ALLIANCE Presents

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In this newsletter, I want to comment about one of the microbes present in Alliance Biologics. *Bacillus subtilis* is a ubiquitous soil microbe, which means it is present in almost all soil types. Usually, the levels of this microbe in the soil is around 1×10^5 spores per gram. *B. subtilis* present in Alliance Biologics is at a concentration of 3×10^8 spores/mL. If Alliance Biologics is diluted as recommended, the final amount of *B. subtilis* entering the soil/substrate is approximately 3×10^5 spores/mL. This concentration is ideal for *B. subtilis* to colonize the roots and to manifest its benefits. Less than this concentration (in the bottle) is like pouring water (expensive water that is) into your crop because the microbe won't be able to compete with the endogenous microbes present in your soil/substrate or even in your hydroponic system. Higher concentrations are also bad because it can disrupt the natural root microbial communities; throwing the system out of balance.

Once in the soil/substrate, the germinated spores of *B. subtilis* are attracted to the roots and colonize their surfaces. On the root surface, the microbe feeds on the root exudates and organic matter close to the root. In exchange, this microbe delivers growth substances that help the roots grow and become more efficient in uptaking nutrients. Also, *B. subtilis* can activate the natural defense capacity of the plant in such a way that the plant can better withstand pathogens or insects, both below- and above ground. Finally, *B. subtilis* is antagonistic against root rot microbes; thus keeping a healthy root system.

Fun fact - some *B. subtilis* strains are found in fermented foods and are also beneficial to human health. Some new research being done at Colorado State University shows that people consuming *B. subtilis* as a dietary supplement had better heart health than those taking a placebo! Now, we **don't recommend** drinking your Alliance Biologics (the *B. subtilis* strains they used were different than ours), but it's nice to know that our microbes won't harm humans either.

Stay healthy & keep your plants healthy!

Enzymes?

We Don't Need No Stinkin' Enzymes!

~ Written By: **By Rasta Ryan**

Enzymes are an important part of any regimen, right? We all know that breaking down expired organic root matter is important, right? The breakdown of this organic material increases your plants overall vitality. Once "broken-down," your non-viable root material is now able to release any "sealed" nutrients back into the rhizosphere; where eventually, they will be able to provide needed macro and micronutrients to your plant. Here is the thing though…when using Alliance Biologics, a Master Grower no longer needs to use an enzyme! Why you ask? Well, this feature can be attributed, mainly, to the bacteria *Bacillus pumilus*, which naturally produces enzymes to breakdown organic matter. In addition, independent studies have shown that *B. pumilus*' antioxidant enzymatic activity can also relieve plants of certain micronutrient toxicities. *B. pumilus* is highly resistant to harsh conditions such as drought, or high salinity, making it more stable than most manufactured "enzymes" on the market today. In addition, *B. pumilus* constantly produces enzymes like a small factory. Now, subtract the cost of the "enzyme" bottle that is normally a staple in your feed regimen, this equals money back in your pocket!