



AscendTM PA

VA-Mycorrhizal Soil and Root Inoculant, for use on Production Agricultural Crops

“For growers with deficient soil ecologies, BioScientific’s *Ascend PA* is a liquid culture of VA mycorrhizal fungi that promotes growth over fertilizers alone. Unlike fertilizers alone the use of *Ascend PA* establishes the most elemental component of soil/plant fertility, while providing for a foundation of disease resistance.”

BACKGROUND

Biotechnology can be defined as the controlled use of living organisms or their components for the benefit of mankind. One aspect of biotechnology involves the special relationships formed between certain fungi and plants, called mycorrhizae, which have been shown to dramatically enhance the establishment, growth, development and survival of plants. The term mycorrhiza; means “fungus root” and can be defined as a beneficial symbiotic association between plant roots and specific soil fungi. In the mycorrhizal relationship, the fungus penetrates roots to form a new organ called the mycorrhizae.

The most agronomically important mycorrhizal fungi found in North America are those in the endogonacea family, also referred to as VA Mycorrhizae (VAM). As a “biological fertilizer,” *Ascend PA* contains viable spores and infective propagules from the VAM: *Glomus intraradices*. Although, there is host specificity between different species, the fungi in the inoculant *Ascend PA*, will colonize plant roots in the absence of the preferred symbiont. This is particularly valuable in a sterile soil media, and/or where a earlier or rapid colonization benefit is desired.

FREQUENTLY ASKED QUESTIONS:

How does *Ascend PA* help plants?

Once colonized, the ecto-cellular fungal hyphae extend the surface area of the host root system allowing for the increased uptake of the critical nutrients: Phosphorus, Nitrogen, Zinc, Copper, etc., and Water. While increasing tolerance to drought, salts and pesticides. Also this “fungal net” creates a physical and biochemical barrier to root pathogens.

Ascend PA benefits plants by increasing:

- ▣ Nutrient and water uptake.
- ▣ Root health and disease resistance.
- ▣ Tolerance to environmental stresses.

Which soils most need *Ascend PA*?

Sterile soil ecologies, whether induced by cultural practices (e.g. fumigation, fallowing) or by nature, lack the benefits of mycorrhizae. Also, soils with “immobilized phosphorus” can benefit. Mycorrhizae are of most benefit in poor soils.

Aren’t mycorrhizae already in the soil?

All natural soils contain some level of mycorrhizae, but they are easily destroyed. Many practices can degrade mycorrhizae, such as: Long Fallowing, frequent disking, “cut and fill” land leveling, pesticides, and acid or ammonia fertilizers. Once lacking re-introduction becomes prudent.

How does one know they have a deficient soil ecology?

Sub-optimum productivity, slow, uneven growth or Phosphate/Zinc deficiencies are the most common, however in some cases the crop will stop growth after the cotyledon stage, which is common to fumigated and cool/wet soils.

How can mycorrhizae be introduced into the soil?

Cultural systems that use minimum tillage, and “pro-biotic” inputs can encourage the development of natural mycorrhizae. However, accurately timed/placed applications of *Ascend PA* will ensure that the plant has the greatest opportunity for optimum development.

What crops need *Ascend PA*?

About 92% of all plant families, but dependent crops include: Asparagus, Beets, Cereal Crops, Chilies, Citrus, Carrots,

Cotton, Corn, Deciduous fruit and nuts, Garlic, Grapes, Legumes, Lettuce, Melons, Onions, Peppers, Potato, Sorghum, Strawberry, Sudan Grass, Squash, Turf grass, Tomato, etc.,

What crops will not benefit from *Ascend PA*?

Although a short list, the following crops do not respond to VAM: The cole crops Broccoli, Cabbage and Cauliflower, and some chenopods such as Spinach and Sugar Beets.

Does *Ascend PA* require special handling?

The viable microorganisms in *Ascend PA* are living and as such require special treatment. As with all living organisms there is a limited life span during which the product must be used.

RATES AND TIMINGS:

RATES:

Label rates are between 5 - 15 gallons per acre per growing season. High placement accuracy will allow lower rates while low placement accuracy will necessitate higher rates. (e.g. 5 g.p.a. in a planter band, or 15 g.p.a. in a pre irrigation)

TIMINGS:

As *Ascend PA* is only of benefit to plant roots; placement accuracy will increase the effectiveness of any application. Place *Ascend PA* in close proximity to newly developing roots.

**Growth enhancements by
Ascend PA fungi:**

Plant	% increase in growth
Alfalfa	301
Apples	90
Avocado	254
Barley	290
Bell pepper	188
Cotton	300
Cowpea	50
Navelorange	2600
Onion	600
Sour orange	1089
Soybean	167
Strawberry	1000
Tomato	144

“The rule rather than the exception...”

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