– MicrobeBio® products solubilize phosphates in the soil, making them more accessible to plants.

MINERALIZATION AND IMMOBILIZATION

– MicrobeBio® products enhance healthy plant hormones and store soil carbon, resulting in increased availability of nitrate nitrogen to plants. This creates a nutrient reservoir comprising organic bio-stimulants in the soil.

PRODUCTION OF PHYTOHORMONES

– MicrobeBio® products utilize bacteria to significantly reduce soil salinity, improving soil conditions.

BALANCING THE PH OF YOUR SOIL

– The organic biostimulants in MicrobeBio® products enhance soil porosity and reduce leaching, while improving soil aggregation.

INCREASED SAPROPHYTIC COMPETENCE

– MicrobeBio® products aid saprophytes in breaking down dead matter, enabling our microbes to compete effectively with native soil microbes and other organic bio-stimulants.

MICROBEBIO® ECOSYSTEM & SOCIAL HEALTH



Farmers typically seek soil with abundant organic matter levels as it plays a critical role in various soil processes. High organic matter content supports high crop yields while reducing input costs. Our product combination introduces essential microorganisms that aid in decomposing organic matter, making nutrients readily available to plants. Soil life significantly

contributes to enhancing nutrition and water availability for agricultural productivity.

Beneficial organisms in the soil are actively involved in growing and reproducing. By-products from stable humus, roots, and plant residue serve as nourishment for soil organisms. These soil organisms, in turn, support plant

health by decomposing plant residues and organic matter, cycling nutrients, enhancing soil structure, and regulating populations of both beneficial and harmful soil organisms (such as pests and pathogens), ultimately affecting crop productivity (source: www.fao.org).

MICROBEBIO®

BIORATIONAL



MicrobeBio® is a distinctive blend of predatory bacteria and beneficial fungi, offering a broad-spectrum defense against harmful insects and pests. The predator bacteria, a naturally occurring soilborne bacterium, serves as a natural insect control agent. It features a persistent spore containing a toxic protein crystal. When certain insects consume this bacterium, the toxic crystal is released in their alkaline gut, disrupting their digestive system's protection.

The beneficial fungi naturally exist in soils worldwide and cause disease in various insects by acting as parasitoids. When insects come into contact with these fungi, their hyphae germinate and penetrate the insect's cuticle, eventually leading to the insect's demise within a few days. This lethal effect is further supported by the production of insecticidal cyclic peptides exuded from the hyphae.

MicrobeBio® poses no harm

to birds, fish, or warm-blooded creatures, making it an ecologically sound alternative to harsh insecticides. To prevent population flare-ups, MicrobeBio® is best applied directly to the infected areas, providing a highly effective and environmentally friendly pest control solution.

MicrobeBio® offers a diverse array of beneficial microorganisms, creating a rich microorganism blend that enhances and balances the soil's environment.

MICROBEBIO®

BIORATIONAL

These natural microorganisms improve plant metabolism efficiency and increase plant resilience to various stresses, promoting rapid recovery. They also enhance nutrient absorption and uptake, dissolve insoluble minerals, fix nitrogen, and encourage robust plant root development. By warding off harmful pathogens and bacteria in the rhizosphere, these products support overall plant health.

The primary mode of action for Microbebio involves the formation of a protein-rich crystal inside the spore, which is toxic when consumed by specific

insects. This unique bacterium disrupts the formation of the insect's protective stomach lining, leading to the insect's demise. Microbebio poses no threat to birds, fish, or warm-blooded creatures due to their acidic gut conditions, which neutralize the bacterium's effect.

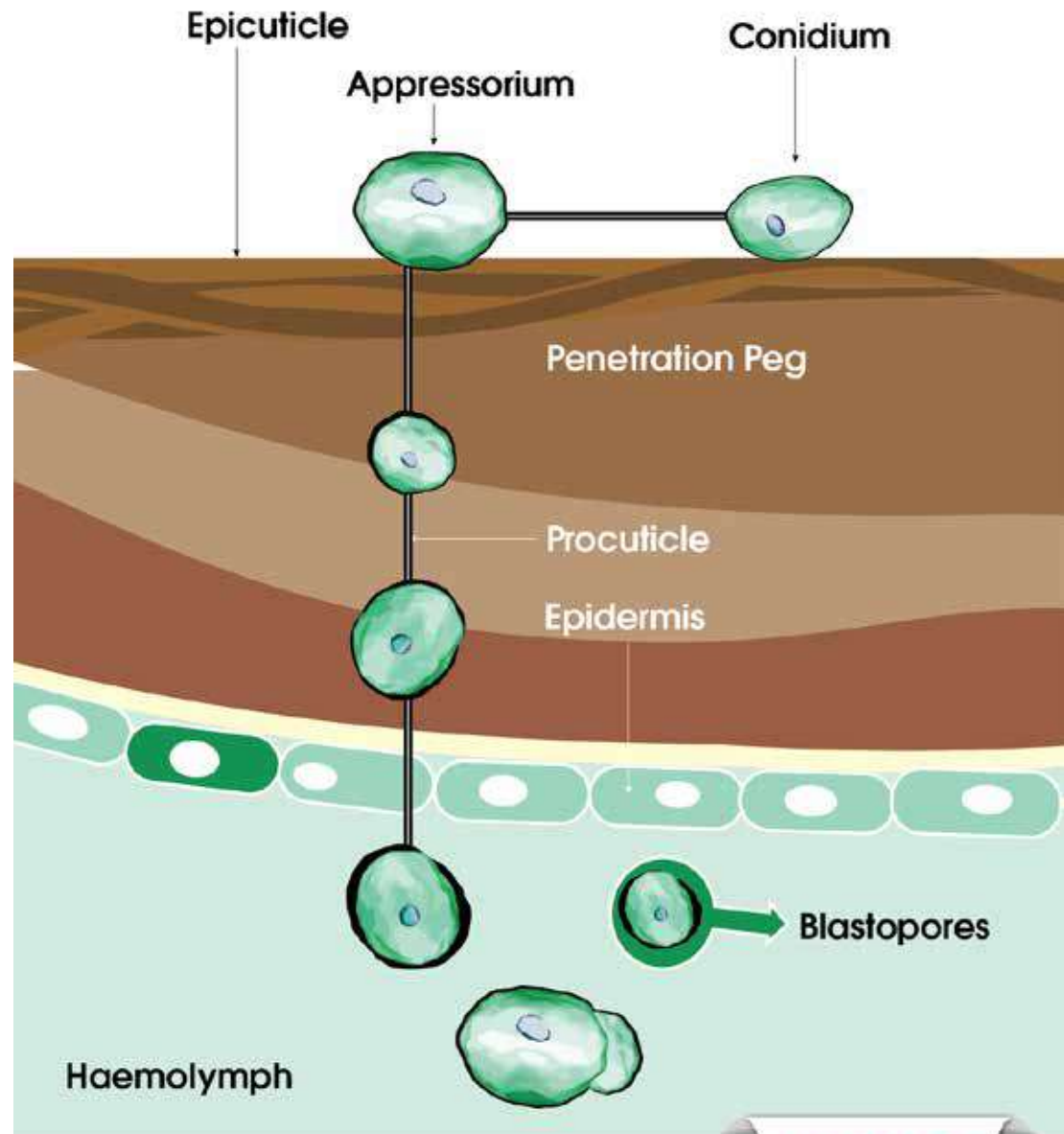
Water-use efficiency is improved through increased organic matter. This highly effective and environmentally friendly alternative to harsh chemicals requires no special handling. Applying Microbebio® directly to the infected areas prevents population flare-ups.

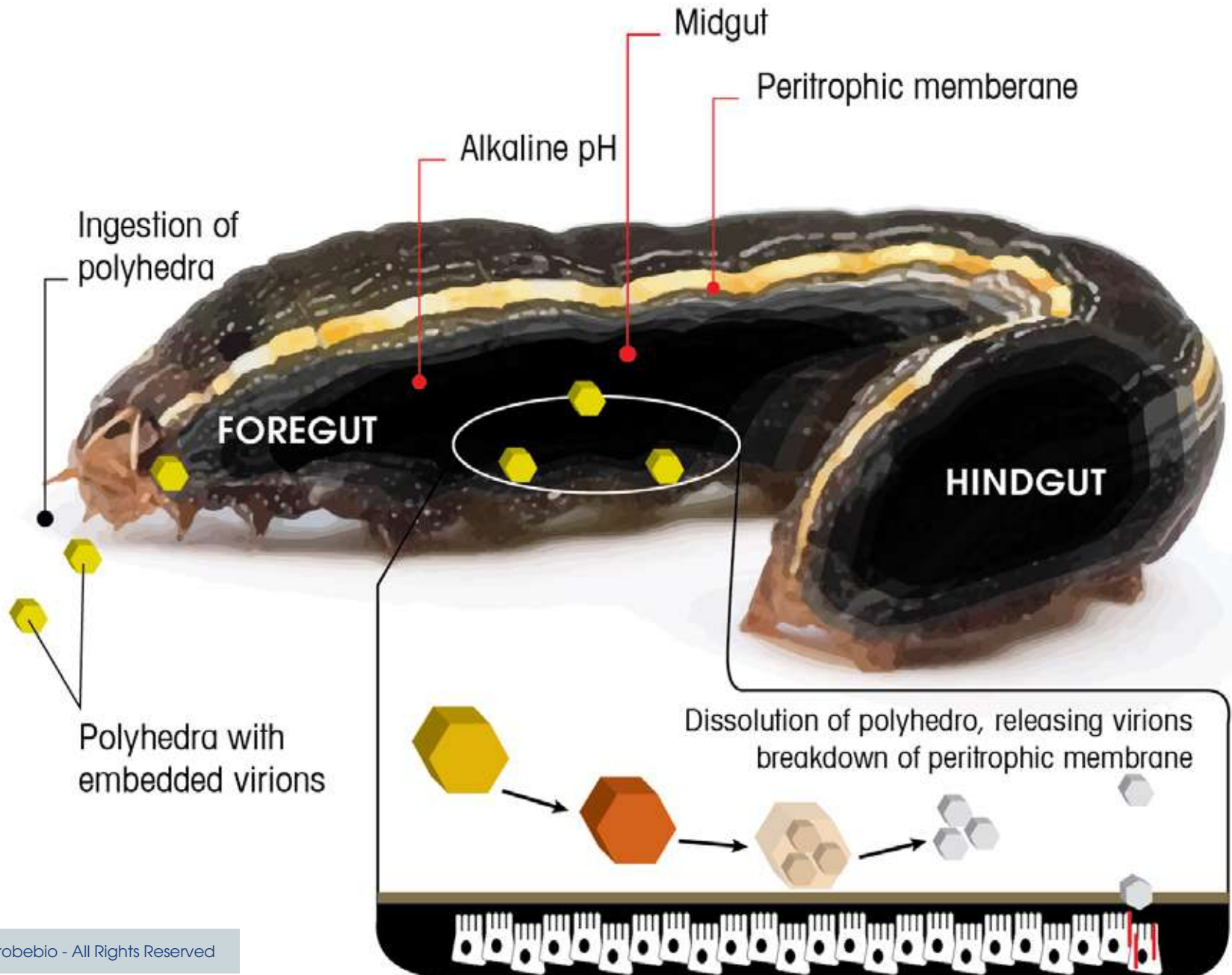
These eco-friendly microbial communities exhibit excellent colonization abilities and endospore production. They interact mutually with plants, forming a protective biofilm that enhances plant immunity against environmental stresses. Moreover, they stimulate physiological processes and produce phytohormones. Through colonization and defensive retention of phyllospheric niches, Microbebio achieves biological control over plant aerial fungal phytopathogens.

MICROBEBIO®

BIORATIONAL

Microbebio® harnesses the power of bacterial allelochemicals, such as iron-chelating siderophores, antibiotics, biocidal volatiles, lytic enzymes, and detoxification enzymes. The spores, cysts, and mycelia of Microbebio® simply need to come into contact with a host insect. Once infected, the microbes rapidly grow inside the insect, feeding on the host's nutrients and producing toxins during this process. As the host insect succumbs, the microbes cover the carcass with a layer of white mold that generates more infective spores. This process, known as entomopathogenic fungi, involves contact adherence of conidia to the insect's cuticle, spore germination, penetration inside the host, vegetative growth in the host's haemolymph, and the production of new conidia upon the host's death.





MICROBEBIO®

BIORATIONAL



MICROBEBIO BIORATIONAL CAN EFFECTIVELY HELP REDUCING THE HARMFUL EFFECTS OF

NEMATODES:

- Ditylenchus sp.
- Helicotylenchus sp.
- Meloidogyne sp.
- Radopholus sp.
- Pratylenchus sp.
- Rotylenchulus sp.
- Tylenchus sp.
- Xiphinema sp.

PLANT ROOT FUNGI

- Fusarium oxysporum f.sp. lycopersici
- Fusarium oxysporum f.sp. cubense
- Fusarium oxysporum f.sp. dianthi
- Rhizoctonia solani
- Sclerotium rolfsii
- Sclerotinia sclerotiorum
- Pythium ultimum
- Phytophthora infestans
- P. nicotianae.

VIRUS & BACTERIUM:

- Grassy stunt Rice grassy stunt virus (RGSV)
- Tungro Rice tungro bacilliform virus (RTBV)
- Xanthomonas oryzae
- Xanthomonas oryzae pv. Oryzae

SOFT-BODIED INSECTS

- Alfalfa Weevil
- Aphids
- Apple Cleaving Moth
- Fall Army Worms
- Bark Beetles
- Bean Leaf Beetle
- Best Leafhopper
- Beetles
- Black Vine Weevil
- Boll Weevil
- Cabbage Looper
- Cabbage Worm
- Cane Borer
- Caterpillars
- Cereal Leaf Beetle
- Chinch Bugs
- Coffee Borer Beetle
- Codling Moth
- Colorado Potato Beetle
- Corn Borer
- Cucumber Beetle
- Douglas Fir Tussock Moth
- Emerald Ash Borer
- Fire Ants Flies
- Fungal Gnats
- Grasshoppers
- Greenhouse Whitefly
- Invasive Silkworms
- Japanese Beetle
- Lygus Bugs
- Mealybugs
- Mexican Bean Beetle
- Mites
- Psyllids
- Red Palm Weevil
- Shore Flies
- Stem Borers
- Stink Bugs
- Strawberry Root Weevil
- Termites
- Thrips
- Whiteflies
- White Grubs, ...

COMMON PLANT LEAVES FUNGI

- Alternaria Fruit Rot* - *Alternaria tenuissima*
- Alternaria Leaf Spot - *Alternaria alternate*
- Alternaria Leaf Spot - *Alternaria* spp.
- Anthracnose
- Anthracnose - *Colletotrichum acutatum*
- Anthracnose *Colletotrichum gloeosporioides* *Colletotrichum ananas*
- Anthracnose Fruit Rot* - *Colletotrichum gloeosporioides*; *Colletotrichum acutatum*
- Bacterial Blight *Xanthomonas Campestris*
- Bacterial Canker
- Bacterial Canker - *Erwinia* spp.
- Bacterial Canker - *Pseudomonas* spp.
- Bacterial Canker - *Pseudomonas syringae*
- Bacterial Leaf Blight - *Xanthomonas campestris*
- Bacterial Leaf Spot / Bacterial Spot* *Xanthomonas arboricola*
- Bacterial Speck *Pseudomonas syringae* pv. *tomato*
- Bacterial Spot - *Xanthomonas* spp.
- Bitter Rot* - *Colletotrichum* spp.
- Black Crown Rot - *Alternaria* spp.
- Black Rot/
- Bot Rot* - *Botryosphaeria dothidea*
- Botrytis - *Botrytis cinerea*
- Botrytis Blight - *Botrytis cinerea*
- Botrytis Leaf Blight - *Botrytis squamosa*
- Botrytis Neck Rot - *Botrytis* spp.
- Brooks Spot* - *Mycosphaerella pomii*
- Brown Rot - *Monilinia* spp.
- Brown Rot Blossom Blight - *Monilinia laxa*
- Bull's Eye Rot* - *Neofabraea* spp.
- Cedar Apple Rust* - *Gymnosporangium juniperi-virginianae*
- Cercospora Leaf Spot - *Cercospora* spp.
- *Colletotrichum gloeosporioides* *Colletotrichum ananas*
- Common Rust - *Puccinia sorghi*
- Damping-Off* - *Aphanomyces* spp.
- Downy Mildew - *Peronospora parasitica*; *Peronospora* spp.
- Downy Mildew - *Peronospora* spp.
- Downy Mildew - *Plasmopara viticola*
- Downy Mildew - *Pseudoperonospora cubensis*
- Downy Mildew *Bremia lactucae* *Peronospora* spp.
- Early Blight - *Alternaria solani*
- Early Leaf Spot *Cercospora* spp. - *Cercospora arachidicola*
- Fire Blight - *Erwinia amylovora*
- Flyspeck* - *Schizothyrium pomii*
- Fruit Brown Rot - *Monilinia fructicola*
- Gray Mold - *Botrytis cinerea*
- Gray Mold - *Botrytis* spp.
- Greasy Spot - *Mycosphaerella citri*
- Gummy Stem Blight *Didymella bryoniae* *Phoma cucurbitacearum*
- Late Blight - *Phytophthora infestans*
- Late Leaf Spot *Cercosporidium personatum*
- Melanose - *Diaporthe citri*
- Mummy Berry - *Monilinia vaccinii-corymbosi*
- Onion Downy Mildew - *Peronospora destructor*
- Onion Purple Blotch - *Alternaria porri*
- Phomopsis - *Phomopsis viticola*
- Pin Rot Complex - *Alternaria/ Xanthomonas*
- Pink Rot - *Sclerotinia sclerotiorum*
- Post Bloom Fruit Drop - *Colletotrichum acutatum*
- Powdery Mildew - *Erysiphe cichoracearum*
- Powdery Mildew - *Erysiphe* spp.
- Powdery Mildew - *Podosphaera leucotricha*
- Powdery Mildew - *Sphaerotheca macularis*
- Powdery Mildew - *Uncinula necator*
- Powdery Mildew *Erysiphe* spp. - *Sphaerotheca* spp.
- Powdery Mildew *Leveillula taurica* *Oidiopsis taurica* *Erysiphe* spp. *Sphaerotheca* spp.
- Powdery Mildew *Sphaerotheca macularis* *Erysiphe* spp.
- Powdery Mildew *Sphaerotheca pannosa* *Podosphaera clandestina* *Podosphaera* spp.
- Rust - *Puccinia menthae*
- Rust - *Puccinia porri*
- Rust - *Puccinia* spp.
- Rust - *Uromyces appendiculatus*
- Scab - *Elsinoe fawcetti*
- Scab - *Venturia* spp.
- Sclerotinia Head and Leaf Drop - *Sclerotinia* spp.
- Shot Hole *Wilsonomyces carpophilus* *Xanthomonas pruni* *Blumeriella gaapi* *Cercospora* spp.
- Sigatoka *Mycosphaerella fijiensis*
- Sooty Blotch* - *Gloeodes pomigena*
- Sour Rot - [a complex of pathogens: *Aspergillus niger*, *Alternaria tenuis*, *Botrytis cinerea*, *Cladosporium herbarum*, *Rhizopus arrhizus*, *Penicillium* spp., and others]
- Southern Leaf Blight - *Bipolaris maydis*
- Helminthosporium *maydis*
- *Cochliobolus heterostrophus*
- Target Spot - *Corynespora cassiicola*
- Walnut Blight - *Xanthomonas campestris*
- White Mold - *Sclerotinia sclerotiorum*
- White Mold (*Sclerotinia* Stem Rot) - *Sclerotinia sclerotiorum*
- White Rust* - *Albugo occidentalis*
- *Xanthomonas campestris*
- *Xanthomonas* Leaf Spot - *Xanthomonas campestris*

MICROBEBIO®

HOW TO MANAGE/ CONTROL COFFEE RUST



Coffee leaf rust is considered one of the most severe diseases affecting coffee plants. The disease has caused major losses in coffee production areas in the countries of America, Asia, and Africa. MicrobeBio understands that plant physiology is closely related to the functioning of plant organs and tissues, which may be affected or favored by interaction with climatic factors. The factors that directly influence the development and productivity of coffee plants are temperature, precipitation, relative humidity, dew, and solar radiation,

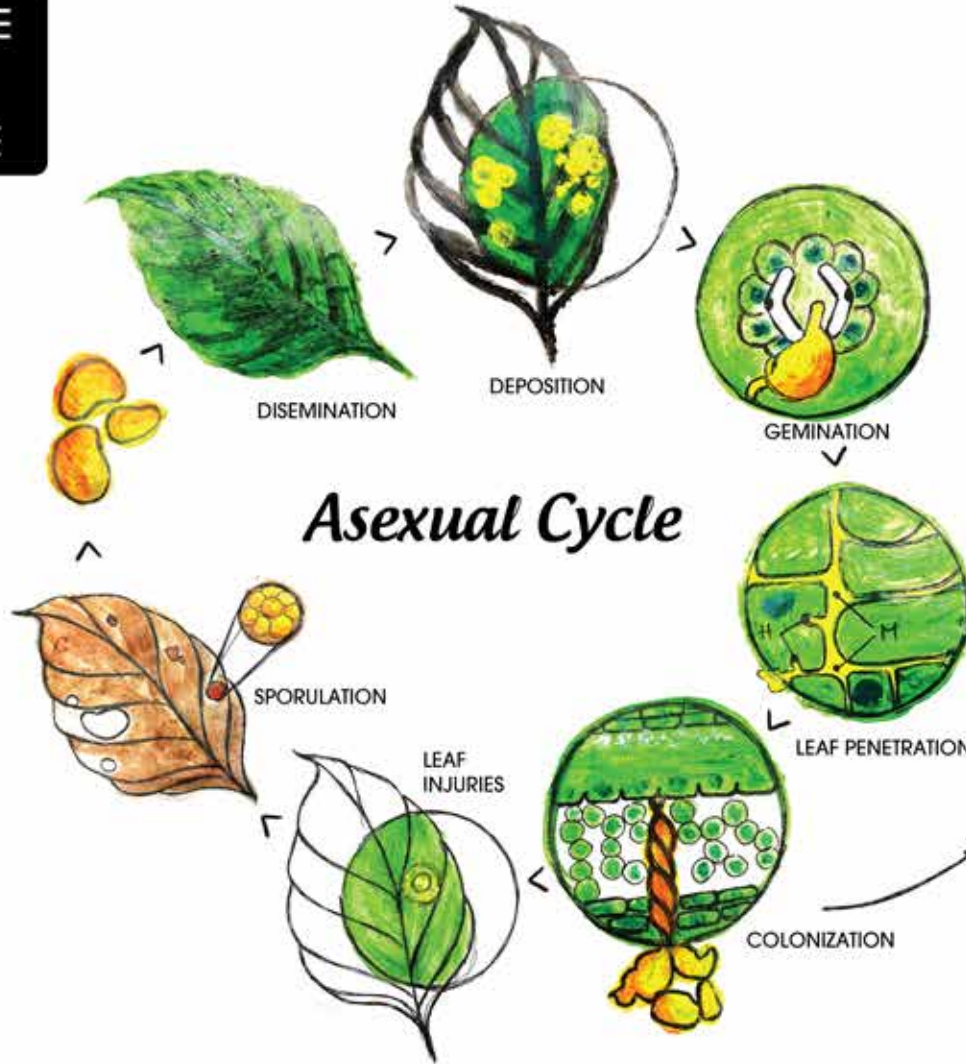
which play roles in the processes of photosynthesis to produce food substances (sugars, proteins, etc.). MicrobeBio performs a completed patented biotechnology package harmonizing with a special growth boost package to synthesize complex system plant nutrients, crucial vitamins, naturally occurring minerals, and selective microorganisms that dominate the environment through competitive prohibition by eliminating harmful pathogens (including coffee rust) and bacteria that invade the rhizosphere. What is

coffee rust (coffee leaf rust)? Coffee rust is caused by the fungal pathogen known as *Hemileia vastatrix*. Coffee rust infection, especially when combined with drought, can lead to flower abortion, poor-quality berries, and lower harvestable yield.

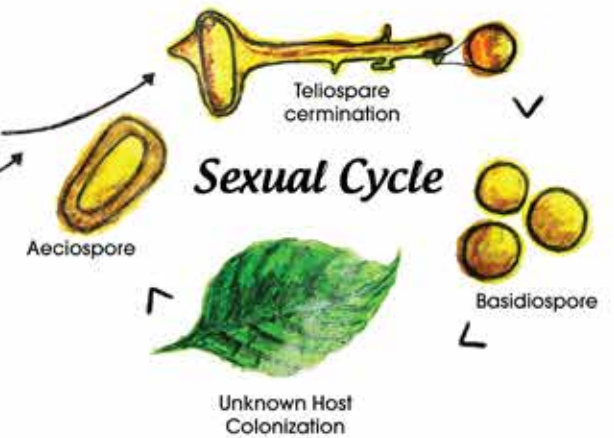
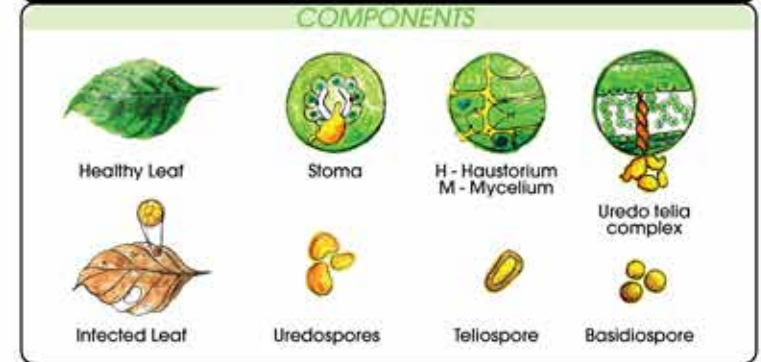
On the plant, it causes:

- Leaves turn brown
- A lack of maturation
- Undeveloped fruit leaves
- Losing in quantity and quality of fruit production

COFFEE RUST LIFE CYCLE



HEMILEIA VASTATRIX Reproductive Cycles





DISSEMINATION STAGE

Dissemination occurs through spores that appear as yellow or orange powder, found on the underside of the coffee plant's leaves. In the ideal condition, the fungus will disseminate its spores among coffee trees in the same plot, affecting many trees through the same stages at the same time. After damaging the trunk, the fungus will migrate to the cell membrane to continue spreading to several leaves on the same tree quickly. Within two or three weeks of initial infection, the fungus can be

found on as many as 30% of the leaves on the tree.

GERMINATION STAGE

Once it settles on the underside of a coffee leaf, the fungus will produce germ tubes over 6 to 12 hours. These tubes grow until they reach the leaf stomata where the fungus will require water, low light, and temperatures below 82.4oF (28oC).

COLONIZATION STAGE

When the fungus has penetrated the leaf, it begins to extract nutrients.

Plant cells that have been parasitized lose their green coloration and begin to look yellowish. This stage can last from 21 to 24 days in the sun or 18 to 22 days in the shade.

REPRODUCTION STAGE

After 30 days of colonization, the fungus will be mature enough to start the cycle again. The fungus is polycyclic and produces spores and reinfest plants on any given day throughout a growing season.

MICROBEBI COFFEE RUST MANAGEMENT

SOIL AND ROOT TREATMENTS

MicrobioBio produces patented product lines that synthesize, harmonize, and energize the growth environment to enhance the symbiotic cycle to help microbial populations exponentially flourish in the soil and around the rhizosphere. The products also provide a bundle of proprietary plant nutrients from variant habitats that provide quick-release and slow-release nutrients to the soil and root zones.

The proprietary microbes in MicrobeBio products are activated from the dominant formula and produce more oxygen to multiply and colonize around the root of the plant. The bundles improve both nitrogen by converting nitrogen to ammonia, nitrite, and nitrate which are easy for roots to uptake. Enhancing a carbon cycle, the soil microbes process minerals in the soil and supply nutrients to the plants. In exchange for the cycle, the plants supply carbon (carbohydrates and



Tastes and Aromas for Coffee

glucose) to soil microbes through photosynthesis. This unique and constant interaction between the plants and the microbes creates an ideal symbiosis.

MicrobeBio products help to rebuild topsoil, enhance nutrient uptake, harvest the best size and weight of coffee beans, boost the aroma and taste of the coffee bean, increase diterpenes (cafestol and kahweol), balance flavonoids (antioxidants),

extend root mass, create optimal growth zones (Brix level, pH, and humus), and increase crop yield and productivity.

In the ecosystem, MicrobeBio products create fantastic aeration in roots, a great water retention capacity, and reduce drought and stress in the soil. These actions will enhance and boost the natural defense system of the coffee tree to reduce the coffee rust pathogen.

GROWTH TREATMENTS AND PRODUCTIVE TREATMENTS

MicrobeBio products offer a unique blend of proprietary beneficial microorganisms that effectively combat the coffee rust pathogen. When applied at the right time, these products significantly reduce coffee rust disease incidence without disrupting the environmental balance. Additionally, the product line

energizes microorganisms residing on the plant, converting atmospheric macronutrients, secondary nutrients, and micronutrients deposited on leaves into nutrient solutions. This process promotes superior plant vigor and growth.

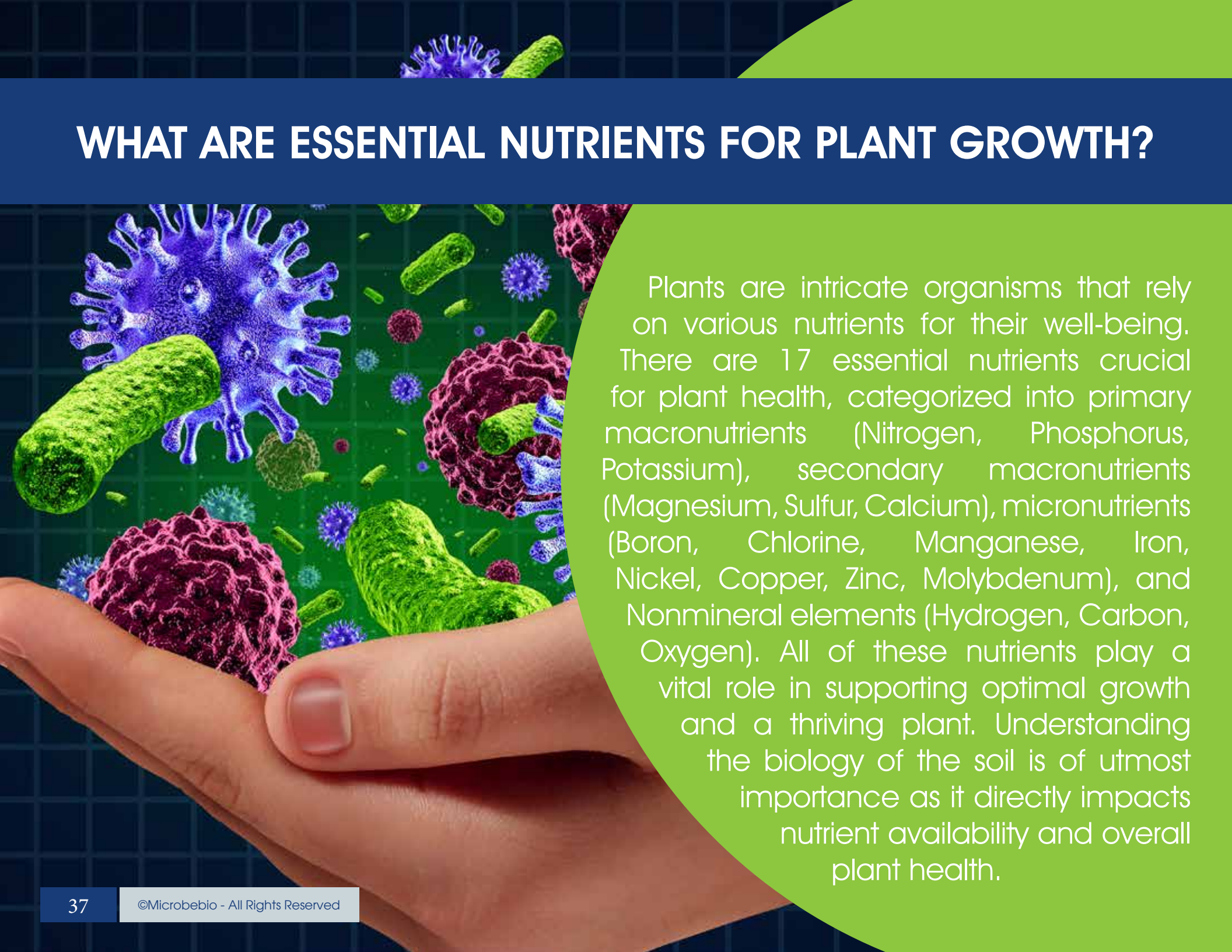
Furthermore, MicrobeBio products help maintain balanced water levels on the leaves' surface during the rainy season or heavy dew. This action

facilitates efficient photosynthesis absorption and blocks the coffee rust cycle on leaves and stems. These indigenous, eco-friendly, and nonpolluting bacterial antagonists present a promising biological management approach for effectively managing the coffee leaf rust pathogen.

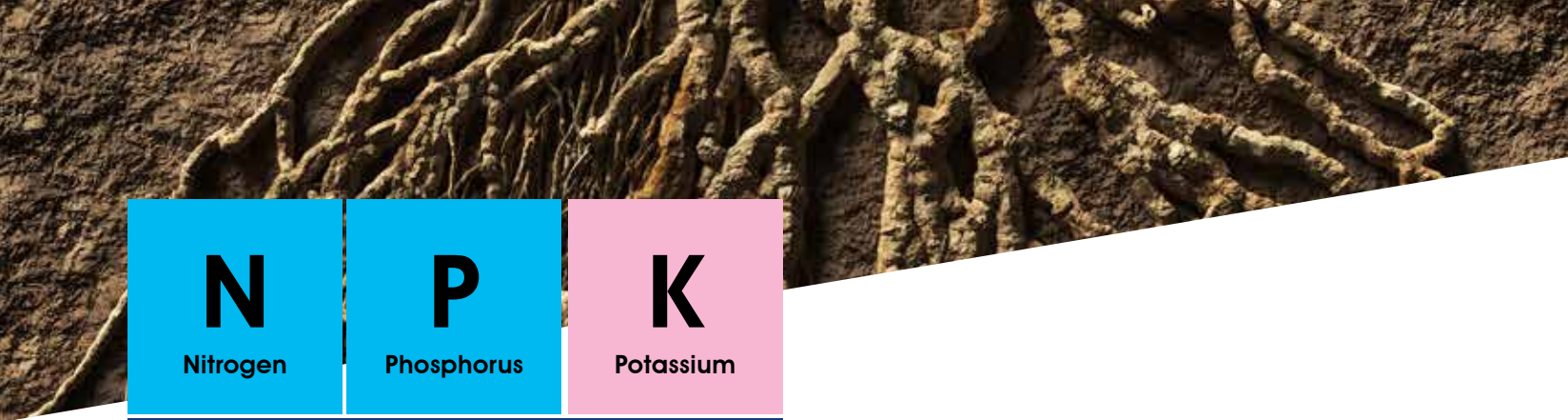


MicrobeBio takes pride in introducing cutting-edge biotechnology products that act as catalysts to restore nature's ecosystem while preserving the environment in the way Mother Nature intended.

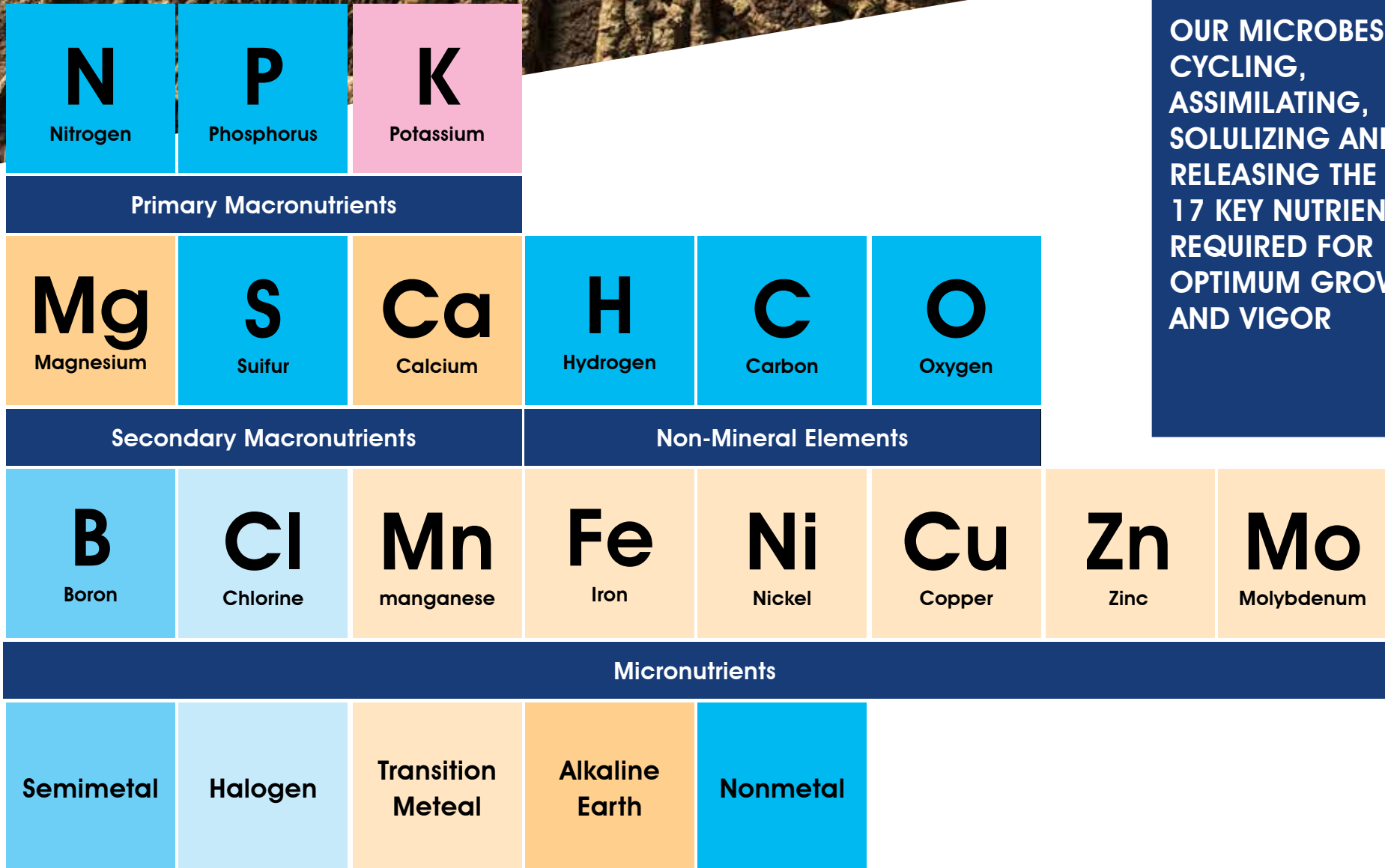
WHAT ARE ESSENTIAL NUTRIENTS FOR PLANT GROWTH?



Plants are intricate organisms that rely on various nutrients for their well-being. There are 17 essential nutrients crucial for plant health, categorized into primary macronutrients (Nitrogen, Phosphorus, Potassium), secondary macronutrients (Magnesium, Sulfur, Calcium), micronutrients (Boron, Chlorine, Manganese, Iron, Nickel, Copper, Zinc, Molybdenum), and Nonmineral elements (Hydrogen, Carbon, Oxygen). All of these nutrients play a vital role in supporting optimal growth and a thriving plant. Understanding the biology of the soil is of utmost importance as it directly impacts nutrient availability and overall plant health.



OUR MICROBES CYCLING, ASSIMILATING, SOLULIZING AND RELEASING THE 17 KEY NUTRIENTS REQUIRED FOR OPTIMUM GROWTH AND VIGOR



N

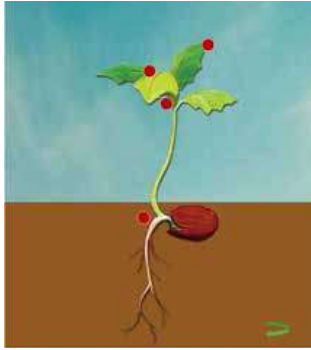
Nitrogen

P

Phosphorus

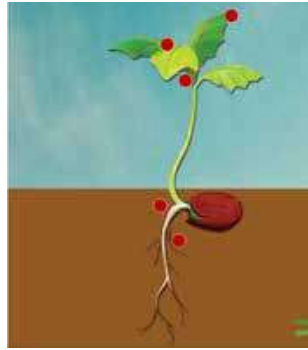
K

Potassium

PRIMARY MACRONUTRIENTS**N (NITROGEN)**

Nitrogen (N) holds significant importance for plants and other living organisms. It plays a vital role in plant development by facilitating chlorophyll synthesis and protein production. However,

most nitrogen in the atmosphere exists in an unusable gas state for plants. MicrobeBio® aids in making nitrogen more accessible to plants through Nitrogen Fixation. This process involves converting the unusable nitrogen from the air into organic compounds that both plants and organisms can utilize effectively.

P (PHOSPHORUS)

Phosphorus is a crucial nutrient essential for healthy plant growth. Plants acquire phosphorus from the soil by absorbing primary and secondary orthophosphates. It plays a vital role in various plant

processes, including root growth, converting solar energy into usable energy, and carrying out other essential functions. Sufficient phosphorus intake is crucial for the plant's overall well-being, as a deficiency can hinder nutrient absorption and hinder growth. Microbes come to the rescue by helping plants obtain the required phosphorus for thriving. Our product achieves this by facilitating phosphate solubilization, which makes bound phosphate in the soil accessible for plant uptake, ensuring optimal growth and development.

K (POTASSIUM)

Potassium is an essential nutrient that is crucial for the overall health of plants. It plays a vital role in various plant functions, including photosynthesis, protein synthesis, and the formation of cellulose. Potassium

is also responsible for the translocation of sugars and starches within the plant. Furthermore, it significantly influences the plant's size, shape, color, taste, and overall quality.

Having an adequate supply of potassium can enhance root growth and improve drought resistance in plants. MicrobeBio comes to the aid of plants by assisting them in obtaining the required potassium. The microorganisms present in MicrobeBio facilitate potassium solubilization, breaking down potassium and making it readily available to plants. This process makes it easier for plants to absorb potassium and ensures their optimal growth and development.



SECONDARY MACRONUTRIENTS

MG (MAGNESIUM)



Magnesium is important to a plant's health. Magnesium is in every molecule of chlorophyll which means it is actively involved in photosynthesis. It also aids in phosphate metabolism, plant

respiration, and the activation of many enzyme systems. Magnesium is needed to capture the sun's energy for growth and production through photosynthesis. Like many other nutrients, most magnesium is not available for plants. Microbes take this unusable magnesium and convert it into a compound that plants can absorb. MicrobeBio microbes will ensure plants get the right amount of magnesium that they need.

S (SULFUR)



Sulfur is an important nutrient that plants receive through the soil, but can also enter plant leaves as dioxide. Sulfur is needed for the synthesis of certain amino acids and proteins, photosynthesis,

seed production, and nitrogen fixation, and is also useful for winter crop hardiness. However, most sulfur in the soil is tied up in organic matter and cannot be absorbed by plants. This leads to the problem of plants not having enough sulfur. MicrobeBio's microbes help break up this matter and convert the sulfur in the organic matter into a compound that is easy for plants to absorb and use.

CA (CALCIUM)



Calcium is an important nutrient for plants because it is essential for their structure. Much like we need calcium for strong bones, plants need calcium to develop strong cell walls. This enables plants to stand

upright and be better protected. Calcium also helps with cellular signaling which is a biological process critical to a plant's healthy development. A deficiency in calcium can have negative effects on plant growth. Most calcium compounds found in the soil are insoluble and plants can't use them. MicrobeBio's microbes help by taking the insoluble calcium and turning it into a soluble compound that plants can use.

B

Boron

Cl

Chlorine

Mn

manganese

Fe

Iron

Ni

Nickel

Cu

Copper

Zn

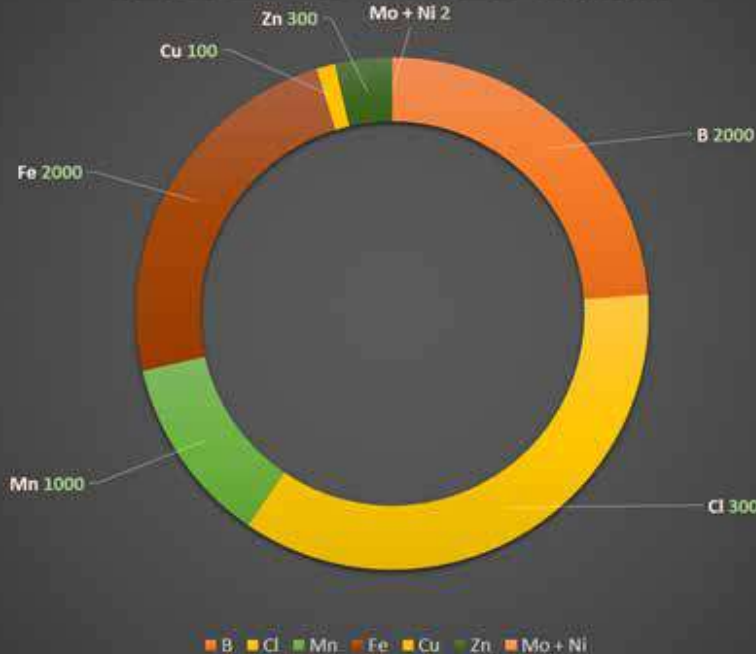
Zinc

Mo

Molybdenum

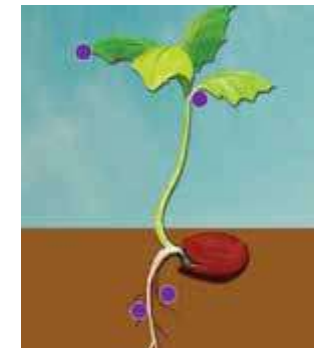
MICRONUTRIENTS ACHIEVE FULL BALANCED NUTRITION (SOURCE: IPNI)

Values are relative concentrations



insoluble boron and converting it into a soluble form that plants can easily absorb. This process ensures that plants receive the required boron to support healthy growth and development.

CL (CHLORINE)



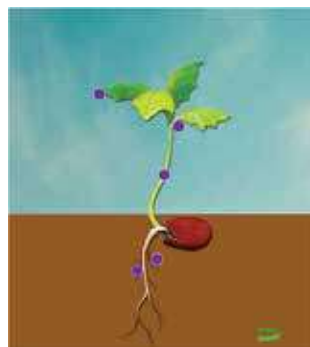
Chlorine, though classified as a micronutrient, holds several advantages for plant growth and is essential for their development. It plays a crucial role, alongside potassium, in the proper functioning

of stomatal openings in plants, enabling them to regulate their internal water balance effectively. Additionally, chloride, the form of chlorine absorbed by plants, assists in the hydrolysis process during photosynthesis.

While most chlorides in the soil are soluble, MicrobeBio proves valuable in environments where chloride is not readily soluble. MicrobeBio aids in making this otherwise inaccessible chloride available to plants, supporting their overall growth and well-being.

B (BORON)

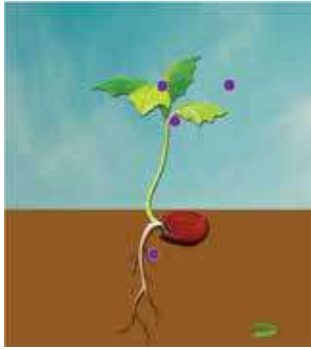
Boron is essential for the health of plants as it plays a crucial role in the formation and strengthening of cell walls. Additionally, it influences the uptake of potassium and phosphorus in plants. Boron deficiency is one of the most common nutrient deficiencies



in plants, and it can have detrimental effects on cell walls and reproductive organs. Severe boron deficiency can result in stunted growth and even the death of growth tissue.

MicrobeBio's microbes play a vital role in the soil by breaking down

MN (MANGANESE)

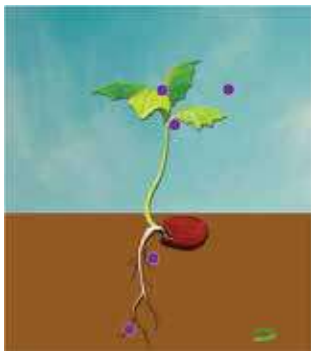


Manganese plays a significant role in various plant systems, including photosynthesis, respiration, and nitrogen assimilation. It is also essential for pollen tube growth, pollen germination, and root pathogen

resistance. A deficiency in Manganese can lead to stunted growth, yellow leaves, and the appearance of sunken spots.

MicrobeBio effectively aids in breaking down Manganese in the soil, ensuring that it becomes readily available for plants to absorb. This process ensures that plants receive the necessary Manganese for their optimal growth and overall health.

FE (IRON)

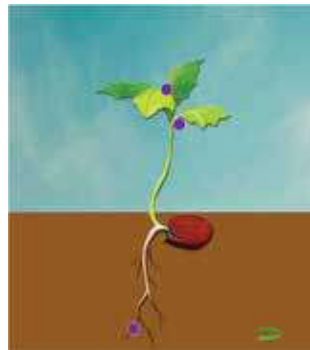


Iron is a crucial element for plant growth and food production, playing a vital role in various processes such as energy transfer, nitrogen reduction, fixation, and lignin formation. It is

essential for plants to move oxygen throughout their system and maintain green leaves. A deficiency in iron can lead to chlorosis, where leaves turn yellow with green veins.

MicrobeBio's microbes play a significant role in aiding plants to access the necessary nutrients, including iron. They work to make iron from the soil, sourced from water or fertilizers, more accessible to plants, ensuring that they receive the required iron for healthy growth and vibrant foliage.

NI (NICKEL)



Nickel (Ni) was recognized as an essential plant nutrient in the late 20th century. Plants absorb Ni in the form of the divalent cation Ni^{2+} , and it is required in trace amounts, with a critical level of around

0.1 parts per million. Nickel is vital for the biosynthesis of hydrogenase, carbon monoxide dehydrogenase, and factor F430, found in various bacteria genera.

While no Ni deficiencies have been observed in crop-growing conditions, agricultural scientists have reproduced deficiency symptoms like chlorosis of young leaves and dead meristematic tissue in crop research settings. Nickel is a crucial

component of the urease enzyme, necessary for converting urea to ammonia (NH_3) in plant tissue, which plays a significant role in plant nitrogen (N) metabolism.

MicrobeBio® contains four microbial enzymes known to require nickel: hydrogenase, methyl coenzyme M reductase, carbon monoxide dehydrogenase, and urease. Recent biochemical and molecular biological experiments have shown the existence of multiple auxiliary genes that facilitate nickel incorporation into urease and hydrogenase.

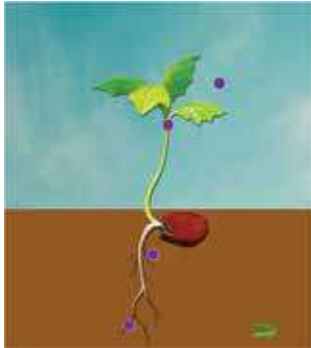
CU (COPPER)

Copper plays a crucial role in activating enzymes responsible for lignin synthesis in plants and is essential for various other enzyme systems. It is involved in photosynthesis and contributes to enhancing the flavor and color of vegetables, as well as the color of flowers. A deficiency in copper can lead to stunted growth in plants, with new leaves growing smaller, losing their sheen, and eventually wilting. MicrobeBio's microbes



play a vital role in providing copper to plants. They seek out and create usable copper compounds for plants, ensuring that they receive the necessary copper for optimal growth and development.

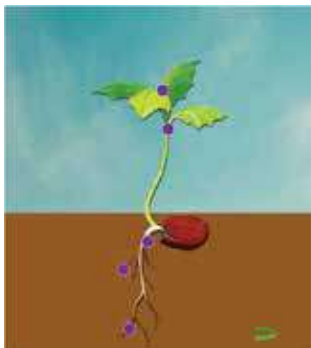
ZN (ZINC)



Zinc is used to activate enzymes that are responsible for the synthesis of certain proteins. It is also used in the conversion of starches to sugars, the formation of chlorophyll and some carbohydrates, to

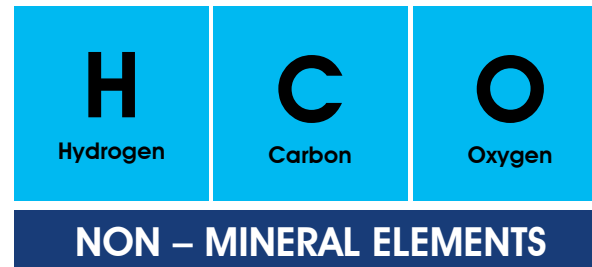
help withstand cold temperatures, and helps in the formation of auxins which help with growth regulation and stem elongation. Deficiency in Zinc leads to chlorosis and new leaves are often cupped upward or distorted. MicrobeBio helps plants get the amount of Zinc they need by breaking down organic matter that contains Zinc and making it available for plants to use.

MO (MOLYBDENUM)

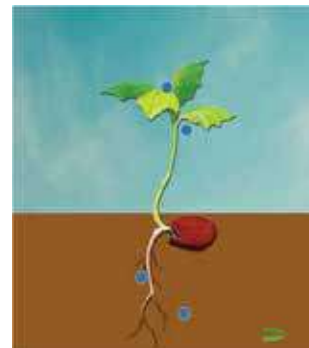


Molybdenum is a vital nutrient used in two enzymes that facilitate the conversion of nitrate into nitrite and further into ammonia, essential for synthesizing amino acids throughout the

plant. Additionally, plants utilize molybdenum to convert inorganic phosphorus into organic forms and aid symbiotic nitrogen-fixing bacteria in legumes to fix atmospheric nitrogen. MicrobeBio plays a significant role by converting molybdenum into a soluble form that plants can readily utilize. This process ensures that plants have access to the necessary molybdenum for their essential functions and overall growth.



H (HYDROGEN)



Hydrogen is a crucial compound for plants and is one of the three elements that constitute a majority of the plant's composition. It plays a vital role in completing various

biochemical reactions within the plant. The primary source of hydrogen for plants is water, which means that most hydrogen encountered by a plant should be soluble, allowing the plant to utilize it immediately.

CU (COPPER)



Copper plays a crucial role in activating enzymes responsible for lignin synthesis in plants and is essential for various other enzyme systems. It is involved in photosynthesis and contributes to enhancing the flavor

and color of vegetables, as well as the color in flowers. A deficiency in copper can lead to stunted growth in plants, with new leaves growing smaller, losing their sheen, and eventually wilting. MicrobeBio's microbes play a vital role in providing copper to plants. They seek out and create usable copper compounds for plants, ensuring that they receive the necessary copper for optimal growth and development.

C (CARBON)



Carbon is a crucial compound needed for plant growth and is one of three compounds that make up the majority of plant mass. Carbon is needed in every living and plants are no exception. Plants take CO_2 from the air and use the carbon from it for energy. This

energy is then used to build essential biological compounds such as carbohydrates and proteins. MicrobeBio's microbes help build carbon in the soil through carbon sequestration, which is the process of taking CO_2 from the air and converting it into a solid state for long-term storage. This creates more organic matter and carbon in the soil which causes microbes to begin a mineralization process and transition all carbon sources into plant-available fertilization such as nitrate nitrogen.

O (OXYGEN)

Oxygen is an important compound needed in plants and is one of three compounds that make up the majority of plant mass. Oxygen is responsible for cellular respiration in plants. Plants get oxygen by breaking down CO_2 during photosynthesis and releasing the majority of it as a byproduct while keeping a small portion for future energy. MicrobeBio® helps increase the amount of oxygen available to plants through carbon sequestration, which stores CO_2 in the soil until it is needed.

ELEMENT GROUPS

Semimetal

B

A semimetal is an element that exhibits properties that lie in between those of metals and solid non-metals or semiconductors.

Halogen

Cl

An element found in group VIIA (17) of the periodic table, they are non-metallic elements that react to form strongly acidic compounds with hydrogen, leading to the creation of simple salts.

Transition Metal

MN, FE, NI, CU, ZN, CU

Transition metals are a group of metallic elements situated in the central block of the periodic table (Groups IVB-VIII, IB, and IIB, or 4-12). Chemically, they exhibit variable valency and have a strong propensity to form coordination compounds, with many of their compounds displaying distinct colors.

Alkaline Earth

MG, CA

Elements in Group IIA (2) of the periodic table are reactive, electropositive, and divalent metals. They have a tendency to form basic oxides that react with water to produce relatively insoluble hydroxides.

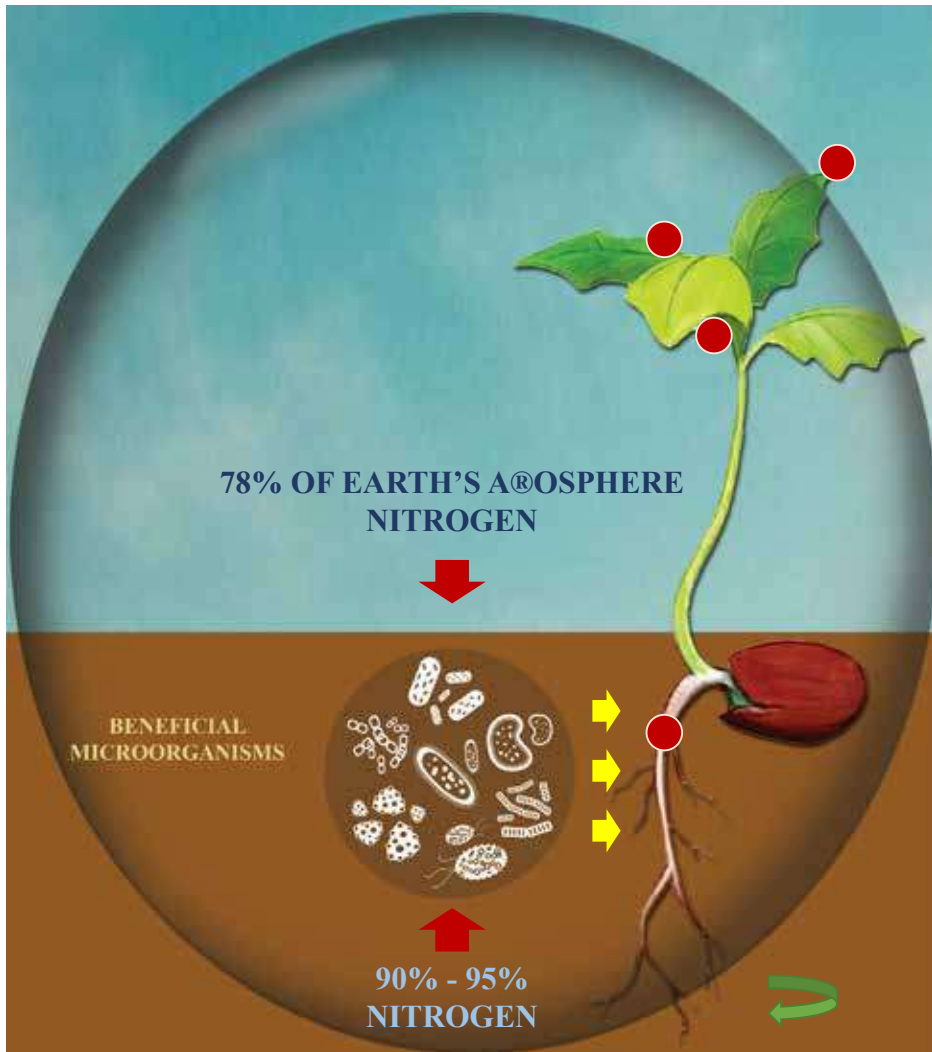
Nonmetal

N, P, S, H, C, O

A nonmetal is an element or substance that does not exhibit metallic properties.

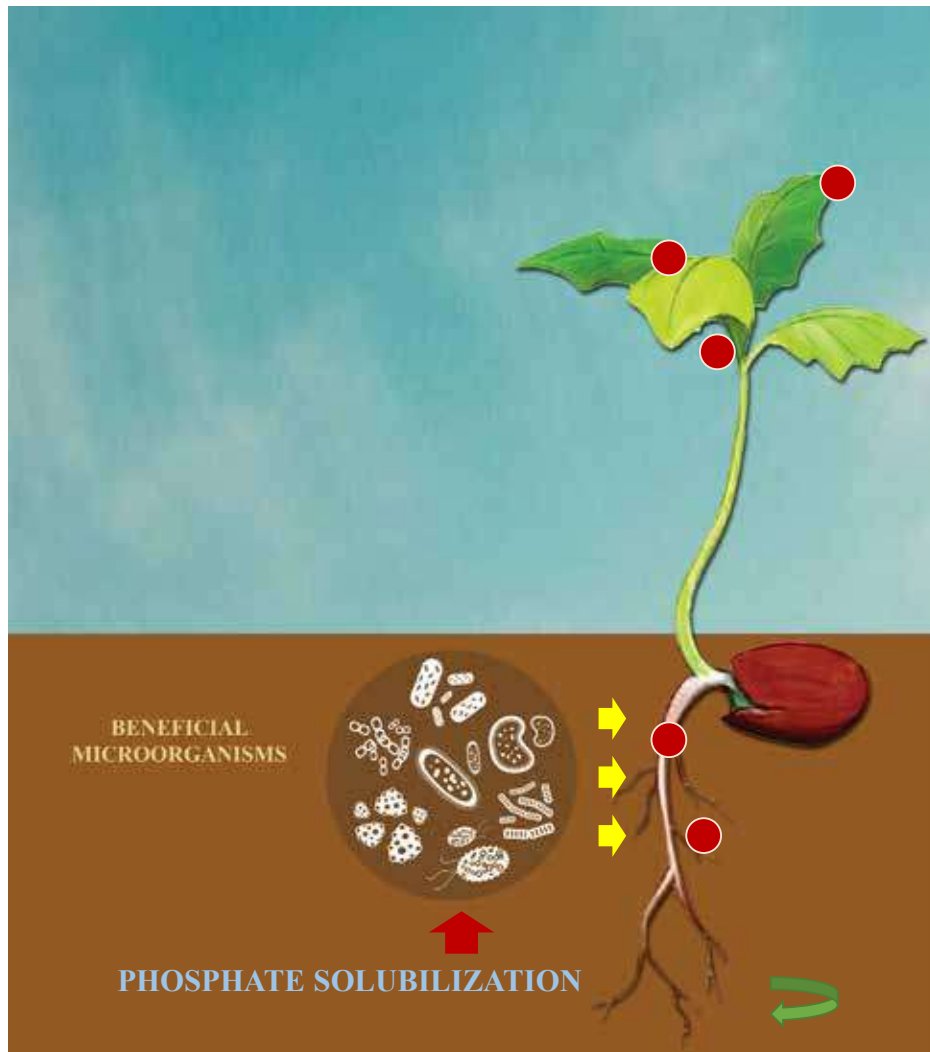
BIOLOGICAL NITROGEN FIXATION

Approximately 90-95% of the nitrogen in the soil exists in an organic form that is inaccessible to plants for uptake. Additionally, 78% of the earth's atmosphere comprises nitrogen, which is not directly available for plant use. MicrobeBio® Nature Vigor introduces beneficial microbes that play a vital role in the nitrogen cycle. These microbes are essential for converting the unusable nitrogen from the air into organic compounds that plants and organisms can utilize effectively.

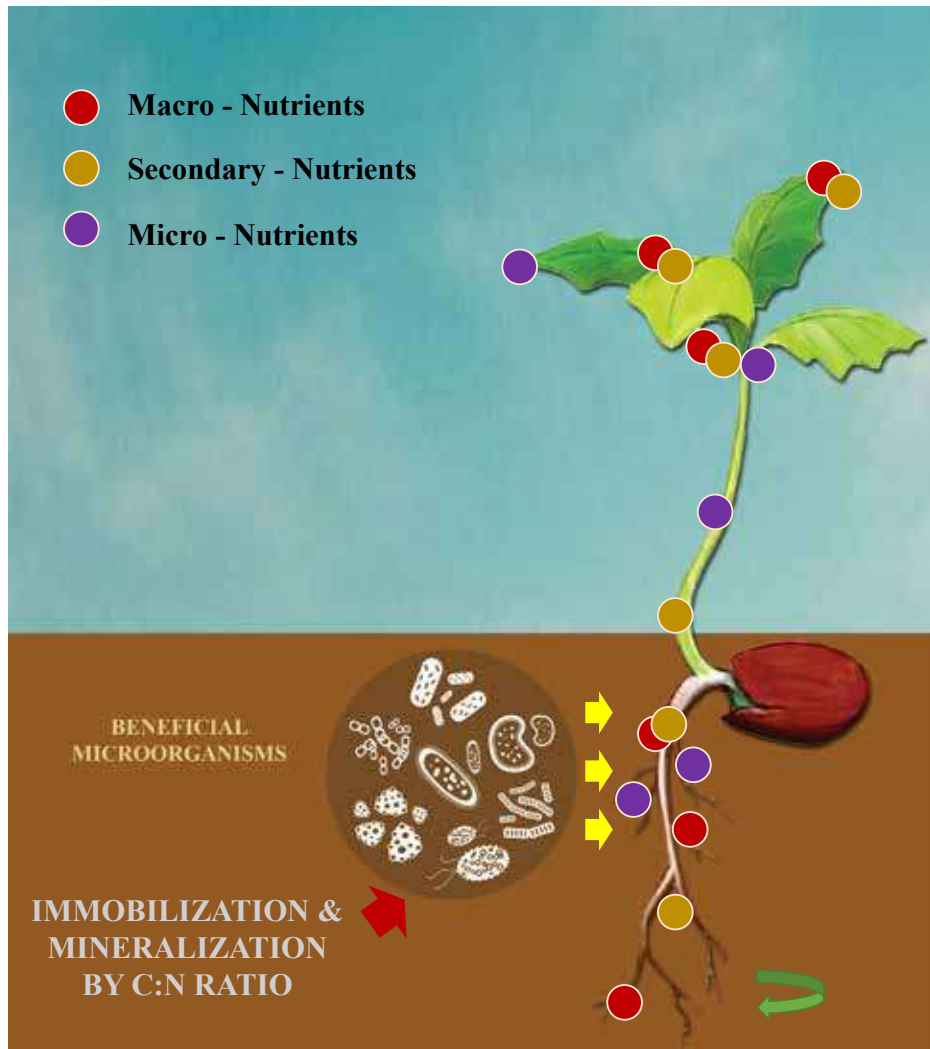


PHOSPATE SOLUBILIZATION

Phosphorus is one of the main nutrients plants need to grow healthy. Plants get phosphorus from the soil by absorbing P from the soil as primary and secondary orthophosphates. It is essential plants get enough phosphorus because it is important for many of its production cycles including root growth, converting the sun's energy into usable energy, and many other key functions. A lack of phosphorus is detrimental to the plant and will cause it to not absorb nutrients. MicrobeBio® Nature Vigor helps plants receive the amount of phosphorus they need to thrive. Our product accomplishes this through phosphate solubilization which is the process of solubilizing bound phosphate in the soil and making it available for uptake by plants.

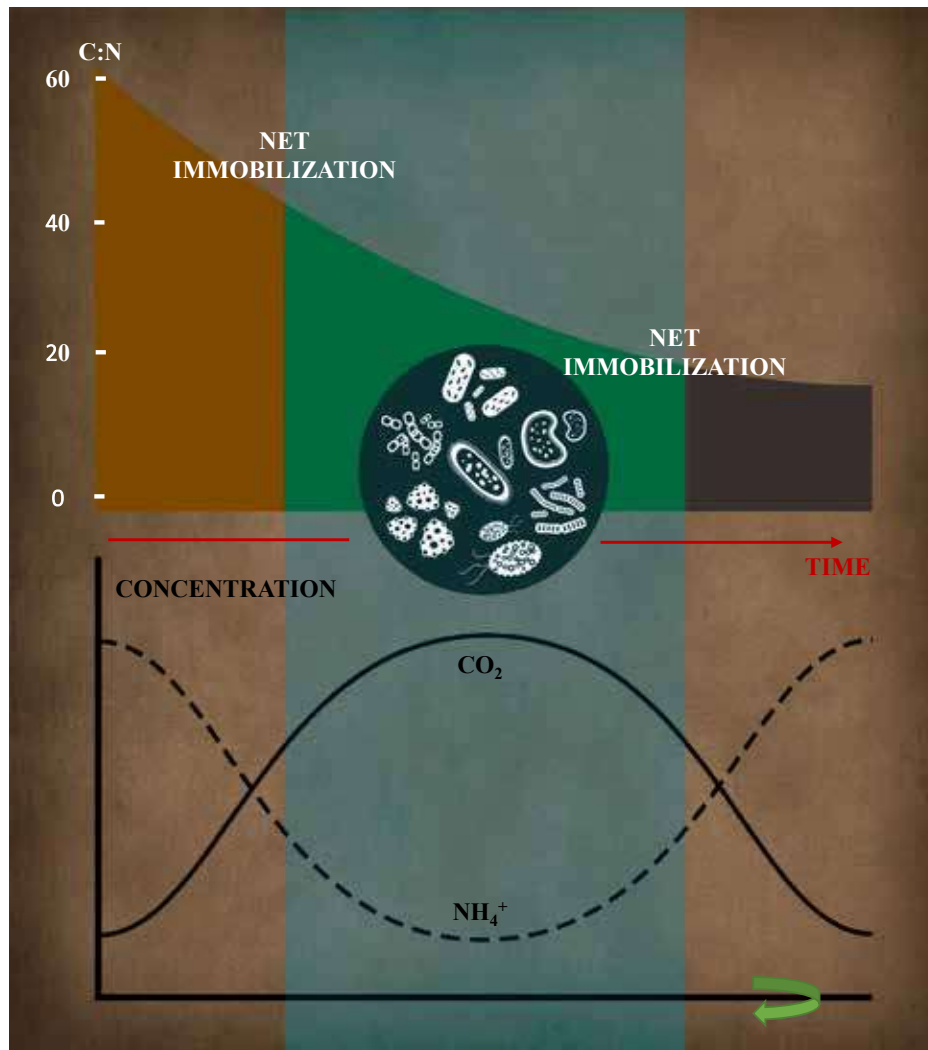


IMMOBILIZATION & MINERALIZATION



Plants have different parts containing various amounts of nitrogen. Our Nature Vigor provides beneficial microorganisms expressing an amount of nitrogen in plants or inorganic matter in the carbon-to-nitrogen ratio (C: N ratio). Immobilization: When the C: N ratio of added organic matter is high (greater than 30:1 ratio), microorganisms will require more nitrogen from the soil (the form of nitrate or ammonium) or in the air (the form of ammonia) to decompose the carbon in the organic matter. This nitrogen will be immobilized (unavailable for plants) until these microorganisms die when the nitrogen is released. Mineralization: When the C: N ratio of reduced organic matter is low (less than 30:1 ratio), the abundant nitrogen is supplied through the decomposition of the organic matter to obtain the nitrogen levels of the decomposing organism. As a result, there will be a net release and build-up of inorganic nitrogen in the soil (mineralization). The more we can balance the IMMOBILIZATION & MINERALIZATION, the more plants can uptake nutrients and increase yield.

IMMOBILIZATION & MINERALIZATION



The graph illustrates the impact of adding organic material with a high C: N ratio to the soil, observed over three distinct periods.

1ST PHASE: NET IMMOBILIZATION (C:N RATIO IS DECREASING)

- The population of microorganisms is increasing.
- Microorganisms consume N (NH₄⁺), leading to a decrease in its availability.
- Microorganisms consume

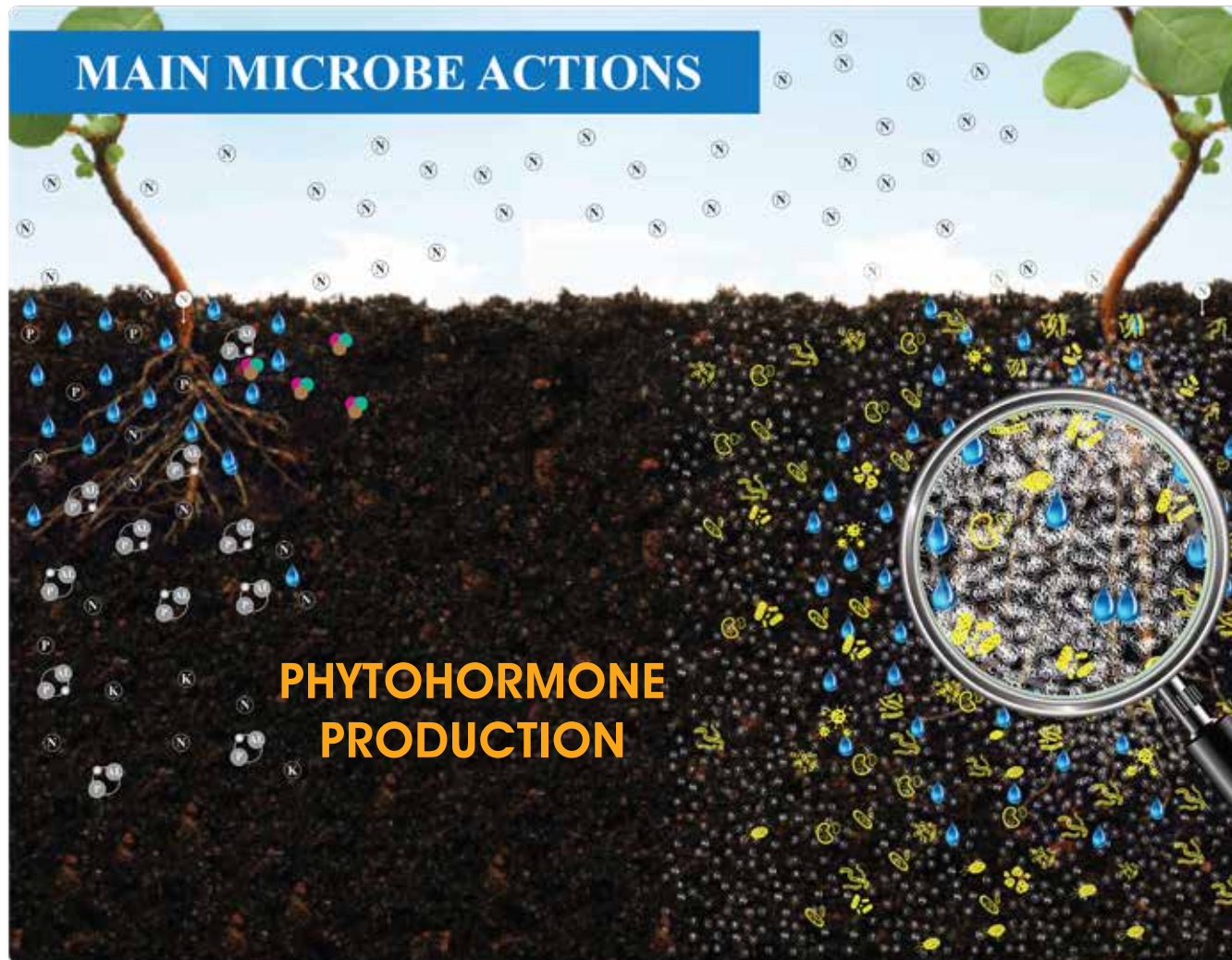
2ND PHASE: BALANCE IMMOBILIZATION & MINERALIZATION

- Microorganisms have utilized a significant portion of the available N.
- Maximum consumption of C products and CO₂ production.

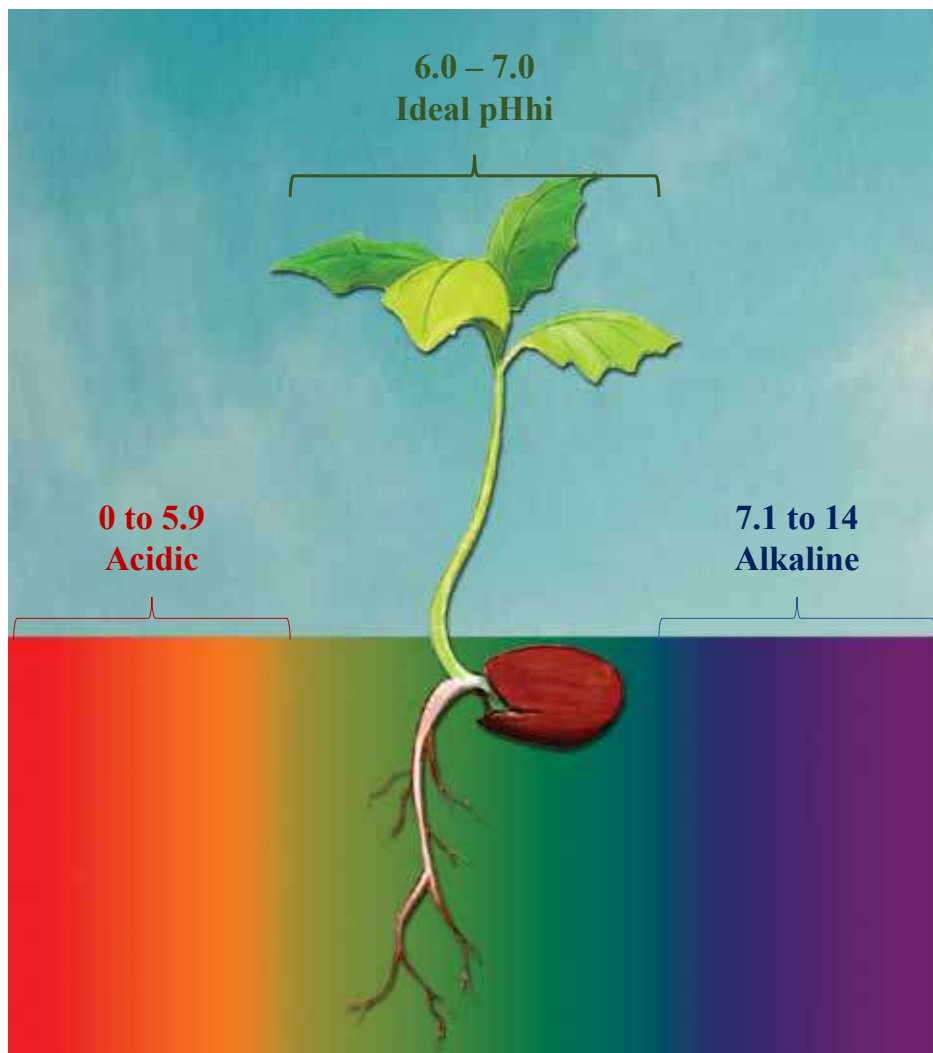
3RD PHASE: NET MINERALIZATION (C:N RATIO IS LOW)

- Microorganisms start to decline in numbers.
- NH₄⁺ level increases as the N from the microorganisms becomes available in the soil.
- Decomposition of C compounds occurs, resulting in low CO₂ production.

PHYTOHORMONE PRODUCTION



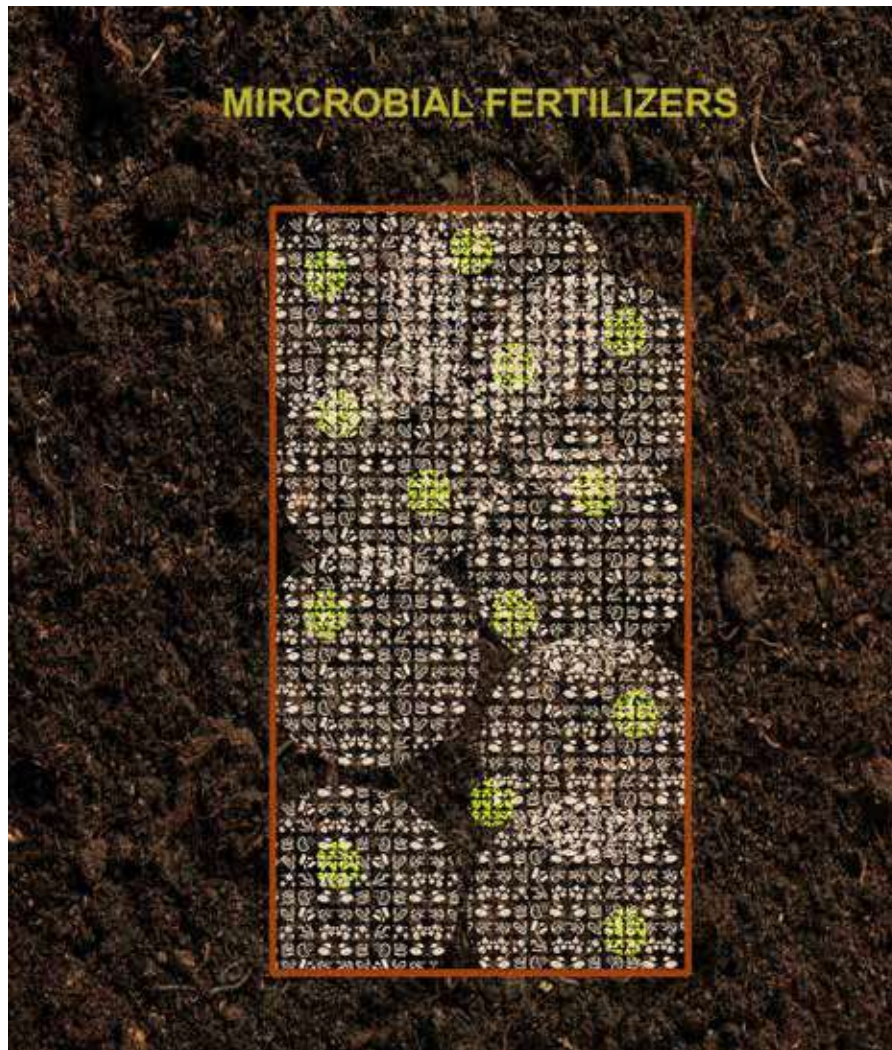
MicrobeBio® Nature Vigor contains plant growth-promoting microorganisms, which consist of organic stimulants and beneficial microorganisms. These microorganisms colonize the plants, including seeds, and contribute to enhanced plant growth. Through phytohormone production, they synthesize organic substances that can be translocated to different plant stages, triggering specific biochemical, physiological, and morphological responses. This process enables crops to achieve optimal growth and yield in a shorter period of time.



BALANCE SOIL pH

Soil pH plays a significant role in nutrient availability for plants, affecting both chemical forms and nutrient solubility in the soil. MicrobeBio® Nature Vigor helps maintain an optimal soil pH even under extreme environmental conditions by balancing the soil. Its organic bio-stimulants enhance soil porosity, leading to improved aeration, infiltration, and drainage. The product also acts as a buffer, preventing nutrient loss through leaching. Furthermore, the organic bio-stimulants enhance soil granulation, improving the aggregation of soil particles.

SAPROPHYTIC COMPETENCE



Saprophytic competence refers to the capacity of rhizobia inoculants to establish themselves in the soil for a certain period, typically between growing seasons. Variations in this ability are well-documented across different species and strains. The unique saprophytic competence of MicrobeBio[®] products plays a vital role in enhancing the aggressiveness and persistence of the inoculants in the soil, surpassing less efficient native strains. Additionally, MicrobeBio[®] products acquire available nutrients and extra water from the environment and soil, providing the plant with enhanced uptake capabilities.

FOR HIGHER YIELDS

WITH ORGANIC MATTER

- Enters through the stomata and leaf tissue.
- Increases fruit set during flowering, pollination and germination.

- The oxygen availability increases.
- CO₂ is taken up through the leaves.

- Improves the breakdown of leaf residues

- Reduces nutrient inputs

- Chelated minerals are in a bio available form.
- A clean carbon food source for increasing soil biology.
- Increases soil aeration and worm activity.

- Hold nutrients in a bio available form in soil solution.
- CO₂ is taken up through the roots.
- Unlocks soil nutrient reserves.



BENEFITS

Our purpose is to maintain the balance of life on Earth by caring for it consciously and nurturing it. Through our microbial regenerative technology, we aim to serve as stewards of the land and plants. By incorporating microbes into the soil and roots of plants, we enable growers to practice sustainable cultivation.

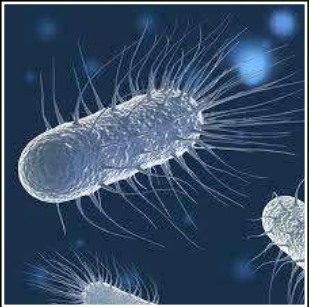
THE BENEFITS OF OUR APPROACH ARE NUMEROUS

- Improving soil structure and enhancing nutrient absorption and utilization.
- Reducing nutrient contamination in water sources by preventing leaching and runoff.
- Increasing crop production efficiency, yield, and quality for higher profitability.
- Stimulating effective breakdown of organic matter, enriching the soil with carbon and nutrients.
- Controlling salinity and heavy metals in soil.
- Enhancing drought resistance and reducing irrigation needs through improved moisture retention.
- Promoting robust root systems, better seed germination, and increased vitality in plants.
- Reducing costs and dependency on nitrogen-based fertilizers and transportation.
- Enhancing resistance to pests and diseases, leading to healthier plants.
- Boosting the formation of essential micronutrients, such as iron, easily absorbed by plants.
- Elevating Brix levels for better-tasting produce.
- Minimizing adverse environmental impact and remediating soil contaminants.
- Our 100% organic, non-toxic, non-GMO approach is easy to apply and fosters sustainable soil for future crops.
- In essence, our microbial regenerative technology enables growers to be proactive rather than reactive, fostering a harmonious and thriving ecosystem for the benefit of all.

MicrobeBio is dedicated to safeguarding soil and enhancing crop productivity from the ground up.

We collaborate with plants and soil to foster more productive and sustainable agriculture.

ABOUT US



MicrobeBio is an innovative microbial technology company focused on identifying, selecting, and producing specialized microbials for the agriculture and environmental sectors using its unique biochemical screening platform.



WHAT ARE BACTERIA?

Bacteria are prokaryotic single-celled microorganisms, lacking a nucleus. They come in various shapes such as spheres, rods, or spirals, and display a wide range of metabolic capabilities, enabling them to thrive on various food sources.

INTRODUCING MICROBEBIO MICROBIAL



MicrobeBio's microbial consist of carefully chosen, extensively tested organic enhancements, including soil and plant health-promoting bacteria.

Further

MicrobeBio acts on the plant rhizosphere, creating a conducive environment for meristem root growth.

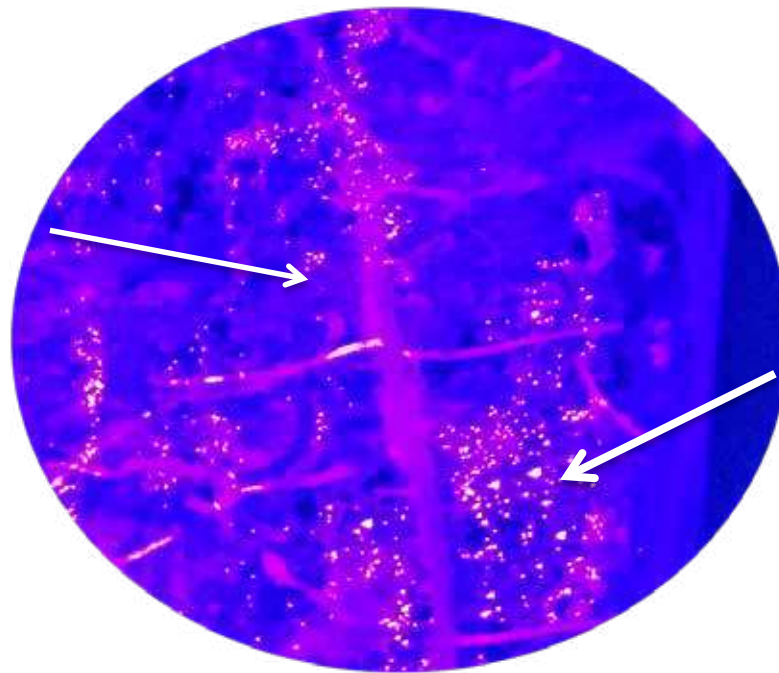
The increased biodiversity accelerates organic mineralization, enhances plant nutrient uptake, improves photosynthesis, and fosters overall plant health.

CENTRAL DOGMA

AGRONOMY AND MICROBIOLOGY

OF UTMOST IMPORTANCE

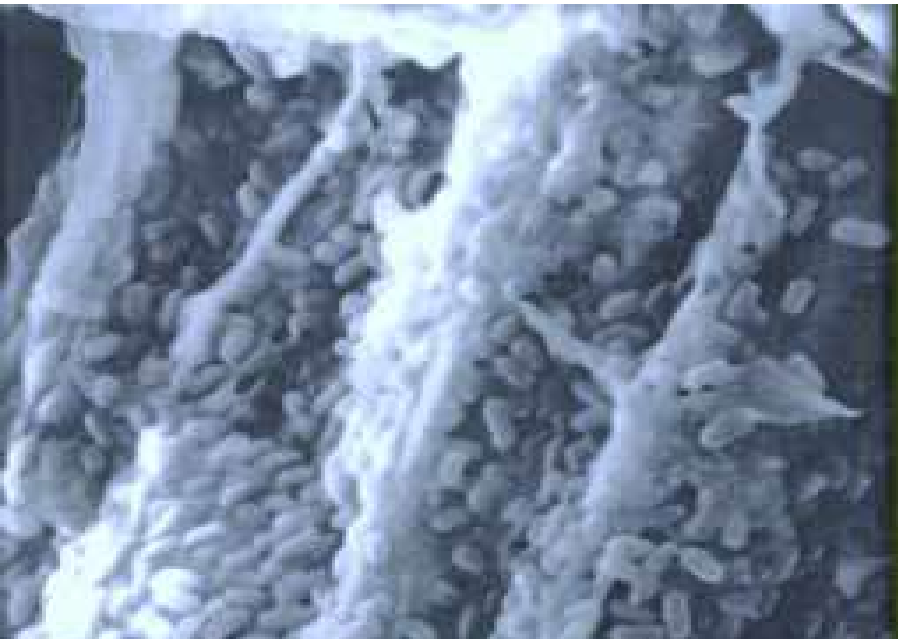
Bacteria MUST colonize the root zone to stimulate
Plant Growth Promotion and **mineralization**.



**MicrobeBio Bacterial colonization
at the root zone**
Bioilluminated Image

Beneficial Bacillus Spores

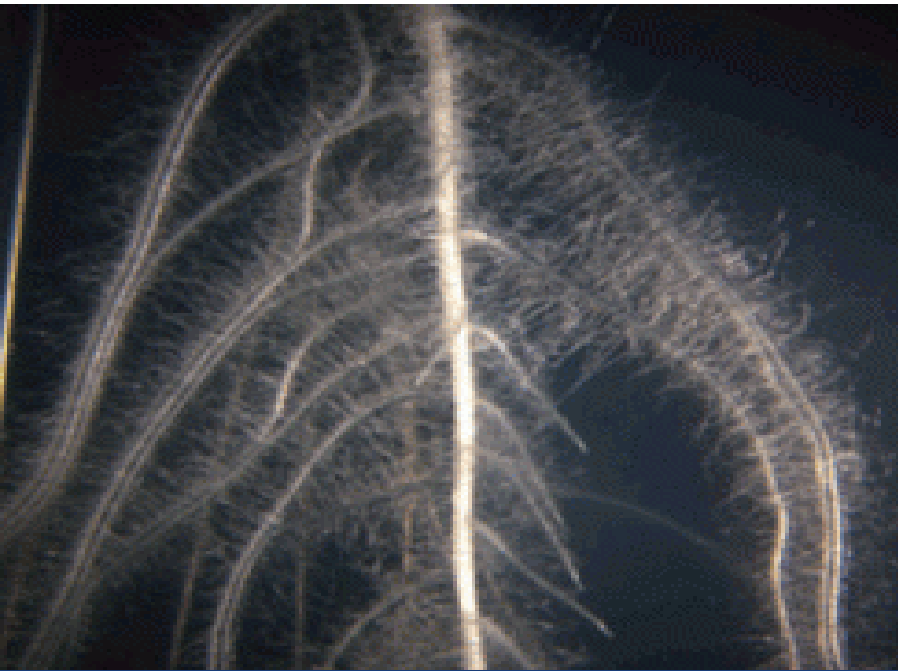
Strains in MicrobeBio's Products



Bacilli root associations protect the rhizosphere by the production of antibiotics and polysaccharides

All beneficial bacterial strains are **naturally derived** from agriculture sources worldwide

Microbebio's Specialty Agriculture Microbials

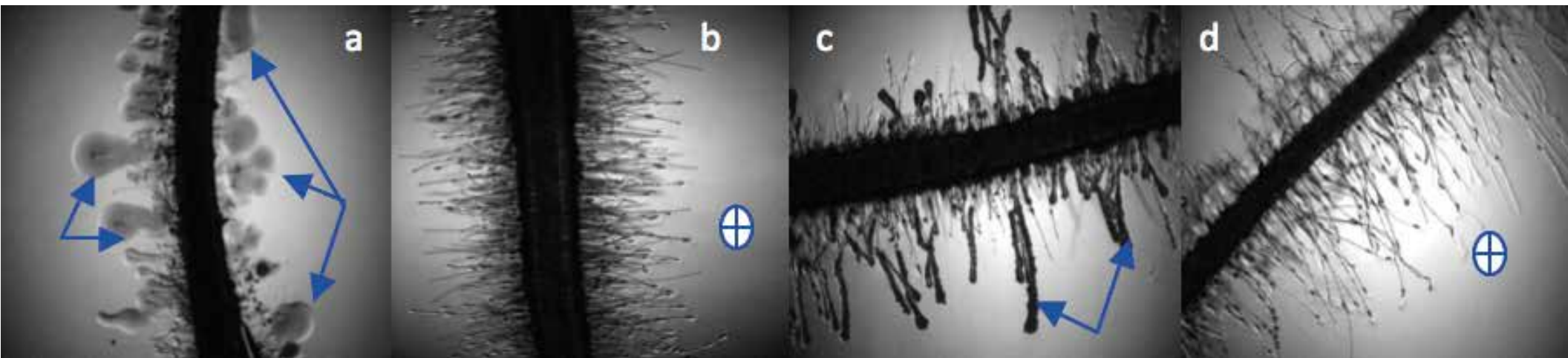


Root-associated Bacilli aids rapid nutrient uptake through root cells

Nature Vigor:

- > 400 Billion CFU/Gram
- Ultra concentrate of Ag Bacillus spores
- High-throughput testing
- Validation
- Synergistic and effective
- Motile and chemotactic

Root Colonization by MicrobeBio Bacteria



Bacillus subtilis colonization and polyaccharide production



Mineral depletion from 1940 to 1991

Substantial loss of nutrients in vegetables and fruits over time!

Vegetables

- Lost **76%** of their copper content
- Lost **49 %** of their sodium content
- Lost **46%** of their calcium content
- Lost **27%** of their iron content
- Lost **24%** of their magnesium
- Lost **16%** of their potassium

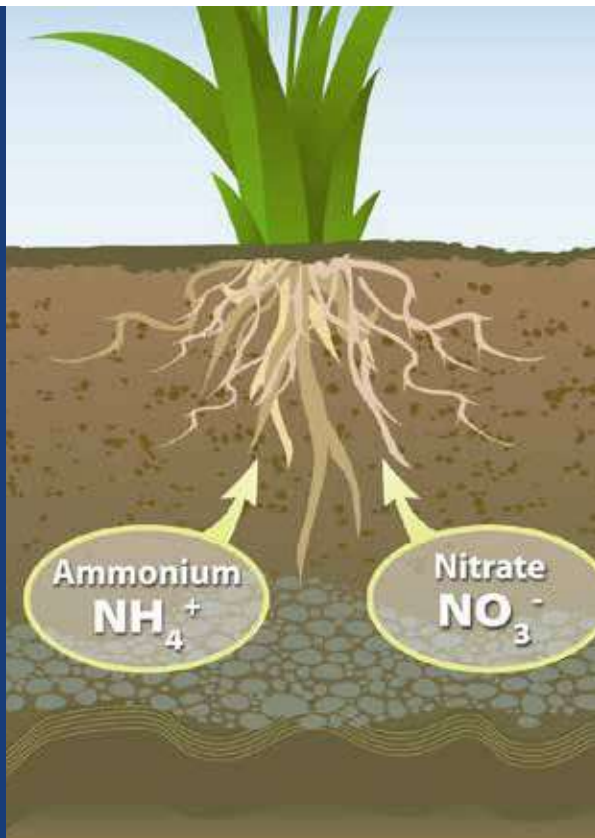
Fruit

- Lost **19%** of their copper content
- Lost **29%** of their sodium content
- Lost **16%** of their calcium content
- Lost **24%** of their iron content
- Lost **15%** of their magnesium content
- Lost **22%** of their potassium content

Source: USDA Soils

Mineralization and Nitrogen

Beneficial bacteria impacts



Beneficial bacteria
fix nitrogen and
rapidly mineralize
nutrients into plant
useable forms

Beneficial bacteria

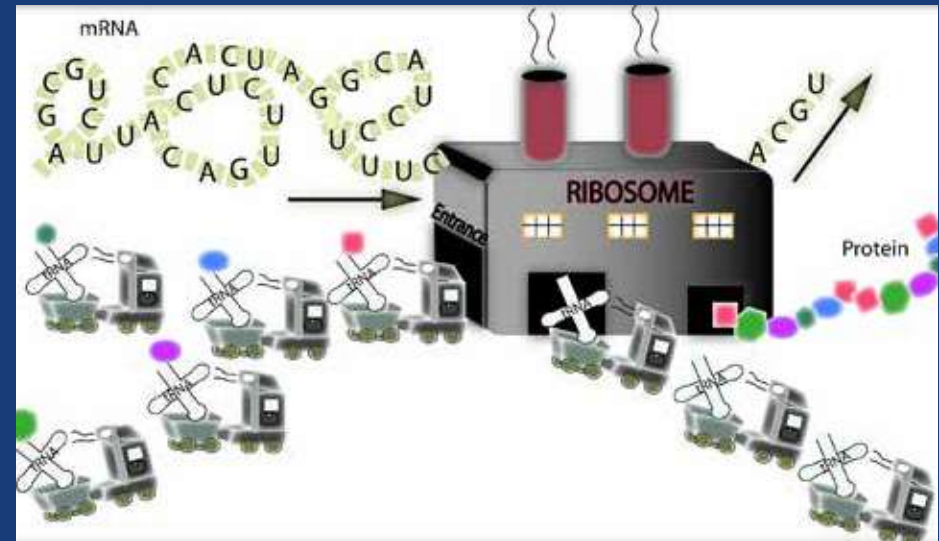
The key to soil health

Converting unusable nutrients into usable nutrients 24/7



Bacteria are Microscopic Jackhammers

Continually breaking down insoluble nutrients and ions into their free forms for plant use

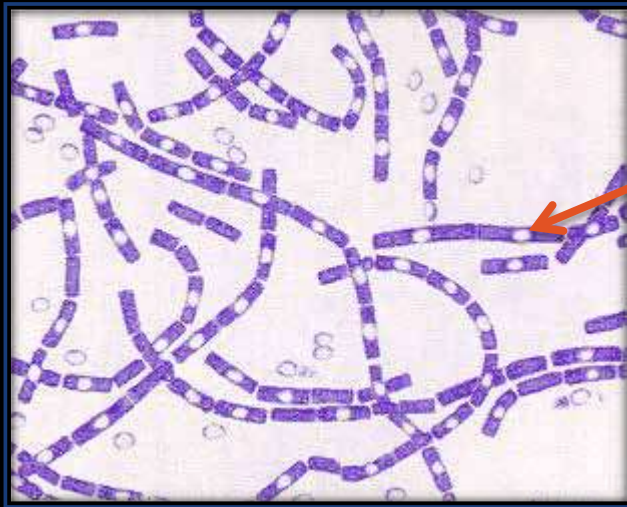


Bacteria are Microscopic Factories

Continually producing by products and Surfactants for greater nutrient uptake

Bacteria Survival, Shelf Life, and Integrity

Bacillus bacteria utilize **endospores** to survive and adapt to unfavorable environmental conditions, including temperature, salinity, pH, drought, and other abiotic and biotic factors.

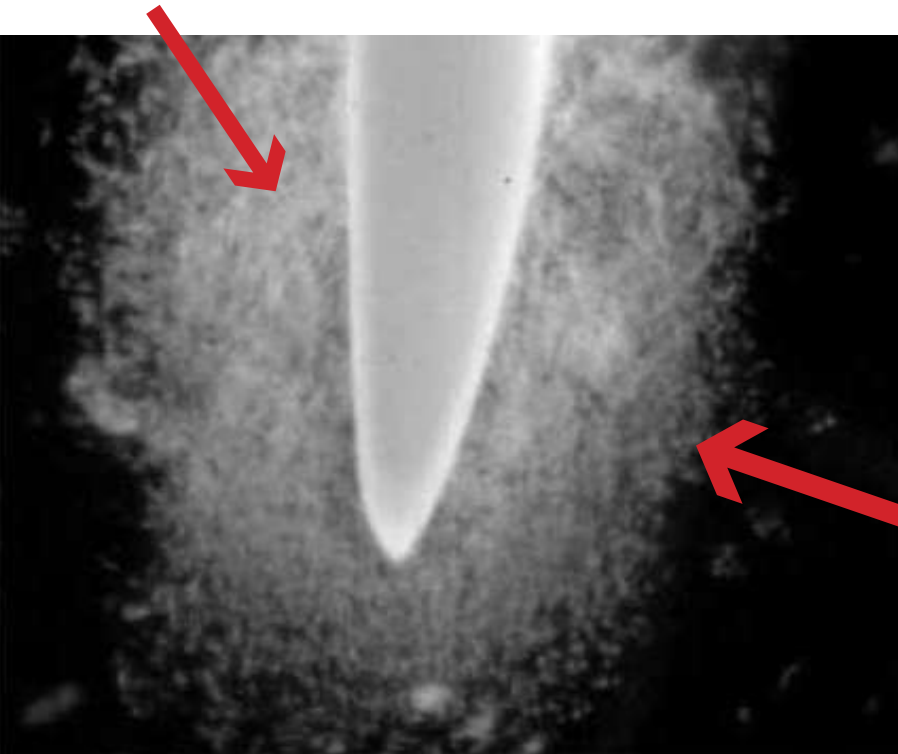


ENDOSPORE

MicrobeBio bacteria have the ability to form endospores, enabling them to withstand extreme temperatures and environmental conditions.

SHELF LIFE IS A MINIMUM OF 2 YEARS (LIQUID) AND 5 YEARS (POWDER)

Root Hair Extension and Microbial Chemotaxis



Microbes swiftly
move towards
root sugars and
chemicals

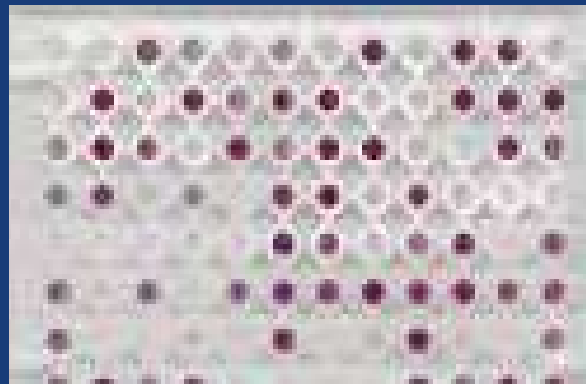
CHEMOTAXIS IS THE MOVEMENT OF MICROORGANISMS TOWARDS ROOT EXUDATE CHEMICALS AND STIMULI

HIGH THROUGHPUT ASSAYS

The MicrobeBio Difference

1000+ biochemical assays, all microbial strains extensively lab and field tested

- Over 1000+ metabolic challenge assays
- Proven metabolic diversity of complex polymers and sugars in the soil (lignin, chitin, cellulose, pectin, keratin, starch, dextrose, xylose, etc)
- Proven metabolic activity in divergent soil pH, osmotic salinities, phosphorus, sulfur and nitrogen
- Proven nitrogen fixation and assimilation
- Synergistic blend of Bacillus strains





What are beneficial soil bacteria... and why they are important

Beneficial Soil Bacteria

Microscopic Farmers

Bacteria break-up rock minerals tightly bound in soil

Minerals and nutrients are **abundantly present** as ion complexes in the soil...

■ Yet, these elemental ions form rock complexes that are insoluble to water and unavailable to plants.

■ Microorganisms function to continually release **unavailable** plant nutrients bound in soil, metabolically transforming them into plant **available** nutrients (P, K, Ca...)

BACTERIA PRODUCE LARGE VOLUMES OF ENZYMES AND BIO-SURFACTANTS THAT BREAK ION COMPLEXES IN SOIL TO RELEASE NUTRIENTS FOR PLANT UPTAKE.

Beneficial bacteria

The key to soil health

Converting unusable nutrients into usable nutrients

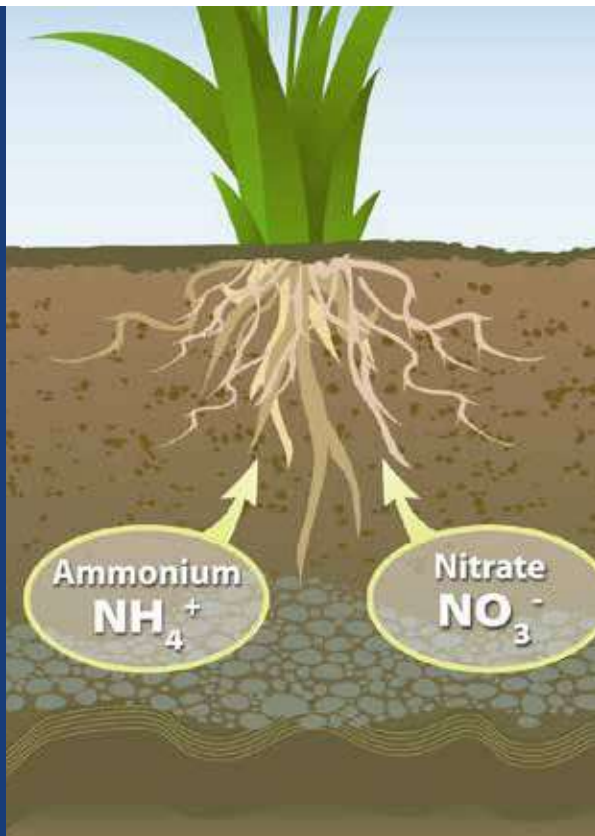


Beneficial bacteria continually produce essential enzymes, surfactants, polysaccharides and antibiotics essential for soil, root and plant growth

AG MICROBIALS WORK SYNERGISTICALLY WITH PLANT ROOTS TO PROMOTE SOIL HEALTH, PHOTOSYNTHESIS, PLANT VIGOR AND IMPROVE NUTRIENT UPTAKE

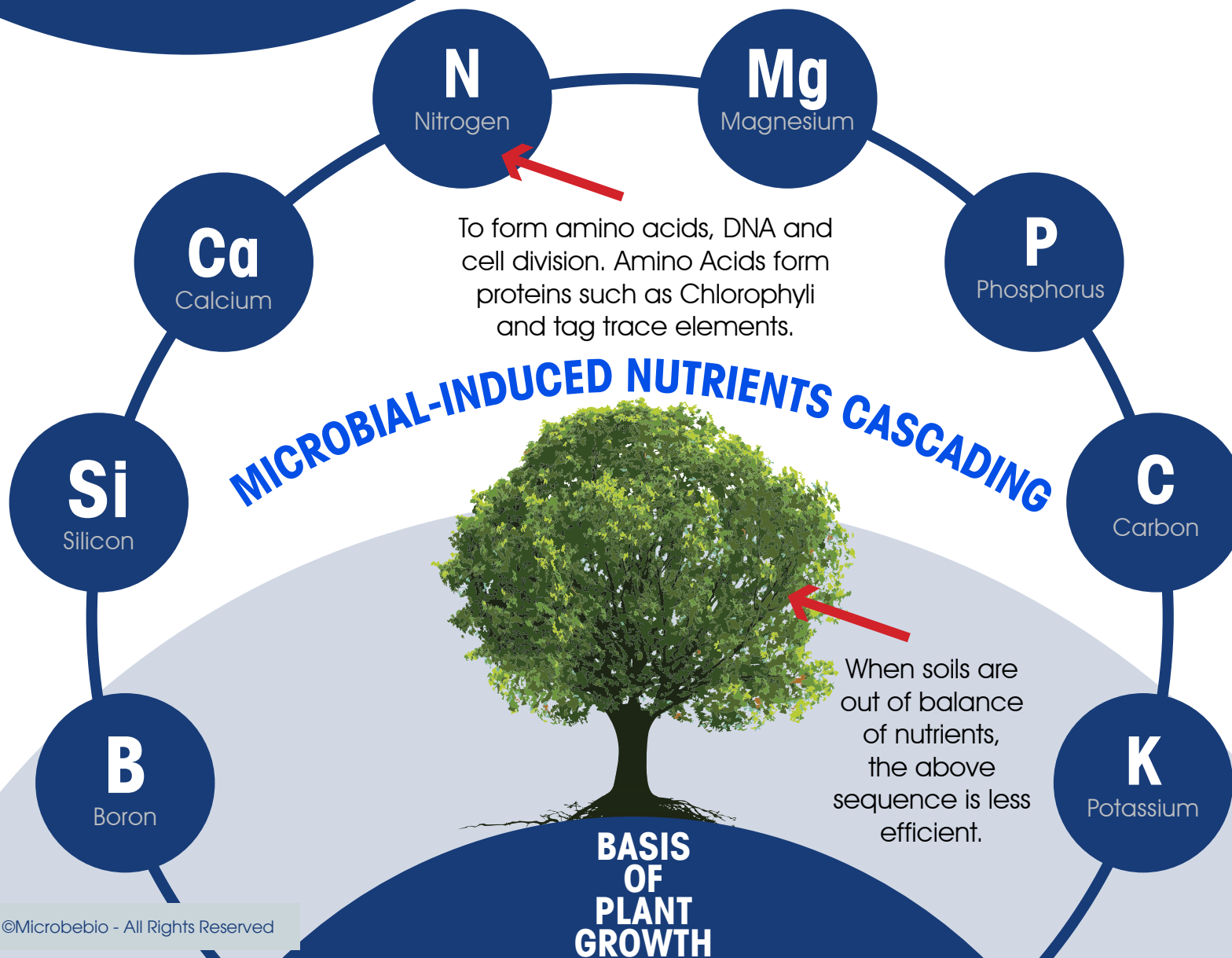
Mineralization and Nitrogen

Beneficial bacteria impacts



Bacillus bacteria fix nitrogen and rapidly mineralize nutrients into plant useable forms

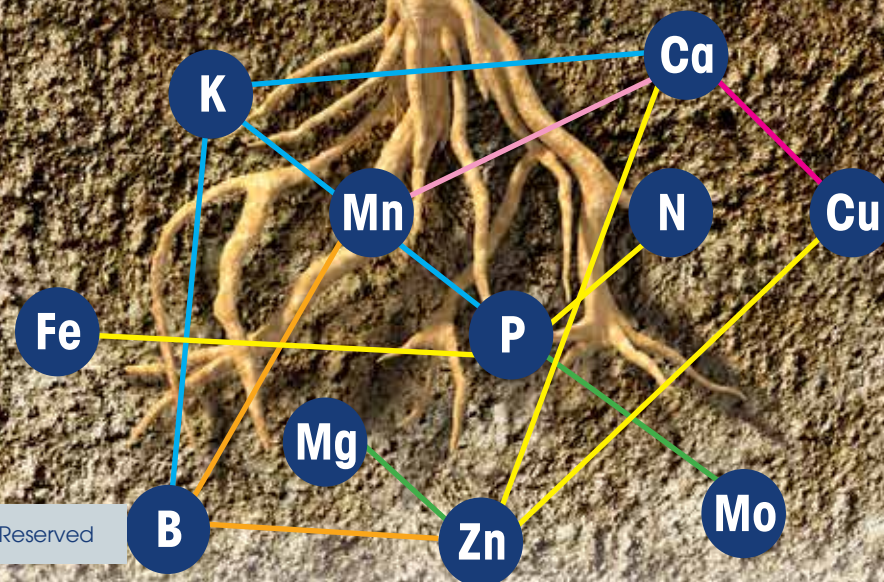
BIOCHEMICAL SEQUENCE OF NUTRITION ON PLANTS



ELEMENT AVAILABILITY THROUGH MINERALIZATION

THE RELATIONSHIP BETWEEN NUTRIENTS

The image portrays a sprouting seedling breaking through the soil surface. Beneath the ground, there is a vast network of beneficial and symbiotic microorganisms actively involved in plant development. Among these, the beneficial bacteria stand out as key players, supporting vital nutrient uptake and essential physiological growth pathways.





What's the Problem?

Is Feeding the Existing Microbials in Soil Enough?

The Challenge...

Nutrient and microbial imbalance will not self-correct



Phytophthora capsici
infecting pepper

The **micro and macro** biomes in soil function harmoniously together. However, due to conventional farming and tilling practices, soils gradually experience nutrient and microbial imbalances that cannot self-correct without intervention.



Feeding Existing Microbial is Not Enough

Merely nourishing the current microbial communities will not lead to improvements in soil and plant health.

Stressed microbial communities in the soil, facing abiotic and biotic challenges, lose vital life-giving components.

This creates space for pathogenic fungi to occupy the stressed soil areas due to natural competition.

MERELY FEEDING THE SOIL WITHOUT ADDING BENEFICIAL BACTERIA NOURISHES THE PATHOGENS, ENABLING THEM TO THRIVE WITH MINIMAL COMPETITION.

So, what's the bottom line?

The impact of imbalance and loss of soil health

What's the Bottom Line?

The presence of native soil bacteria alone cannot ensure optimal plant health, address crop nutrient deficiencies, and manage soil pathogenesis effectively. If they were sufficient, there wouldn't be any soil health issues.

To address the existing soil bacteria imbalance, a strategic boost of the right microbial is essential to profoundly alter the soil microbiome. NLBS introduces microorganisms that can effectively correct soil deficiencies.

Nematode BioControl Tests

NEMATODE	Disease Reduction vs. Control (In-Furrow Treatment)	Disease Reduction vs. Control (Seed Treatment)	Average Microbiology Change vs. Control
Root Knot Nematode	↓86%	↓91%	↑1,330,000 CFU/Gm
Soybean Cyst Nematode	↓84%	↓88%	
Sting Nematode	↓93%	↓96%	↑950,000 CFU/Gm
Lance Nematode	↓81%	↓94%	↑950,000 CFU/Gm



**What can be done to create a
beneficial environment for plant
health and crop growth?**

The Solution...

Improving crop nutrients, crop health, and much more

So, what is the solution?

By treating soils with beneficial agricultural bacteria, microbes can effectively occupy critical spaces, out-competing and eliminating pathogenic microorganisms. This process helps promote a healthier and more balanced soil ecosystem.

By promoting critical microbial populations, healthy mineralization, metabolic cycling, nitrification, and nutrient uptake are facilitated in the soil. This leads to improved overall soil health and plant growth.

Bacillus and Beneficial Soil Bacteria

Direct and Indirect Benefits on Plant Growth Promotion

Direct Mechanism	Effects on Plant Growth
Nitrogen fixation on or in root or shoot tissue	Increased plant biomass or nitrogen content
Production of plant growth regulators (i.e., auxin, cytokinins, gibberellins)	Increased root or shoot biomass or root branching; induction of reproduction cycles
Inhibition of ethylene oxide synthesis in inoculated plants	Increased root length
Phosphorus solubilization content	Increased plant biomass or phosphorus
Sulfur oxidation	Increased plant biomass or foliar sulfur content
Increased root permeability	Increased plant biomass & nutrient uptake
Increased nitrate reductase activity and assimilation	Increased plant biomass or nitrogen content

Table 1: Direct mechanisms involved in plant growth promotion by Bacillus and soil bacteria.

Bacillus and Beneficial Soil Bacteria

Direct and Indirect Benefits on Plant Growth Promotion

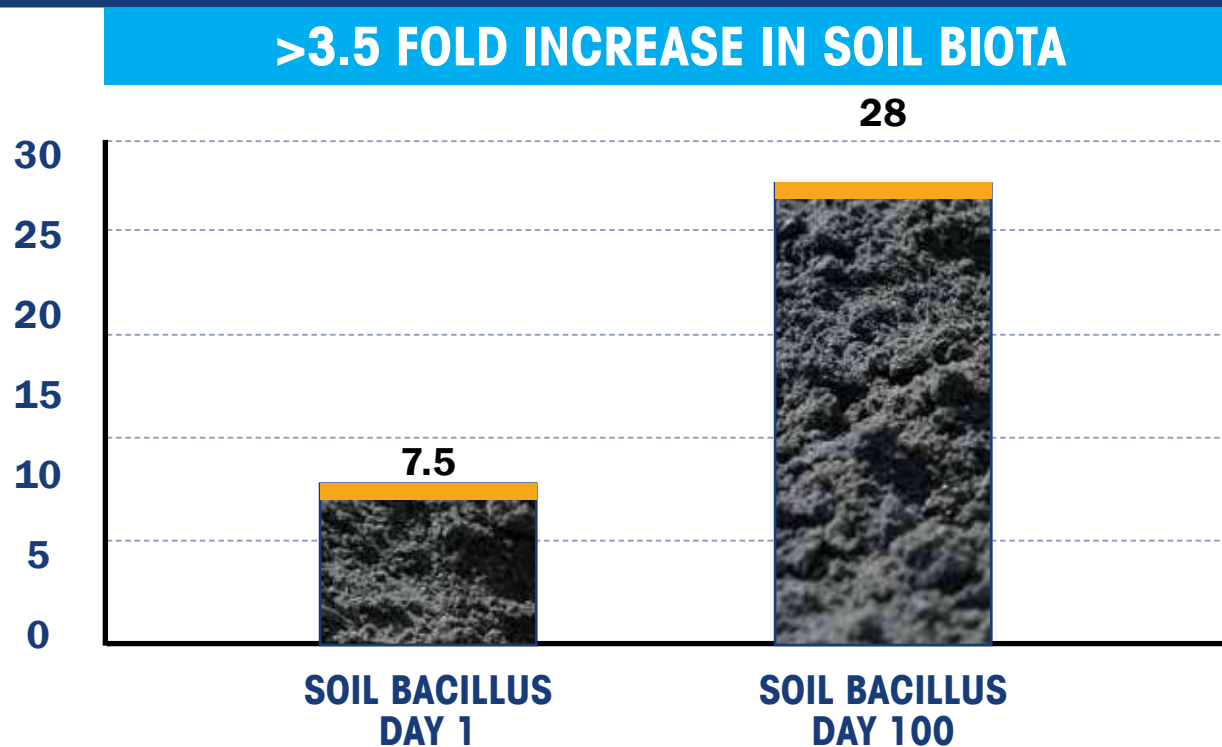
Indirect Mechanism	Effects on Plant Growth
Increased root nodule number or size on legumes or actinorhizal plants	Increased plant biomass, nitrogen content or yield
Increased infection frequency or efficacy by mycorrhizal fungi	Increased plant biomass
Suppression of disease pathogens	Increased plant biomass and reduced incidence of disease and plant mortality
Induction of plant systemic resistance to pathogens	Increased plant biomass and reduced incidence of disease and plant mortality

Table 2: Indirect mechanisms involved in plant growth promotion by Bacillus and soil bacteria.

Bacillus Content in Soil

(Consistent Improvements)

Soybean and Corn Soil Tests



Beneficial Bacteria

Enhances Plant Growth, Soil Health and Mitigates Environmental Stress



- Improves nutrient uptake
- Improves water uptake
- Improves root growth
- Improves plant growth yield
- Induces phytohormones



Note greater decomposition of pith of treated residue treated late fall 2015, pic 8/10/16

BENEFICIAL MICROBES IN MICROBEBIO®

Our microbial products boast an exclusive blend of 50+ microorganisms, setting them apart from others in three key aspects: Bio-diversity, Endospores, and Equilibrium. Rigorous lab and field compatibility studies worldwide, including Southeast Asia and the U.S., validate the formula's synergy and effectiveness:

BIO-DIVERSITY

- The diverse chain of 50+ microorganisms plays a crucial role in promoting nutrient cycling in the soil when applied to the root zone or as a foliar treatment. In contrast, mono-cultural strains lack diversity and are more vulnerable to environmental pathogens, leading to DNA denaturation and death.
- The bioactive potential of microbial spores ensures prolonged nutrient uptake by plants across all growth stages, surpassing live microbes with a limited lifespan.

Our products feature viable bacteria that undergo fermentation to form endospores. This strategic approach offers several advantages:

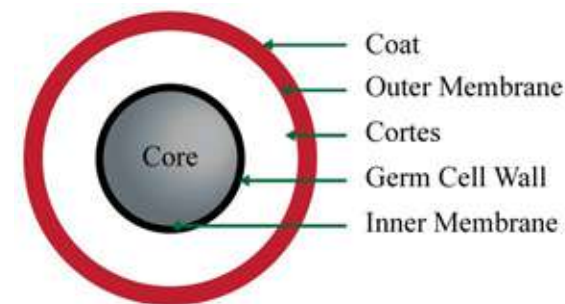
ENDOSPORES

Increased Shelf Life: Endospores limit metabolism and

catabolism, extending the product's shelf life compared to active cells. This ensures the viability and effectiveness of the product over an extended period.

- **Minimized Genetic Mutations:** Sporulating the bacteria reduces the risk of excessive genetic mutations that may hinder the intended performance of the product. This enhances product consistency and reliability.
- **Stability and Quality Assurance:** Endospores provide stability and fidelity to the product, ensuring consistent performance in the field and maintaining a high standard of quality.
- **Container Integrity:** Unlike viable ("live"/active) cells, endospores prevent excess metabolism or CO₂ production within the container, avoiding container expansion or compression.

In summary, the use of endospores is the preferred approach due to their preservation, prolonged efficacy, quality assurance, and extended shelf life.



EQUILIBRIUM

Following extensive quality assurance trials, we have determined that the diversity of microbes plays a crucial role in maintaining long-lasting soil equilibrium. This diversity contributes to continuous bacterial composting throughout the growing season. The presence of biodiversity and redundancy offers several benefits:

- **Accelerated Organic Mineralization:** The varied microbial community accelerates the breakdown of organic matter in the soil, leading to improved nutrient availability.
- **Nutrient Release:** The diverse microbial strains work together to release nutrients from organic compounds, enhancing plant uptake.
- **Pathogen Perimeter Protection:** The range of microbes provides a protective barrier against pathogens, promoting plant health.
- **Enhanced Soil Tilth:** The increased microbial diversity improves soil structure, enhancing air and water movement in the soil.

Here's a glimpse of our proprietary formula for microbial spores and their respective functions:

BENEFICIAL MICROBES

GENUS AZOTOBACTER

- Facilitates nitrogen fixation in association with non-leguminous plant roots, even in the presence of oxygen that typically inhibits nitrogen-fixing enzymes. Some microbes achieve this by consuming available oxygen sources in their vicinity.

- Enhances the uptake of atmospheric nitrogen (N₃-), a task traditionally attributed to microbes. Produces three enzymes—catalase, peroxidase, and superoxide dismutases—to counteract reactive oxygen species.

GENUS BACILLUS

Nutrient Decomposition: Supports resistance against environmental stressors like heat, desiccation, radiation, and chemical assaults. These attributes allow *Bacillus* to persist in the environment over extended periods. Endospores become active during nutritional scarcity, enabling survival until favorable conditions arise.

Enzymes, Plant-Growth Hormones, and Soil Structure: Generates enzymes, antibiotics, and metabolites, contributing to nutrient cycling in nature. An array of extracellular enzymes is involved in nutrient cycling.

C: N Ratio (Carbon & Nitrogen): Isolates the nitrate reductase enzyme, facilitating beneficial anaerobic respiration on nitrate. Additionally, it conducts aerobic carbon monoxide oxidation.

Phosphate Solubilization: Forms polysaccharide-based bonds on cell walls, facilitating the extraction of inorganic phosphorus from insoluble compounds. Offers preventive inoculation against pathogens and finds applications in penicillin and enzyme production.

Lactic Acid Formation: Amends soil by introducing organic materials to foster rapid microbial growth, significantly enhancing nutrient uptake.

Prophylactic Effects: Stimulates bacterial growth to hinder the germination of Rhizoctonia and fusarium spores. Builds high resistance to environmental stressors like UV light exposure, desiccation, and oxidizers.

Bio-pesticidal Properties: Functions as a natural insecticide and endotoxin in various insecticides and pesticides.

GENUS PAENIBACILLUS

Nitrogen Conversion, Nutrient Cycling, and Soil Structure: Proficient in converting nitrogen into forms easily assimilated by plants. Sources of less-accessible nitrogen (N₂) are prevalent in soil, plant roots, marine sediments, and the atmosphere.

Preventing Pathogen Encroachment: Similar to other strains, these bacteria form biofilms on plant roots, yielding exopolysaccharides (probiotics) that suppress pathogen proliferation (combat plant diseases) and trigger systemic plant resistance.

GENUS PSEUDOMONAS

Pathogen Control: Produces PCA-phenazine-1-carboxylic acid (C₁₃H₈N₂O₂), an antimicrobial compound that inhibits germination of Rhizoctonia and Fusarium spores on seedlings.

Reducing Autoimmune Diseases: Through Aerobic Denitrification and Nitric oxide dismutation.

GENUS STREPTOMYCES

Noteworthy Antibiotic Properties: Ubiquitous in soil and deep sea sediments. Exhibits potent activity against disease-causing organisms by generating antibiotics.

Anti-Fungal Properties: Exhibits robust in-vitro antagonism against diverse fungal plant pathogens in plate assays through the production of extracellular anti-fungal metabolites, belonging to the Genus Trichoderma.

Effective Nematode Prevention: Applied to the root zone as an antifungal agent, Penicillium combats Botrytis and Fusarium, acting as a strong preventative measure against nematodes (worms).

MYCORRHIZAE GENUS GLOMUS

Enhancing Root Extension: Supports the elongation of roots for improved growth.

GENUS SACCHAROMYCES

Disease Resistance Enhancement: A yeast species contributing to secretory pathways of antibodies against diseases.

GENUS GLOMUS

Supports root extensions.

GENUS SACCHAROMYCES

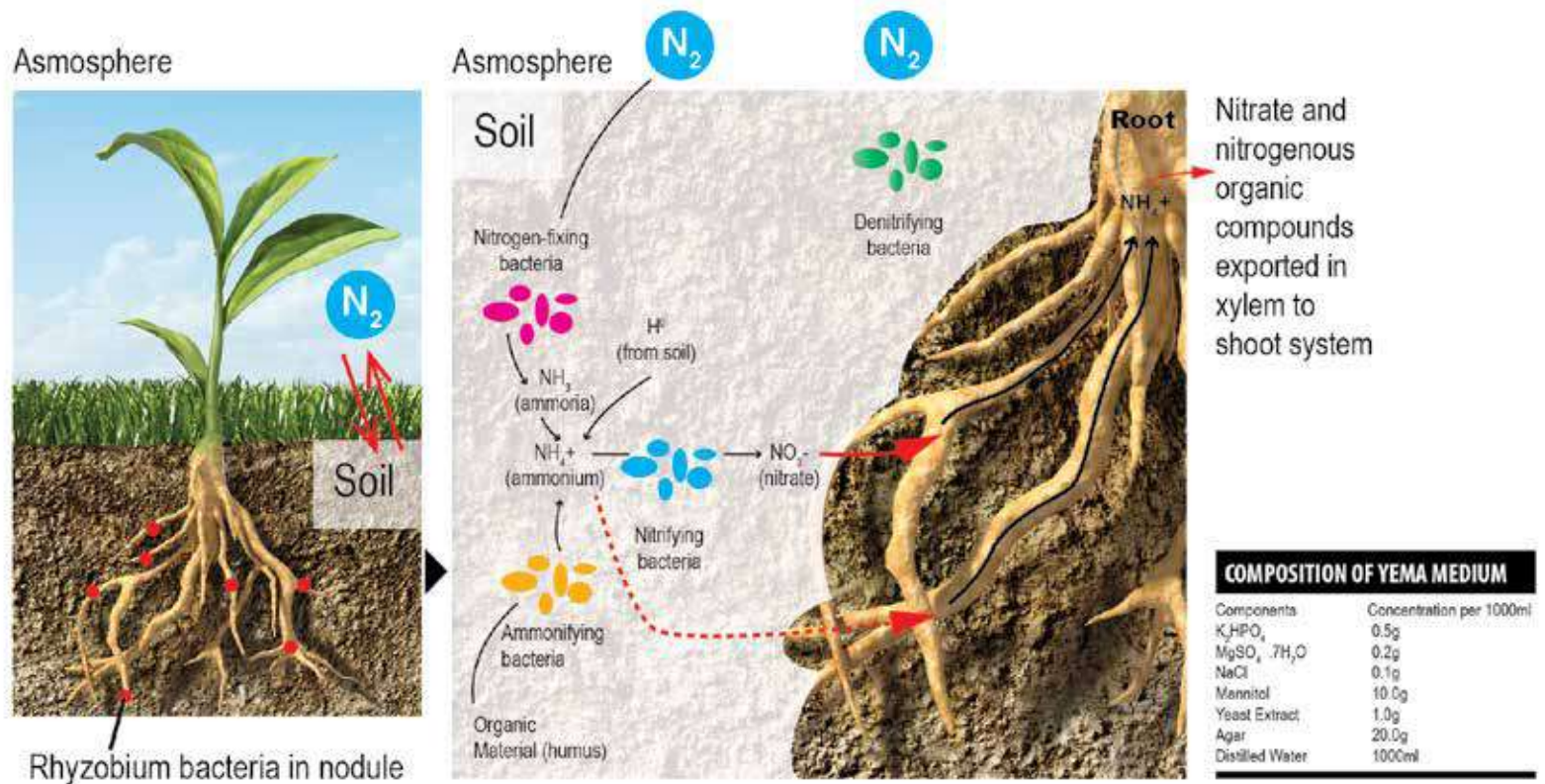
A species of yeast involved in secretory pathways of antibodies against diseases.

IMPACT

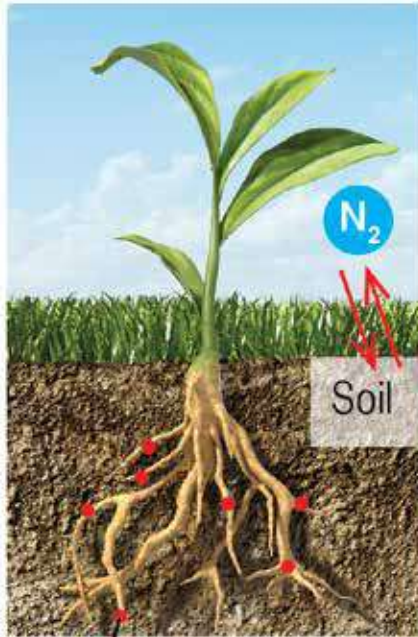
SYMBIOTIC NITROGEN FIXER

Symbiotic nitrogen fixation occurs between leguminous plants and Rhizobium

Association between **leguminous plants** and **Rhizobium**

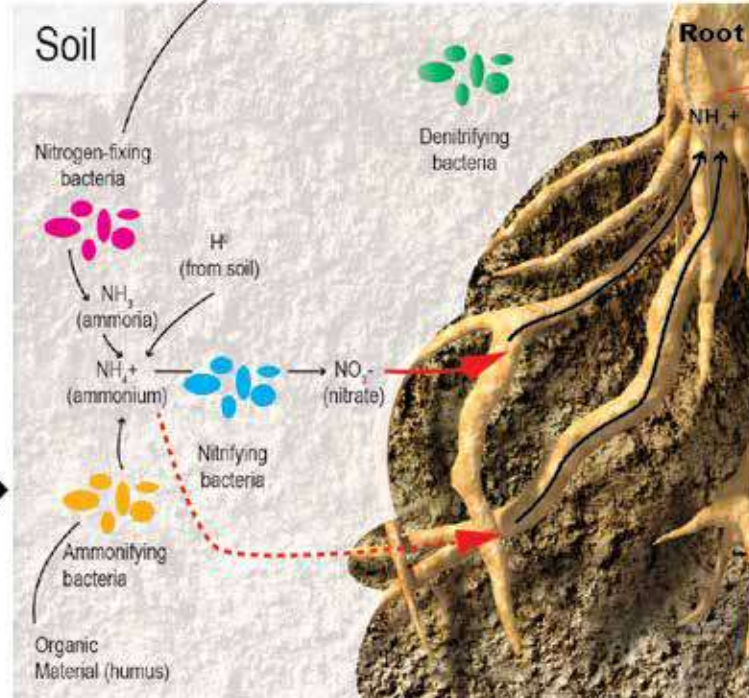


Asmosphere



Rhizobium bacteria in nodule

Asmosphere



Nitrate and nitrogenous organic compounds exported in xylem to shoot system

COMPOSITION OF YEMA MEDIUM

Components	Concentration per 1000ml
K ₂ HPO ₄	0.5g
MgSO ₄ · 7H ₂ O	0.2g
NaCl	0.1g
Mannitol	10.0g
Yeast Extract	1.0g
Agar	20.0g
Distilled Water	1000ml

IMPACT

MICROBEBIO

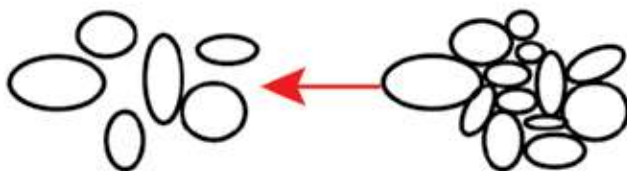
- 1 Effect on soil physicochemical and biochemical properties
- 2 Effect on microbial community



Increased soil aggregation



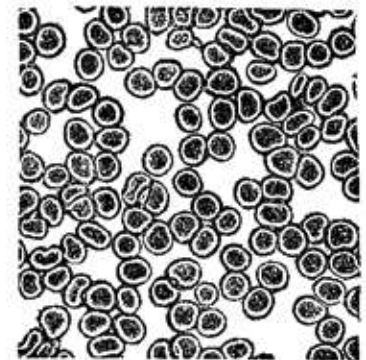
Increased in soil porosity



Increase in nitrifiers



Increase in fungal community



IMPACT

SOIL COMPARISON

TREATED

NON TREATED



IMPACT

PEPPER COMPARISON

TREATED

NON TREATED



IMPACT

PEPPER COMPARISON

TREATED



NON TREATED



IMPACT

TOMATO COMPARISON

TREATED

NON TREATED



IMPACT

DRAGON COMPARISON

TREATED

NON TREATED



IMPACT

WHEAT COMPARISON

TREATED

NON TREATED



IMPACT

WHITE RADISH COMPARISON

TREATED

NON TREATED



IMPACT



RICE COMPARISON

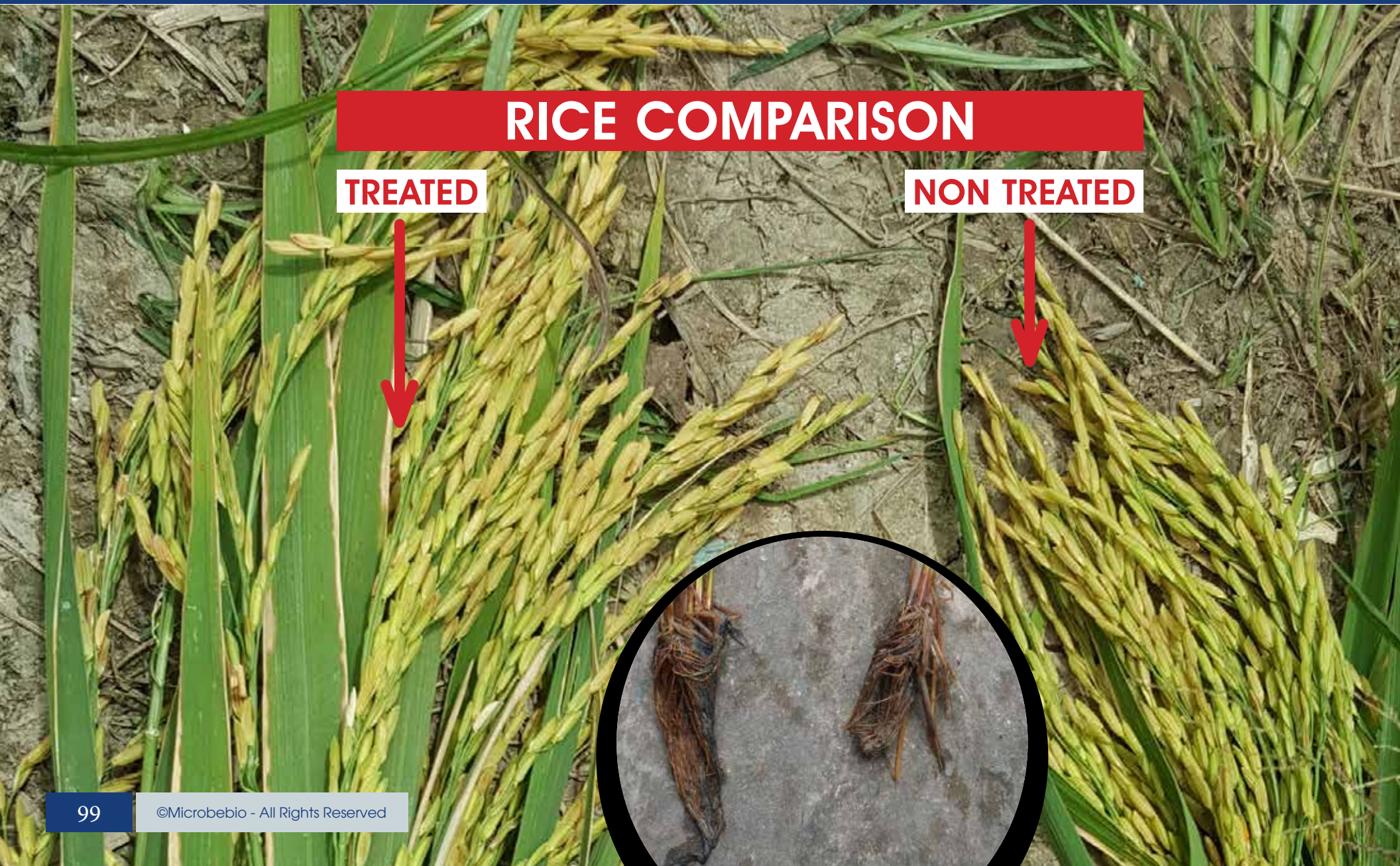
TREATED



NON TREATED



IMPACT



RICE COMPARISON

TREATED

NON TREATED



IMPACT

CABBAGE COMPARISON

NON TREATED TREATED



IMPACT

SWEET PEPPER COMPARISON



IMPACT

PINEAPPLE TREE COMPARISON

TREATED

NON TREATED



IMPACT

CORN COMPARISON

TREATED

NON TREATED



SGS NORTH AMERICA, INC.

CORN FIELD PERFORMANCE TRIALS - DECEMBER, 2020



TRIAL TEST EXECUTIVE SUMMARY



CORN – South Dakota, USA

The effects of MicrobeBio® products on Corn compared to Average Corn Data in the U.S.

PRIMARY POINTS:

Crop: Corn
Location: SGS - South Dakota, USA
Trial Date: October, 2020

COMPARISON POINTS:

MicrobeBio®: Trial Test Data Reported by SGS North America, Inc.
 (products: Nature Phenom + Hydro Activator)
U.S Average: Reported National Average by USDA in 2020
U.S Grading: U.S Corn Grading Requirements

ASSESSMENT DATA:

At Harvest: Total Weight
 Moisture
 Yield



TRIAL TEST EXECUTIVE SUMMARY

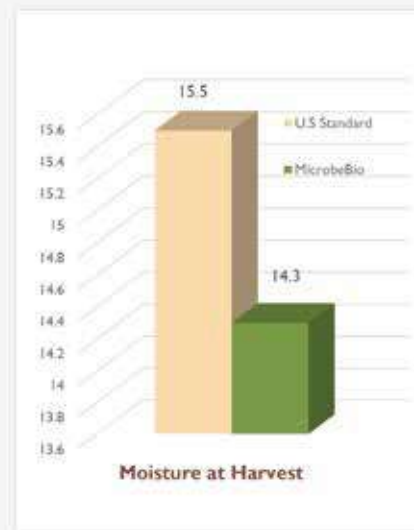


CORN – South Dakota, USA

The effects of MicrobeBio® products on Corn compared to Average Corn Data in the U.S.

PERFORMANCE ASSESSMENT on MOISTURE

Treatment	Yield Bu/A
U.S Standard	15.5
MicrobeBio	14.3
Comparison	-7.74%



⇒ The moisture content of Corn treated using MicrobeBio Products is 14.3% which is less than the U.S. Standard Corn Moisture Content (*).

(* Source: USDA

<https://www.gipsa.usda.gov/fgis/standards/810corn.pdf>

TRIAL TEST EXECUTIVE SUMMARY



CORN – South Dakota, USA

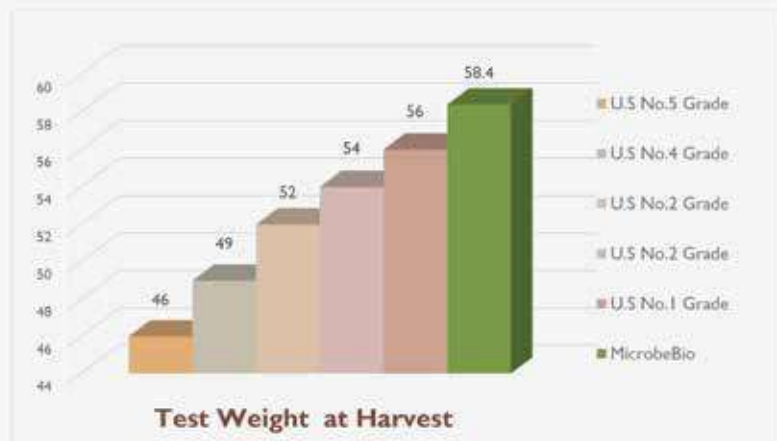
The effects of MicrobeBio® products on Corn compared to Average Corn Data in the U.S.

PERFORMANCE ASSESSMENT on

TOTAL TEST WEIGHT

TREATMENT	TEST WEIGHT	COMPARED TO MICROBEBIO
U.S No.5 Grade	46	+ 26.96%
U.S No.4 Grade	49	+ 19.18%
U.S No.3 Grade	52	+ 12.31%
U.S No.2 Grade	54	+ 8.15%
U.S No.1 Grade	56	+ 4.29%
MicrobeBio	58.4	

⇒ The average Test Weight of Corn treated using MicrobeBio Products is 58.4 lb/bu which is well above the U.S. Corn Grading Requirements (*).



(*) Source: USDA 2020

<https://www.gipsa.usda.gov/figs/standards/B10corn.pdf>

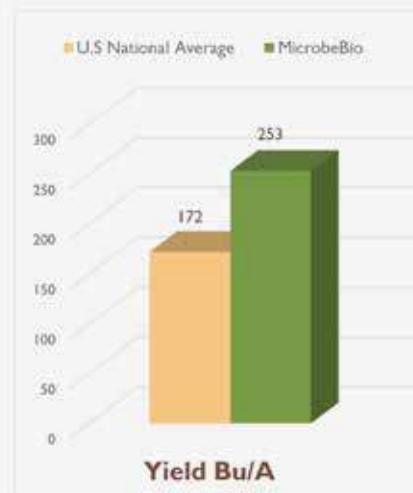
TRIAL TEST EXECUTIVE SUMMARY



CORN – South Dakota, USA

The effects of MicrobeBio® products on Corn compared to Average Corn Data in the U.S.

PERFORMANCE ASSESSMENT on TOTAL YIELD



Treatment	Yield Bu/A
U.S National Average In year 2020	172
MicrobeBio	253
Comparison	+ 47.09%

⇒ The Total Yield of Corn treated using MicrobeBio Products is 253 Bu/A which is well above the U.S. National Average in 2020 – 172 Bu/A (**)

(**) Source: USDA 2020

<https://downloads.usda.library.cornell.edu/usda-esmis/files/tm70mv177/8w32c016h/79408r341/crop0321.pdf>



APPENDIX

Oct-27-2020 (MicrobeBio Corn 2020)

ARM 2020.2 Assessment Data Summary

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020 Location: Trial Year: 2020 Protocol ID: Investigator (Creator): Field Researcher Project ID: Study Director: Sponsor Contact:									
Rating Date								Oct-15-2020	
Part Rated									
Rating Type	Stand 17.5FT	NDVI	NDVI	Avg - Plant Height	Avg - Stalk Diam Inches	Total - Root Mass Grams	Total - 1000 K Wt Grams	WEIGHT	
Rating Unit	1	1	1	1	1	1	1	1	
Number of Subsamples	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	Oct-27-2020	
Data Entry Date	V5-V6	V5-V6	R1	R3	R3	R3	R3	HARVEST	
Rating Timing									
ARM Action Codes									
Number of Decimals									
Tri Treatment									
No. Name	Plot	1	2	3	4	5	6	7	8
1 Nature Phenom 10		31.0	0.630	0.840	98.0	3.400	888.0	336.0	32.260
1 Hydro Activator Mean =		31.0	0.630	0.840	98.0	3.400	888.0	336.0	32.260
2 Check Mean =	102	32.0	0.650	0.830	95.0	3.250	850.0	322.0	31.370
		32.0	0.650	0.830	95.0	3.250	850.0	322.0	31.370

Oct-27-2020 (MicrobeBio Corn 2020)

ARM 2020.2 Assessment Data Summary

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020 Location: Trial Year: 2020
 Protocol ID: Investigator (Creator): Field Researcher
 Project ID: Study Director:
 Sponsor Contact:

Rating Date	Oct-15-2020	Oct-15-2020	Oct-15-2020	
Part Rated				
Rating Type	MOISTURE	TEST WEIGHT	YIELD	
Rating Unit			BU	
Number of Subsamples	1	1	1	
Data Entry Date	Oct-27-2020	Oct-27-2020		
Rating Timing	HARVEST	HARVEST	HARVEST	
ARM Action Codes			TY1	
Number of Decimals			1	
Tri Treatment				
No. Name	Plot	9	10	11
1 Nature Phenom 101 Hydro Activator Mean =		14.30	58.40	253.0
2 Check Mean =	102	14.50	58.10	245.4
		14.50	58.10	245.4

CORN FIELD PERFORMANCE TRIALS - DECEMBER, 2020

Oct-27-2020 (MicrobeBio Corn 2020)

ARM 2020.2 Assessment Data Summary

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020	Location:	Trial Year: 2020
Protocol ID:	Investigator (Creator): Field Researcher	
Project ID:	Study Director:	
	Sponsor Contact:	

Rating Type
 NDVI = normalized difference vegetation index
 WEIGHT = weight
 YIELD = yield
Rating Unit
 BU = bushel
ARM Action Codes
 TY1 = 7.778572*[8]^(100-[9])/85

Reps: 1 Appl Code: Plots: 10 by 20 feet

Trt No.	Treatment Name	Amt Product to Measure	Rep 1
1	Nature Phenom Hydro Activator		101
2	Check		102

Sort Order: Application Code, Replicate 1

Product quantities required for listed treatments and applications of trials included in this table:

Amount*	Unit	Treatment Name	Form Conc	Form Unit	Form Type	Lot Code
---------	------	----------------	-----------	-----------	-----------	----------

* Product amount calculations increased 25 % for overage adjustment.

Trial Map Treatment Description

Trt	Code	Description
1	CHK	
2		
3		
4		
5		

General Trial Information

Investigator: Connor Vitthum Title: Field Scientist

Trial Status: E established

ARM Trial Created On: Apr-7-2020

Conducted Under GLP: No

Conducted Under GEP: No

Role: INVEST investigator	Title: Field Scientist
Investigator: Connor Vitthum	
Organization: SGS Field Research	
Address 1: 47649 US Hwy 14	Mobile No.: 5153681410
Country: USA United States	E-mail: connor.vitthum@sgs.com
City: Aurora	State/Prov: South Dakota Postal Code: 57002

Oct-27-2020 (MicrobeBio Corn 2020)

ARM 2020.2 Site Description

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020	Location:	Trial Year: 2020
Protocol ID:	Investigator (Creator): Field Researcher	
Project ID:	Study Director:	
	Sponsor Contact:	

Crop Description
Crop 1: C ZEAMX Zea mays Corn **Stage Scale:** BBCH
Entry Date: Oct-27-2020
Variety: DKC38-03RIB
Attributes: VT2PRIB
Planting Date: May-26-2020 **Planting Rate:** 32000 P/A
Depth: 2 IN
Rows per Plot: 4 **Planting Method:** PLANTD planted plot planter
Row Spacing: 30 IN **Planting Equipment:** PP smooth
Seed Bed: SMOOTH good
Soil Moisture: GOOD
Harvest Date: Oct-15-2020 **Harvest Equipment:** Wintersteiger Quantum
Moisture Meter: Harvest Master H2 Classic **Harvested Width:** 5 FT
% Standard Moisture: 15.0 **Harvested Length:** 20 FT
Weighing Equipment: Harvest Master H2 Classic

Site and Design
Treated Plot Width: 10 FT
Treated Plot Length: 20 FT
Treated Plot Area: 200 FT2 **Treatments:** 5
Replications: 1 **Study Design:** RACOB L Randomized Complete Block (RCB)

Maintenance

No.	Date	Type	Maintenance Product Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit
1.	May-26-2020	HERB	Accuron	3	QT/A	L	15	GPA

Soil Description
Description Name: Aurora, SD
% Sand: 39.8 **% OM:** 3.5 **Texture:** L loam
% Silt: 37.7 **pH:** 6.6 **Soil Name:** VENAGRO-SVEA
% Clay: 29.5 **CEC:** 16.1 **Fert. Level:** E excellent
Soil Drainage: G good

Weather Conditions
Overall Moisture Conditions: GOOD good
Closest Weather Station: On Site **Distance:** 300 FT

No.	Date	Moisture Total	Unit	Min Temp	Max Temp	Avg Temp	Temp Unit	Avg Wind	Unit
1.	May-26-2020	0.02	IN	53.9	66.6	60.3	F	1.5	MPH
2.	May-27-2020	0	IN	47.2	82.4	65.8	F	0.6	MPH
3.	May-28-2020	0	IN	51.1	74.8	65.9	F	5.1	MPH
4.	May-29-2020	0	IN	45	68.7	56.9	F	2.7	MPH
5.	May-30-2020	0	IN	48.1	72.6	60.8	F	1.3	MPH
6.	May-31-2020	0	IN	48.1	78.2	64.3	F	4.8	MPH
7.	Jun-1-2020	0	IN	64.5	96.8	79.5	F	5.6	MPH
8.	Jun-2-2020	0	IN	62	92.1	76.8	F	5.0	MPH
9.	Jun-3-2020	0	IN	55.9	86.2	72	F	0.9	MPH
10.	Jun-4-2020	0.01	IN	56.1	86.3	71.9	F	2.4	MPH
11.	Jun-5-2020	0.01	IN	53	80.9	68.8	F	3.5	MPH
12.	Jun-6-2020	0.3	IN	63.7	79.5	70.1	F	5.0	MPH
13.	Jun-7-2020	0	IN	71.4	95.9	82.6	F	12.1	MPH
14.	Jun-8-2020	0	IN	74.3	90.1	81.7	F	11.7	MPH
15.	Jun-9-2020	0.19	IN	55.3	79.4	67.4	F	9.4	MPH
16.	Jun-10-2020	0.01	IN	53.7	72.7	62.3	F	7.9	MPH
17.	Jun-11-2020	0	IN	50.9	79.9	66.5	F	3.8	MPH
18.	Jun-12-2020	0	IN	54.1	89.6	72.2	F	2.3	MPH
19.	Jun-13-2020	0	IN	59.4	86.1	72.6	F	2.9	MPH
20.	Jun-14-2020	0	IN	59.4	87.4	72.9	F	8.0	MPH
21.	Jun-15-2020	0	IN	70.9	91.3	79.5	F	9.6	MPH
22.	Jun-16-2020	0	IN	71.8	91.4	81.6	F	10.7	MPH

CORN FIELD PERFORMANCE TRIALS - DECEMBER, 2020

Oct-27-2020 (MicrobeBio Corn 2020)

ARM 2020.2 Site Description

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020		Location:		Trial Year: 2020					
Protocol ID:		Investigator (Creator): Field Researcher							
Project ID:		Study Director:							
		Sponsor Contact:							
23.	Jun-17-2020	0	IN	69.4	82	81	F	10.5	MPH
24.	Jun-18-2020	0.49	IN	58.3	78.9	67.8	F	2.3	MPH
25.	Jun-19-2020	0	IN	52.5	75.7	64.5	F	0.3	MPH
26.	Jun-20-2020	0.13	IN	60	73.6	65.1	F	2.0	MPH
27.	Jun-21-2020	0.01	IN	58.9	76.7	67.8	F	1.2	MPH
28.	Jun-22-2020	0	IN	56.3	75.9	65.1	F	1.6	MPH
29.	Jun-23-2020	0	IN	55.3	75	64.8	F	2.4	MPH
30.	Jun-24-2020	0	IN	50	83.1	68.6	F	1.1	MPH
31.	Jun-25-2020	0.88	IN	57	66.6	69.7	F	2.8	MPH
32.	Jun-26-2020	0.19	IN	64.8	83.5	73	F	1.4	MPH
33.	Jun-27-2020	0.01	IN	59.2	85.9	73.7	F	0.6	MPH
34.	Jun-28-2020	0	IN	68.9	81	75.2	F	2.5	MPH
35.	Jun-29-2020	0	IN	68.5	79.2	75	F	3.1	MPH
36.	Jun-30-2020	0	IN	74.7	87.9	80.1	F	3.8	MPH
37.	Jul-1-2020	0.82	IN	61.5	84	74.2	F	2.6	MPH
38.	Jul-2-2020	0	IN	65.8	88	77.2	F	1.8	MPH
39.	Jul-3-2020	0	IN	69.3	90.6	78.3	F	0.5	MPH
40.	Jul-4-2020	0	IN	65.7	87.3	77.2	F	1.9	MPH
41.	Jul-5-2020	0	IN	68.9	87.1	77.4	F	1.8	MPH
42.	Jul-6-2020	0.16	IN	66	82.1	72.9	F	2.0	MPH
43.	Jul-7-2020	0.23	IN	65.7	83.5	74.3	F	1.1	MPH
44.	Jul-8-2020	0	IN	73	90	80.3	F	5.4	MPH
45.	Jul-9-2020	0.22	IN	66.8	84.1	74.8	F	0.6	MPH
46.	Jul-10-2020	0	IN	59.6	85.1	73.7	F	0.6	MPH
47.	Jul-11-2020	0	IN	58.9	80.4	71.6	F	2.7	MPH
48.	Jul-12-2020	0	IN	55.4	84.7	70.3	F	0.5	MPH
49.	Jul-13-2020	0	IN	62.7	87.4	74.6	F	4.8	MPH
50.	Jul-14-2020	0.2	IN	56	73.9	66.5	F	1.4	MPH
51.	Jul-15-2020	0	IN	50.5	80.9	65.8	F	0.9	MPH
52.	Jul-16-2020	0	IN	57.3	85.2	72.5	F	3.2	MPH
53.	Jul-17-2020	0	IN	67.4	87.3	78.4	F	4.0	MPH
54.	Jul-18-2020	0.09	IN	62.5	88	74.8	F	3.3	MPH
55.	Jul-19-2020	0	IN	58.2	81.1	70.4	F	2.2	MPH
56.	Jul-20-2020	0.95	IN	60.5	82.7	69.8	F	1.4	MPH
57.	Jul-21-2020	0.64	IN	61.1	75.5	68.3	F	2.0	MPH
58.	Jul-22-2020	0	IN	55.1	79.7	67.8	F	0.2	MPH
59.	Jul-23-2020	0	IN	60.8	83.6	72.4	F	3.2	MPH
60.	Jul-24-2020	0	IN	74	89.4	80.7	F	7.1	MPH
61.	Jul-25-2020	0.04	IN	69.3	88.1	79.2	F	4.1	MPH
62.	Jul-26-2020	0.34	IN	62.1	80.8	73.4	F	1.0	MPH
63.	Jul-27-2020	0	IN	55.1	82.9	70.6	F	0.2	MPH
64.	Jul-28-2020	0	IN	62.9	84.1	72.8	F	0.9	MPH
65.	Jul-29-2020	0	IN	60.4	81.2	70.4	F	0.6	MPH
66.	Jul-30-2020	0	IN	56	79.3	68.1	F	0.7	MPH
67.	Jul-31-2020	0	IN	55.7	84.6	70.6	F	0.1	MPH
68.	Aug-1-2020	0	IN	57.2	76.3	68	F	2.3	MPH
69.	Aug-2-2020	0	IN	53.7	75.4	63.7	F	1.8	MPH
70.	Aug-3-2020	0	IN	45.5	77.3	62.3	F	0.0	MPH
71.	Aug-4-2020	0	IN	51.5	76.9	64.5	F	1.0	MPH
72.	Aug-5-2020	0	IN	59.5	69.8	64.7	F	2.2	MPH
73.	Aug-6-2020	0	IN	62.8	81.7	70.8	F	0.6	MPH
74.	Aug-7-2020	0.07	IN	68	81.2	73.7	F	4.9	MPH
75.	Aug-8-2020	0.01	IN	65.4	81.3	74.1	F	2.5	MPH

Oct-27-2020 (MicrobeBio Corn 2020)

ARM 2020.2 Site Description

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020		Location:		Trial Year: 2020					
Protocol ID:		Investigator (Creator): Field Researcher							
Project ID:		Study Director:							
		Sponsor Contact:							
76.	Aug-9-2020	0.23	IN	63.4	86.6	74.9	F	2.5	MPH
77.	Aug-10-2020	0.05	IN	58	77.7	67.4	F	0.6	MPH
78.	Aug-11-2020	0	IN	52.3	80.1	67.3	F	2.1	MPH
79.	Aug-12-2020	0.01	IN	64.3	85	73.8	F	2.7	MPH
80.	Aug-13-2020	0	IN	70	85.8	77.1	F	6.3	MPH
81.	Aug-14-2020	0	IN	57.5	83.6	73.7	F	5.2	MPH
82.	Aug-15-2020	0	IN	49.6	83.8	67.1	F	1.2	MPH
83.	Aug-16-2020	0	IN	54.9	87.6	70.2	F	0.8	MPH
84.	Aug-17-2020	0	IN	52.6	82.3	66.7	F	0.9	MPH
85.	Aug-18-2020	0	IN	51.3	83.2	67.4	F	1.2	MPH
86.	Aug-19-2020	0	IN	59.1	83.8	71.1	F	4.0	MPH
87.	Aug-20-2020	0	IN	62.2	84.1	70.6	F	3.0	MPH
88.	Aug-21-2020	0	IN	64.9	87.5	75.7	F	2.4	MPH
89.	Aug-22-2020	0	IN	60.1	91.4	76	F	0.0	MPH
90.	Aug-23-2020	0	IN	60.1	92.2	77	F	0.4	MPH
91.	Aug-24-2020	0	IN	66.3	90.9	76.8	F	2.8	MPH
92.	Aug-25-2020	0	IN	66.4	90.2	77.6	F	2.9	MPH
93.	Aug-26-2020	0	IN	69.4	90.6	78.2	F	3.2	MPH
94.	Aug-27-2020	0	IN	69.2	84.9	75.4	F	2.2	MPH
95.	Aug-28-2020	0.43	IN	56.3	79.3	68.7	F	3.1	MPH
96.	Aug-29-2020	0.01	IN	50	78.8	63.3	F	0.1	MPH
97.	Aug-30-2020	0.17	IN	53.4	76.9	63.6	F	4.2	MPH
98.	Aug-31-2020	0.6	IN	50.3	70.5	60.7	F	2.6	MPH
99.	Sep-1-2020	0	IN	53.5	75.8	62.9	F	3.2	MPH
100.	Sep-2-2020	0	IN	46.3	83.5	67.2	F	3.2	MPH
101.	Sep-3-2020	0	IN	47.4	72.2	62.2	F	5.1	MPH
102.	Sep-4-2020	0	IN	41.8	81.3	60.6	F	1.2	MPH
103.	Sep-5-2020	0.08	IN	44.9	84.5	64.6	F	0.5	MPH
104.	Sep-6-2020	0.14	IN	58.3	83.7	70.3	F	2.3	MPH
105.	Sep-7-2020	0.27	IN	45	59.2	48.7	F	1.4	MPH
106.	Sep-8-2020	0	IN	37	45.7	42.7	F	1.8	MPH
107.	Sep-9-2020	0.04	IN	33.4	51.6	42.1	F	0.1	MPH
108.	Sep-10-2020	0	IN	31.2	64.1	46.5	F	0.1	MPH
109.	Sep-11-2020	0.2	IN	42.3	55.2	51.1	F	0.2	MPH
110.	Sep-12-2020	0.01	IN	50.8	62.7	54.9	F	0.3	MPH
111.	Sep-13-2020	0	IN	43	82.6	60.6	F	2.1	MPH
112.	Sep-14-2020	0	IN	51.5	83.7	66.1	F	3.9	MPH
113.	Sep-15-2020	0	IN	57.7	84.8	68.2	F	4.1	MPH
114.	Sep-16-2020	0	IN	44.4	67	56.3	F	1.8	MPH
115.	Sep-17-2020	0	IN	39.9	66.5	51.8	F	1.0	MPH
116.	Sep-18-2020	0	IN	39.4	67.5	52.9	F	1.5	MPH
117.	Sep-19-2020	0	IN	46.8	74.5	61	F	5.9	MPH
118.	Sep-20-2020	0	IN	55.3	75.3	64.5	F	7.2	MPH
119.	Sep-21-2020	0	IN	55.1	81.7	66.4	F	1.9	MPH
120.	Sep-22-2020	0	IN	53.1	85.8	67.8	F	1.1	MPH
121.	Sep-23-2020	0	IN	54.3	85.6	68.7	F	2.6	MPH
122.	Sep-24-2020	0	IN	53.1	82.1	66	F	0.6	MPH
123.	Sep-25-2020	0	IN	51	78.1	64.7	F	2.1	MPH
124.	Sep-26-2020	0	IN	50.3	77.4	61.8	F	0.9	MPH
125.	Sep-27-2020	0.06	IN	47.1	64.3	53.5	F	4.1	MPH
126.	Sep-28-2020	0	IN	40	54.6	49.7	F	4.0	MPH
127.	Sep-29-2020	0	IN	36.6	72.6	54.6	F	2.9	MPH
128.	Sep-30-2020	0	IN	45.4	63.7	55.1	F	7.0	MPH

CORN FIELD PERFORMANCE TRIALS - DECEMBER, 2020

Oct-27-2020 (MicrobeBio Corn 2020)

ARM 2020.2 Site Description

SGS North America, Inc.

Trial ID: MicrobeBio Corn 2020	Location:	Trial Year: 2020
Protocol ID:	Investigator (Creator): Field Researcher	
Project ID:	Study Director:	
	Sponsor Contact:	

129.	Sep-1-2020	0	IN	29.2	52.8	44.3	F	5.3	MPH
130.	Oct-2-2020	0	IN	27.4	53.6	40.7	F	0.3	MPH
131.	Oct-3-2020	0	IN	30.6	56.6	43.2	F	0.2	MPH
132.	Oct-4-2020	0	IN	24.1	62.2	44	F	2.7	MPH
133.	Oct-5-2020	0	IN	47	75	56.9	F	4.5	MPH
134.	Oct-6-2020	0	IN	36.4	81.8	57.9	F	2.0	MPH
135.	Oct-7-2020	0	IN	40.7	71.8	54.6	F	2.2	MPH
136.	Oct-8-2020	0	IN	38.8	73.7	56.9	F	3.4	MPH
137.	Oct-9-2020	0	IN	47.7	85.2	65	F	1.8	MPH
138.	Oct-10-2020	0	IN	39	70	55	F	1.0	MPH
139.	Oct-11-2020	0.14	IN	51.7	80.3	63.3	F	7.9	MPH
140.	Oct-12-2020	0.03	IN	39.7	66.3	53.3	F	2.3	MPH
141.	Oct-13-2020	0	IN	43.4	60.3	51.1	F	3.5	MPH
142.	Oct-14-2020	0	IN	37	60.3	51.1	F	6.2	MPH
143.	Oct-15-2020	0	IN	26.4	49.1	37.8	F	7.2	MPH

Crop Stage At Each Application

	A
Crop 1 Code, BBCH Scale	ZEAMX BCOR

Context	Date	By	Notes
STATUS	Apr-7-2020	Field Researcher	Automatically added by ARM: Trial Status updated to 'S' during trial creation.



TRIAL TEST BY MICROBEBIO®



on Eggplant (3000m²)
at An Giang, Vietnam



TRIAL TEST BY MICROBEBIO®

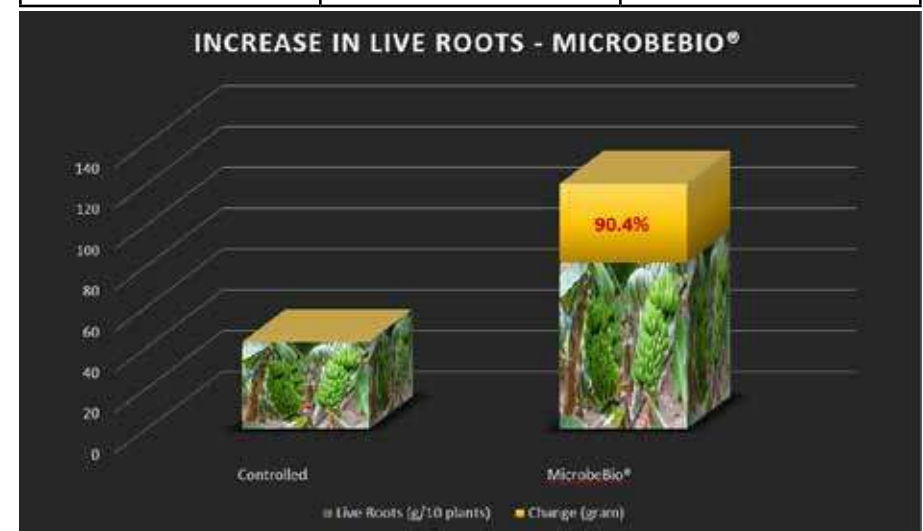
ORGANIC BANANA, DOMINICAN REPUBLIC



Place : Dominican Republic
Time : April – July 2018
Products : MicrobeBio® products
Experimental Design : The selected banana field was divided into three segments: one serving as an untreated control, and another treated with MicrobeBio® products. This division aims to investigate the impact of MicrobeBio® products on enhancing the growth of live roots in the banana field.

Live roots:

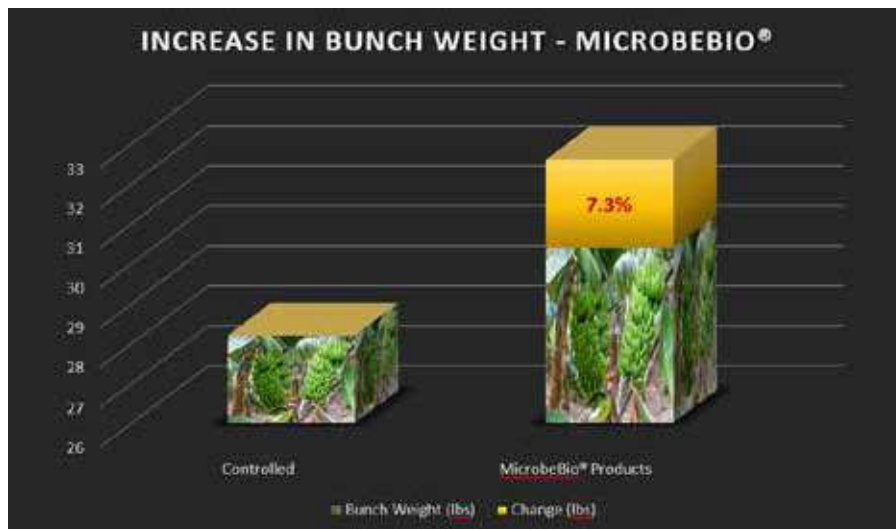
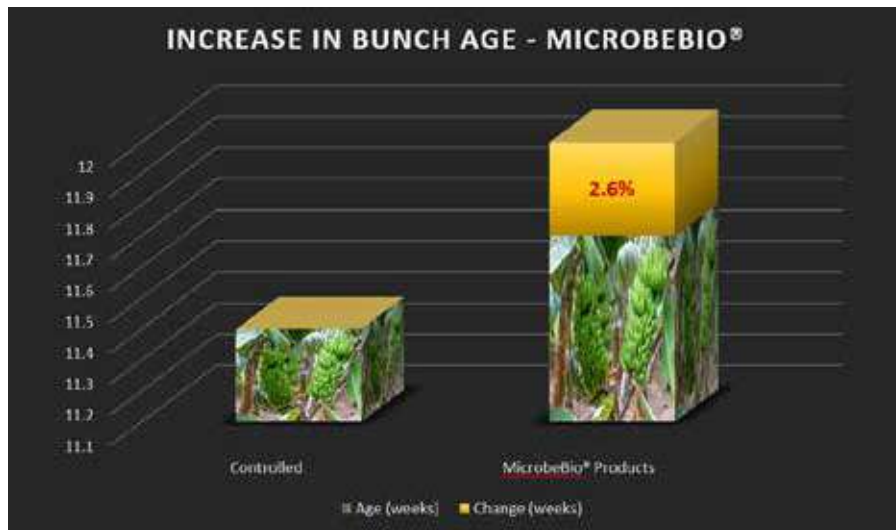
Treatment	Live Roots g/10 plants	Change gram
Controlled	42.8	-
MicrobeBio®	81.5	38.7 (+90.4%)



> The change of the banana live roots with MicrobeBio®: 90.4%

TRIAL TEST BY MICROBEBIO®

ORGANIC BANANA, DOMINICAN REPUBLIC



Conclusions:

The findings from this experiment unveiled that the application of MicrobeBio® products can yield a substantial improvement of up to 90.4% (equivalent to approximately 38.7 grams per 10 plants) in the vitality of the banana field's roots, benefiting banana farmers.

Bunch Age – Comparison monthly:

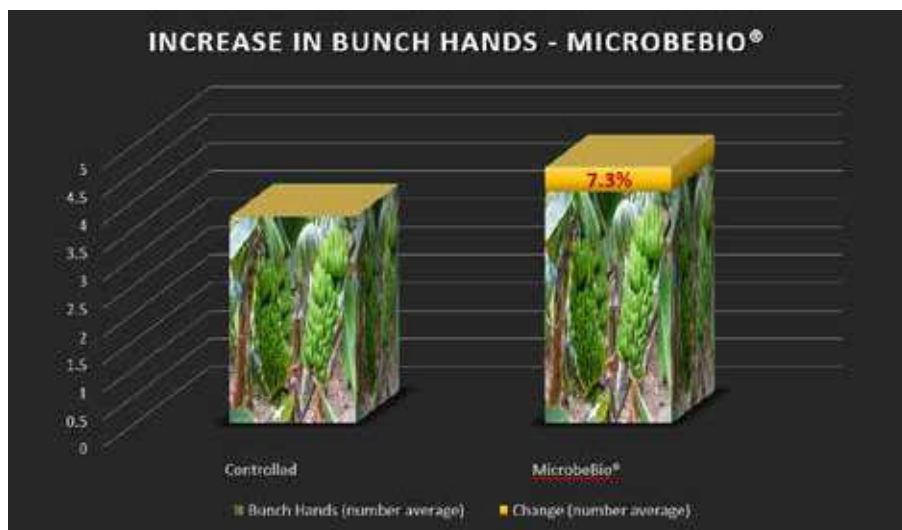
Treatment	Bunch Age weeks	Change gram
Controlled	11.4	-
MicrobeBio®	11.7	0.3 (+2.6%)

Bunch Weight – Comparison monthly:

Treatment	Bunch Weight lbs	Change gram
Controlled	28.2	-
MicrobeBio®	29.5	1.3 (+7.3%)

TRIAL TEST BY MICROBEBIO®

ORGANIC BANANA, DOMINICAN REPUBLIC



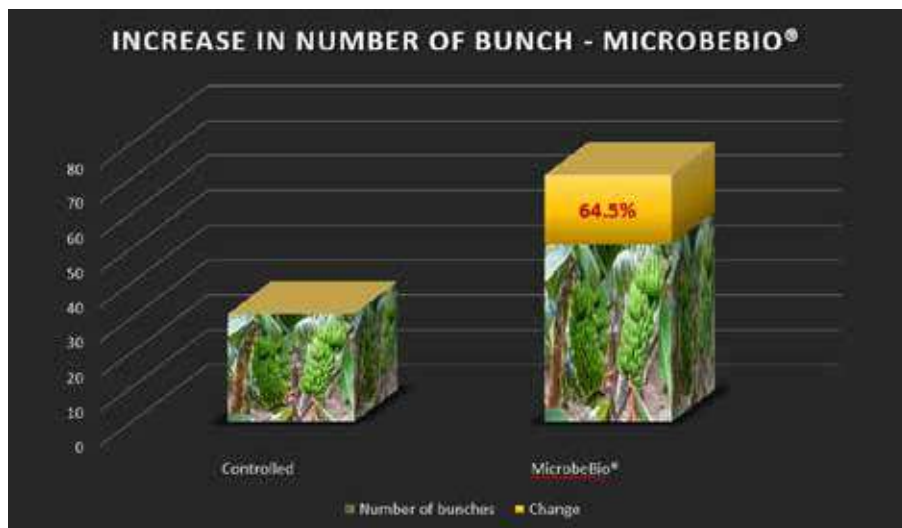
MicrobeBio®	30.4	4.2 (+7.3%)
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Bunch Hands – Comparison monthly:

Treatment	Bunch Hands Average number	Change Average number
Controlled	3.71	-
MicrobeBio®	4.15	0.44 (+11.8%)

Number of Bunch – Comparison monthly:

Treatment	Number of bunch monthly	Change monthly
Controlled	31	-
MicrobeBio®	51	20 (+64.5%)



Conclusions: The outcomes of this experiment demonstrated that the utilization of MicrobeBio® products can lead to a significant enhancement in monthly increases, with banana farmers witnessing a remarkable 64.5% rise in total bunch numbers and a 7.3% increase in total bunch weight.

TRIAL TEST BY MICROBEBIO®

DOMINICAN REPUBLICS BELL PEPPERS GROWTH

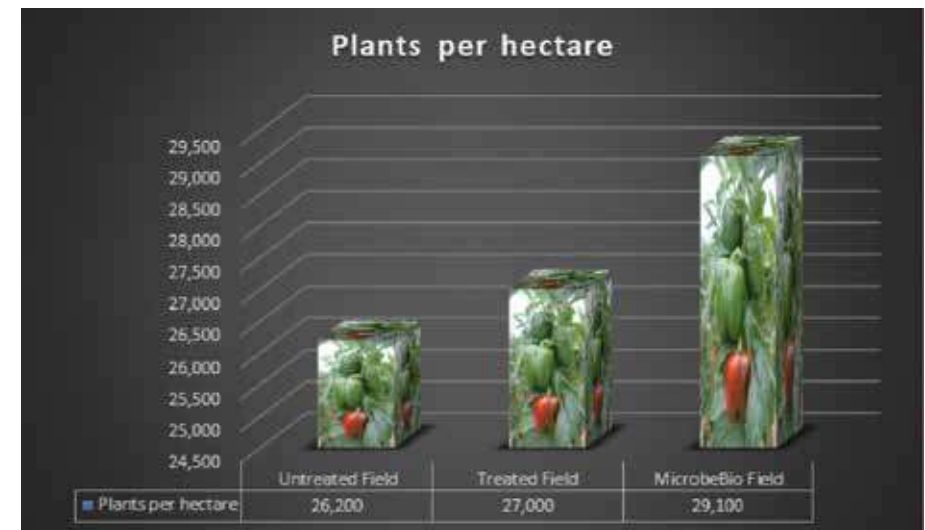


Area: Private Experiment of the Bell Pepper

Years: 2017

Experiments: MicrobeBio® products improved a higher yield to compare with the other controlled field at the same time as the test.

Results:



Conclusions: According to the results, plants treated with MicrobeBio® products produced a higher number of fruits harvested per tree than the untreated field (11%) and treated field (7%).

TRIAL TEST BY MICROBEBIO®

DOMINICAN REPUBLIC



TRIAL TEST BY MICROBEBIO®

MAIZE/CORN FIELDS - ZAMBIA

Location: Corn Field, Zambia

Season: Winter

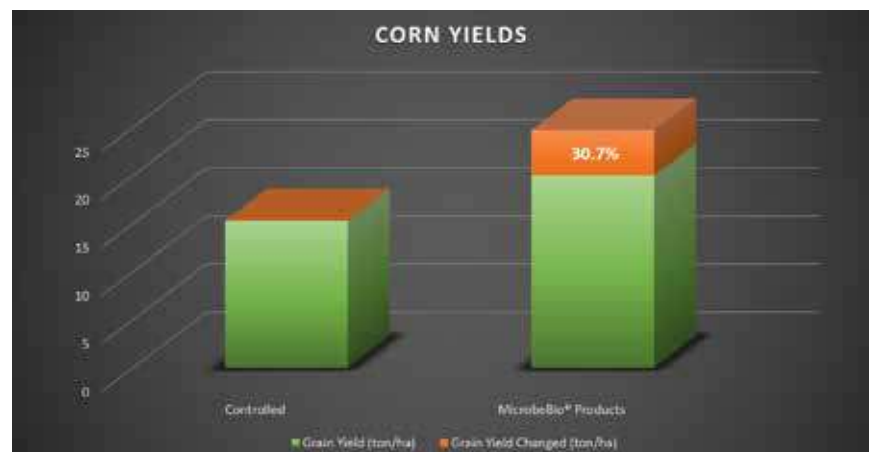
Products:

- MicrobeBio® Nature Activator
- MicrobeBio® Hydro Activator
- MicrobeBio® Nature Foliar
- MicrobeBio® Nature Activator (optional)

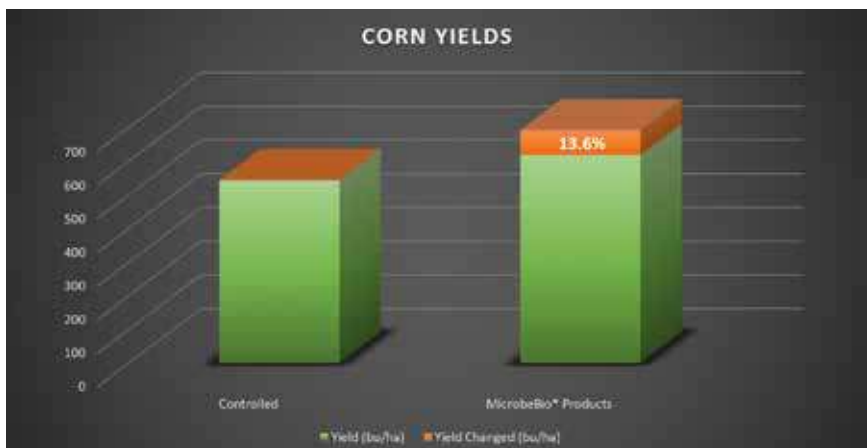
Experimental design: The trial tests present the Controlled and MicrobeBio® products on corn fields.

TREATMENT	GRAIN YIELD (Ton/Ha)	GRAIN YIELD CHANGE (Ton/Ha)
Controlled	15.3	-
MicrobeBio® Products	20.0	4.7 (+30.7%)

TREATMENT	YIELD (Bu/Ha)	YIELD CHANGE (Bu/Ha)
Controlled	543.4	-
MicrobeBio® Products	617.5	74.1 (+13.6%)



Conclusion: A corn trial in Zambia (winter 2017), MicrobeBio® products yield is higher than the controlled yield 13.6%, and MicrobeBio® products grain yield is higher than the controlled grain yield 30%.



TRIAL TEST BY MICROBEBIO®

MAIZE/CORN FIELDS - ZAMBIA



CORN FIELDS - ZAMBIA



TRIAL TEST BY MICROBEBIO®

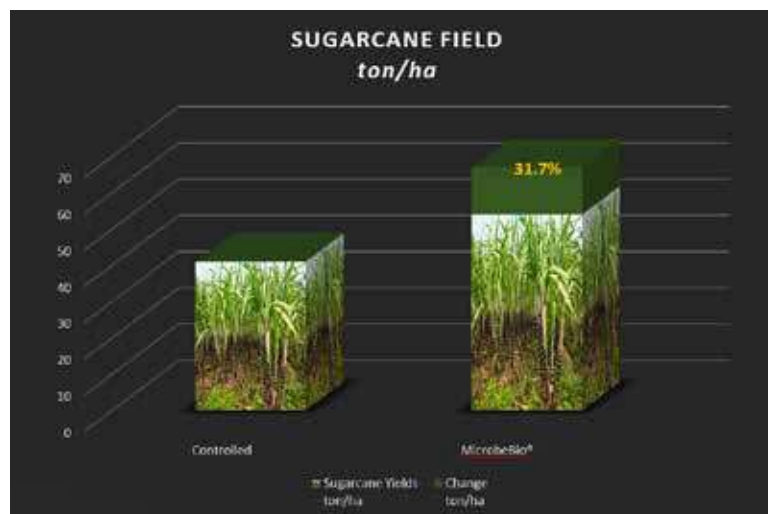
SUGARCANE - BRAZIL



Place : Brazil
Planting Date : Annual
Products : MicrobeBio® Products

Experimental Design: The trial test in the sugarcane field encompasses three sections: an untreated control area, and another section treated with our MicrobeBio® products. The objective is to assess the impact of MicrobeBio® products on the yield of sugarcane.

Treatment	Sugarcane Yield Ton/ha	Change Ton/ha
Controlled	41	-
MicrobeBio®	54	13 (+31.7%)



Conclusions : In Brazil, the sugarcane study demonstrated that the application of MicrobeBio® to the sugarcane field resulted in a noteworthy yield increase of 31.7% compared to the control.

TRIAL TEST BY MICROBEBIO®

TRIAL TEST ON RICE – VIETNAM



Season: Winter-Spring (2018 – 2019)

Location: An Giang, Viet Nam

Area: 20 hectares

Variety: Dai Thom 8 (VNR20) was chosen as a result of crossbreeding BVN and OM4900 varieties.

Products: MicrobeBio® provided the products for the experiment. The experimental setup involved utilizing a 10-hectare section of a rice field, which was designated for testing MicrobeBio® products alongside control treatments. This exclusive trial aimed to assess the impact of MicrobeBio® products on the field and their potential benefits for the rice harvest.



TRIAL TEST BY MICROBEBIO®

TRIAL TEST ON RICE – VIETNAM

SOIL TEST

COLLECTING SOIL BEFORE TREATMENT WITH MICROBEBIO® PRODUCTS

Organism Biomass Data														
Sample	Unique ID	Dry weight	Active Bacterial Biomass (µg/g)	Total Bacterial Biomass (µg/g)	Active Fungal Biomass (µg/g)	Total Fungal Biomass (µg/g)	Hyphal Dia (µm)	Flagellates	Protozoa Numbers/g Amoebae	Ciliates	Total Nematode Number #/g	Percent Mycorrhizal Colonization of Root	Plant Available N Supply from Predators (lbs/acre)	Root-feeding Nematode Presence
5234	#7 Soil	0.79	28.3	96	56.4	159	2.5	2,412	3,123	0	1.7	6%	20-50	Multiple species
Bold and highlight (means Low)														
Desired Range		0.45 - 0.85	15 - 25	175 - 300	15 - 25	175 - 300	2.5 +	5,000 +	5,000 +	50 - 100	10 - 20	40% - 80%	75 lbs/ac+	None

COLLECTING SOIL AFTER TREATMENT WITH MICROBEBIO® PRODUCTS

Organism Biomass Data														
Sample	Unique ID	Dry weight	Active Bacterial Biomass (µg/g)	Total Bacterial Biomass (µg/g)	Active Fungal Biomass (µg/g)	Total Fungal Biomass (µg/g)	Hyphal Dia (µm)	Flagellates	Protozoa Numbers/g Amoebae	Ciliates	Total Nematode Number #/g	Percent Mycorrhizal Colonization of Root	Plant Available N Supply from Predators (lbs/acre)	Root-feeding Nematode Presence
5468	#8 Soil	0.85	33.6	204	66.4	194	2.5	5,848	5,847	62	16	61%	75 - 100	Multiple species
Bold and highlight (means Low)														
Desired Range		0.45 - 0.85	15 - 25	175 - 300	15 - 25	175 - 300	2.5 +	5,000 +	5,000 +	50 - 100	10 - 20	40% - 80%	75 lbs/ac+	None

Conclusions: According to the test results, soil test show that both the bacterial biomass and the fungal biomass triple in weight. Protozoa numbers reach optimal levels. Nematodes increase significantly. Plant available nitrogen supply from predators double in volume.

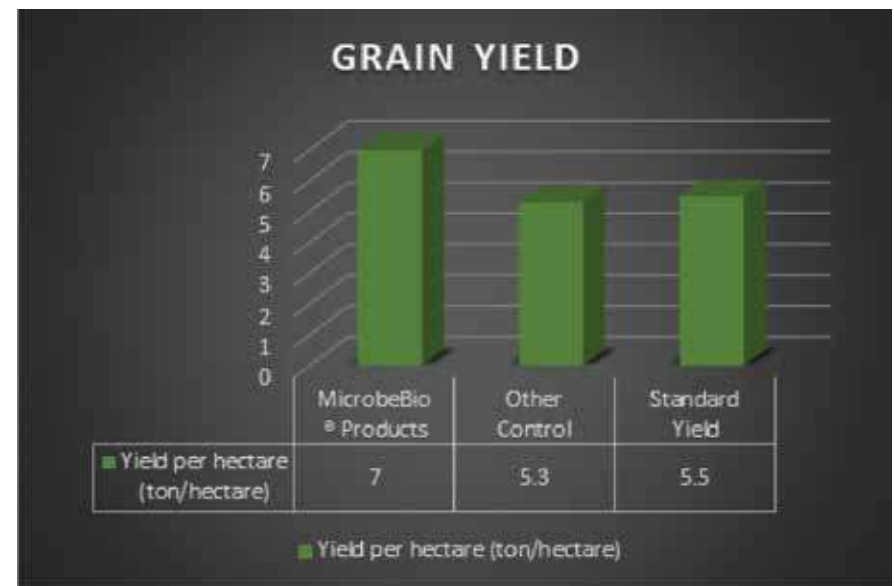
TRIAL TEST BY MICROBEBIO®

TRIAL TEST ON RICE – VIETNAM



RESULT ON YIELD

Based on local reports from rice cultivation in An Giang, the regular yield for the Winter-Spring season stands at 5.5 tons per hectare annually due to the brief duration of the rice-growing period (90 – 95 days).



Conclusions: The utilization of MicrobeBio® products resulted in a grain yield of 7 tons per hectare, surpassing the standard yield by around 20%. Conversely, the yield from the control group reached only 5.3 tons per hectare, falling short of the standard yield by approximately 0.03%.

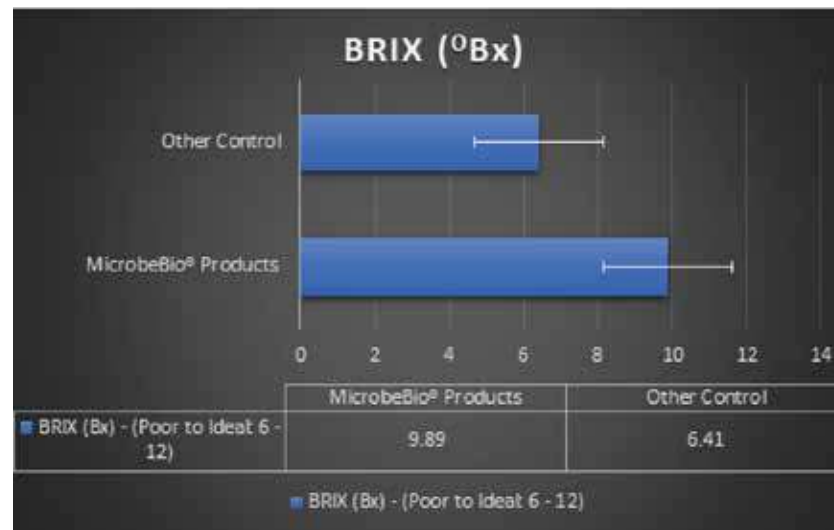
TRIAL TEST BY MICROBEBIO®

TRIAL TEST ON RICE – VIETNAM



RESULT ON BRIX LEVEL

BRIX serves as a refractometer, indicating the proportion of dissolved solids (sugar and carbohydrates) within the measured juice. A higher Brix reading corresponds to better health and the realization of the rice plant's genetic potential.



Conclusions:

Based on the private experiment, outcomes reveal that crops with low Brix levels attract pests, insects, and diseases. As Brix levels increase, rice plants demonstrate enhanced resistance to

diseases and pests, improved mineral content, and better taste. In the case of MicrobeBio®-treated rice plants, the Brix level measures 9.89, falling within the Brix index range for rice (6 to 12), promoting robust growth, and deterring pests and diseases. In contrast, control rice plants are susceptible to issues like Fusarium, insects, and nematodes.

TRIAL TEST BY MICROBEBIO®

TRIAL TEST ON RICE – VIETNAM



Increased silt content
showed in soil treated using
MicrobeBio® Products



PRIVATE TEST CONCLUSION

Based on the yield and Brix report test results, rice plants treated with MicrobeBio® products demonstrated a notable 20% increase in yield and achieved a high Brix level of 9.89, indicating superior performance when compared to other control tests that saw a yield increase of 0.03% and a Brix level of 6.41.



TRIAL TEST BY MICROBEBIO®

TRIAL TEST ON RICE – VIETNAM



THE BENEFITS OF RICE

- The rice (treated by MicrobeBio® products) reaches the standard export due to the elongated, limpid grain, sticky cooked, gentle scent, and amylose content of 16% delicious.
- Short growing period: 90 – 95 days
- Great resistance to pests and diseases, salinization, and alkalinization.
- Strong tillering, the density of aristae (392 aristae/m²), steady body, height (35 – 40 inches)
- Productivity: 7 tons/ha (Winter-Spring 2018 – 2019)



TRIAL TEST BY MICROBEBIO®

TRIAL TEST ON RICE – VIETNAM



Join us in creating a lifestyle of health and sustainability, a billion microbes at a time

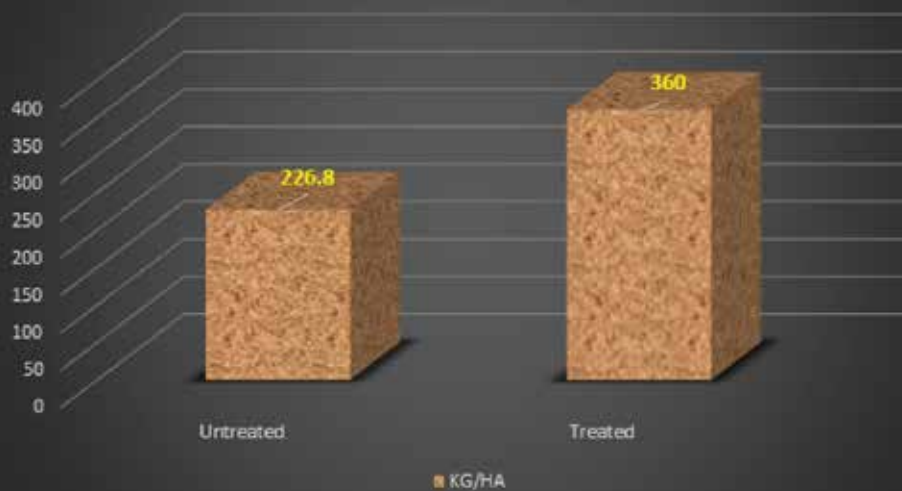


TRIAL TEST BY MICROBEBIO®

TOBACCO TRIAL TEST – VIETNAM



KG/HA



RESULT ON YIELD

- Products:**
 - MicrobeBio® Vigor Boost
 - MicrobeBio® Hydro Activator
 - MicrobeBio® Nature Foliar
- Area:**
 - Country: Vietnam
 - Province: Cao Bang, Lang Son
- Trial Test Results:**

UNTREATED	TREATED
There are Tobacco Mosaic Virus and Rastonia Solanacearum	Present Tobacco Mosaic Virus and Rastonia Solanacearum
Leaves per plant maximum is 19.	Lease per plant is 24
Yield: 226.8kg per hectare	Yield: 360 kg per hectare. The yield significant increased marketable over the untreated (approx: > 30%).
Leaf quality: in average	Leaf quality: at rate of 1 + 2 grade leaves over 50% in the plating area such as: <ul style="list-style-type: none">• Nicotine content• Inverted sugar solution meets the cigarette factories' requirement.• The sensory score is always evaluated at the level of attractiveness from good to excellent.

TRIAL TEST BY MICROBEBIO®

TOMATO – VIETNAM



Products: MicrobeBio® Vigor Boost, MicrobeBio® Nature Foliar, and MicrobeBio® Nature Activator.

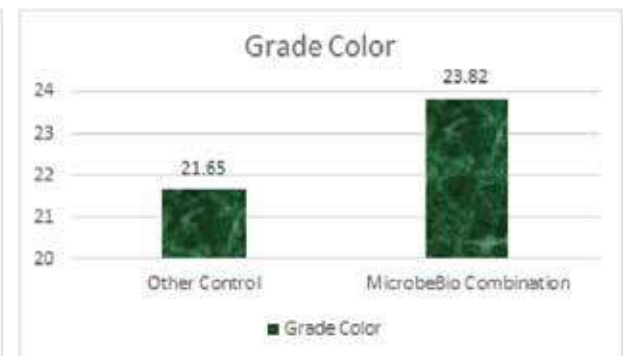
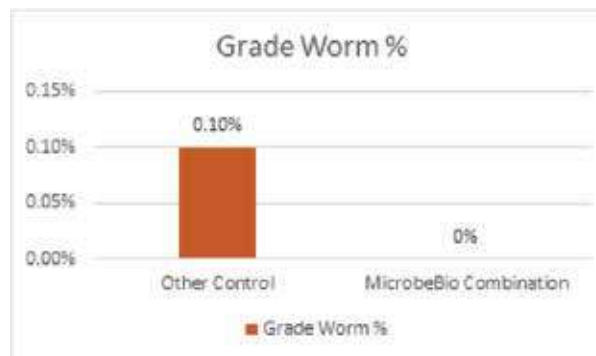
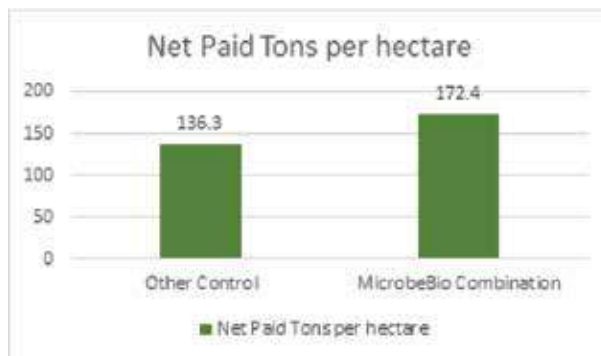
Country: Vietnam

Province: Lam Dong

Yield increase: 22.6%

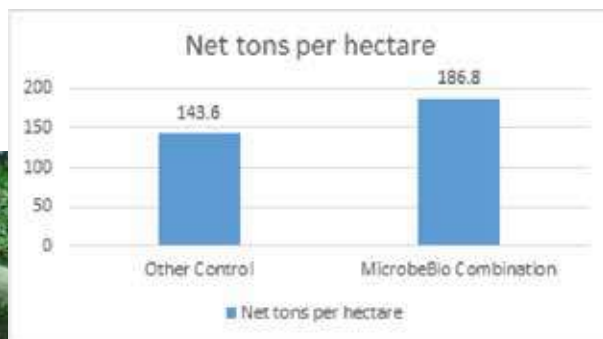
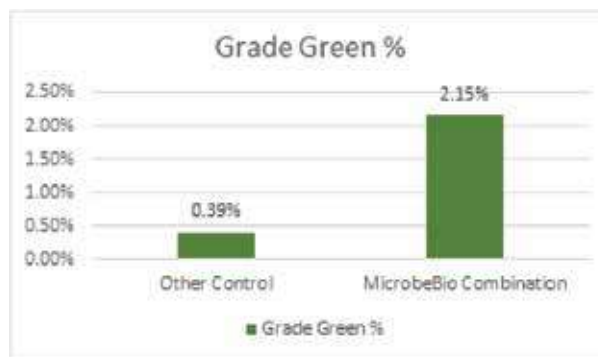
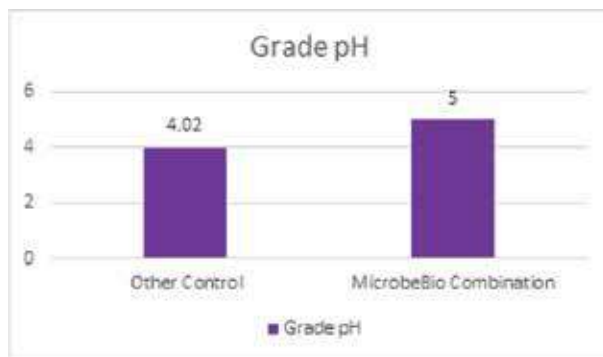
The test result:

Densities	Net tons per hectare	Net Paid tons per hectare	Grade Worm %	Grade Green %	Grade Color	Grade Brix	Grade pH
Other Control	143.6	136.3	0.01%	0.69%	21.65	4.85	4.02
MicrobeBio® Combination	186.8	172.4	0%	2.15%	23.82	4.85	5



TRIAL TEST BY MICROBEBIO®

TOMATO – VIETNAM



TRIAL TEST BY MICROBEBIO®

COTTON – VIETNAM



In 2016, MicrobeBio performed a private cotton trial test in Gia Lai, Vietnam. Production Strategy was to apply MicrobeBio® Vigor Boost, MicrobeBio® Hydro Activator, and MicrobeBio® Nature Foliar. The trial produced 23.5% Yield Increase.

1. Products:

Our field:

- MICROBEBIO® VIGOR BOOST
- MICROBEBIO® HYDRO ACTIVATOR
- MICORBEBIO® NATURE FOLIAR

Other field

- NITROGEN BASED FERTILIZER

2. Area:

Country: Vietnam

Province: Gia Lai

3. Trial Test Result:

Average total bolls per plant by position and the average percentage of the treated plants when compared to the untreated plants by position:

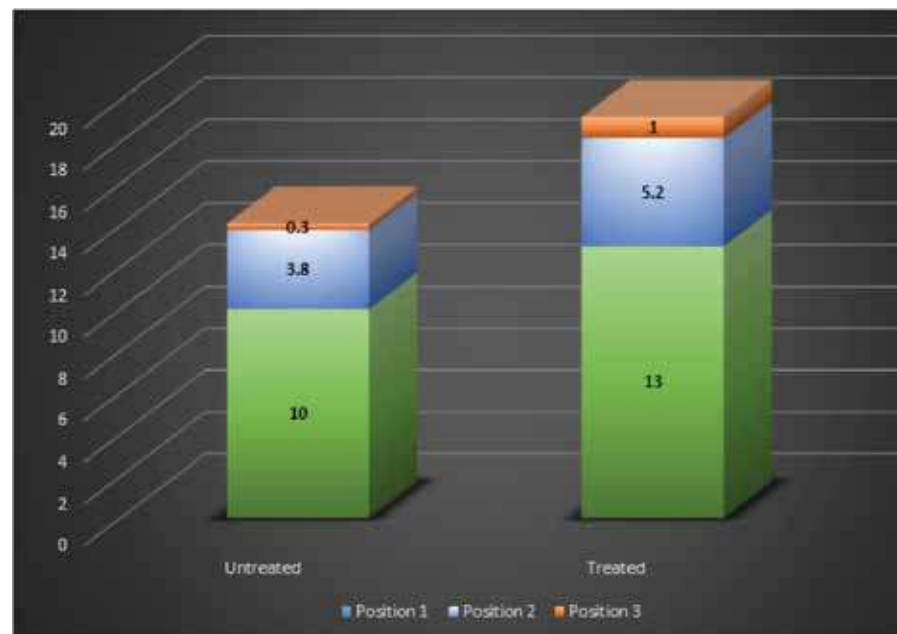
TRIAL TEST BY MICROBEBIO®

COTTON – VIETNAM



- Position 1: Bolls make up the highest percentage of the total yield. This position cracked boll on the plant, count the main-stem nodes above it to the uppermost harvestable 1 position boll. In the mature 1st position boll, it takes about 60 additional HU to mature a 1st position boll one main-stem node up the plant.
- Position 2: Bolls rank second in contributing to the total yield. In any given mature, boll on a fruiting branch, it takes about 120 HU to mature an additional position when moving out on a fruiting branch.

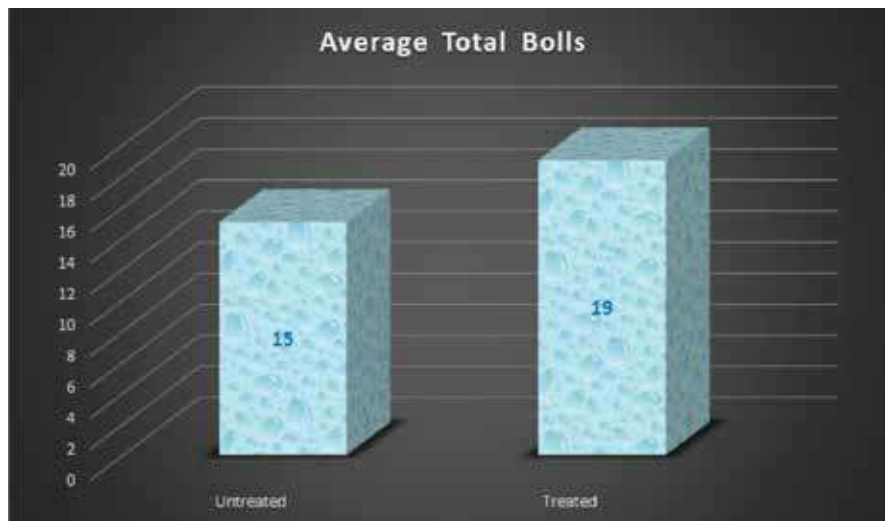
The first four positions contribute most to total yield. These are considered the most important positions.



TRIAL TEST BY MICROBEBIO®

COTTON – VIETNAM

Average total bolls per plant by treatment and the average percentage of the treated plants when compared to the untreated plants.



The untreated field produced an average weight of 1936 kg/hectare. On the other hand, the treated field with 3 times' application produced 5.9% more kg/hectare.



TRIAL TEST BY MICROBEBIO®

TEA – VIETNAM

Tea: The Effect of MicrobeBio® on Tea

Variety: Green Tea

Planting Date: Dec 05, 2017

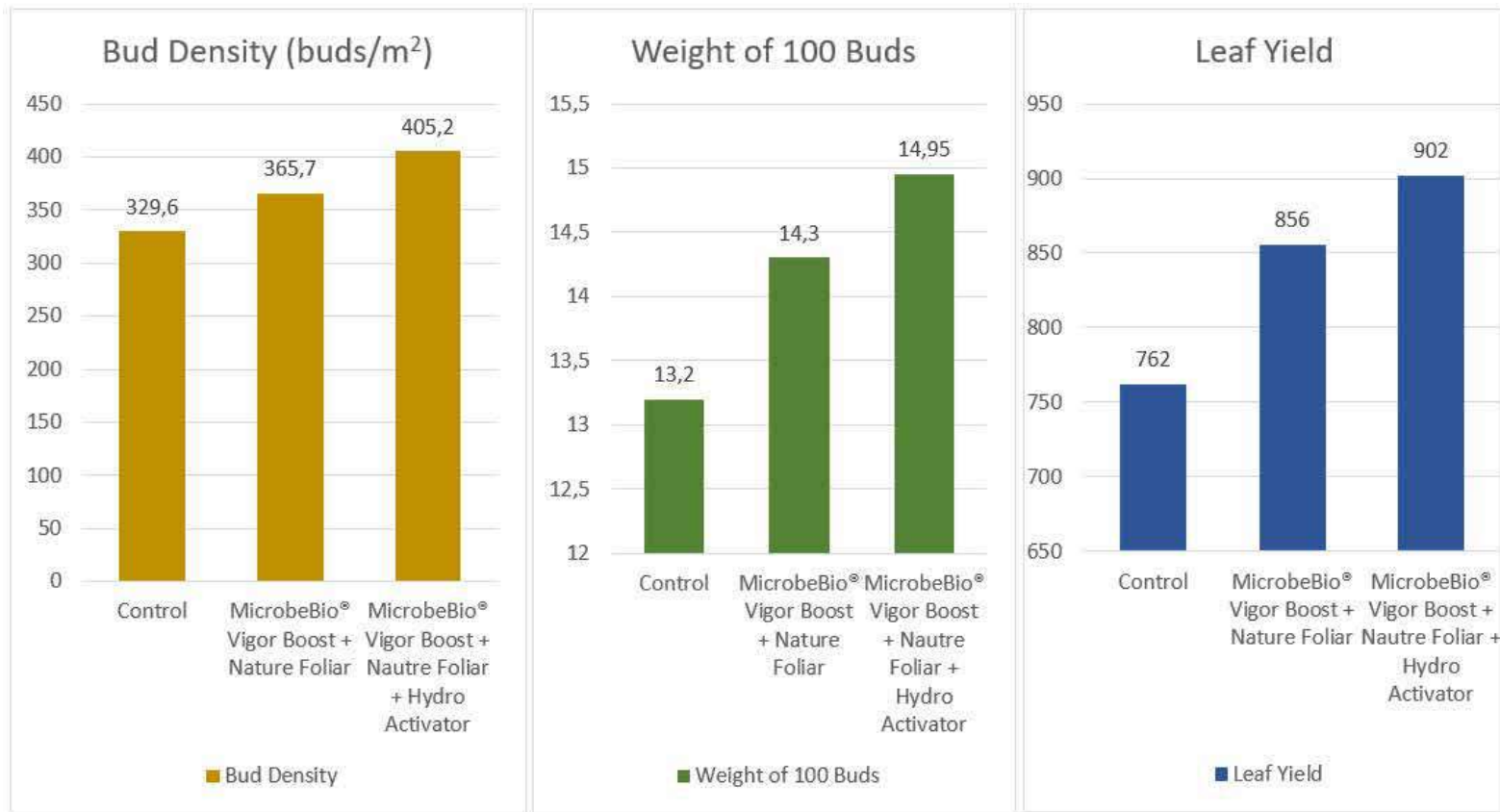
Experimental Design: There were 3 sections of the Tea field used for this trial test, one an untreated control, one treated with MicrobeBio® Vigor Boost

+ Nature Foliar; and another one treated with MicrobeBio® Vigor Boost + Nature Foliar + Hydro Activator. This trial test aimed to examine the effect of MicrobeBio® products on tea trees regarding to three aspects including bud density, bud weight, and leaf yield.

Yield Results:				
Treatment	LEAF YIELD (kg/ha)		BUD DENSITY (bud/m ²)	
	Yield	Change	Density	Change
Control	762	–	329.6	–
MicrobeBio® Vigor Boost + Nature Foliar	856	94 (12.3%)	365.7	36.1 (10.9%)
MicrobeBio® Vigor Boost + Nature Foliar + Hydro Activator	902	140 (18.3%)	405.2	75.6 (22.9%)

TRIAL TEST BY MICROBEBIO®

TEA – VIETNAM



Conclusions:

The study revealed that MicrobeBio® products delivered a great improvement in the bud density (18.3%), leaf yield (22.9%), and also bud weight. Therefore, MicrobeBio® products are highly viable plant amendment for tea growers.

TRIAL TEST BY MICROBEBIO®

MATURE COFFEE – VIETNAM



APPLICATION TO TREAT 1000 TREES:

MicrobeBio® Aqua Activator :	1 kg per hectare (Apply every 2 months) = 6 kg per year
MicrobeBio® Hydro Activator :	3 Liters (Apply every 2 months) = 18 liters per year
MicrobeBio® Nature Foliar :	250 ml (Apply every 2 months) = 1.5 liter per year
MicrobeBio® Rhizo Activator :	50 kg (Apply every 3 months) = 200 kg per year

DILUTION INSTRUCTION

MicrobeBio® Aqua Activator

- Brew the product for at least 24 hours into at least 5 liters of non-chlorine water to activate the microbes.
- Dilute the brewed mixture into at least 500 to 1000 liters of non-chlorine water** to treat 1000 trees.

MicrobeBio® Hydro Activator

- Dilute each application of product into at least 500 to 1000 liters of non-chlorine water** to treat 1000 trees

TRIAL TEST BY MICROBEBIO®

MATURE COFFEE – VIETNAM



MicrobeBio® Nature Foliar

- Dilute each application of product into at least 1000 liters of non-chlorine water** to treat 1000 trees

MicrobeBio® Rhizo Activator

- Dry spray by manual spread or electrical sprayer.

*** While diluting or irrigating crops, the growers can dilute the product into chlorinated water after the chlorinated water has been standing for over 48 hours in an open container that allows chlorine gas to dispense.*

APPLICATION OF EVERY 2 MONTHS

APPLY PRODUCTST TO TREAT SOIL:

Scenario 1: Dilute MicrobeBio® Hydro Activator and MicrobeBio® Aqua Activator into 500 liters non-chlorine water to treat 1,000 trees.

- Dilute 3 liters MicrobeBio® Hydro Activator + 1 kg MicrobeBio® Aqua Activator into 500-liter non-chlorine water to treat 1,000 trees every 2 months.
- That is known as applying 500 ml of the mixture to spray around the trunk of each tree.

TRIAL TEST BY MICROBEBIO®

MATURE COFFEE – VIETNAM

Scenario 2: Dilute MicrobeBio® Hydro Activator and MicrobeBio® Aqua Activator into 1,000 liters non-chlorine water to treat 1,000 trees.

- Dilute 3 liters MicrobeBio® Hydro Activator + 1 kg MicrobeBio® Aqua Activator into 1,000-liter non-chlorine water to treat 1,000 trees every 2 months.
- That is known as applying 1 liter of the mixture to spray around the trunk of each tree.

APPLY PRODUCTST TO TREAT LEAVES AND TREE:

- Dilute 250 ml MicrobeBio® Nature Foliar into 1,000-liter non-chlorine water to treat 1,000 trees every 2 months.
- That is known as spraying 1 liter of the mixture for a foliar feeding per each tree.

APPLICATION OF EVERY 3 MONTHS

APPLY PRODUCTST TO TREAT SOIL:

- Dry spray by manual spread or electrical sprayer 50 kg MicrobeBio® Rhizo Activator to treat 1,000 trees every 3 months.
- That is known as spraying by manual spread or electrical sprayer 50g MicrobeBio® Rhizo Activator to treat 1 tree.



TRIAL TEST BY MICROBEBIO®

MATURE COFFEE – VIETNAM

TRIAL TEST RESULTS

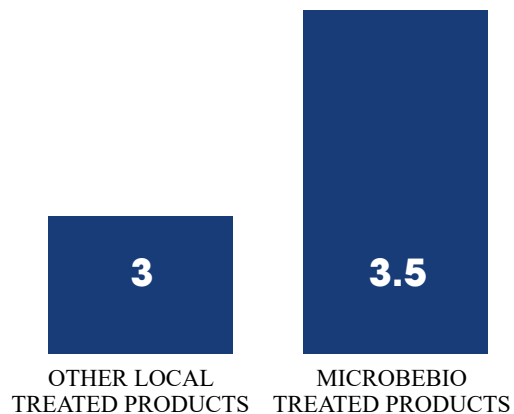
Area: Lam Dong, Vietnam

Increasing yield: 10.5%

Experiment: In 2019, MicrobeBio had done a trial test of growing mature coffee trees in Lam Dong, Vietnam. Production Strategy was to apply MicrobeBio® Aqua Activator, MicrobeBio® Hydro Activator, and MicrobeBio® Nature Foliar, and MicrobeBio® Rhizo Activator. The trial produced 10.5% Yield Increase to compare with other local treated products at the same growing time.

INCREASING YIELDS

(TONS/HECTARE)



TRIAL TEST BY MICROBEBIO®

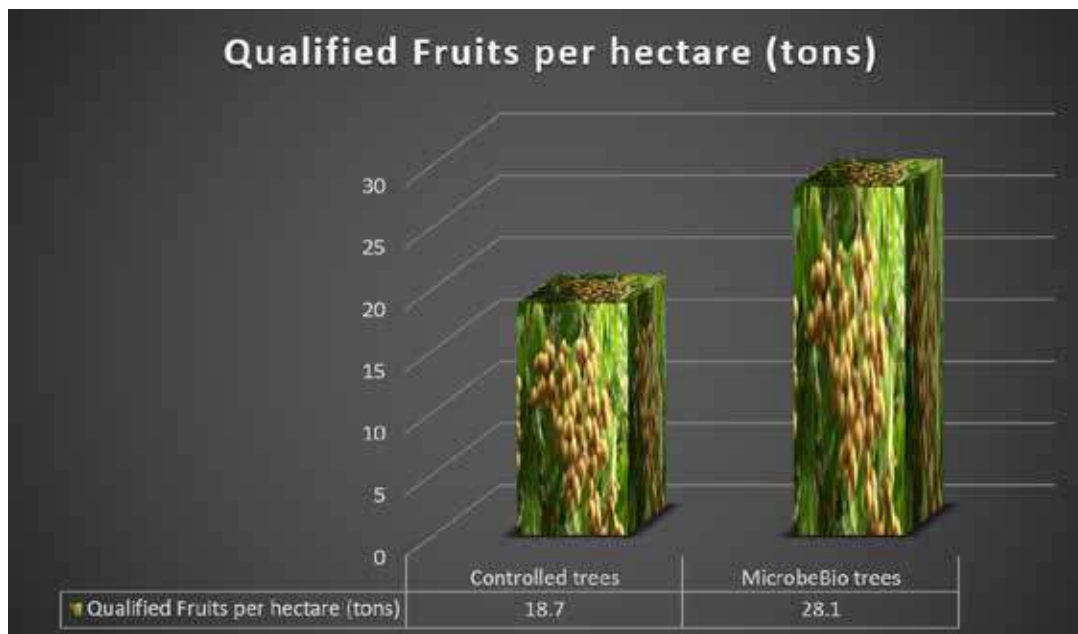
LONGAN – VIETNAM

Area: Private Experiment of the Longan farm

Years of harvesting: 2018

Experiments: MicrobeBio® products present more qualified fruits per hectare than qualified fruits per another controlled hectare in the same season.

Results:



Conclusion: According to the results, MicrobeBio® products present 28.1 tons of qualified longan fruits per hectare to compare with 18.7 tons of qualified longan fruits per controlled hectare.

TRIAL TEST BY MICROBEBIO®

LONGAN – VIETNAM



LONGAN FARM - VIETNAM



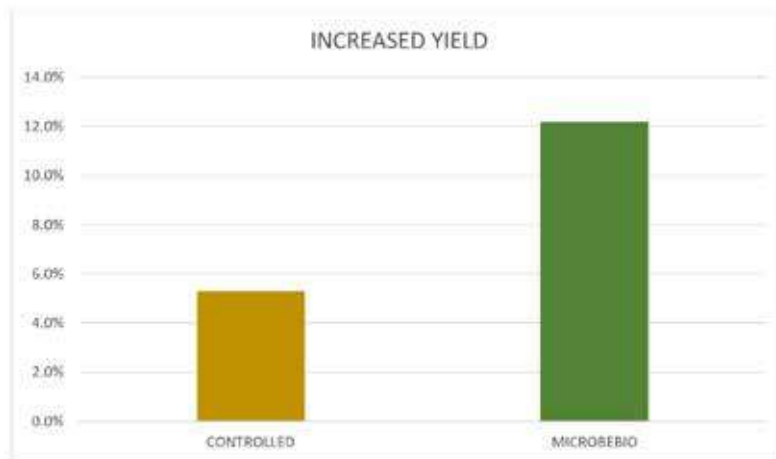
TRIAL TEST BY MICROBEBIO®

DRAGON FRUITS – VIETNAM

Place: Phan Thiet, Vietnam (2018 – 2019)

Area: 1 hectare

YIELD:



Result: The dragon fruit trees were treated by MicrobeBio® products presenting the increased yield at 12.2% to compare with the regular yield. On the other hand, the dragon fruit trees were treated by other fertilizers performing the yield only at 5.3% to compare with the regular yield and less than 6.9% to compare with MicrobeBio® products' yield at the same time.

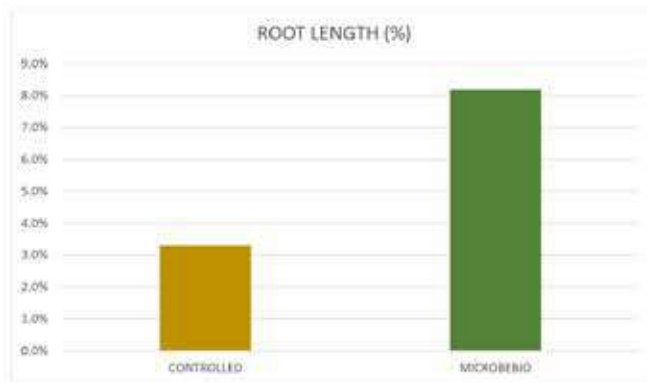


TRIAL TEST BY MICROBEBIO®

DRAGON FRUITS – VIETNAM



ROOT LENGTH:



Result: The dragon fruit trees' root length was treated by MicrobeBio® products presenting the increased yield at 8.2% to compare with the regular yield. On the other hand, the dragon fruit trees' root length was treated by other fertilizers performing the yield only at 3.3% to compare with the regular yield and less than 2.9% to compare with MicrobeBio® products treatment at the same time.

SHOOT LENGTH:



Result: The dragon fruit trees' shoot length was treated by MicrobeBio® products presenting the increased yield at 10.2% to compare with the regular yield. On the other hand, the dragon fruit trees' shoot length was treated by other fertilizers performing the yield only at 4.3% to compare with the regular yield and less than 5.9% to compare with MicrobeBio® products treatment at the same time.

TRIAL TEST BY MICROBEBIO®

DRAGON FRUITS – VIETNAM



TRIAL TEST BY MICROBEBIO®

BLACK PEPPER – VIETNAM

Area: Private Experiment of the Black Pepper farm in the middle of Vietnam

Years: 2018

Experiments: MicrobeBio® products present a significant yield to compare with the other controlled field (local traditional applications) in the same season and area.

Results:



Conclusion: According to the results, MicrobeBio® products present a significantly increased yield (11.4%) harvested per 1 hectare compared to the treated field (2.3%).

TRIAL TEST BY MICROBEBIO®

JACKFRUIT – VIETNAM

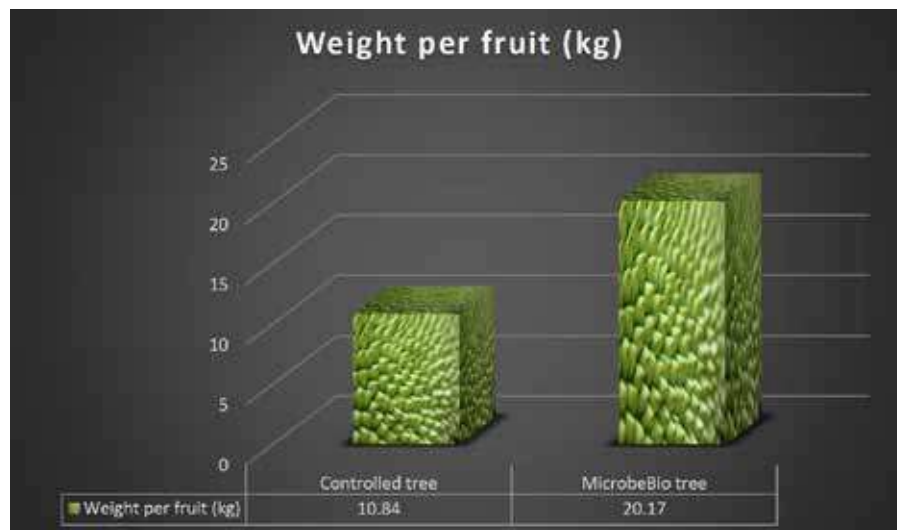
Area: Private Experiment of the Jackfruit farm

Type: Changai (Thailand)

Years of harvesting: 2018

Experiments: MicrobeBio® products present a high weight per fruit to compare to other controlled trees' fruit weight in the same growing season.

Results:



Conclusion: According to the results, MicrobeBio® products present 20.17 kg per fruit to compare with 10.84 kg per fruit from the other controlled trees.

TRIAL TEST BY MICROBEBIO®

JACKFRUIT – VIETNAM



EXPERIMENT OF THE JACKFRUIT
FARM - VIETNAMESE

TRIAL TEST BY MICROBEBIO®

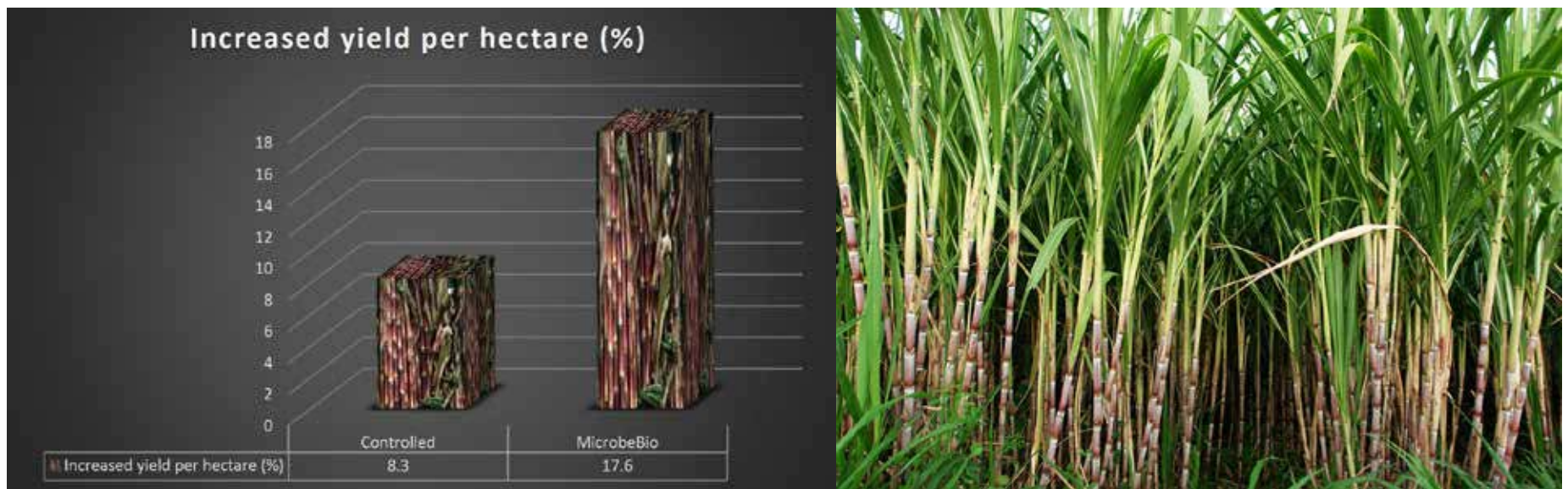
SUGARCANE – VIETNAM

Area: Private Experiment of the Sugarcane farms

Years of harvesting: 2017 - 2018

Experiments: MicrobeBio® products present a high yield per hectare to compare the yield per hectare from other controlled farms in the same season.

Results:



Conclusion: According to the results, MicrobeBio® products perform the high yield per hectare at 10.1% to compare to the yield per hectare from the controlled farm at 5.7%.

TRIAL TEST BY MICROBEBIO®

SUGARCANE – VIETNAM



TRIAL TEST BY MICROBEBIO®

CASSAVA – VIETNAM

Area: Private Experiment of the Cassava farms

Years of harvesting: 2018

Experiments: MicrobeBio® products present a high yield per hectare to compare the yield per hectare from other controlled farms in the same season.

Results:



Conclusion: According to the results, MicrobeBio® products perform the high yield per hectare at 44.1 tons per hectare to compare to the yield per hectare from the controlled farm at 32.4 tons per hectare.

TRIAL TEST BY MICROBEBIO®

TUMERIC – VIETNAM

Area: Private Experiment of the Tumeric farms

Years of harvesting: 2018

Experiments: MicrobeBio® products present a high yield per hectare to compare the yield per hectare from other controlled farms in the same season.

Results:



Conclusion: According to the results, MicrobeBio® products perform the high yield per hectare at 39.1 tons per hectare to compare to the yield per hectare from the controlled farm at 31.5 tons per hectare.

TRIAL TEST BY MICROBEBIO®

CABBAGE FIELDS – SOUTHEAST ASIA



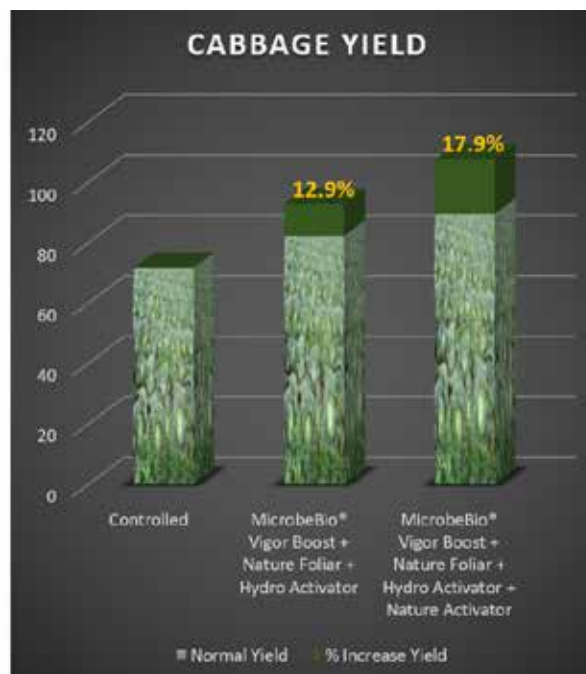
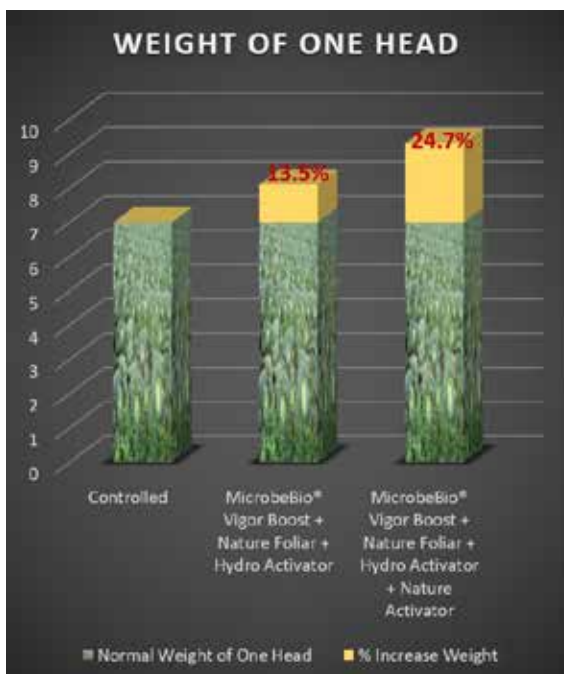
- Variation** : Unknown
- Place** : Southeast Asia
- Planting Date** : Spring 2018
- Products** : MicrobeBio® Vigor Boost
MicrobeBio® Hydro Activator
MicrobeBio® Nature Foliar
MicrobeBio® Nature Activator

Experimental Design : There are three sections of the Cabbage field used for the trial test one an untreated control, one treated with MicrobeBio® Vigor Boost + Nature Foliar – Hydro Activator; and the another one treated with MicrobeBio® Vigor Boost + Nature Foliar + Hydro Activator + Nature Activator. The purpose is to examine the effect of MicrobeBio® products on Cabbage yield.

TRIAL TEST BY MICROBEBIO®

CABBAGE FIELDS – SOUTHEAST ASIA

Yield Results:				
Treatment	WEIGHT OF ONE HEAD		CABBAGE YIELD Ton/ha	
	Weight	Change	Yield	Change
Controlled	7	-	71.7	-
MicrobeBio® Vigor Boost + Nature Foliar + Hydro Activator	8.1	1.1 (13.5%)	82.3	10.6 (12.9%)
MicrobeBio® Vigor Boost + Nature Foliar + Hydro Activator + Nature Activator	9.3	2.3 (24.7%)	89.6	17.9 (19.9%)



Conclusions : The study revealed that MicrobeBio® products delivered a great improvement in the weight of one head (13.5% to 24.7%), cabbage yield (12.9% to 17.9%), and also bud weight. Therefore, MicrobeBio® products are highly viable plant amendment for cabbage growers.

TRIAL TEST BY MICROBEBIO®

CABBAGE FIELDS – SOUTHEAST ASIA



Cabbages after 15 days



Cabbages after 50 days

TRIAL TEST BY MICROBEBIO®

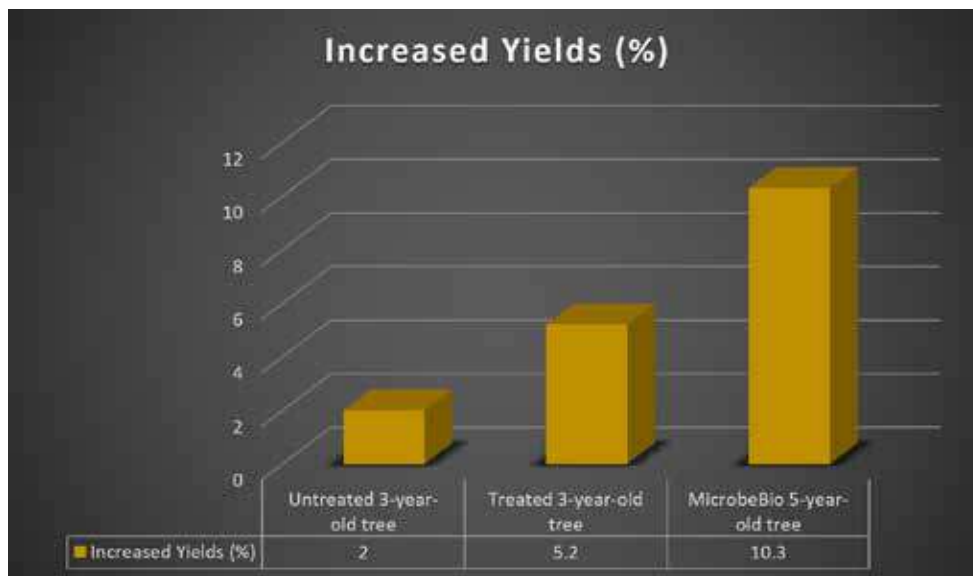
COFFEE – LAOS

Area: Private Experiment of the coffee garden

Years: 2018

Experiments: MicrobeBio® products present a higher yield to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, MicrobeBio® products presenting a significantly increased yield (10.3%) harvested per tree to compare with the untreated field (2%) and treated field (5.2%).

TRIAL TEST BY MICROBEBIO®

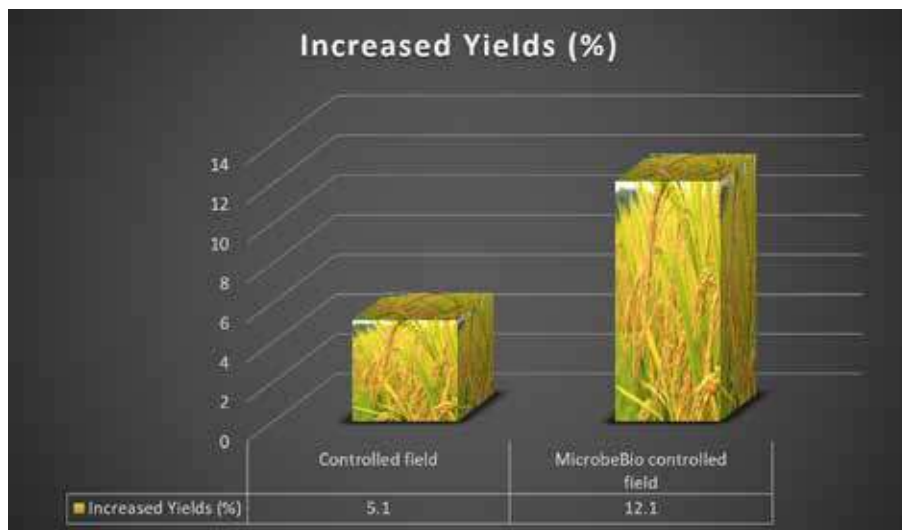
RICE – LAOS

Area: Private Experiment of the Ricefield

Years: 2017 - 2018

Experiments: MicrobeBio® products present a significant yield to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, MicrobeBio® products presenting a significantly increased yield (12.1%) harvested per field comparing to the treated field (5.1%).

TRIAL TEST BY MICROBEBIO®

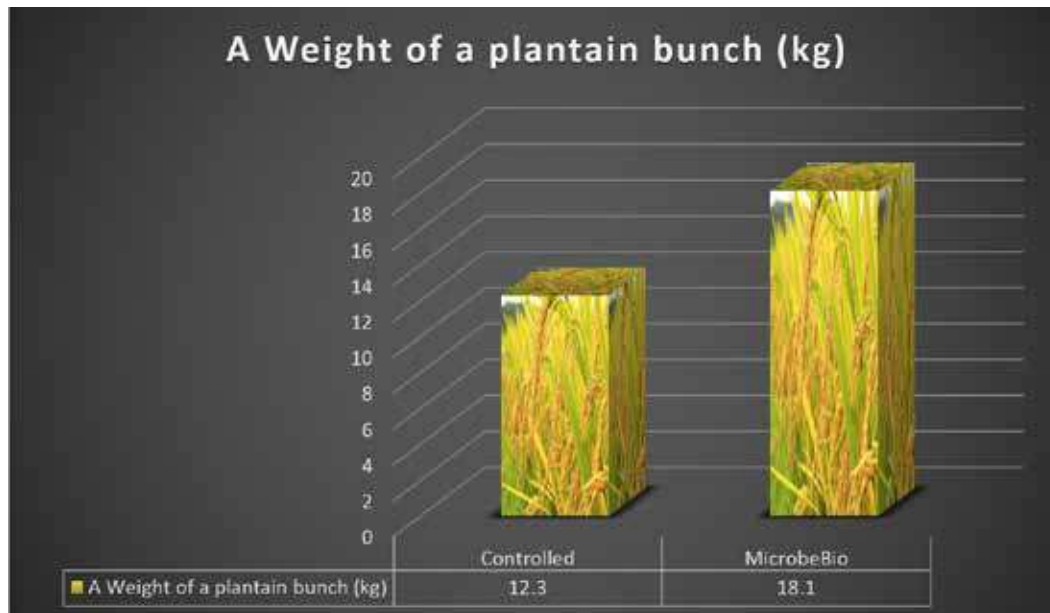
PLANTAIN – LAOS

Area: Private Experiment of the plantain farms

Years: 2017 - 2018

Experiments: MicrobeBio® products present a greater weight of a bunch to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, MicrobeBio® products presenting a weight of a plantain bunch at 18.1 kg to compare with the controlled plantain bunch's weight at 12.3 kg.

TRIAL TEST BY MICROBEBIO®

PLANTAIN – LAOS



EXPERIMENT PLANTAIN FARMS
LAOS



TRIAL TEST BY MICROBEBIO®

DURIAN – CAMBODIA

Area: Private Experiment of the Durian Garden

Years: 2018 - 2019

Experiments: MicrobeBio® products improved a higher yield to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, the number of fruits harvested was treated by MicrobeBio® products presenting a higher number of fruits harvested per tree than the untreated field (>50%) and treated field (20%).

TRIAL TEST BY MICROBEBIO®

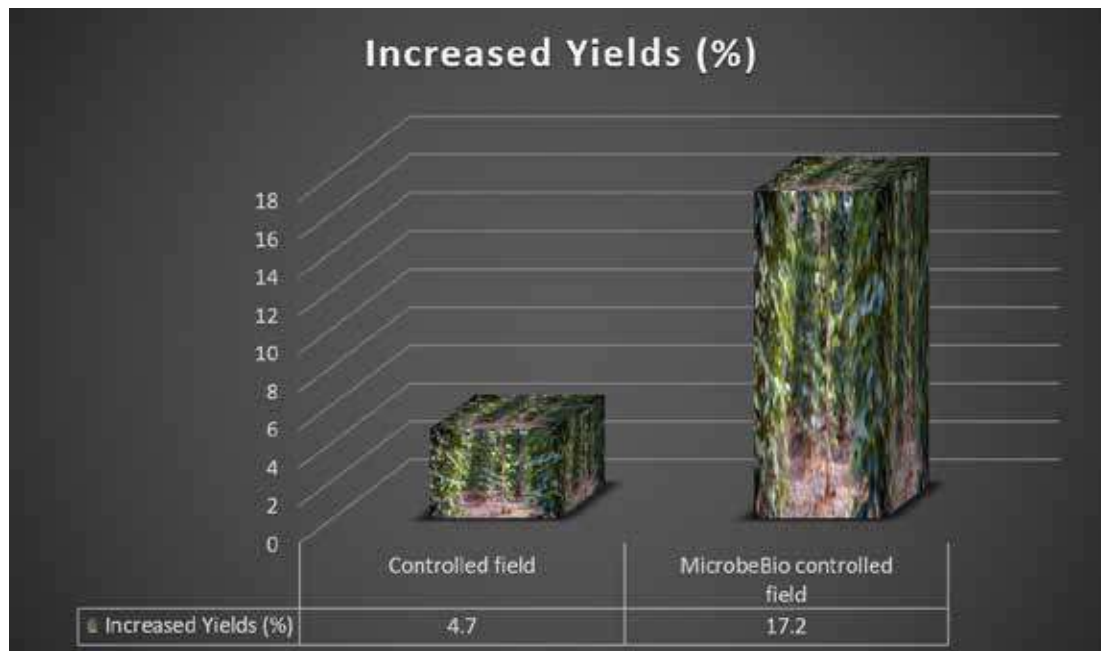
BLACK PEPPER – CAMBODIA

Area: Private Experiment of the Black Pepper farm

Years: 2017 - 2018

Experiments: MicrobeBio® products present a significant yield to compare with the other controlled field (local traditional applications) in the same season and area.

Results:



Conclusion: According to the results, MicrobeBio® products present a significantly increased yield (17.2%) harvested per 1 hectare compared to the treated field (4.7%).

TRIAL TEST BY MICROBEBIO®

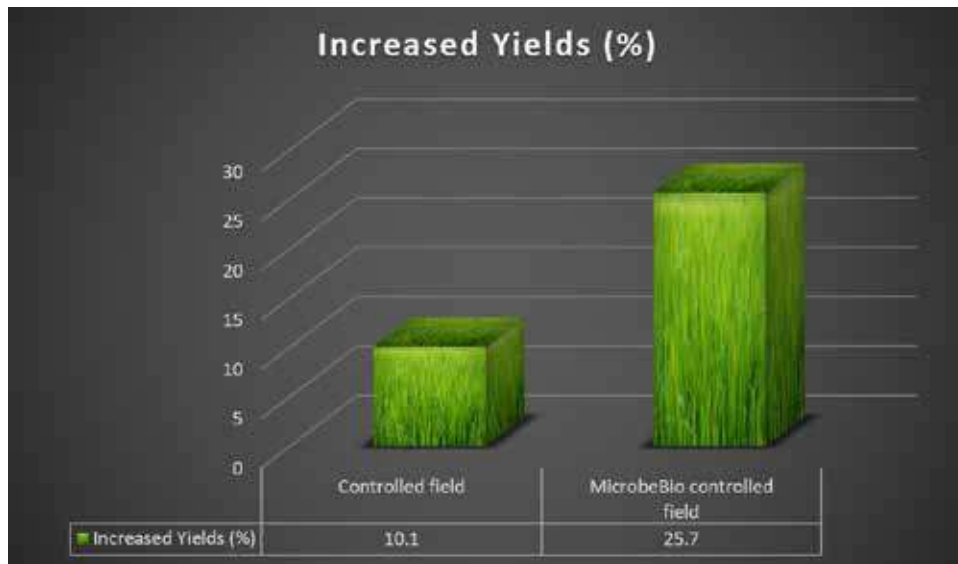
RICE – CAMBODIA

Area: Private Experiment of the Ricefield

Years: 2018 - 2019

Experiments: MicrobeBio® products present a significant yield to compare with the other controlled field (local traditional applications) at the same time as the test.

Results:



Conclusion: According to the results, MicrobeBio® products presenting a significantly increased yield (25.70%) harvested per 1 hectare (6.25 rai) compared to the treated field (10.10%).

TRIAL TEST BY MICROBEBIO®

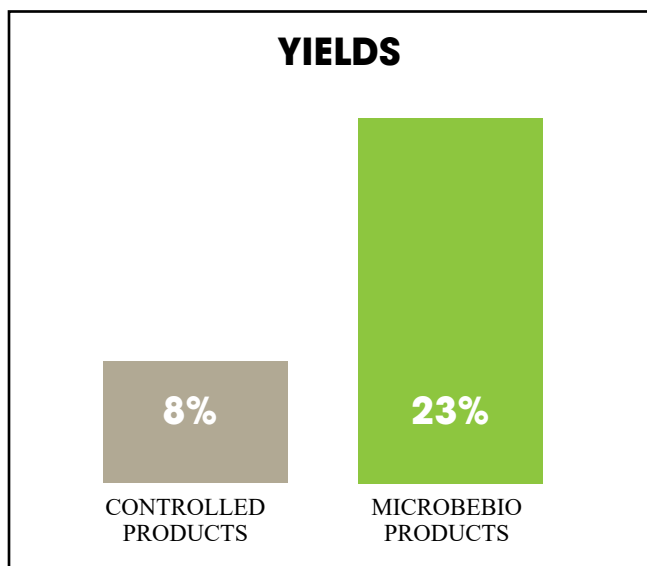
CACAO – CAMBODIA

Place: Cambodia

Area: 1 hectare

Experiment: According to the high demand of the cacao in the market, the farmer presents the trial test to compare the yield of the cacao field treated by MicorbeBio® products to the field of the cacao field treated by other controlled products at the same time and conditions.

RESULT:



CONCLUSION: At the same time, place, and condition, the cacao trees were treated by MicrobeBio® products performed the increasing yield at 23%. This yield greater than the yield of the cacao trees treated by other controlled products 15%.

TRIAL TEST BY MICROBEBIO®

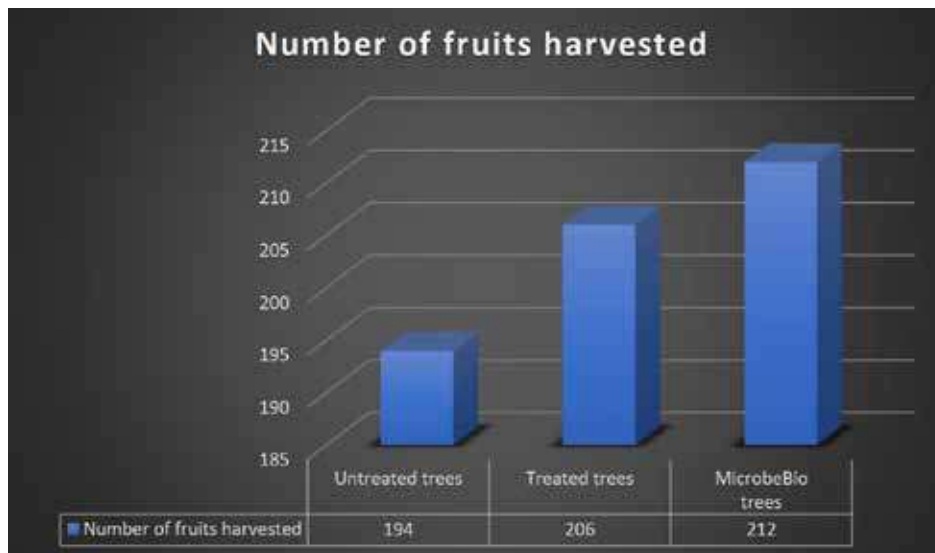
MANGO – CAMBODIA

Area: Private Experiment of the Mango Garden

Years: 2017

Experiments: MicrobeBio® products improved a higher yield to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, the number of fruits harvested was treated by MicrobeBio® products presenting a higher number of fruits harvested per tree than the untreated field (9%) and treated field (7%).

TRIAL TEST BY MICROBEBIO®

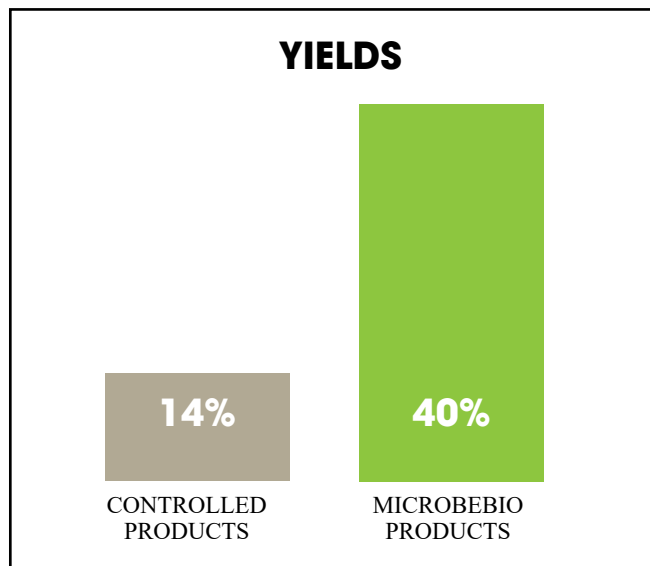
CACAO – PHILIPPINES

Place: Philippines

Area: 1 hectare

Experiment: According to the high demand of the cacao in the market, the farmer presents the trial test to compare the yield of the cacao field treated by MicorbeBio® products to the field of the cacao field treated by other controlled products at the same time and conditions.

RESULT:



CONCLUSION: At the same time, place, and condition, the cacao trees were treated by MicrobeBio® products performed the increasing yield at 40%. This yield greater than the yield of the cacao trees treated by other controlled products 26%.

TRIAL TEST BY MICROBEBIO®

RICE – PHILIPPINES

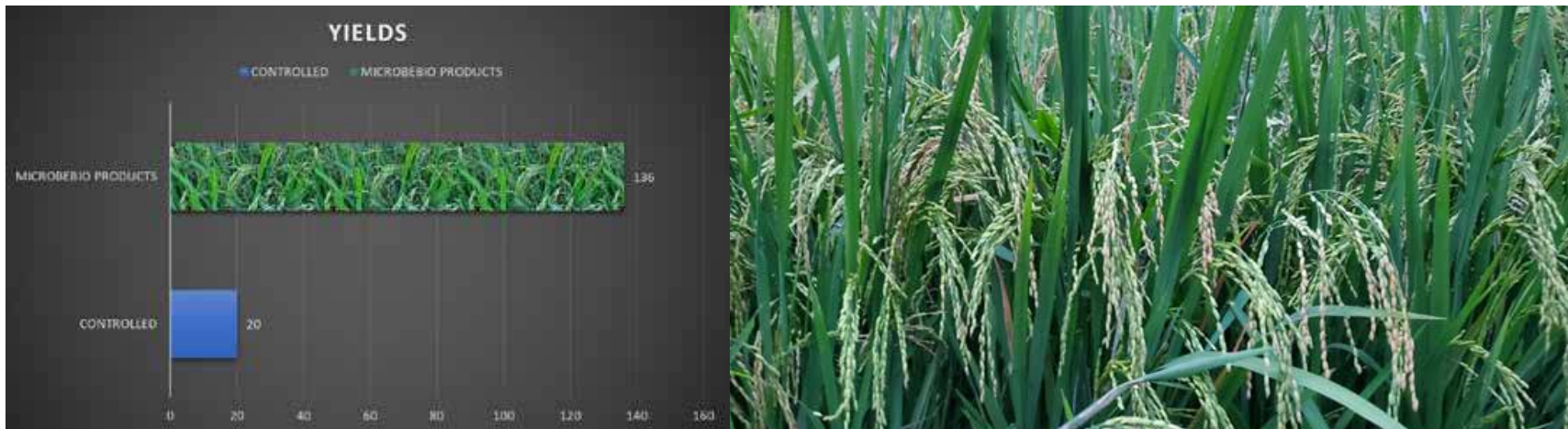
Place: Iloilo, Philippine

Year: 2019

Test Area: 1 hectare

Experiment: This is the tough experiment that presents to grow rice plants on the dry soil. There is a comparison of growing rice plants by using MicrobeBio® products versus using other controlled products in Iloilo, Philippines

Results:



Conclusion: Rice plants are often growing on the flooded rice paddies. MicrobeBio® is successful in growing rice plants on the dry soil in Iloilo. The result performs the one hectare of growing rice plants treated by MicrobeBio® products presenting 136 sacs to compare to another controlled one hectare of growing rice plants only presenting 20 sacs at the same time treatment and area.

TRIAL TEST BY MICROBEBIO®

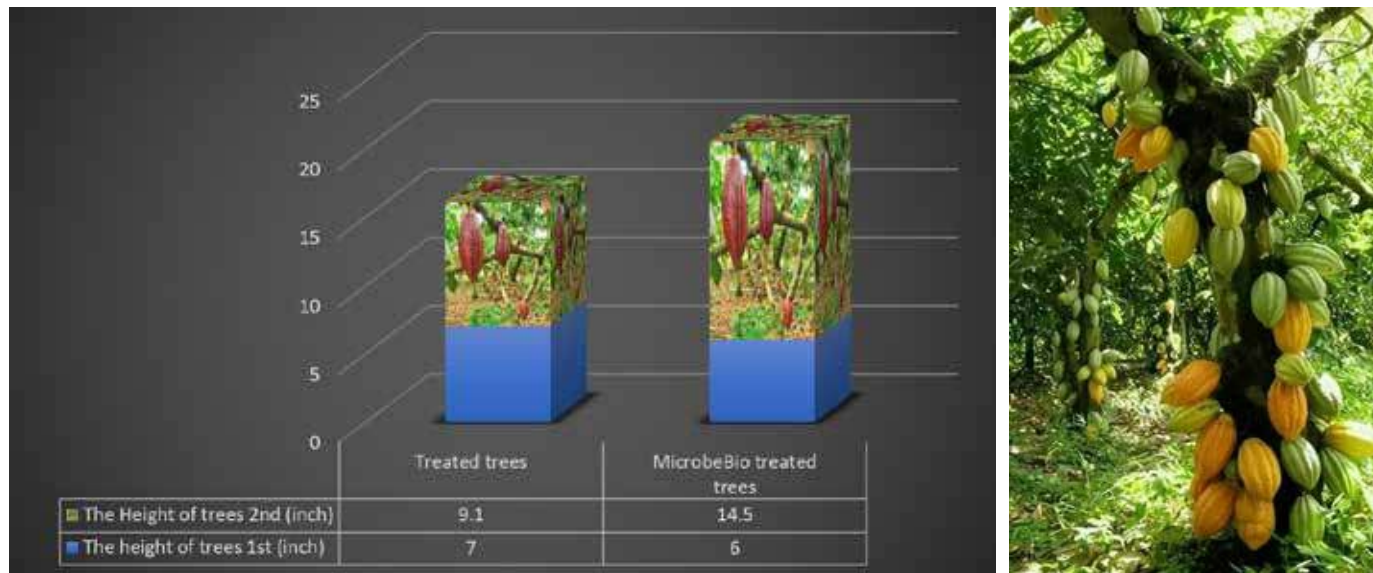
COCAO (COCOA) TREE – PHILIPPINES

Area: Private Experiment of the Cocoa (Cocoa) Trees Garden

Years: 2018 -2019

Experiments: MicrobeBio® products improved a higher growth to compare with another treated field at the same time and condition of the trial test.

Results:



Conclusion: According to the results, MicrobeBio® treated trees presents from a mean height of 6 inches to 14.5 inches that equals a growth increase of 40% while the untreated trees presented form 7 inches to 9.1 inches that equal a growth increase of 0.3%.

TRIAL TEST BY MICROBEBIO®

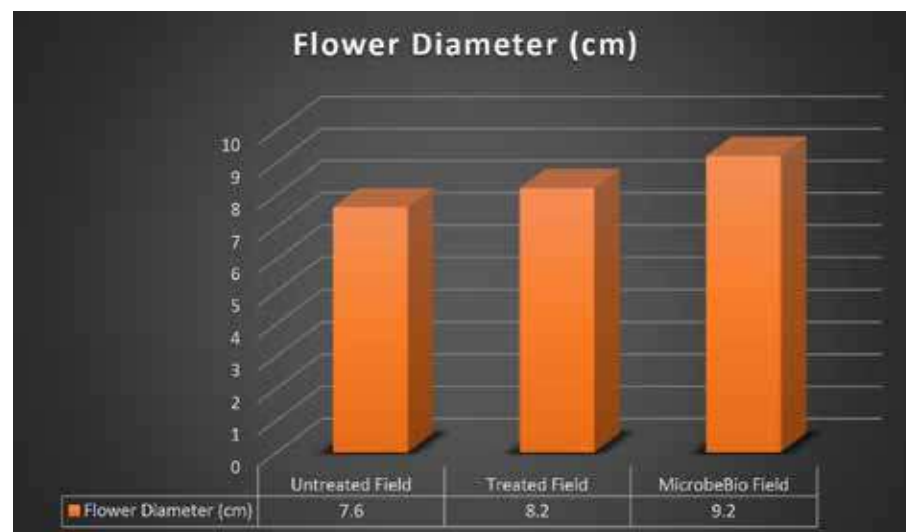
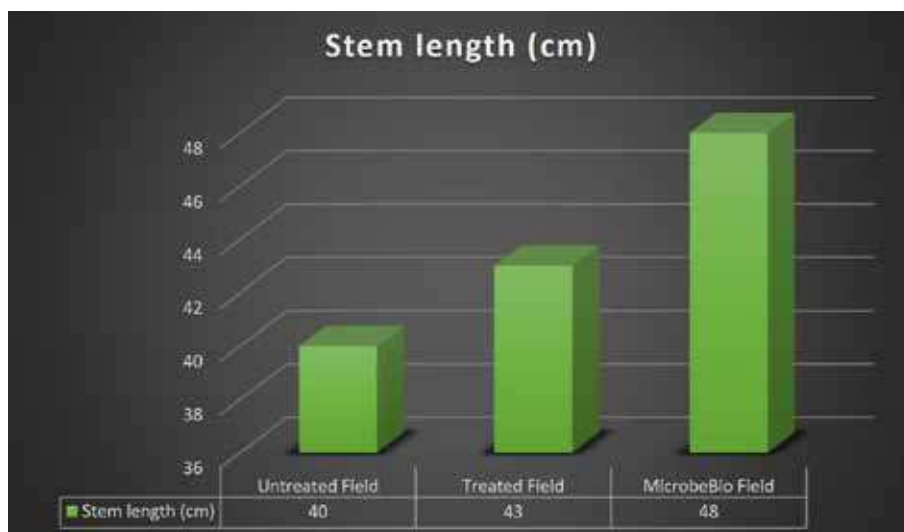
FLOWER – PHILIPPINES

Area: Philippine Exported Flower Greenhouse Field - Gerbera

Years: 2017

Experiments: MicrobeBio® products improved a high yield to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, the stem length of the Gerbera was treated by MicrobeBio® products presenting higher stem length than the untreated field (20%) and treated field (12%). Besides, the flower diameter of the Gerbera was treated by MicrobeBio® products present at 9.2 cm that is also higher than the untreated field (7.6 cm) and treated field (8.2 cm).

TRIAL TEST BY MICROBEBIO®

FLOWER – PHILIPPINES



TRIAL TEST BY MICROBEBIO®

TRIAL TEST PHILIPPINES



Philippine Exported Flower
Greenhouse Field - Garbera



TRIAL TEST BY MICROBEBIO®

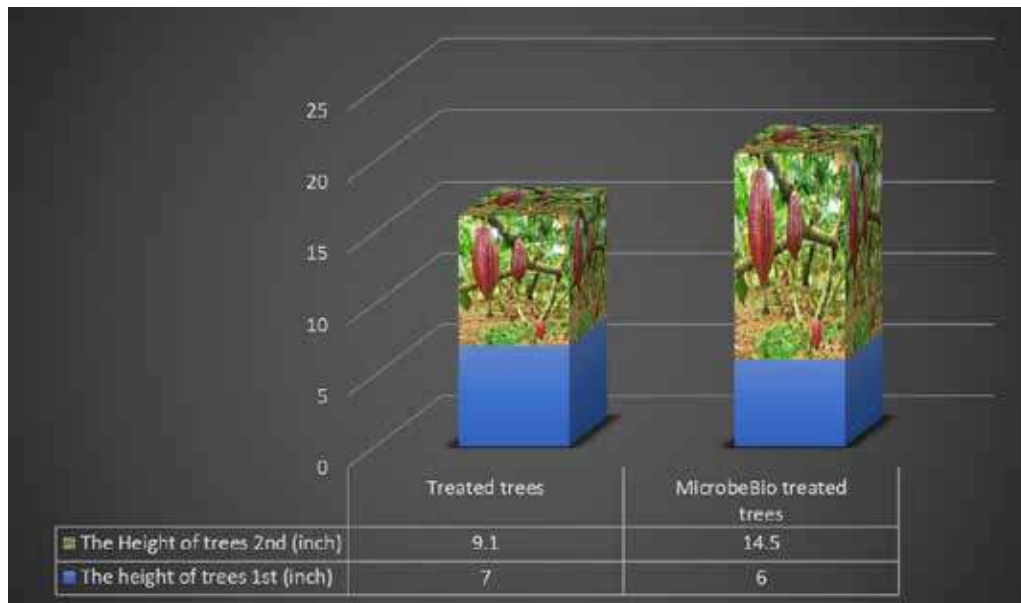
RICE – THAILAND

Area: Private Experiment of the Ricefield

Years: 2018

Experiments: MicrobeBio® products present a significant yield to compare with the other controlled field (local traditional applications) at the same time as the test.

Results:



Conclusion: According to the results, MicrobeBio® products presenting a significantly increased yield (28.48%) harvested per 1 hectare (6.25 rai) compared to the treated field (8.37%).

TRIAL TEST BY MICROBEBIO®

DURIAN – THAILAND

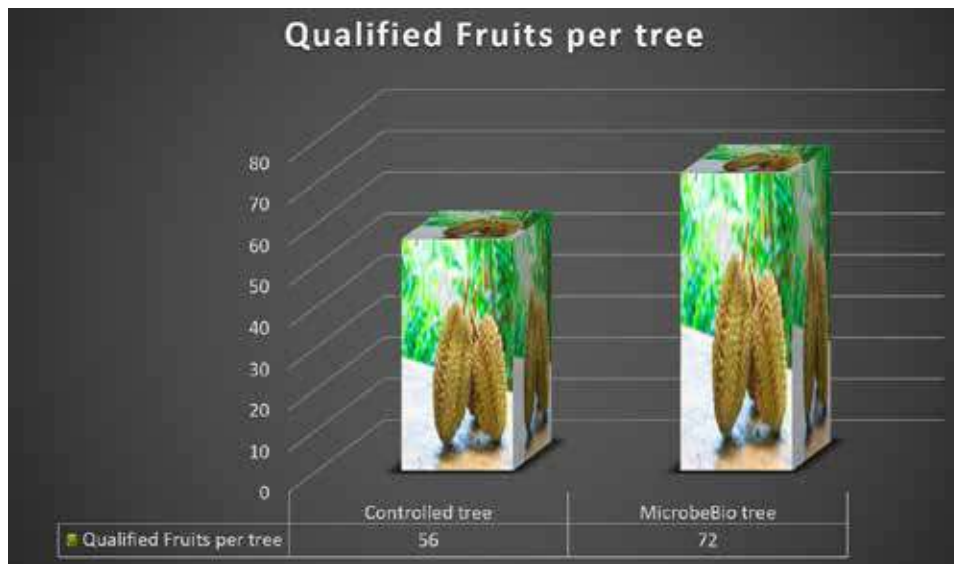
Area: Private Experiment of the Durian farm

Type: Gaanyao

Years: 2018

Experiments: MicrobeBio® products present more qualified fruits per tree than qualified fruits per another controlled tree in the same season.

Results:



Conclusion: According to the results, MicrobeBio® products 72 qualified durian fruits per tree to compare with 56 qualified durian fruits per controlled tree.

TRIAL TEST BY MICROBEBIO®

LONGAN – THAILAND

Area: Private Experiment of the Longan farm (5-year-old longan trees)

Years of harvesting: 2018

Experiments: MicrobeBio® products present more qualified fruits per tree than qualified fruits per another controlled tree in the same season.

Results:



Conclusion: According to the results, MicrobeBio® products 8.6 kg qualified longan fruits per tree to compare with 5.2 kg qualified longan fruits per controlled tree.

TRIAL TEST BY MICROBEBIO®

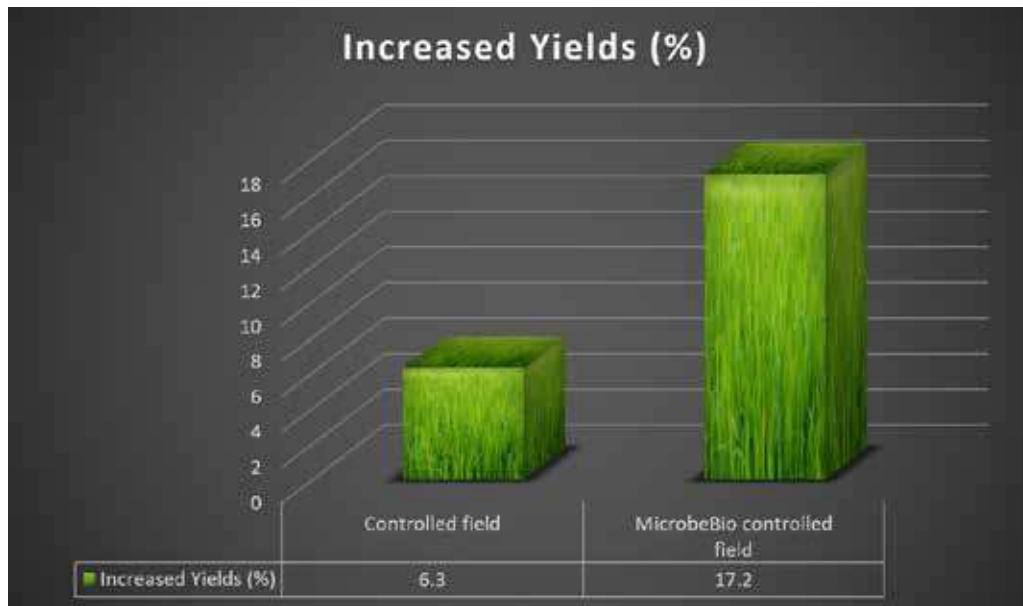
RICE – MYANMAR

Area: Private Experiment of the Ricefield

Years: 2018

Experiments: MicrobeBio® products present a significant yield to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, MicrobeBio® products presenting a significantly increased yield (17.2%) harvested per 1 hectare compared to the treated field (6.3%).

TRIAL TEST BY MICROBEBIO®

PLANTAIN – MYANMAR

Area: Private Experiment of the plantain farms

Years: 2018 - 2019

Experiments: MicrobeBio® products present a greater weight of a bunch to compare with the other controlled field at the same time as the test.

Results:



Conclusion: According to the results, MicrobeBio® products presenting a weight of a plantain bunch at 18.6 kg to compare with the controlled plantain bunch's weight at 11.8 kg.

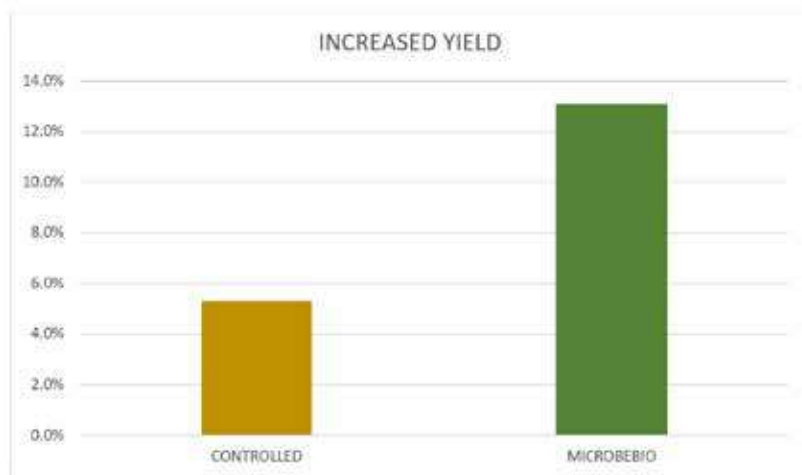
TRIAL TEST BY MICROBEBIO®

HEMP – USA

Place: Texas, USA (2018 – 2019)

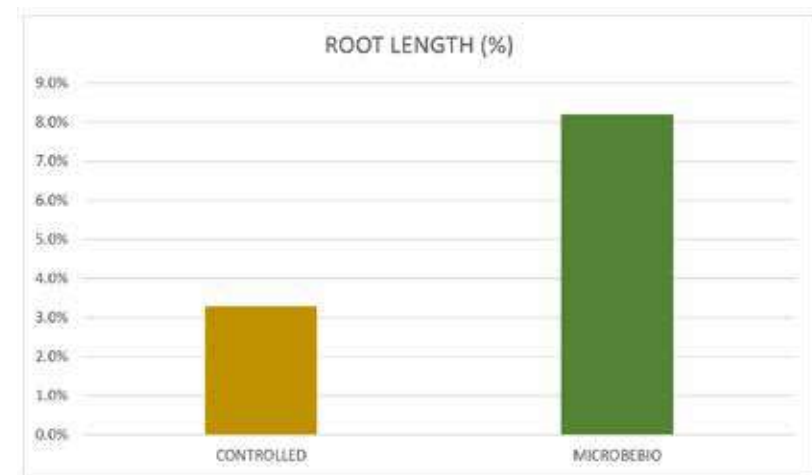
Area: 2 hectares

YIELD:



Result: The Hemp was treated by MicrobeBio® products presenting the increased yield at 13.1% to compare with the regular yield. On the other hand, the hemp was treated by other fertilizers performing the yield only at 5.3% to compare with the regular yield and less than 7.8% to compare with MicrobeBio® products' yield at the same time.

ROOT LENGTH:



Result: The hemp' root length was treated by MicrobeBio® products presenting the increased yield at 10.3% to compare with the regular yield. On the other hand, the hemp's root length was treated by other fertilizers performing the yield only at 3.3% to compare with the regular root length and less than 7.0% to compare with MicrobeBio® products treatment at the same time.

TRIAL TEST BY MICROBEBIO®

HEMP – USA



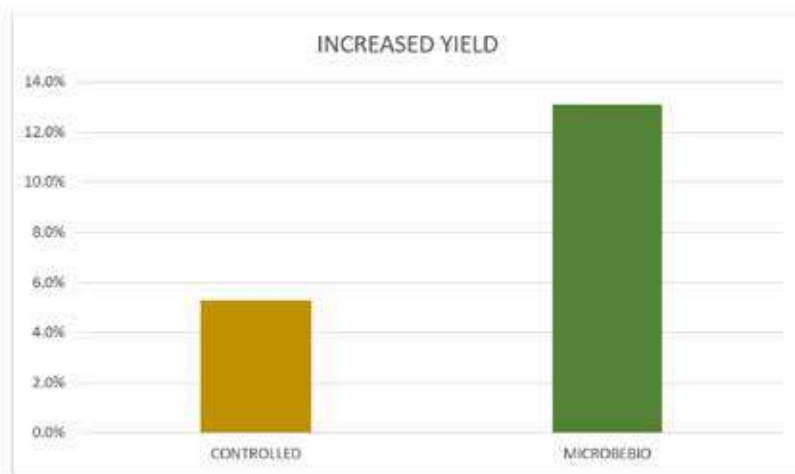
TRIAL TEST BY MICROBEBIO®

ALFALFA – USA

Place: Texas, USA (2018 – 2019)

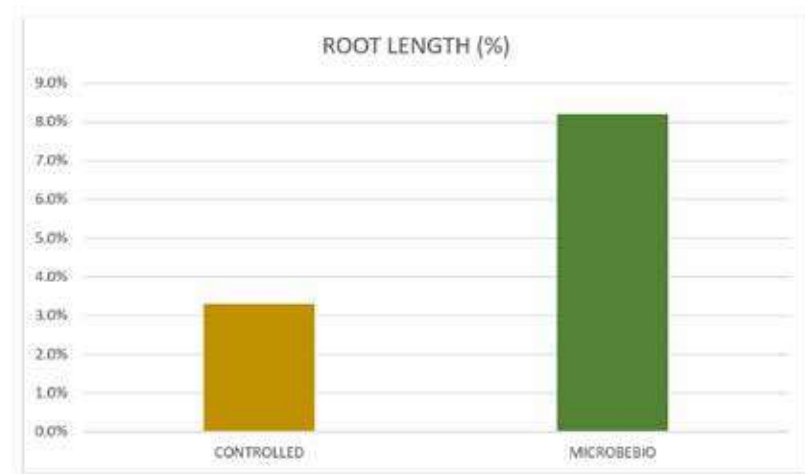
Area: 10 hectares

YIELD:



Result: The Alfalfa were treated by MicrobeBio® products presenting the increased yield at 13.1% to compare with the regular yield. On the other hand, the alfalfa was treated by other fertilizers performing the yield only at 5.3% to compare with the regular yield and less than 7.8% to compare with MicrobeBio® products' yield at the same time.

ROOT LENGTH:



Result: The alfalfa' root length was treated by MicrobeBio® products presenting the increased yield at 10.3% to compare with the regular yield. On the other hand, the alfalfa's root length was treated by other fertilizers performing the yield only at 3.3% to compare with the regular root length and less than 7.0% to compare with MicrobeBio® products treatment at the same time.

TRIAL TEST BY MICROBEBIO®

ALFALFA – USA



IMPACT





OUR PRODUCT

**AT MICROBEBIO, WE OFFER AN INCREDIBLY DISTINCTIVE RANGE OF PRODUCTS
DESIGNED TO WORK HARMONIOUSLY, RESULTING IN COMPREHENSIVE SOIL
RESTORATION, SAFEGUARDING OF CROPS AGAINST DISEASES AND PESTS, AND A
SUBSTANTIAL BOOST IN YIELD. EXPERIENCE THE POWER OF OUR PATENT-PENDING
ORGANIC CULTIVATION PROGRAM FOR ULTIMATE SUCCESS.**

MicrobeBio products outperform many of the other prominent brands in the industry through a distinct approach. Instead of concentrating solely on specific elements within technology, chemistry, or plant development stages, MicrobeBio has pioneered an advanced multi-purpose product platform. Our products are meticulously formulated to supply essential nutrients and microbes throughout the entire crop cycle. By closely emulating natural processes, MicrobeBio

products foster improved crop development and establish an innate resilience against plant diseases and pests. Working synergistically, our products stimulate natural processes, enhancing nutrient absorption and efficiency, rehabilitating soil conditions, and promoting robust growth and vitality. This precision ensures our products deliver precise nutrient and microbial quantities essential for each stage of plant growth, effectively eliminating any guesswork.

MicrobeBio presents a line of products enriched with essential "free-living" microorganisms and fungi, meticulously designed to foster the robust growth of a healthy root system. These microorganisms engage in a symbiotic relationship with the plant's roots, facilitating the availability of vital nutrients. Each of our products features a distinctive blend of microbial inoculants, enhancing the absorption of atmospheric nitrogen and solubilizing naturally occurring phosphorus bound to soil particles.

Our offerings promote sustainable soil health by encompassing fundamental elements like bacteria, fungi, organic matter, microbe-biological components, and organic enzymes that boost soil mineral content. The convergence of these natural components in the soil significantly enhances water retention, air quality, and plant biodiversity. Thriving soils, in turn, ensure the cultivation of exquisite and nutrient-rich plants.

Every MicrobeBio product is meticulously crafted with advanced microbial technology to foster exceptional plant and crop yields. These microorganisms actively break down organic matter in the soil, liberating previously inaccessible nutrients for plant uptake. Abundant in beneficial microorganisms and bacteria, our products bolster the plant's innate ability to ward off invasive pathogens and disruptors within the rhizosphere. Employing our microbial technology results

in heightened plant resilience against both physical and biological stressors.

MicrobeBio recognizes the transformative potential of microbial technology in addressing global challenges stemming from unsustainable agricultural practices. Harnessing the power of naturally occurring microorganisms and bacteria allows us to rejuvenate the soil, leading to substantial yield increases while curbing the detrimental environmental consequences of unsustainable methods.

Our approach revolves around an ecosystem-centered strategy that emphasizes the long-term prevention of environmental harm associated with many pesticides. Our product range includes biopesticides—naturally derived substances like microbes, bacteria, or plant extracts—engineered to target specific organisms. By parasitizing and eliminating pests in their early life stages, these biopesticides impede egg laying and minimize crop damage. Notably, biopesticides have a minimal environmental impact and are correlated with improved yield quality.

MicrobeBio products encompass all vital organic components necessary to transform nutrient-deficient soil into a robust and fertile foundation. Our offerings remain consistently 100% natural, devoid of chemicals and synthetic materials.

VISION STATEMENT

MicrobeBio's foremost commitment and primary objective as a company revolve around crafting products that synergize and establish equilibrium within every unique growth cycle. Over the last two decades, we have masterfully combined the finest elements from both Nature and Science to formulate products that are entirely organic and environmentally friendly. Through rigorous research, MicrobeBio has harnessed the core principles of Soil Ecology and infused them into all facets of agriculture, horticulture, viticulture, and various other cultivation practices.

Our products feature meticulously tailored biological compositions, empowering growers to enrich their soil ecology and provide their plants with an optimal environment for overall productivity. MicrobeBio ardently champions sustainable farming and has introduced exclusive products that embody this ethos. We firmly believe that the foundation of sustainable farming hinges on products that are economically viable—true sustainability necessitates profitability. MicrobeBio has developed ecologically sound products that are purposefully designed to conserve the resources that sustain us all.

Our dedication extends to crafting user-friendly solutions that also contribute positively to the social fabric. We value the well-being of farmers, their families, and the larger agricultural communities. Their quality of life is integral to our mission, and we are dedicated to creating products that reflect this sentiment.

OUR MISSION



Communities that are empowered often spark their own self-reliance. With this in mind, our aim is to foster thriving agricultural communities by assisting them in forming and progressing through a set of consistent, optimal practices in soil cultivation and preservation.

OUR MISSION



MicrobeBio's overarching objective is to introduce the technology within the nation for manufacturing purposes. This endeavor aims to lower logistics expenses, generate employment opportunities for local residents, and establish support teams to educate community farmers. In doing so, we seek to reshape Agriculture into a catalyst for global economic transformation—amplifying food supplies, enhancing nutrition, combating malnutrition, and progressing toward sustainability to uplift lives on a global scale.

OUR MISSION

FOSTERING GLOBAL EMPOWERMENT THROUGH SELF-SUFFICIENCY

- Constructs self-sustaining solutions from their very foundations, quite literally. In line with this, we provide assistance to communities whose sustenance relies on effective agronomic methods and the vitality of the soil.

LOCAL COMMUNITY

- Training on Microbial Technology
- Education regarding best agronomic practices
- Provisions of High-Tech Soil Remedies

ANTICIPATED MERITS

- Improved soil for sustained farming
- Scale-up advantages
- More work and commerce for the community
- Sphere of influence for surrounding cooperatives
- Community Empowerment



Envision MicrobeBio products in this manner – we're akin to health food for plants, determined to halt the prolonged consumption of horticultural junk food that has been imposed upon Mother Nature. It's as if MicrobeBio has distilled the finest essence of Mother Nature and encapsulated it into a potent formula. Staying true to the principles of all-natural products, we abstain from employing growth hormones or GMOs, steer clear of irradiation, and refrain from using any substances that could endanger humans, livestock, or the environment.

**WE HOPE THAT YOU WILL JOIN US IN CREATING A LIFESTYLE OF BOTH HEALTH
AND SUSTAINABILITY, A BILLION MICROBES AT A TIME.**



MicrobeBio[®]
NATURE PHENOMENON

MICROBEBIO MICROBIAL TECHNOLOGY

Beneficial. Microbial. Soil. Enhancements