

Healthier Plants, Better Production

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We have been fearfully and wonderfully made! Though the human body is much healthier when it has more of what it needs, yet it is able to survive under less than optimal conditions.

Plants are the same way. They are capable of surviving in very poor conditions. However, the resulting nutritional deficiencies greatly compromise a plant's ability to defend itself against parasitic bacteria, parasitic and pathogenic fungi, and against invasion by insects.

When plants have optimal living conditions - when they have available extra resources to work with, they can go from just surviving to thriving.

Plant Health Level Zero

When a plant is barely surviving, its resources become very precious. It must use most of its resources to create plant structure; little can be spared to build greater root structure or to feed its microbial partners in the soil.

Plant Health Level One

Mycorrhizal fungi have a vested interest in keeping the plant alive. They depend on the plant to sequester sugars to feed them. They, in turn, provide nutrients to the plant.

Mycorrhizal fungi are very good at making tied-up phosphorus in the soil available, and there is a huge amount of tied up phosphorus in most soils. At level one, plants sequester sugars and receive phosphorus in return.

But when a chemical phosphorus fertilizer is applied, the plant no longer needs the help of mycorrhizal fungi to fetch phosphorus. Therefore, the plant doesn't feed the mycorrhizal fungi, and much needed mycorrhizal structures are not established.

At level one, carbon sequestration increases carbohydrate levels in the soil. These help a plant to protect itself against soil borne pathogens.

Mycorrhizal fungi also help to transport moisture back to the plant. This helps the plant to stay green during dry spells, so that more photosynthesis can take place.

Plant Health Level Two

As larger mycorrhizal fungi networks are built in the soil, they share plant sugars with beneficial bacteria and colonize them around the root zone. These bacteria help to denitrify nitrogen, making it available to the plant. They rapidly "weather" bedrock to extract minerals.

Mycorrhizal fungi are all too happy to work together with beneficial bacteria, because by working together they can do more to ensure the survival of the plant, and thus, their own survival.

GroPal Balance helps to create healthy soil conditions, and thereby helps to get mycorrhizal fungi networks established in the soil. Besides this, GPB provides trace minerals that play a key role in protein synthesis.

At health level 2, the plant has enough resources to build extra proteins on the surface of the leaf, giving the plant much greater protection against sucking and chewing insects.

Plant Health Level Three

Amino acids are the building blocks of proteins. At level three, mycorrhizal fungi create a mucous layer, a type of sheath, that surrounds fungal hyphae in the soil. This provides a means for bacteria to move through the soil.

At health level three, the microbes in the mycorrhizal sheath are able to digest amino acids, turning them into

proteins, saving the plant the need to create these proteins.

Without the help of the mycorrhizal sheath, the plant finds it hard to turn enough amino acids into proteins. This creates an excess of soluble amino acids in plant sap, which in turn draws sapping insects and pathogenic fungi.

At health level three, nitrogen combines with plant sugars to create fatty lipids. This builds a better defence in plant leaves against air borne diseases.

A primary sign that a plant has reached level three of health is that the lipids and proteins create a waxy surface on the leaves, making them glossy.

Numerous GroPal Balance customers have commented that their plants now have glossy leaves. GPB can help most plants to fairly quickly attain level 3 of health.

Plant Health Level Four

At level three of plant health, mycorrhizal fungi incorporate themselves into the root structure of the plant. When they die and disintegrate within the plant root, it releases complex proteins and lipids directly into plant protoplasm.

At health level four, the plant will incorporate these complex proteins and lipids into the leaves of the plant, and the plant thereby gains an ability to defend itself against beetles.

One of our customers noted that throughout the whole season he only saw one sapping insect in his garden. Combining GroPal Balance with good soil management practices can make a huge difference in plant health.

Healthier, nutrient dense plants yield better, plus they help to increase beef and milk production. Imagine what GPB could do for you!



Learn more at: www.AG-USA.net, or call or write AG-USA and request a free information packet. 1-888-588-3139. Organic - WSDA.

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