



Ascend™ PA is a kit comprised of two parts:

Ascend™ PA Part A, which is a liquid containing a consortia of natural beneficial microorganisms (see Ascend™ PA Part A label)

And

Ascend™ PA Part B, which is a dry powder inoculum containing propagules of VAM (see Ascend™ Part B label)

Ascend™ PA Part A and Part B are intended to be mixed together immediately before use.

Expiration Date:

This product will expire on _____, or one year from the date of shipment.

DIRECTIONS FOR USE

General Information: Ascend™ PA is a Vesicular-Arbuscular Mycorrhizal (VAM) soil and root inoculant designed for use under VAM deficient soil conditions such as those soils that have been sterilized by prolonged flooded, or fallowing, or those soils that have been solarized, fumigated, or pasteurized. Likewise this product is of benefit to artificial media, light textured and low organic matter soils. Ascend™ PA can also be used following applications of soil pesticides that reduce naturally occurring VAM populations. Ascend™ PA is labeled for use on all commercially grown Production Agricultural (PA) commodities; excluding ecto, ecto-endo, and ericoidal mycorrhiza plant families. Ascend™ PA can be applied prior to planting, at planting or during the growing season. Do not apply Ascend™ PA prior to soil sterilization. To achieve best results, this product should be used in an integrated management program and early in the plant's development.

Mixing Instructions: Ascend™ is not ready for use until Part A (liquid) and Part B (Dry) are mixed. Your packet of Part B is included with this container and has further mixing instructions. Mixing should take place just prior to application, and at the quantity to be used. Combine ingredients at the concentrations specified by the table below. Shake, stir or agitate for five minutes before use.

Mixing Rates:

<u>Part A Quantity</u>	<u>Grams of Part B to add to Part A</u>
Five gallon container	42
55 gallon drum	462
275 gallons bulk	2,310
330 gallons bulk	2,772
6,000 gallons bulk	50,400

Conversion Table:

<u>To Convert</u>	<u>Into</u>	<u>Divide By</u>
Grams	Pounds	454
	Kilograms	1,000

Compatibilities: Ascend™ PA is compatible with a wide range of fertilizers. To assure the compatibility of Ascend™ PA with new combinations of fertilizer and other soil conditioners, pour an amount of the contents into a small container in the correct proportions. After a thorough mixing, let stand for 5 minutes. If the combination

remains mixed, or can be readily remixed, the mixture is compatible. Tank mixing with fertilizers should only take place at the time of application. Do not store the combination. The following is a short list of incompatibilities: Maintain a pH range of 6-8 by avoiding strongly acidic/basic conditions and biocides such as free ammonia, chlorine and some pesticides. Do not mix with Aqueous Ammonia, Sulfuric Acid, Urea Sulfuric Acid, Phosphoric Acid, Soil Fumigants or Soil Fungicides. When using Ascend™ PA after pesticide and fumigant treatments make applications after the toxicant has dissipated (refer to pesticide label for guidelines). There are, at the time of this printing, no other known incompatibilities.

Handling: Follow appropriate general safety procedures. In case of accidental exposure, flush with plenty of water.

SHAKE, STIR OR AGITATE BEFORE USE. When handled in bulk quantities, storage in a cone bottomed tank is recommended to facilitate agitation. When stored in a cone bottomed tank, agitate 10 minutes prior to use. When stored in a flat-bottomed tank, agitate one hour before use. Avoid air blast agitation as foaming may result. If foaming does occur through normal agitation, use an approved food grade defoamer. Agitation is recommended once every month. Storage past the expiration date is not recommended.

APPLYING ASCEND™ PA

Ascend™ PA is a Vesicular-Arbuscular Mycorrhizal soil and root inoculant, apply Ascend™ PA to deficient soils in close proximity to the seed and newly developed root system. Ascend™ PA can be applied via seedline shank injection, drip chemigation, subsoil drip line chemigation, drenching, mixing in the transplant water, or using a soil covering method.

General application guidelines: Use 15-30 gallons per broadcast acre equivalent early in the growing season, or as needed. See the placement specific guidelines below (Table 1) for further placement efficiency guidelines. As this product is only of benefit to plant roots: *Applications of high placement accuracy will allow lower rates, while low placement accuracy will necessitate a higher rate (see General Rate For Application).*

Soil Moisture: Application should be made under “good seedbed conditions”. This includes thorough cultivation of the soil and pre-irrigation to 50 to 75% soil moisture conditions. Soil moisture can be estimated by squeezing a handful of soil into a ball. If the ball holds its shape and then easily breaks up, moisture is generally within this range.

Environmental factors: Ascend™ PA is sensitive to ultra violet light. Ascend™ PA should be applied using a subterranean technique or in sufficient water to move the product off the soil surface and into the plant root zone. To get the optimum results from Ascend™ PA, apply when the soil is between 50 and 100 degrees Fahrenheit.

Note: The use of Ascend™ PA may affect crop nutrient response through increased root surface area. Utilize soil and tissue testing to determine nutrient needs. Caution should be exercised when applying Ascend™ PA with high salt fertilizers to prevent “fertilizer salt” induced phytotoxicity. Where fertilizer salts are the combination of Nitrogen, Potassium and metal salts, do not exceed 5 lb. of total salt on the seed and/or 10 lb. of salt per inch away from the seed. Where warranted, adjust fertilizer rated and replace with a maximum of a 1:1 ration of up to 30 gallons of Ascend™ PA/acre/application.

General Rates for Application:

Broadcast rates for Ascend™ PA can be reduced in field grown crops in the following ways: Shank injection, banded, in furrow sprays, soil covering methods, layby, drench, in the transplant water, or by drip chemigation. Means to calculate rates will be elaborated on below. However, the following table gives one an idea of what rates are usually applied per total acre equivalent:

<u>Treatment Method</u>	<u>Field/Row Crops Gallons per acre</u>	<u>Tree/Vine Crops Gallons per acre</u>
Broadcast	30	30
Sidedress	8-10	10-15

Micro-irrigation	5-8	5-8
Transplant	3-5	3-8
On seed	3-5	-
Under seed	3-8	-

Banding: For banded (shank injection, band drench or seedline dribble) applications, the treatment area actually is the area covered by the band, not the total cropland planted. Some application recommendations are based on treating in-the-row and these rates are generally specified as liquid amounts of product per certain row length. Others express rates as amount per treated acre, which means the total area treated with the product. If rates are expressed as amount per treated acre and banded applications are used, the amount of product used will be proportionally less. The following formula can be used to calculate the amount of Ascend™ PA needed per acre of crop when banded applications are made:

Band width in inches
 ----- X Broadcast rate/Acre = Total amount needed per acre.
 Row spacing in inches

Drenching Method: Apply Ascend™ PA in sufficient water or fertilizer to move Ascend™ PA off the soil surface and into the root zone, but not beyond. See band application calculations for instructions on calculating the amount of product to apply.

Soil Coverage Method: At planting time apply 15 gallons of Ascend™ PA per acre. Please reference the banding application notes listed above concerning band application calculations. Apply the specified dosage to the soil around the seed and to the covering soil as it fills in the furrow. The product should be below the seed as much as possible, with the exception of potatoes where it should generally be above the seed piece.

MICRO SPRINKLER OR DRIP IRRIGATION SYSTEMS

Chemigation Application Guidelines: Apply 15-30 gallons of Ascend™ PA per acre depending on the crop, depth of application, and water holding capacity of the soil. For proper application:

1. Determine the area (length x width) to be treated, divide by the number of acres and multiply by the rate per the number of acres to be treated. This number is the total gallons of Ascend™ PA needed to treat the field or irrigation block.
2. Ascend™ PA can be safely metered into drip systems. Determine the amount of water needed to saturate the root zone (0.5" to 1.25" of water), divide this by the time needed to apply the necessary water. This number is the time required to make the application of Ascend™ PA.
3. Divide the number of gallons from Step 1 by the treatments time in Step 2. This number is the application rate of Ascend™ PA per unit of time. Apply Ascend™ PA at this treatment rate until desired application rate has been reached.

Drip Chemigation Calibration Instructions: During pre-irrigation check drip tape for uniform distribution (See calibration information below) and repair if necessary. Once the system is calibrated add the amount of Ascend™ PA required for treatments as calculated above, or generally 3-8 gallons per total acre, to the middle third of the irrigation set. Follow these guidelines:

Step-by-Step Instructions

- Each run of the irrigation system must be calibrated separately to determine the time it takes water to move through the system and to make sure all emitters are putting out the same amount of water.
- Before starting to calibrate, operate the system until all emitters are putting out equal flow rates or until the system is operating at full pressure.
- Only pressure injection or venture equipment is recommended.
- Determine the area to be treated in each irrigation run.
- For calibration, substitute a concentrated detergent or a soluble fertilizer in the injection tank. The detergent will bubble as it leaves the emitters. The time period over which bubbles occur

should be checked for both the closest and farthest emitters. If a soluble fertilizer is used, measure the time intervals with a salt bridge.

- If the period of detection of the indicator solution between the emitters is within two minutes of each other, comparable coverage will be obtained. If they are not, make adjustments to dilution ratio, using more or less water per part Ascend™ PA or adjust the injector to a slower or faster rate.
- Once the system is calibrated, dilute the needed amount of Ascend™ PA with water using a minimum of 5 parts water/fertilizer solution to 1 part Ascend™ PA.
- Do not begin to inject Ascend™ PA into the system until all emitters are producing equal flow rates, or until the system is at full pressure.
- Inject Ascend™ PA into the system in the middle of the irrigation set of a ½ - 1 inch of irrigation water. With at least ¼" of additional water to move product off of the surface.

CROPS THAT CAN BE TREATED WITH Ascend™ PA

Below is a partial list of the agricultural plants that can be treated with Ascend™ PA. For a listing of nursery, turf and ornamental plants, refer to the Ascend™ NTC label:

Alfalfa	Cantaloupe	Cucumber	Leek	Pecan	Strawberry
Almonds	Carrot	Currant	Mango	Pepper, All	Stone fruit, all
Apples	Cassava	Date Palm	Maple, All	Pigeon Peas	Sudan Grass
Apricot	Cedar	Eggplant	Melon, All	Pineapple	Sugar Cane
Artichoke	Celery	Fescue	Millet	Pistachio	Sugar Maple
Avocado	Cereal Grains, All	Fig	Oil Palm	Poplar	Sweet Potato
Asparagus	Chick pea	Grapes, All	Olive	Plum	Sunflower
Banana	Cherry	Garlic	Okra	Potato	Tea
Barley	Chili, All	Grapefruit	Onions	Prunes	Tobacco
Basil	Citrus, All	Grass family	Orange	Raspberry	Tomato
Bayberry	Clover	Honey dew	Passion Fruit	Redwood	Walnut
Beans, All	Coconut Palm	Jojoba	Papaya	Rice	Watermelon
Blackberry	Coffee	Kiwi	Peach	Russian Olive	Wheat
Bulbs, All	Corn	Lemon	Peanut	Soybeans	
Cactus	Cowpeas	Lentil	Peas, All	Squash, All	

Do not use Ascend™ PA on these plant families:

Some plant families do not become colonized successfully by the endomycorrhizal fungus even in the most favorable growing conditions. The following lists are plant families and examples for each:

Betulaceae (Birch)
 Caryophyllaceae (Carnation)
 Cruciferae (Broccoli, Cauliflower, Turnip and Mustard)
 Ericaceae (Blueberry, Cranberry, Heath, Rhododendron and Azalea)
 Juneaceae (Rush)
 Orchidaceae (Cattleya, Orchid and Phalaenopsis)
 Proteaceae (Protea)

Brassica (Cabbage)
 Chenopodiaceae (Beet and Spinach)
 Cyperaccae (Sedge)
 Fagaceae (Beech, Oak)
 Myrtaceae (Eucalyptus)
 Pinaceae (Pine, Fir and Spruce)
 Salicaceae (Willow)

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Net Contents _____ gallons _____ liters

Lot No. _____

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Ascend is the trademark of BioScientific, Inc.

Seller warrants that this product conforms to its chemical description and is reasonably fit for the purpose referred to in the directions for use when used in accordance with the directions under normal conditions. Buyer assumes the risk of any use contrary to such directions. Seller makes no other warranty of representation of any kind, expressed or implied, concerning the product, including NO IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS OF THE GOODS FOR ANY OTHER PARTICULAR PURPOSE. No such warranties shall be implied by law and no agent of the seller is authorized to alter this warranty in any way, except in writing with a specific reference to this warranty. The exclusive remedy against seller shall be a claim for damages not to exceed the purchase price of the product, without regard to whether such a claim is based upon breach of warranty or tort.