



Working Principle for the proGanix Family of Products

White Paper
(backgrounder)

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RE: Working Principle of the proGanix product line

Dear Valued Potential proGanix Client,

We are pleased to introduce you to **Brillyant Resources'** agriculture product line, designed specifically for orchards and groves. For a complete listing of specific benefits and characteristics for each of the products discussed in this document, please ask your representative for a product fact sheet, which is also accessible on-line. This document will demonstrate:

- **proGanix** design objectives
- Why **proGanix** program is both soil fertilizer and amendment
- Benefits and expectations

We hope this family of products will become part of your ever healthier and more economic program.



Murcott orange variety, sprayed with **proGanix Premium**, Lake Placid, FL. Applications thus far: 3 foliar, 1 microjet, Mar 2014.

Working Principle Overview

The base of the **proGanix** product line is a wide assortment of macro- and micronutrients, coupled with a carefully selected family of microbial agents. Only the best macro- and micronutrients, such as nitrogen, potassium, magnesium, manganese, zinc, iron, copper, and many more, form the nutrient base. In this sense, **proGanix** is a fertilizer.

This base is then enriched with various levels of beneficial fungi, protista and bacteria, as well as an additional mineral, to make up the various **proGanix** products. You can use all or just one of them to get started. All products have a multi-year shelf life, and we can guarantee three years of storage and freshness, provided the product is kept at room temperature, and is not exposed to prolonged UV (direct sunlight).

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These products have been optimized, based on internal testing, and applied to various trees, grasses and plants, including mustard, orange, lemon, orange, cherry, hydrangea, tomato, scallion, oregano, kale and pepper, among others.

For the past year, we have been running multiple trials in several diverse regions of Florida and

California, to further demonstrate our product and improve the details of our recommended application schedule. A well-designed program must prove itself not just at the initial stages, but also during harvest. Then repeat it, again, during the next consecutive growing season, with an even lower total cost of management. We look forward to developing a partnership with you. We know our fieldwork is never done because every region is unique, and every variety within a particular family of crops, is unique, with its own unique nutrition requirements and vulnerabilities.

Florida, Our Proving Ground

The sun is powerful throughout the year. Southern Florida turfs and groves face nematodes year-round. Insects do not take vacations from reproducing, proliferating and damaging yields. Florida farm managers, therefore, scout on a weekly basis, and we often join them.

In this tough environment, we have proven that we can deliver measurable, positive root system results. **proGanix** root-growth stimulation converts roots that are 1.5 to 3 inches in length prior to our program, and within a span of three to six months, more than double their size to a length of 5 to 6 inches. Our protista and mycorrhizae create a natural living barricade, shielding



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delicate and tasty new roots from nematodes (such as citrus, sting, root-knot, and lance, among others), and phytopthera.

To see if this program is beneficial to you, we recommend you begin with 15 to 50 acres, and give your crop eight weeks. A healthy root system, a healthy canopy makes – so the adage goes. Based upon our experience, we believe that within three weeks you will see positive change on your land. And by eight weeks, you will be excited about the **proGanix** program. Currently, specialists are studying **proGanix** as a tool for launching resets, from the nursery and onto the groves. Ask your representative about this aspect of the **proGanix** program.

Systemic Acquired Resistance (SAR)

So how does it all work? What gives? What makes this program special?

In the 1990s and thereafter, research emerged – identifying a relationship between soil bacteria and plant life. It became apparent that bacteria could up the percentage of certain enzymes (limonene, limonoic acid, jasmonic acid, salicylic acid, etc.) that are useful to a plant's natural



defense against insect and infection. Naturally, an industrial opportunity was borne. Soon, companies emerged, fermenting organisms, and harvesting these substances from them, then adding them to various nutrition programs with the hope of reducing illness or infestation.

The **proGanix** program is similar to these Systemic Acquired Resistance (SAR) programs, attempting to combat current problems, such as CBS (citrus black spot), HLB (citrus greening) and canker, in states such as Arizona, California, Louisiana and Florida. The difference for the **proGanix** development team is this: They believe a truly powerful SAR program needs to incorporate high levels of microbial life, and the proper mix of beneficial bacteria. The logic is simple: Why drench a soil or touch a leaf with an acid, especially during blooming. Isn't it better to feed the plant and let the plant make its own, according to its own natural processes and regulatory systems? In this sense, **proGanix** is an amendment.

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The success of this effort has caught the interest of several university research labs. More information will be downloadable on our web site, as soon as we have permission from all participating parties to disclose it.



It is an exciting moment in the agricultural industry and we are excited to be a part of it. Currently, University of Delaware researchers, studying *UD1023*, a naturally occurring soil bacterium, are finding that bacteria can assist plants in blocking the uptake of arsenic. Just another small example of how the agricultural landscape will change based on cutting-edge microbiological science in the near future.

Working Together

We believe that with your help we can go beyond the turf and citrus industry, and develop our program for other fruit-bearing trees, such as apple, walnut, pecan, peach and mango.

We believe that our products will produce similar results on other tropical fruit-bearing trees. We also look forward, if necessary, to making adjustments to our program, to better fit the needs of other varieties, beyond the scope of citrus.

proGanix (1-0-2) & proGanix (2-0-4)

The **proGanix** product line is a probiotic and nutrition source for plants, which includes organic additives that maximize nutrition uptake at the foliar level. We also have identified several microbes that support the mycorrhizal bacteria and rhizosphere, evidenced by recent research, to accelerate tree growth and make saplings bear fruit sooner.

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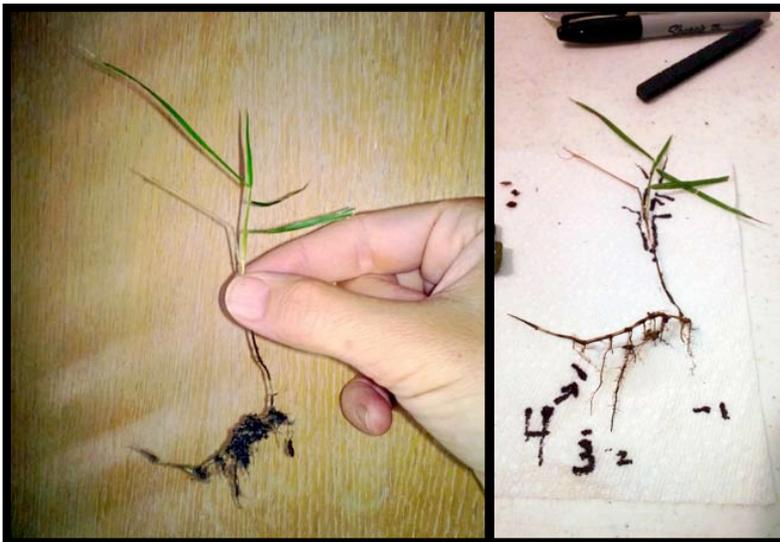
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Depending on the severity of greening and other bacterial infections, we recommend the appropriate mix of the **proGanix (1-0-2)** and **proGanix (2-0-4)** products, which our project management team will draft for you in the form of a program schedule and application calendar.

proGanix (1-0-2), with an NPK of 1-0-2, is ideal for unwanted fungus and various blight. It is suited for soil drenching or foliar application for two main reasons:

- First, with lower levels of nitrogen, it has more nematode-dispersing bacteria and protista for your microjet or fertigation systems.
- Second, it is pH neutral and gentle – ideal for foliar application on blooms – at a cost-efficient price point.

Get a heartier leaf and shoot sooner with **proGanix (2-0-4)** and its higher concentrations of nitrogen and potassium. This fertilizer, better suited for foliar application, but also for soil



drenching, with its higher potassium levels, carries more bacteria related to the nitrogen cycle. Use it to quickly deliver targeted solutions that fix systemic problems, such as poor nutrition uptake, or bacterial infection.

Both **proGanix (1-0-2)** & **proGanix (2-0-4)** dramatically increase root length and root density within a period of three to

six months. Read below to learn more.

proGanix Preventys

With an NPK value of 0-0-4, **proGanix Preventys** is designed specifically for foliar application. Via the foliar part of our program, shield your plants or trees with our microbes, and realize cost savings by reducing your pesticide bill.

For organic and conventional growers, where insects are a constant threat, this mineral and microbial insect repellent is a must.

Illustrating Root Growth

We created a simple five-hour lab experiment to demonstrate our root development components. We cleaned, and prepared four terminals from this grass (*pictured above*). Next, we soaked the roots in a glass beaker, containing 10% **proGanix (1-0-2)** solution for a total of five

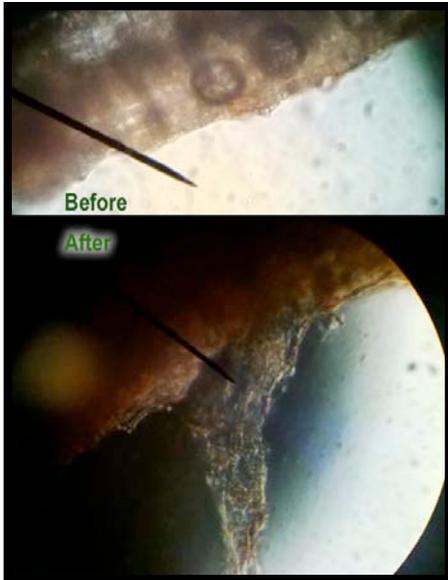
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hours. The before photos have been taken prior to the five-hour soak. The after photos were taken once the plant was removed from the root soak solution.



The images that follow compare three of the labeled terminals. (In the delicate process of positioning the roots under a microscope, terminal 2 was severed by a slide/coverslip, used in this experiment.)

Terminal 1 (*pictured left*) quickly produced biofilm, which is multiple generations of bacterial life, clustered together in a sinewy matrix of polysaccharides and proteins. The stalactite form of both living and non-living microorganisms functions as a nutrient-retaining net. It reduces the leaching of nutrients away from the root.

Some bacteria found in such clusters also manufacture nitrogen, which is collected from the air by a process known as nitrogen fixation.

Captured from terminal 3 (*pictured right*) is a root area that has had significant root hair growth. Prior to dipping, we could not observe any root hairs. This could partly be due to damage sustained on the roots in the process of preparing the grass for observation. Nevertheless, five hours later, note how the same terminal root has already recovered and formed several visible root hairs.

In terminal 4 (*pictured next page*), we can see the mycorrhizal network lengthen both horizontally and vertically. Mycorrhizae do not suck nutrients from the plant; their energy comes from the act of decomposing organic matter. In fact, complex life, such as animalia or flora, could not be possible without the presence of decomposing microorganisms, such as these.

Mycorrhizae are also important for soil fertilizers and amendments, such as **proGanix**, because a rich network can go far from a root system, and deliver to that root system nutrients that otherwise would not be obtainable by the plant. The most important such nutrient is phosphorus. By maximizing the benefit of this technology, the plants are able to locate all the natural phosphorus necessary for plant life, without damaging local waterways and watersheds. **proGanix** therefore augments the value of your other inputs and materials: it will help you better absorb other nutritional products that you use from other fertilizers and amendments.



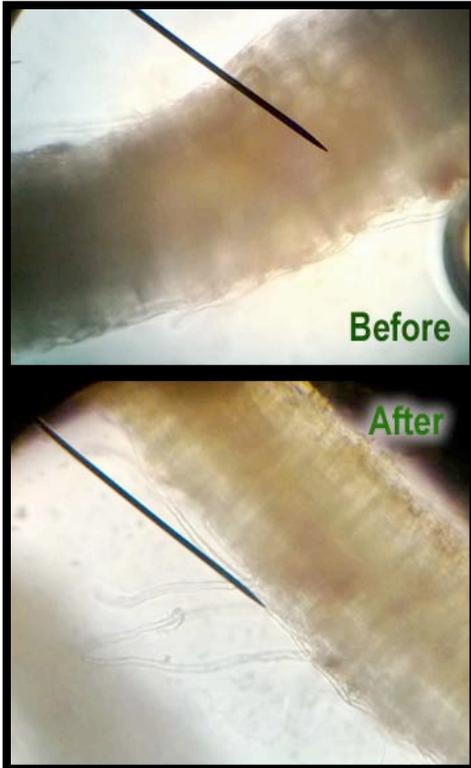
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We stressed our intentions below surface, because soil bacteria trigger plant enzymatic activity in the sap, leading to a rich and beautiful aboveground canopy. More canopy means more photosynthesis, more carbon and more energy in the plant, reducing the need for phosphates. But more importantly, a healthy symbiotic root system will help a plant's natural enzymes protect it against insect and infection.



Healthy Soil Means Cost-Efficiency

Continue using insecticides, such as Neonicotinoids or *Bacillus thuringiensis*, as part of your pest-control program.

With time, as you familiarize yourself with **proGanix**, and once you witness in your trials the value of maintaining your beneficial insects, such as lady bugs, bees, lady beetles, spiders and wasps, re-visit the details of your spray regimen.

Perhaps you, too, will discover the pleasant surprise that you can reduce your insecticide capital spend and sell a more healthy product to your consumers and buyers.

Certifications and Licensing

proGanix products are regularly lab-tested for quality assurance purposes, and registered with the State of Florida. If you are not sure whether **proGanix** is licensed in your state, please be sure to ask your

official representative. Also, you will be able to download our Florida license on-line.

All **proGanix** ingredients are OMRI-listed and OMRI-certified. Additionally, all products are either currently OMRI listed, or are in the process of getting certified. For a better understanding of USDA-certified organic programs, and the OMRI requirements for organic farming, please visit www.omri.org.

Sincerely,
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