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AGRICULTURE SUSTAINABILITY EDITION

BUILDING SUSTAINABLE SOILS WITH MULTI-STRAIN BIO FERTILIZERS

PHARMGRADE

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COVER STORY

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BUILDING SUSTAINABLE SOILS WITH MULTI-STRAIN BIO FERTILIZERS

Agri Business Review TOP 10 SUSTAINABLE FARMING COMPANIES - 2023

Driving sustainable change in agriculture is instrumental to supporting life and fueling economic growth. Regenerative agriculture, which involves the use of multi-strain bio-fertilizers, holds the answer to boosting soil fertility and rejuvenating croplands by replenishing beneficial soil microbiology. Creating the ideal environment for soil microorganisms to thrive, multi-strain biologicals have emerged as a promising method to enhance sustainable agricultural production.

Delivering on this promise is Pharmgrade.

Envisioning a better world for farmers, the biotech company differentiates itself with its ability to improve soil health by restoring biodiversity. Its breakthrough, sustainable, multi-strain inoculants are built on the foundation of nature and its delicate balance and processes. The proprietary blends combine naturally occurring microbes, organic acids, and metabolites to help farmers improve soil health, maximize crop yields, and enhance crop quality.

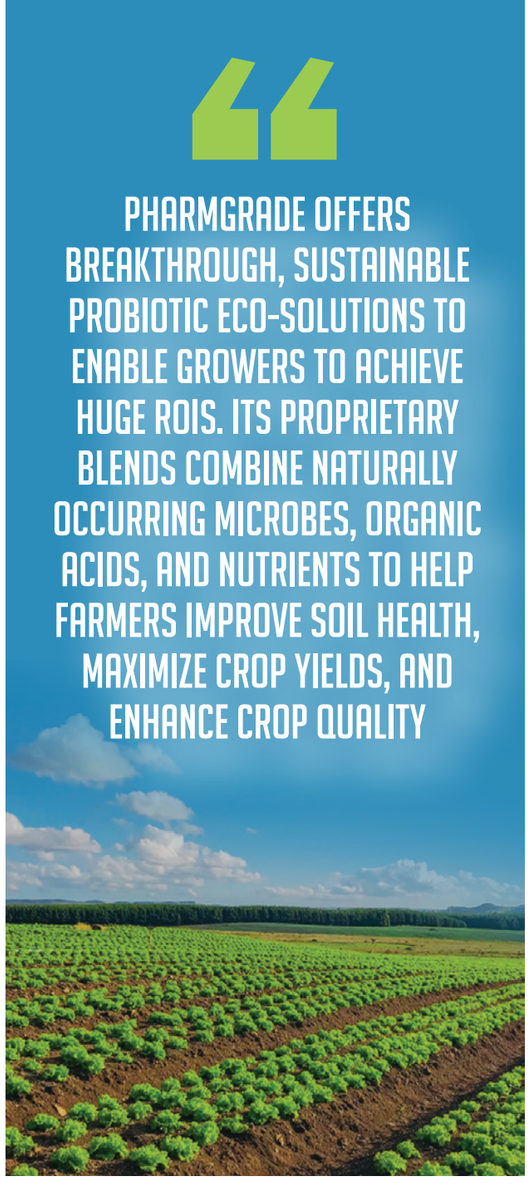
Tyler Tuttle
Chief Commercial Officer

Kelly Tuttle
Founder, CEO

Richard Tuttle
President - COO

> WE TAKE A HOLISTIC APPROACH AND SELL OUR PRODUCTS AS COMPLETE SOIL OR PLANT HEALTH SOLUTIONS

> PHARMGRADE OFFERS BREAKTHROUGH, SUSTAINABLE PROBIOTIC ECO-SOLUTIONS TO ENABLE GROWERS TO ACHIEVE HUGE ROIS. ITS PROPRIETARY BLENDS COMBINE NATURALLY OCCURRING MICROBES, ORGANIC ACIDS, AND NUTRIENTS TO HELP FARMERS IMPROVE SOIL HEALTH, MAXIMIZE CROP YIELDS, AND ENHANCE CROP QUALITY



Pharmgrade's broad spectrum biological soil amendments, including Pharmgrade Exponent, Nitros, and Guardian, accelerate the recharging of agricultural fields that have been overused. These amendments, consisting of multiple strains of bacterial and fungal consortia, can attack a multitude of plant diseases and soil problems, as opposed to single-strain inoculants that are labeled for one disease or challenge.

Ignited by a passion for innovation, the Pharmgrade team began its journey as a provider of organic manures and composts that significantly drove down farming costs for growers. Diversifying its offerings, it began developing compost teas. However, the teas at times failed to produce the expected results upon practical application as bugs in the feedstock compost were uncontrolled and varied greatly from batch to batch. The search for a more consistent product opened the door for Pharmgrade's principal offerings: pharmaceutical-grade, broad-spectrum, multi-strain biologicals. A series of products has the ability to tackle a range of pathogens and other soil-related problems consistently and reliably year in and year out.

"We have a guaranteed analysis of every strain of microorganism that goes into our products. We start with pharmaceutical-grade mother cultures and multiply those through our propriety processes, resulting in products that ensure quality produce all year round. Our clients can count on us for consistency," says Tyler Tuttle, Chief Commercial officer of Pharmgrade.

Delivering Value through Innovation

Pharmgrade Exponent, its flagship product, delivers three crucial types of beneficial organisms; hard-hitting aerobes, versatile facultative anaerobes, and an industry-best roster of Trichoderma. This mix of organic acids and stress-reducing energy sources, such as kelp, ensures a balanced approach to soil health. The hormone precursors produced through the metabolism of these feedstocks stimulate plant growth.

A sustainable nitrogen supplement for crops, Pharmgrade Nitros is a highly concentrated blend of nitrogen-fixing bacteria that optimizes the ability of plants and soil systems to draw nitrogen from the atmosphere and convert it into the most efficient form for absorption by plants. The bacteria facilitate this by either colonizing at the root or entering the stomata of the leaf. Every gallon of NITROS contains enough nitrogen-fixers to produce about ten units of nitrogen. It is 100 percent efficient and doesn't leach away from the roots or cause water contamination, contributing to sustainability.

Equally impressive is Pharmgrade Guardian, a probiotic solution that is a superior alternative to hard chemistry soil fumigants. Fumigants sterilize the soil before crops are planted, eliminating disease-causing bacteria along with the beneficial microbes in the soil. Building soils instead of stripping them, Guardian helps replenish the useful biodiversity and enables growers to drive down investments in chemical inputs.

In addition to their own labels of Exponent, Guardian, and Nitros, Pharmgrade has partnered with Valley Agronomics on two private-label versions of their products. The first is Valley Bios, one of the top-selling biological inoculants on the market today, and the other, Valley Dominate is the premier probiotic soil fumigation alternative for permanent crops like orchards as well as row crops.

The Roots of Pharmgrade's Excellence

Under the hood of the Pharmgrade's products is a consortia of three functional groups. Each specific product varies in the balance of these groups. The first one is the aerobic bacteria like Bacillus subtilis and Bacillus megaterium, which break down organic matter and help cycle nutrients back into the soil. They are also effective against certain plant diseases and stress.

The second functional group is the facultative anaerobes, which can use an alternative energy source to oxygen, like ammonium, to run their respiration chain in flooded soils. They are adept at fighting abiotic stress like heat, salt, and wind and are active on many fungal pathogen blooms that are common in flooded soils.

Trichoderma, a genus of beneficial fungi, forms the final functional group. A blend of different types of Trichoderma penetrates deep into the soil and creates a network of fungal hyphae in the root zone, which helps plants access nutrients. It also acts as a heavy lifter on the bio-control front, killing or out-competing disease-causing microorganisms.

"We take a holistic approach and sell our products as complete soil or plant health solutions. These three functional groups help us ensure the good microbes keep the bad ones in check," says Tuttle.

Pharmgrade's products are capable of increasing crop yields in both organic and conventional agricultural systems. They reduce the need for chemical fertilizers, making the process sustainable and producing the best results.

In one instance, Pharmgrade worked with a large, international potato processing company that was growing Clearwater Russet, a variety suitable for making french fries. The client was struggling to drive higher yields in soil unsuitable for this variety. Their expected yield was about 300 bags per acre.

Pharmgrade replaced the client's chemical fumigation practices with Dominate, which is the private-label version of their fumigant replacement product sold by Valley Ag, to rev up the soil biology. By applying 12 gallons of Dominate per acre during the fall, it increased the soil nutrient availability for the upcoming crop.

Later in the spring, it applied five gallons of Valley BIOS per acre. During the summers, seven gallons of BIOS per acre were applied, mixed with the client's regular nitrogen fertilizer. As a result, the client harvested around 510 sacks of potatoes per acre; an unprecedented yield for this particular ground. This substitution for chemical fumigant represented an 80% reduction of chemical inputs, replacing them with sustainable agricultural practices.

Taking Regenerative Agriculture, a Notch Higher

Pharmgrade's approach to improving soil reduces chemical residue and enables the team to offer high-quality, natural, cost-effective, and safe products whose benefits grow over time. It differentiates itself with a strong focus on broad-spectrum biodiversity versus specialized single-strain products. The proprietary blend technology is proven to restore the biodiversity in the soil by focusing on building the entire roster of beneficial microbes.

These robust capabilities have driven Pharmgrade's solutions to the top of the market. The company has grown exponentially over the years by selling millions of gallons of product to customers across Washington, Oregon, Idaho, Utah, Nevada, California, and Texas. Recently, they have moved into markets in Wyoming, Montana, Nebraska and the Dakotas and is excited to bring their technology to the growers there.

Steering ahead, it plans to leverage new distributors to broadly commercialize Slingshot, which is a new dry formulation currently offered in the Midwest. It is also planning to invest in building a plant in the Columbia River Basin to enhance the production of liquid products for crops like potatoes, corn, grain, cherries, apples, and grapes.

As a family-owned business, Pharmgrade continues to uphold the rich legacy of innovation and excellence to serve the evolving needs of customers and set a new benchmark in sustainable agriculture.