FOR ORGANIC PRODUCTION

For protection of crops from attack by certain fungal diseases (e.g., *Armillaria* spp., *Fusarium* spp., *Phytophthora* spp., *Pythium* spp., *Rhizoctonia* spp., *Rosellinia* spp., *Sclerotinia* spp., *Sclerotium rolfsii*, *Thielaviopsis basicola*, *Verticillium* spp., *and grape vine pruning disease caused by Phaeomoniella chlamydospora).*

ACTIVE INGREDIENTS:

Trichoderma asperellum (ICC 012) *	2.0%
Trichoderma gamsii (ICC 080) *	2.0%
OTHER INGREDIENTS	96.0%
TOTAL	100.0%

* Contains a minimum of 5 x 10^6 colony forming units (CFU) of each *Trichoderma* strain (i.e., *Trichoderma asperellum* strain ICC 012 and *Trichoderma gamsii* strain ICC 080)

KEEP OUT OF REACH OF CHILDREN

CAUTION / PRECAUCION

See inside booklet for additional Precautions and Direction for Use

FIRST AID	
IF ON SKIN OR CLOTHING	• Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15-20 minutes. • Call a poison control center or doctor for further treatment advice.
IF SWALLOWED:	• Call poison control center or doctor immediately for treatment advice. • Have person sip a glass of water if able to swallow. • Do not induce vomiting unless told to do so by the poison control center or doctor. • Do not give anything by mouth to an unconscious person.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. Contact 1-888-478-0798 for emergency medical treatment information.	

EPA Registration Number: 10163-399 Made in Italy
EPA Est. No.:

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION

Harmful if absorbed through skin or swallowed. Avoid contact with skin, eyes, or clothing. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before reuse. Wear waterproof gloves.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear the following:

- Long-sleeved shirt and long pants
- Shoes plus socks
- Waterproof gloves

Mixers/loaders and applicators must wear a dust/mist filtering respirator meeting the NIOSH standards of at least N-95, R-95, or P-95. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Do not reuse them.

Net Contents:

Produced For:
Gowan Company, LLC
PO BOX 5569
Yuma, AZ 85366-5569

USER SAFETY RECOMMENDATIONS

Users should:

- Wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.
- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENGINEERING CONTROLS

When handlers use closed systems or enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [(40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS. IMPORTANT: When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment break-down.

ENVIRONMENTAL HAZARDS

Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate.

This product may pose a risk to beneficial coleopteran (beetle) species. Do not apply this product in the following counties where endangered beetles have been found:

Texas - Red River, Lamar

Nebraska - Cherry, Brown, Keya Paha, Rock, Holt, Boyd, Thomas, Blaine, Loup, Garfield, Wheeler, Boone, Antelope, Lincoln, Dawson, Lancaster

Kansas - Elk, Wilson, Montgomery, Chatauqua

Arkansas - Logan, Sebastian, Franklin, Scott, Little River

Rhode Island - Washington (on Block Island)

Oklahoma - Osage, Craig, Rogers, Tulsa, Wagoner, Cherokee, Muskogee, Sequoyah, McIntosh, Haskell, Latimer, Le Flore, Pittsburg, Atoka, Pushmataha, McCurtain, Choctaw, Bryan, Johnston, Coal, Hughes, Okfuskee, Creek, Okmulgee, Mayes, Nowata, Ottawa, Washington, Delaware, Adair

South Dakota - Tripp, Gregory, and Todd

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Read the entire label. Use strictly in accordance with Precautionary Statements, Directions for Use, and applicable State and Federal regulations.

Do not apply this product in a way that will contact workers or other people, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR part 170. This standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box apply only to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted-entry interval (REI) of 4 hours unless wearing the appropriate personal protective equipment.

EXCEPTION: If the product is soil incorporated, the Worker Protection Standard, under certain circumstances, allows workers to enter the treated area if there will be no contact with anything that has been treated.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water), is:

- Coveralls
- Waterproof gloves
- Shoes plus socks

NON-AGRICULTURAL USE REQUIREMENTS

The requirements in this box only apply to uses of this product that are NOT within the scope of the Worker Protection Standard for agricultural pesticides (40 CFR part 170). The Worker Protection Standard applies when this product is used to produce agricultural plants on farms, forests, nurseries, or greenhouses.

Keep unprotected persons out of treated areas until sprays have dried or dusts have settled.

PRODUCT INFORMATION

Bio-Tam 2.0 is a biofungicide containing naturally occurring and selected strains of antagonistic fungi, *Trichoderma asperellum* strain ICC 012 *and Trichoderma gamsii* strain ICC 080.

Bio-Tam 2.0 is particularly useful for the prevention of attacks to the root system and collar region of susceptible crops by the following phytopathogenic fungi: *Armillaria* spp., *Fusarium* spp., *Phytophthora* spp., *Pythium* spp., *Rhizoctonia* spp., *Rosellinia* spp., *Sclerotinia* spp., *Sclerotium rolfsii, Thielaviopsis basicola*, and *Verticillium* spp. After application, *Trichoderma* colonize the soil and roots of the host plant and compete with plant-pathogenic fungi for space and nutrients. Moreover, the antagonists also attack the cell walls of pathogens with enzymes. Therefore, it is essential to apply **Bio-Tam 2.0** before colonization of fungal pathogens occurs.

Bio-Tam 2.0 should be applied up to 7 days before planting to initiate soil colonization before the crop is planted and reapplied at planting.
For maximum effectiveness, apply to 2 or more applications of **Bio-Tam 2.0**.
Bio-Tam 2.0 may be applied throughout the crop production cycle in order to maintain a high colonization of the root zone.
Bio-Tam 2.0 may be applied through fertigation systems in combination with the most common fertilizers.
Bio-Tam 2.0 may be used on the crops indicated on this label.
To prepare a suspension, combine 1 pound of **Bio-Tam 2.0** for every 1.25 gallons of water, and mix from time to time in order to promote the germination of conidia and obtain faster soil colonization. Subsequently, dilute the suspension in the amount of water that is stated in the ***Labeled Crops and Use Rates*** table.
Bio-Tam 2.0 is a useful tool in managing chemical fungicide resistance.

PRECAUTIONS AND RESTRICTIONS

- Do not apply by aircraft.
- Apply **Bio-Tam 2.0** when the soil temperature is at least 50°F (10°C).
- Apply **Bio-Tam 2.0** to moist soil or growth media, but not to saturated or waterlogged soil. Soil or growth media must remain moist after application of **Bio-Tam 2.0** to provide adequate control of soilborne fungal diseases listed on this label.
- **Bio-Tam 2.0** may be applied to sterilized or fumigated soil, but must be applied after the sterilizing agent or fumigant has dissipated.
- **Bio-Tam 2.0** has no curative effect and therefore is not effective against plants infected with disease at the time of application.
- In case of applications on or to dry soils, pre-irrigate until soil is moist. Then irrigate again immediately after application.
- **Bio-Tam 2.0** product life is approximately 15 months when stored as directed under the ***Storage and Disposal*** section of this label.
- **Bio-Tam 2.0** is not compatible with the following fungicides: imazalil, dichloran, mancozeb, propiconazole, tebuconazole, thiram, and triflumizole. Do not tank mix with, or apply **Bio-Tam 2.0** within 3 days before or after use of these products.

SOILBORNE/SEEDLING DISEASE CONTROL

- **Bio-Tam 2.0** can provide control of many soilborne diseases if applied early in the growing season or growing cycle prior to infection by disease. Specific application methods covered in this label for soilborne diseases include cutting and bare root, broadcast, in-furrow, banded, greenhouse and nursery drench, and applications made via chemigation systems applied over the row or directed towards the desirable plants crown and rooting area, either before planting, at planting, or shortly after planting and promptly watered in. Use of different application types depends on the cultural practices in the region or the specific target disease to be controlled. In some locations, one type of application may provide better disease control than the other, depending on the timing of the disease cycle. For example, seedling diseases are generally controlled by in-furrow applications, while banded applications are generally more effective against soilborne diseases that develop later in the season. Consult your local expert to get some guidance regarding application type.

DILUTION INFORMATION

Bio-Tam 2.0 may be prepared in advance to initiate conidial germination 24-36 hours prior to treatment. To prepare a suspension, combine 1 pound of Bioten WP for every 1.25 gallons of water, and mix from time to time in order to promote the germination of conidia and obtain faster soil colonization. Subsequently, dilute the suspension in the amount of water that is stated in the Labeled Crops and Use Rates table.

BIO-TAM 2.0 TANK MIXTURES

Bio-Tam 2.0 is not compatible with the following fungicides: imazalil, dichloran, mancozeb, propiconazole, tebuconazole, thiram, and triflumizole. Do not tank mix with, or apply **Bio-Tam 2.0** within 3 days before or after use of these products. Tank mixture compatibility is relative to both physical formulation compatibility and biological-chemical compatibility.

Tank Mixture Compatibility Testing

Before tank mixing **Bio-Tam 2.0** with other pesticides or materials, it is recommended that a compatibility or jar test be performed. In order to perform the compatibility test, the relative proportions of the materials being considered for tank mixture should be added to a clear quart jar. After addition to the jar, invert or shake the jar numerous times to ensure complete mixing then observe the jar for at least one-half hour. If precipitates (sludges, layers, flakes, balls, etc.) form, the tank mixture combination is not compatible and should not be used.

Order of Mixing

1. Fill the tank at least one-half full of water and begin agitation.
2. Add materials in the following order: **Bio-Tam 2.0**, dry flowables (DF), wettable powders (WP), aqueous suspensions (AS), flowables (F), and liquids (L).
3. Allow each material to completely disperse before adding the next material.
4. While continuing agitation, fill the tank to three-fourths full.
5. Add any solution (S) formulations and surfactants.
6. Bring the tank to final volume.
7. Maintain agitation during the filling process and until the application is complete. If agitation and application are stopped, suspended materials may settle out to the bottom of the tank. It is very important to re-suspend all materials in the tank before applications are resumed. Sparger-type agitators are useful for these circumstances. Do not allow tank mixtures to remain in the spray tank overnight.

Refer to the companion pesticide label(s) for all applicable use directions, restrictions, and precautions. Observe the most restrictive of the labelling limitations and precautions of all products used in mixtures.

SPRAYER TANK CLEANOUT

DO NOT USE CHLORINE BLEACH WITH AMMONIA

To avoid injury to desirable crops, clean all mixing and spray equipment before and immediately following applications of **Bio-Tam 2.0** as follows:

1. Drain remaining spray solution from spray tank. Thoroughly rinse spray tank, boom, and hoses with clean water. Remove the nozzles, screens and any components contacting the spray solution and clean separately in a bucket containing ammonia and water. Loosen and physically remove any visible deposits.
2. Fill the tank with clean water and 1 gallon of household ammonia (minimum 3% ammonia) for every 100 gallons of water. Flush the hoses, boom, and nozzles with the cleaning solution.*
3. Refill the spray tank back to full. Circulate the cleaning solution through the tank and hoses for at least 15 minutes. Again flush the hoses, boom, and nozzles with the cleaning solution and then drain the tank.
4. Remove the nozzles, screens and components as before and clean separately in a bucket containing ammonia and water.
5. Repeat step 2.
6. Rinse the tank, boom, and hoses with clean water.
7. The rinsate may be disposed of on-site or at an approved disposal facility.

* If using an ammonia product that is not 3% ammonia, an equivalent amount of an alternate strength ammonia solution can be used in the clean out procedure. Carefully read and follow the individual cleaner instructions.

INSTRUCTIONS FOR APPLICATION METHODS COVERED UNDER THIS LABEL

CUTTINGS, BARE ROOT, CROWN DIP AND PREPLANT DUST APPLICATIONS

- Dip cuttings, bare root transplants, crowns, or bulbs in undiluted **Bio-Tam 2.0** powder or in a suspension that contains 0.25 – 2.0 lbs of **Bio-Tam 2.0**/gallon of water.
- After dipping the cutting, bare root transplant, bulb or crown, follow standard practices for planting.

BROADCAST APPLICATIONS

- For broadcast applications, apply **Bio-Tam 2.0** as a spray at a minimum volume of 10 gallons of water per acre prior to or at planting. Thorough and uniform coverage of the soil surface is necessary. Immediate incorporation of the **Bio-Tam 2.0** is necessary either by watering in using sufficient water to wet the upper 1" of soil or using light cultivation to incorporate the treatment into the seeding or rooting zone.
- Use higher application rates when the weather conditions are expected to be conducive for disease development, if the field has a history of disease development, if disease pressure is high, or if minimum/low till programs are in place.

IN-FURROW SPRAY APPLICATIONS

- For in-furrow applications, apply **Bio-Tam 2.0** as an in-furrow spray in 3-15 gallons of water per acre at planting.
- Mount the spray nozzle so the spray is directed into the furrow just before the seeds are covered.
- Use higher application rates when the weather conditions are expected to be conducive for disease development, if the field has a history of disease development, if disease pressure is high, or if minimum/low till programs are in place.
- The ***Bio-Tam 2.0 Rates for In-furrow Spray Applications*** provides common row spacing and the amount of **Bio-Tam 2.0** to apply when banding a 4" in-furrow spray into the seeding trench.

Bio-Tam 2.0 Rates for In-furrow Spray Applications (oz/A)[1]					
Rate per 1000 row ft[2]	20" row spacing	24" row spacing	30" row spacing	36" row spacing	40" row spacing
1.5 oz	7.8 oz/A	5.4 oz/A	3.5 oz/A	2.4 oz/A	2.0 oz/A
3.0 oz	15.7 oz/A	10.9 oz/A	7.0 oz/A	4.8 oz/A	3.9 oz/A

[1] Calculations provided are based on treating a 4" zone of the seeding furrow.
[2] 1.5 oz/1000 row feet is equivalent to the 2.5 lb/A broadcast rate and 3.0 oz/1000 row feet is equivalent to the 5.0 lb/A broadcast rate.

- If a banded in-furrow spray different from 4" is needed, use the following equation to calculate the appropriate application rate. Row feet per acre at common row widths are provided below.

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \frac{\text{rate in oz}}{\text{1000 row feet}} \times \text{row feet per acre (see chart below)} = \text{amount product needed in (oz/A)}$$

Row width	20"	24"	30"	36"	40"
Row feet/A	26,136	21,780	17,424	14,520	13,068

GROUND BANDED APPLICATIONS

- Soilborne diseases that develop later in the season are generally controlled by banded applications that are watered in by irrigation.
- In banded applications, applied band width depends on crop and plant root diameter.
- For banded applications, apply **Bio-Tam 2.0** prior to infection as a directed spray to the soil, using single or multiple nozzles adjusted to provide thorough coverage of the soil surface in close proximity to the plant and lower stems. For surface banded applications, immediate watering in with 0.25" to 0.5" of water is required for optimum performance. Soil applications can be applied during cultivation or hilling operations to provide soil incorporation, followed by watering in with 0.25" to 0.5" of water.
- Use higher application rates when the weather conditions are expected to be conducive for disease development, if the field has a history of disease development, if disease pressure is high, or if minimum/low till programs are in place.
- Application rates in the ***Labeled Crops and Use Rates*** table are generally expressed as an amount per acre, which refers to the total crop acreage to be treated. If a 7 inch band is used, consult the table below for the ounces of product needed per acre of field. If a band width other than 7 inches is desired, consult the formula provided below to determine the appropriate amount of product needed.

band width in inches x *broadcast rate* x *16 ounces* = *amount product needed in ounces*
row width in inches *pounds per acre* *per pound* *per acre of field*

Bio-Tam 2.0 rate for Banded Applications (oz/acre)						
Spray band width	Rate (lb) per Acre	20" row spacing	24" row spacing	30" row spacing	36" row spacing	40" row spacing
7"	2.5 lb/A	14 oz/A	12 oz/A	9.3 oz/A	7.8 oz/A	7 oz/A
7"	5.0 lb/A	28 oz/A	23 oz/A	18.7 oz/A	15.6 oz/A	14 oz/A

HANDHELD OR BACKPACK DRENCH APPLICATIONS

- **Bio-Tam 2.0** may be applied by handheld or backpack sprayer as a drench application.
- Suspend **Bio-Tam 2.0** at a rate of 0.025 – 0.075 oz/gallon of water with thorough agitation.
- If using this method, thorough wetting of the first inch of soil with the **Bio-Tam 2.0** suspension is required.
- It is required that sprayer clean out directions (listed in the ***Sprayer Tank Cleanout*** section) are followed before mixing **Bio-Tam 2.0** in sprayers previously used for other pesticides.

GREENHOUSE AND NURSERY DRENCH APPLICATIONS

- Suspend 2.5 – 7.5 oz **Bio-Tam 2.0** in 100 gallons water with thorough agitation and apply suspension as a drench to greenhouse plantings or container crops.
- For flats or beds with a maximum depth that does not exceed 4 inches, apply 50 to 100 gallons prepared **Bio-Tam 2.0** suspension per 800 ft^2.
- Apply 4 to 8 fluid ounces (½ to 1 cup) of prepared **Bio-Tam 2.0** suspension per pot or container, or 100 gallons per 400 ft^2 prepared **Bio-Tam 2.0** suspension when the flat, bed, or container exceeds a depth of 4 inches.
- Constant agitation during application will ensure **Bio-Tam 2.0** remains in suspension.

GREENHOUSE AND NURSERY SOIL INCORPORATION APPLICATIONS

- Suspend 2.5 – 7.5 oz **Bio-Tam 2.0** in 100 gallons water with thorough agitation and apply suspension as a drench to greenhouse plantings or container crops.
- For flats or beds with a maximum depth that does not exceed 4 inches, apply 50 to 100 gallons prepared **Bio-Tam 2.0** suspension per 800 ft^2.
- Apply 4 to 8 fluid ounces (½ to 1 cup) of prepared **Bio-Tam 2.0** suspension per pot or container, or 100 gallons per 400 ft^2 prepared **Bio-Tam 2.0** suspension when the flat, bed, or container exceeds a depth of 4 inches.
- Constant agitation during application will ensure **Bio-Tam 2.0** remains in suspension.

CHEMIGATION APPLICATIONS

- Apply **Bio-Tam 2.0** through listed irrigation/chemigation systems up to 1 week prior to planting and immediately after planting or transplanting. Apply 2.5 to 5.0 lbs product per acre.
- **Bio-Tam 2.0** applications may be repeated every 14 to 21 days as needed depending upon disease pressure.
- **Bio-Tam 2.0** should be applied to moderately moist soils using irrigation volumes (typically 0.25 to 0.50 inches water) that do not cause runoff from the treated area. Agitation during the application process should be continuous and application volume constant in order to apply the specified application rate evenly to the treated area.
- **Bio-Tam 2.0** may be premixed in a supply tank with water when fertilizer or other allowed tank mixed agricultural chemicals are needed. Constant agitation is necessary.
- Mix **Bio-Tam 2.0** into at least 50 gallons or more of water while maintaining continuous agitation and inject through a 50 mesh screen into the irrigation line. Alternatively, a suspension may be formed using a smaller volume of water. This may be performed by combining 1 pound of **Bio-Tam 2.0** for every 1.25 gallons of water and mixing thoroughly. Next, pour the suspension through a 50 mesh screen into the final volume of water for injection into the chemigation system.
- Apply **Bio-Tam 2.0** immediately and do not allow the product to remain for prolonged periods (i.e. overnight) in the chemigation system as settling of the suspension may occur.
- Injection of **Bio-Tam 2.0** suspension should be performed only after the system has become fully pressurized with water (normally 30 to 60 minutes after start up) to allow uniform distribution of the product over the target area.
- After application, flush the system with clean water for another 15 to 20 minutes to clear the irrigation lines and prevent fouling.
- Refer to ***Requirements for Chemigation*** for additional use instructions and requirements.

Requirements for Chemigation

- Apply **Bio-Tam 2.0** only through the following chemigation systems: 1) overhead boom and mist-type irrigation systems, or sprinklers such as impact or micro-sprinklers, 2) pressurized drench (flood) or drip (trickle) systems, 3) micro-irrigation such as spaghetti-tube

or individual tube irrigation, 4) hand-held calibrated irrigation equipment such as the hand-held wand with injector, and 5) ebb and flow systems. Do not apply this product through any other type of irrigation system.

- Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.
- If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers, or other experts.
- Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- A person knowledgeable of the chemigation system and responsible for its operation or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.

Requirements for Chemigation Systems Connected to Public Water Systems

- Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone (RPZ), back flow preventer or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favor drift beyond the area intended for treatment.
- Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and injector system and flush with clean water before use. Failure to provide a clean tank, free of scale or residues may reduce effectiveness of this product.

Requirements for Sprinkler Chemigation

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch that will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.

Requirements for Flood Chemigation

- Systems using a gravity flow pesticide dispensing system must meter the pesticide into the water at the head of the field and downstream of a hydraulic discontinuity, such as a drop structure or weir box, to decrease potential for water source contamination from back flow if water flow stops.
- Systems utilizing a pressurized water and pesticide injection system must meet the following requirements:
  1) The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
  2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
  3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
  4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
  5) The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
  6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

Requirements for Drip Chemigation

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.

- The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional inter-locking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.

LABELED CROPS AND USE RATES

CROPS	METHOD OF APPLICATION	USE RATE AND APPLICATION INSTRUCTIONS*
Alfalfa (for use in forage and seed crops, including birdsfoot trefoil) **Cereal Grains** (including barley, oats, rye, triticale, wheat, and Durum wheat) **Clover** (for use in forage and seed crops) **Corn** (all types, including field corn, popcorn, sweet corn, and corn produced for seed) **Cotton** **Ginseng** **Grass, Forage, Fodder, and Hay** (including pasture grasses and grasses grown for hay or silage such as Bermuda grass, bluegrass, brome grass, and fescue) **Peanut** **Sunflower** **Tobacco**	In-Furrow**	1.5 to 3 oz per 1000 row feet.
	Ground Banded***	2.5 to 3 lb/A.
	Broadcast	Apply 2.5 – 5.0 lb/A at sowing, at restart of vegetative growth, and before the infection risk period. If rainfall is not expected, follow the treatment with light irrigation of 0.25 – 0.5 inches of water per acre. Alternatively, apply 0.92 to 1.8 oz per 1000 square feet in at least 3 to 5 gallons water to obtain thorough wetting of the soil.
	Chemigation	Apply 2.5 – 5 lb/A.
Berries **Bushberries** (including blueberry, cranberry, currant, elderberry, gooseberry, huckleberry, juneberry, lingonberry, salal, strawberry, and all cultivars and hybrids of these) **Caneberries** (including blackberry, boysenberry, marionberry, loganberry, raspberry, and all cultivars and hybrids of these)	Cuttings and Bare Root	Dip into undiluted **Bio-Tam 2.0** or prepare solution, composed of 0.25 – 2 lb of **Bio-Tam 2.0**/gallon of water, for dipping.
	Substrate Mix	Mix 0.5 – 1.5 lb/cubic yard substrate.
	In-Furrow**	1.5 to 3 oz per 1000 row feet.
	Ground Banded***	2.5 to 3 lb/A.
	Chemigation	Apply 2.5 – 5 lb/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.
	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Cole Crops (including broccoli, brussel sprouts, cabbage, cauliflower, Chinese cabbage, collards, kale, kohlrabi, mustard greens, rape greens, and all hybrids and varieties of these) **Cucurbits** (including cantaloupe, chinese waxgourd, cucumber, gherkin, gourd–edible, honeydew, *Momordica* spp., muskmelon, pumpkins, squash–summer, squash–winter, watermelon, zucchini, and all hybrids and cultivars of these) **Fruiting Vegetables** (including eggplant, groundcherry, okra, pepino, pepper, tomatillo, and tomato) **Leafy Vegetables (Except Brassica)** (including amaranth, arugula, cardoon, celery, celtuce, chervil, Chinese celery, chrysanthemum, corn salad, cress, dandelion, dock, endive, florence fennel, lettuce–head, lettuce–leaf, orach, parsley, purslane, radicchio, rhubarb, spinach, and swiss chard) **Legume Vegetables** (including bean *Lupinus* spp., bean *Phaseolus* spp., bean *Vigna* spp. including asparagus, broad bean–fava, chickpea–garbonzo bean,	Substrate Mix	Mix 0.5 – 1.5 lb/cubic yard substrate.
	Broadcast	Apply 2.5 – 5.0 lb/A at sowing, at restart of vegetative growth, and before the infection risk period. If rainfall is not expected, follow the treatment with light irrigation of 0.25 – 0.5 inches of water per acre.
	In-Furrow**	1.5 to 3 oz per 1000 row feet.
	Ground Banded***	2.5 to 3 lb/A.
	Chemigation	Apply 2.5 – 5 lb product/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.

CROPS	METHOD OF APPLICATION	USE RATE AND APPLICATION INSTRUCTIONS*
lentil, pea *Pisum* spp., pigeon pea, soybean, including all hybrids and varieties of these) **Root, Tuber, and Corm Vegetables** (including arrowroot, Chinese and Jerusalem artichoke, garden beet, sugar beet, edible burdock, carrot, cassava, celeriac, chayote, chervil, chicory, ginger, ginseng, horseradish, parsley, turnip–rooted parsley, parsnip, potato, radish, oriental radish, rutabaga, salsify, sweet potato, taro, tumeric, turnip, yam bean, and true yam)	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Herbs (Fresh, Dried, and for Oil) (including angelica, basil, catnip, chervil, catnip, chamomile, chive, cilantro–leaf, coriander–leaf, curry, dillweed, fennel, hyssop, lavender, lemongrass, marigold, marjoram, mint, nasturtium, parsley, peppermint, rosemary, sage, savory–summer, savory–winter, spearmint, sweet bay, tansy, tarragon, thyme, wintergreen, woodruff, and wormwood)	Cuttings and Bare Root	Dip into undiluted **Bio-Tam 2.0** or prepare solution, composed of 0.25 – 2 lbs of **Bio-Tam 2.0**/gallon of water, for dipping.
	Substrate Mix	Mix 0.5 – 1.5 lb/cubic yard substrate.
	In-Furrow**	1.5 to 3 oz per 1000 row feet.
	Ground Banded***	2.5 to 3 lb/A.
	Broadcast	Apply 2.5 – 5.0 lb/A at sowing, at restart of vegetative growth, and before the infection risk period. If rainfall is not expected, follow the treatment with light irrigation of 0.25 – 0.5 inches of water per acre.
	Chemigation	Apply 2.5 – 5 lb product/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.
	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Onions **Dry Bulb** (garlic, onions, shallots) **Green** (green eschalots, green onions, green shallots, Japanese bunching onions, leeks, spring onions, and scallions)	Pre-Plant Dust	Dip into undiluted **Bio-Tam 2.0** prior to planting.
	In-Furrow**	1.5 to 3 oz per 1000 row feet.
	Ground Banded***	2.5 to 3 lb/A.
	Chemigation	Apply 2.5 – 5 lb product/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.
	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Pineapple	Crown Dip	Dip into undiluted **Bio-Tam 2.0** or prepare solution, composed of 0.25 – 2 lbs of **Bio-Tam 2.0**/gallon of water, for dipping.
	In-Furrow**	1.5 to 3 oz per 1000 row feet.
	Ground Banded***	2.5 to 3 lb/A.
	Chemigation	Apply 2.5 – 5 lb product/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.
	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Citrus (including calamondin, citrus citron, citrus hybrids (i.e., chironja, tangelo, and tangor),	Cuttings and Bare Root	Dip into undiluted **Bio-Tam 2.0** or prepare solution, composed of 0.25 – 2 lbs of **Bio-Tam 2.0**/gallon of water, for dipping.

CROPS	METHOD OF APPLICATION	USE RATE AND APPLICATION INSTRUCTIONS*
grapefruit, kumquat, lemon, lime, mandarin–tangerine, orange, pummelo, Satsuma mandarin, and all cultivars and hybrids of these)	Substrate Mix	Mix 0.5 – 1.5 lb/cubic yard substrate.
	In-Furrow**	1.5 to 3 oz per 1000 row feet.
Olive **Pomegranate** **Tree Fruit (Pome Fruit)** (including deciduous trees bearing pome fruit such as apple, pear, crabapple, loquat, mayhew, oriental pear, and quince) **Tree Fruit (Stone Fruit)** (including bearing and non-bearing apricot, sweet and tart cherry, nectarine, peach, plum, plumcot, prune, and all hybrids and cultivars of these) **Tree Nuts** (including almonds, beechnut, Brazil nut, butternut, cashew, chestnut, chinquapin, filbert, hickory, hazelnuts, macadamia, pecans, pistachios, and walnuts) **Tropical Fruit** (including acerola, atemoya, avocado, canistel, cherimoya, custard apple, ilama, guava, kiwifruit, longan, loquat, lychee, mango, mangosteen, papaya, pashionfruit, pawpaw, persimmon, pummello, rambutan, black sapote, mamey sapote, sapodilla, soursop, star apple, starfruit, sugar apple, and tamarind) **Vines** (including table, wine, raisin grapes, muscadines, hops, kiwi)	Ground Banded***	2.5 to 3 lb/A.
	Chemigation	Apply 2.5 – 5 lb product/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.
	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Bulb Crops (limited to ornamental bulbs)	Pre-Plant Dust	Dip into undiluted **Bio-Tam 2.0** prior to planting.
	Ground Banded***	2.5 to 3 lb/A.
	Chemigation	Apply 2.5 – 5 lb product/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.
	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Herbaceous Potted Flowers, Bedding Plants, and Ornamentals (including chrysanthemums, cyclamen, geranium, hollyhock, lily, pansy, petunia, poinsettia, primrose, and snapdragon) **Ornamental Trees** **Non-Flowering Deciduous and Non-Deciduous Landscape, Ornamental, Forest, and Nursery Trees** (including ash, elm, linden, maple, and sycamore) **Evergreen/Conifers and Christmas Trees** (including cedar, fir, pine, spruce, yew, and arborvitae) **Flowering and Non-Bearing Fruit Trees** (including crabapple, hawthorn, cherry, plum, and pear) **Tropical Foliage and Flowering Plants**	Cuttings and Bare Root	Dip into undiluted **Bio-Tam 2.0** or prepare solution, composed of 0.25 – 2 lbs of **Bio-Tam 2.0**/gallon of water, for dipping.
	Substrate Mix	Mix 0.5 – 1.5 lb/cubic yard substrate.
	Chemigation	Apply 2.5 – 5 lb product/A.
	Greenhouse and Nursery Drench****	Suspend 2.5 to 7.5 oz per 100 gallons water.

CROPS	METHOD OF APPLICATION	USE RATE AND APPLICATION INSTRUCTIONS*
(including fern, English ivy, pothos, and poinsettia) **Nursery, Shrubs, and Woody Ornamentals** (including azalea, holly, pittosporum, and rose)	Handheld or Backpack Drench Applications	0.025 – 0.075 oz/gallon of water. Apply in sufficient volume to thoroughly wet the soil.
Turf Grass (including turf, golf courses–all uses, sports fields, sod and seed production)	Broadcast	Apply 2.5 – 5.0 lb/A at sowing, at restart of vegetative growth, and before the infection risk period. If rainfall is not expected, follow the treatment with light irrigation of 0.25 – 0.5 inches of water per acre. Alternatively, apply 0.92 to 1.8 oz per 1000 square feet in at least 3 to 5 gallons water to obtain thorough wetting of the soil.
* If disease pressure is high, use the higher application rate. ** Refer to In-Furrow Application Rate table for specific rate based on band width and row width. *** Refer to Ground Banded Application Rate table to calculate the proper use rate based on band width and row width. ****Refer to Greenhouse and Nursery Drench instructions to determine application rate based on container size.		

GRAPES
Applications to Aid in the Control of Listed Vine Diseases
Following Grapevine Pruning

CROP	TARGET DISEASE	METHOD OF APPLICATION	USE RATE AND APPLICATION INSTRUCTIONS*
Grapes	vine diseases following pruning (*Phaeomoniella chlamydospora)*	Broadcast	Apply as a directed spray within 24 hours of pruning. Make a suspension containing 2 lb **BIO-TAM 2.0** / 100 gallons of water. Apply at 1 lb per acre in 25 to 50 gallons of water ensuring adequate coverage. For additional more detailed use directions read below*

***Additional detailed use directions**

Apply **BIO-TAM 2.0** at 1 pound per acre using a final spray volume of 25 to 50 gallons water per acre to protect against grapevine pruning diseases caused by *Phaeomoniella chlamydospora.*

Apply **BIO-TAM 2.0** within 24 hours of pruning. Regardless of spray volume, it is recommended that a spray dye be used during the application followed by visual inspection to verify thorough coverage of the pruning cuts and susceptible tissue. A second application of **BIO-TAM 2.0** is recommended approximately 14 days later when pruning high risk vineyards (vineyards with a history of grapevine pruning disease, new vines replanted over a highly infested area, or where high disease pressure from surrounding area is present) or if rainfall or high humidity persist resulting in environmental conditions favorable for disease development.

If double pruning of the vineyard is being performed, treatment does not need to be performed after the first, non-selective pruning pass if environmental conditions do not favor infection and disease development into tissue beyond where the final pruning cuts will occur. Under this scenario, apply **BIO-TAM 2.0** within 24 hours of making the second pruning cuts. The second application of **BIO-TAM 2.0** should be applied 14 days after the first application when rainfall and high humidity favor infection and disease development. If the risk of infection and rapid disease development is high, resulting in development of disease into tissue past where the second pruning cuts will be made, **BIO-TAM 2.0** should be applied after the first non-selective pruning cuts followed by a second application after the second and final pruning cuts are made. Again, the use of a spray dye is recommended to ensure thorough coverage of all cut surfaces.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed through storage or disposal.

PESTICIDE STORAGE

Store at temperatures below 75°F, under well-vented and dry storage conditions. Do not store under moist conditions. Do not allow product to freeze. Store the tightly resealed container in a dry place and not exposed directly to sun. Product life is approximately 15 months when stored as directed.

PESTICIDE DISPOSAL

To avoid wastes, use all material in this container by application according to label directions. If wastes cannot be avoided, offer remaining product to a waste disposal facility or pesticide disposal program (often such programs are run by state or local governments or by industry).

CONTAINER HANDLING

Non-refillable, non-rigid container. Do not reuse or refill this container. Completely empty bag into application equipment. Then offer for recycling if available or dispose of empty bag in a sanitary landfill or by incineration or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

For rigid, non-refillable containers (2.5 to 5 gallons):

Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container one-fourth full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling, if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of resulting smoke.

For rigid, non-refillable containers that are too large to shake (with capacities greater than 5 gallons):

Nonrefillable container. Do not reuse or refill this container. Clean container promptly after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container one-fourth full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer for recycling, if available or puncture and dispose of in a sanitary landfill, or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of resulting smoke.

Pressure Rinse Procedures (all sizes)

Pressure rinse as follows: Empty the remaining contents into application equipment or a tank mix and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip.

FOR 24-HOUR EMERGENCY ASSISTANCE (SPILL, LEAK OR FIRE), CALL CHEMTREC® (800) 424-9300 in the US. Outside the US: +1 703 527-3887. For other product information, contact Gowan Company, LLC or see Safety Data Sheet.

NOTICE OF CONDITIONS OF SALE AND WARRANTY AND LIABILITY LIMITATIONS

Important: Read the entire Directions for Use and Notice of Conditions of Sale and Warranty and Liability Limitations before using this product. If terms are not acceptable return the unopened container for a full refund.

Our directions for use of this product are based on tests believed to be reliable. However, it is impossible to eliminate all risk associated with the use of this product. Crop injury, inadequate performance, or other unintended consequences may result due to soil or weather conditions, off target movement, presence of other materials, method of use or application, and other factors, all of which are beyond the control of Gowan Company. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer and User.

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02-R1015