

84059-12

4/26/2012

10941

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division (7511C)
1200 Pennsylvania Avenue NW
Washington, DC 20460

EPA Reg. Number: 84059-12
Date of Issuance: APR 26 2012

Term of Issuance: Unconditional

Name of Pesticide Product: MBI-005 EP

NOTICE OF PESTICIDE:
[X] Registration
[] Reregistration
(under FIFRA, as amended)

Name and Address of Registrant (include ZIP Code):
Marrone Bio Innovations
2121 Second Street Suite B-107
Davis, CA 95618

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered/reregistered under the Federal Insecticide, Fungicide and Rodenticide Act.

Registration is in no way to be construed as an endorsement or recommendation of this product by the Agency. In order to protect health and the environment, the Administrator, on his motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act.

This product is unconditionally registered in accordance with FIFRA Sec. 3(c)(5) and is subject to the following terms and conditions:

- 1. Submit and/or cite all data required for registration/ reregistration of your product under FIFRA section 3(c)(5) and section 4 when the Agency requires all registrants of similar products to submit such data.
2. Revise the EPA Registration Number to read, "EPA Reg. No. 84059-12."
3. Submit three (3) copies of the revised final printed labeling before you release the product for shipment.

Signature of Approving Official:
Keith A. Matthews, Director
Biopesticides and Pollution Prevention Division (7511P)

Date: 26 April 2012

EPA Form 8570-6

CONCURRENCES

Table with columns for SYMBOL, SURNAME, and DATE, containing handwritten entries for 7511P, 7511P, 7511P, and dates 4/24/12, 4/25/12, 26 APR 12.

4. Submit the following data and/or information, determined by EPA to be acceptable, by the due dates specified below:

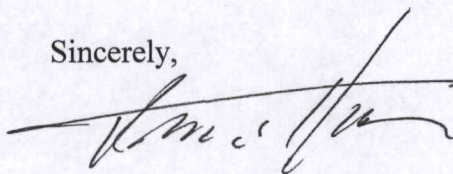
Study Type Required Data/Information	Required Data/Information	Due Date
Storage Stability (OPPTS Guideline 830.6317)	Provide the results of the ongoing two-year (minimum) storage stability study.	April 26, 2013
Corrosion Characteristics (Guideline Number 830.6320)	The corrosion characteristics study for this end-use product has been cited as ongoing. When the study has been completed and the results have been compiled, submit these data to EPA.	April 26, 2013
No Guideline	Verification of OMRI certification	April 26, 2013

5. Reports of all incidents of adverse effects to the environment must be submitted to EPA under the provisions stated in FIFRA section 6(a)(2). Additionally, all incidents of hypersensitivity (including both suspected and confirmed incidents) must be reported to EPA under the provisions of 40 CFR § 158.2140(d).

A stamped copy of the label is enclosed for your records.

The basic confidential statement of formula (CSF) dated February 16, 2012, is acceptable and a copy has been placed in the file jacket for this registration. It supersedes all CSFs previously submitted for this registration.

Sincerely,



Keith A. Matthews, Director
Biopesticides and Pollution Prevention Division (7511P)

Enclosures (2):
MBI-005 EP Accepted Label
A-79 Enclosure

Revised 5/82

A-79 ENCLOSURE

Final printed labeling is defined as that labeling which will accompany the pesticide product to market, and includes not only the container label, but also all accompanying technical information, brochures, etc.

Final printed labeling for the Agency's files should be of a size that can be stored conveniently in 8 1/2 x 11 inch files. Labels may be mounted or photoreduced to meet the size requirements provided the printing is legible and is of microfilm reproduction quality. Should photo reduction make any of the text illegible, the text must be typed out on an accompanying sheet of paper.

PASTE-ON LABELING: This should be submitted as is, unless it requires photo reduction.

SCREEN PRINTED LABELING: These labels should be printed by taping paper on the container as it goes through the printing process. The actual container should not be submitted.

EMBOSSSED LABELING: These labels should be photocopied.

UNUSUAL SIZE LABELING: Large bags or boxes must be photoreduced, either the entire label on one reduction or in sections so that each section is 8 1/2 x 11 inches.

Type Size Requirements for 3 Front Panel Headings

<u>Size of front panel square inches</u>	<u>Minimum type size for "RESTRICTED USE PESTICIDE" (if required) and Signal Word in capital letters</u>	<u>Minimum type for "Storage and Disposal" heading & "Keep Out of Reach of Children" warning</u>
5 and under	6 point	6 point
above 5 to 10	10 point	6 point
above 10 to 15	12 point	8 point
above 15 to 30	14 point	10 point
over 30	18 point	12 point

4041

MBI-005 EP

MASTER LABEL, containing:
Sublabel A: Agricultural Crops
Sublabel B: Turf & Ornamental Use
Sublabel C: Residential Lawns

EPA Reg. No.: (pending as File Symbol 84059-RE)

Manufactured by: Marrone Bio Innovations, Inc.
2121 Second St., Suite B-107
Davis, CA 95618 USA
1-877-664-4476; www.marronebioinnovations.com; info@marronebio.com

ACCEPTED
APR 26 2012
Under the Federal Insecticide,
Fungicide, and Rodenticide Act,
as amended, for the pesticide
registered under
EPA Reg. No. 84059-12

50841

Sublabel A: Agricultural Crops

MBI-005 EP

(Alternate Brand Name: "Opportune")

Pre and Post-emergent Herbicide

(NOP 3 Leaf) Can Be Used in Organic Production (OMRI Placeholder)

For the control of listed annual grasses, broadleaf and sedge weeds (in the listed food crops).

Active Ingredient: Killed, non-viable *Streptomyces acidiscabies* strain RL-110^T cells and spent fermentation media* 17%

Other ingredients: 83%

Total: 100%

*Product contains not less than 4 mg/ml Thaxtomin A.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none"> • 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.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.

EPA Reg. No.: (pending as File Symbol 84059-RE)

EPA Est. No.: XXXXX-XX-XXX

Net Contents: XX

(Batch)(Lot) No: XXXX

Manufactured by: Marrone Bio Innovations, Inc.
 2121 Second St., Suite B-107
 Davis, CA 95618 USA

1-877-664-4476; www.marronebioinnovations.com; info@marronebio.com

US Patents No. XXXXX

XXXX[®] is a trademark of Marrone Bio Innovations, Inc.

Marrone Bio Innovations name and logo are registered trademarks of Marrone Bio Innovations, Inc.

PRECAUTIONARY STATEMENTS

Hazards to humans and domestic animals - CAUTION. Causes moderate eye and skin irritation. Harmful if inhaled, swallowed or absorbed through skin. Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wear goggles or safety glasses and waterproof gloves. 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.

Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

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

Mixer/loaders and applicators, not in aircraft or enclosed cabs, must wear a filtering face piece respirator meeting 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 the manufacturer's instructions for cleaning / maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should:

- 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.

Environmental Hazards: For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean highwater mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, 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 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 exemptions pertaining to the statements on this label about personal protective equipment (PPE) and the restricted entry interval (REI). The requirements in this box only apply 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.

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

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

PRODUCT INFORMATION

MBI-005 EP is a selective biological herbicide for use on specific weeds in food crops listed in the Direction for Use section. When applied as a pre-emergence herbicide, MBI-005 EP controls annual grasses and broadleaf and sedge weeds as they germinate. MBI-005 EP is also a selective post-emergent herbicide for control or suppression of broadleaf and sedge weeds infesting labeled crops. MBI-005 EP does not control emerged grasses. The concentrate of MBI-005 EP must be mixed with water and applied as a spray with ground or aerial equipment equipped for conventional herbicide spraying. MBI-005 EP can also be mixed in liquid fertilizers when applied to the soil for pre-emergent weed control.

A spreader/sticker or adjuvant which has been approved for growing crops can be added for hard to wet weed species. MBI-005 can be applied in a liquid fertilizer.

Pre-emergent Herbicide

The efficacy of MBI-005 EP as a pre-emergent herbicide will improve if the application is followed by 1/2" of rainfall or its equivalent by sprinkler irrigation.

Post-emergent Herbicide

Applications of MBI-005 EP as a post-emergent herbicide must be targeted against weeds that are 2 inches in height or less. Thorough coverage of weed foliage is necessary for effective control. MBI-005 EP does not have systemic activity.

Mode of action: MBI-005 EP inhibits cellulose biosynthesis in the meristem of sensitive plant species. When weeds germinate in the treated area, they contact the herbicide and both shoot and root growth stops.

Close scouting and early attention to infestations is highly recommended. Proper timing of application prior to weed germination and/or for targeting newly emerged weeds is important for optimal results.

USE RESTRICTIONS

Do not apply this product through any type of chemigation system.

Do not apply this product to the foliage of any broadleaf (dicotyledon) crop.

Do not apply this product when wind conditions will allow drift to adjacent, broadleaf ornamental plants or to crops.

Do not apply to pasture, grazing lands or grasses grown for hay.

Applications must be made prior to transplanting or prior to crop emergence. Do not apply to emerged broadleaf crops except for ground applications made between the rows with the use of shielded applicators. Do not apply by air to established broad leaf or dicotyledon crops.

APPLICATION INSTRUCTIONS

Under heavy weed populations, use the higher label rates and/or increase the spray volume to improve coverage.

GROUND APPLICATIONS

Apply MBI-005 EP with quantities of water sufficient to provide uniform coverage of the soil or foliage of targeted weed species. The amount of water needed per acre will depend upon application equipment.

Spray volumes for pre-emergent herbicide use is 40 to 200 gallons per acre. The efficacy of MBI-005 EP as a pre-emergent herbicide will improve if the application is followed by 1/2" of rainfall or its equivalent by sprinkler irrigation. Or, where feasible, lightly incorporate MBI-005 into the top 1-inch of the soil.

Spray volumes for post-emergent herbicide use is 30 to 40 gallons of water per acre. Target applications of MBI-005 EP against broadleaf weeds that are 2 inches in height or less.

Use sprayers equipped with appropriate nozzles that provide uniform and accurate spray distribution and minimize drift. Nozzle and in-line screens must be no finer than 50 mesh.

Ground Applications (Band)

Apply MBI-005 EP uniformly at the broadcast equivalent rate and volume per acre. To determine these:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{band rate per acre}$$

AERIAL APPLICATIONS

Use at least 10 gallons of total volume per acre in water based sprays for pre-emergent herbicide application and use at least 20 gallons of total volume per acre in water based sprays for post-emergent herbicide application. See specific instructions for pre and post-emergent herbicide applications. DO NOT apply during periods of gusty winds or when wind conditions favor drifting.

MIXING INSTRUCTIONS

SHAKE WELL PRIOR TO USE

Important – Do not add MBI-005 EP to the mix tank before introducing the desired amount of water. Add water to the mix tank. Start the mechanical or hydraulic agitation to provide moderate circulation before adding MBI-005 EP. Add the desired volume of MBI-005 EP to the mix tank and continue circulation. Maintain circulation while loading and spraying. Do not mix more MBI-005 EP than can be used in 24 hours. Use a strainer no finer than 50 mesh in conventional spray systems.

TANK MIXING

This product can be tank mixed in accordance with the most restrictive of label limitations and precautions. No label dosage rates may be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing.

To ensure compatibility of tank-mix combinations they must be evaluated prior to use. To determine the physical compatibility of this product with other products use a jar test. Using a quart jar, add the proportionate amounts of the products to one quart of water with agitation. Add dry formulations first, then flowables, then emulsifiable concentrates last. After thoroughly mixing, let this mixture stand for 5 minutes. If the combination remains mixed or can be readily be remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank.

AERIAL DRIFT REDUCTION ADVISORY INFORMATION

GENERAL: Avoiding spray drift at the application site is the responsibility of the applicator. The Interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed. Note: This section is advisory in nature and does not supersede the mandatory label requirements.

INFORMATION ON DROPLET SIZE: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that will provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

CONTROLLING DROPLET SIZE: Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When high flow rates are needed, use higher flow rate nozzles instead of increasing pressure. Number of nozzles - Use the minimum number of nozzles that provide uniform coverage. Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential. Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM WIDTH: For aerial applications, the boom width must not exceed 75% of the wingspan or 90% of the rotary blade. Use upwind swath displacement and apply only when wind speed is 3-10 mph as measured by an anemometer. Use medium or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.

APPLICATION HEIGHT: Do not make application at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure to droplets to evaporation and wind.

SWATH ADJUSTMENT: When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

WIND: Drift potential is lowest between wind speeds of 2 - 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided above 2 mph due to variable wind direction and high inversion potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS: Do not apply during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SENSITIVE AREAS: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas). Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

SHAKE WELL BEFORE USE

FOR USE AS A PRE-EMERGENT HERBICIDE ON THE FOLLOWING CROPS (FOR CONTROL OF SPECIFIED WEEDS:

Applications must be made prior to transplanting or prior to crop emergence. Do not apply to emerged broadleaf crops except for ground applications made between the rows with the use of shielded applicators. Do not apply by air to established broad leaf or dicotyledon crops.

Pre-harvest Interval (PHI) = 0 days

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions	
Artichoke	Grasses Annual ryegrass <i>Lolium rigidum</i> Barnyardgrass <i>Echinochloa crus-galli</i> Bluegrass, annual <i>Poa annua</i> Brome <i>Bromus spp.</i> Canarygrass <i>Phalaris arundinaca</i> Cheat <i>Bromus tectorum</i>	Ground Aerial. Do not apply by air to any emerged broad leaf or dicotyledon crop.	8-12 quarts per acre	Apply in 10-40 gallons of water per acre	
Asparagus					
Bulb vegetables Onion garlic shallots-transplanted sets only					
Cereal grains Barley, millets, oat, rice, rye, sorghum, triticale, wheat					
Citrus Bearing and nonbearing					
Cole Crops (Brassicas) Broccoli, cabbage, cauliflower, brussel sprouts collards-transplanted sets only					
Cotton					
Cucurbits Cantaloupe, Cucumber, Pumpkin, Zucchini, Watermelon, Melon, Muskmelon and Squash – transplanted sets only					
Fruiting Vegetables Peppers, Tomato, Eggplant, Ground Cherry, Tomatillo and Okra – transplanted sets only					Crabgrass <i>Digitaria spp.</i> Crowfootgrass <i>Dactyloctenium aegyptium</i> Dallisgrass (seedling) <i>Paspalum dilatatum</i>
Grapes					
Hops					
Legumes/Vegetables Beans, Green Beans,					

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
Peanuts, Snap Beans, Shell Beans,	Foxtail, giant <i>Setaria faberia</i>			
Soybeans, Dry Beans, Garbanzo Beans, Lima Beans, Peas, Chick Peas, Split Peas and Lentils	Foxtail, green <i>Setaria viridis</i>			
Olives	Foxtail, yellow <i>Setaria glauca</i>			
Peanuts	Goosegrass <i>Eleusine indica</i>			
Pome Fruit Apple, Crabapple, Pear, Quince, and Mayhaw	Hairy chess <i>Bromus commutatus</i>			
Root, Tuber and Corm Crops Potato, Sweet Potato, Ginger, and Ginseng	Itchgrass <i>Rottboellia exalta</i>			
Stone Fruits Apricot, Cherry, Nectarine, Peach, Plum, and Prune	Italian ryegrass <i>Lolium perenne</i>			
Strawberries transplanted sets only	Japanese brome <i>Bromus japonicus</i>			
Tree Nut Crops Almond, Pistachio, Pecan, Filbert, Chestnut, Cashew, Beechnut, Butternut, and Macadamia	Johnsongrass (from seed) <i>Sorghum halepense</i>			
Walnuts	Jointed goatgrass <i>Aegilops cylindrica</i>			
Tropical Fruits Avocado, Mango, Papaya, Plantain, Pineapple, Banana, Pomegranate and Kiwi	Junglerice <i>Echinochloa colona</i>			
	Lovegrass (from seed)			
	<i>Eragrostis spp.</i>			
	Panicum, browntop <i>Panicum fasciculatum</i>			
	Panicum, fall <i>Panicum dichotomiflorum</i>			
	Panicum, Texas <i>Panicum texanum</i>			
	Sandbur, field <i>Cenchrus incertus</i>			
	Signalgrass <i>Brachiaria platyphylla</i>			
	Sprangletop,			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	Mexican <i>Leptochloa uninervia</i> Sprangletop, red <i>Leptochloa filiformis</i> Witchgrass <i>Panicum capillare</i> Woolly cupgrass <i>Eriochloa villosa</i> Broadleaf Weeds Amaranth, Palmer <i>Amaranthus palmeri</i> Bittercress <i>Cardamine spp</i> Burweed, lawn <i>Soliva pterosperma</i> Carpetweed <i>Mollugo verticillata</i> Chickweed, common <i>Stellaria media</i> Chickweed, mouseear <i>Cerastium vulgatum</i> Clover, hop <i>Trifolium procumbens</i> Cudweed <i>Gnaphalium spp</i> Filaree <i>Erodium spp.</i> Geranium, Carolina <i>Geranium carolinianum</i> Henbit <i>Lamium amplexicaule</i> Knotweed, prostrate <i>Polygonum aviculare</i>			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	<p>Kochia <i>Kochia scoparia</i></p> <p>Lambsquarters <i>Chenopodium album</i></p> <p>Lespedeza, common <i>Lespedeza striata</i></p> <p>Mustard <i>Brassica spp.</i></p> <p>Oxalis, buttercup <i>Oxalis pes-caprae</i></p> <p>Pigweed <i>Amaranthus spp.</i></p> <p>Purslane, common <i>Portulaca oleracea</i></p> <p>Purslane, Florida <i>Richardia scabra</i></p> <p>Ragweed, common <i>Ambrosia artemisifolia</i></p> <p>Ragweed, giant <i>Ambrosia trifida</i></p> <p>Rocket, London <i>Sisymbrium irio</i></p> <p>Shepardspurse <i>Capsella bursa-pastoris</i></p> <p>Speedwell, corn' <i>Veronica arvensis</i></p> <p>Smartweed, Pennsylvania <i>Polygonum pensylvanicum</i></p> <p>Spurge, annual <i>Euphorbia spp.</i></p> <p>Spurge, garden <i>Euphorbia hirta</i></p> <p>Spurge, prostrate <i>Chamaesyce</i></p>			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	<i>humistrata</i> Woodsorrel, creeping <i>Oxalis comiculata</i> Woodsorrel, yellow <i>Oxalis stricta</i>			

FOR USE AS A POST-EMERGENT HERBICIDE ON THE FOLLOWING CROPS FOR CONTROL OF SPECIFIED WEEDS:

Pre-harvest Interval (PHI) = 0 days

MBI-005 EP controls the following weed species:

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
Barley, Buckwheat, Grain Amaranth, Milo, Oats, Pearl Millet, Proso Millet, Rye, Sorghum, Triticale, Wheat	Broadleaf weeds (dicotyledons):	Ground	8-12 quarts per acre	Apply in 20-30 gallons of water per acre. Apply when weed emergence is first noticed during the growing season using conventional ground or aerial application equipment.
	Amaranth, Palmer <i>Amaranthus palmeri</i>	Aerial		
	Amaranth, Powell <i>Amaranthus powelli</i>			
	Bedstraw, catchweed <i>Galium aparine</i>			
	Beggarweed, Florida <i>Desmodium tortuosum</i>			
	Buckwheat, wild <i>Polygonum convolvulus</i>			
	Buffalo bur <i>Solanum rostratum</i>			
	Burhead <i>Echinodorus cordifolius</i>			
	Carpetweed <i>Mollugo verticillica</i>			
	Chickweed, common <i>Stellaria media</i>			
	Cocklebur, common <i>Xanthium strumarium</i>			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	Deadnettle, purple <i>Lamium purpurium</i>			
	Devil's claw <i>Proboscidea louisianica</i>			
	Galinsoga <i>Galinsoga parviflora</i>			
	Henbit <i>Lamium amplexicaule</i>			
	Horseweed (marestail) <i>Conyza Canadensis</i>			
	Jimsonweed <i>Datura stramonium</i>			
	Kochia <i>Kochia scoparia</i>			
	Lambsquarter, common <i>Chenopodium album</i>			
	Mallow, Venice <i>Hibiscus trionum</i>			
	Morning glory, ivy-leaf/entireleaf <i>Ipomoea hederacea</i>			
	Mustard, wild <i>Brassica kabèr</i>			
	Nightshade, black <i>Solanum nigrum</i>			
	Nightshade, eastern black <i>Solanum ptycanthum</i>			
	Nightshade, hairy <i>Solanum sarrachoides</i>			
	Pickernelweed, heartshape, false <i>Monochoria vaginalis</i>			
	Pigweed, redroot			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	<i>Amaranthus retroflexus</i>			
	Pigweed, smooth <i>Amaranthus hybridus</i>			
	Puncturevine <i>Tribulus terrestris</i>			
	Purslane, common <i>Portulaca oleracea</i>			
	Pusley, Florida <i>Richardia scabra</i>			
	Radish, wild <i>Raphanus raphanistrum</i>			
	Ragweed, common <i>Ambrosia artemisiifolia</i>			
	Ragweed, giant <i>Ambrosia trifida</i>			
	Sesbania, hemp <i>Sesbania exaltata</i>			
	Shepard's-purse <i>Capsella bursa-pastoris</i>			
	Sicklepod <i>Senna obtusifolia</i>			
	Sida, prickly <i>Sida spinosa</i>			
	Smartweed, ladythumb <i>Polygonum persicaria</i>			
	Smartweed, Pennsylvania <i>Polygonum pensylvanicum</i>			
	Sunflower, common <i>Helianthus annuus</i>			
	Velvetleaf <i>Abutilon theophrasti</i>			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	Waterclover, European <i>Marsilea quadrifolia</i>			
Corn (Field Corn, Sweet Corn, Popcorn and Corn Grown for Seed)	Broadleaf weeds (dicotyledons): Amaranth, Palmer <i>Amaranthus palmeri</i> Amaranth, Powell <i>Amaranthus powelli</i> Bedstraw, catchweed <i>Galium aparine</i> Beggarweed, Florida <i>Desmodium tortuosum</i> Buckwheat, wild <i>Polygonum convolvulus</i> Buffalo bur <i>Solanum rostratum</i> Burhead <i>Echinodorus cordifolius</i> Carpetweed <i>Mollugo verticillica</i> Chickweed, common <i>Stellaria media</i> Cocklebur, common <i>Xanthium strumarium</i> Deadnettle, purple <i>Lamium purpurium</i> Devil's claw <i>Proboscidea louisianica</i> Galinsoga <i>Galinsoga parviflora</i> Henbit <i>Lamium amplexicaule</i> Horseweed (marestail)	Ground Aerial	8-12 quarts per acre	Apply in 20-30 gallons of water per acre. Apply when weed emergence is first noticed during the growing season using conventional ground or aerial application equipment.

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	<i>Conyza Canadensis</i> Jimsonweed <i>Datura stramonium</i> Kochia <i>Kochia scoparia</i> Lambsquarter, common <i>Chenopodium album</i> Mallow, Venice <i>Hibiscus trionum</i> Morning glory, ivy-leaf/entireleaf <i>Ipomoea hederacea</i> Mustard, wild <i>Brassica kaber</i> Nightshade, black <i>Solanum nigrum</i> Nightshade, eastern black <i>Solanum ptycanthum</i> Nightshade, hairy <i>Solanum sarrachoides</i> Pickerelweed, heartshape, false <i>Monochoria vaginalis</i> Pigweed, redroot <i>Amaranthus retroflexus</i> Pigweed, smooth <i>Amaranthus hybridus</i> Puncturevine <i>Tribulus terrestris</i> Purslane, common <i>Portulaca oleracea</i> Pusley, Florida <i>Richardia scabra</i> Radish, wild			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	<p><i>Raphanus raphanistrum</i></p> <p>Ragweed, common <i>Ambrosia artemisiifolia</i></p> <p>Ragweed, giant <i>Ambrosia trifida</i></p> <p>Sesbania, hemp <i>Sesbania exaltata</i></p> <p>Shepard's-purse <i>Capsella bursa-pastoris</i></p> <p>Sicklepod <i>Senna obtusifolia</i></p> <p>Sida, prickly <i>Sida spinosa</i></p> <p>Smartweed, ladythumb <i>Polygonum persicaria</i></p> <p>Smartweed, Pennsylvania <i>Polygonum pensylvanicum</i></p> <p>Sunflower, common <i>Helianthus annuus</i></p> <p>Velvetleaf <i>Abutilon theophrasti</i></p> <p>Waterclover, European <i>Marsilea quadrifolia</i></p>			
Rice	<p>Broadleaf weeds (dicotyledons):</p> <p>Redstem <i>Ammania sp.</i></p> <p>Common waterplantain <i>Alisma plantago-aquatica</i></p> <p>Arrowhead, California <i>Sagittaria montevidensis</i></p> <p>Arrowhead, Gregg <i>Sagittaria longiloba</i></p>	<p>Ground</p> <p>Aerial</p>	<p>8-12 quarts per acre</p>	<p>Apply in 20-30 gallons of water per acre.</p> <p>Water Seeded Rice Apply a single post-flood application. Fields must be partially drained to expose weeds prior</p>

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	<p>Naiads (waterynymphs) <i>Najas</i> spp. Pondweed, American <i>Potamogeton nodosus</i> Waterhemp, common <i>Amaranthus rudis</i> Waterhemp, tall <i>Amaranthus tuberculatus</i> Waterhyssops <i>Bacopa</i> spp.</p> <p>Sedges and rushes Sedge, smallflower umbrella <i>Cyperus difformis</i> Bulrush, ricefield <i>Scirpus mucronatus</i> Bulrush, river <i>Scirpus fluviatilis</i> Flatsedge, ricefield <i>Cyperus iria</i></p>			<p>to application. Target weed species that are at least 70% exposed. Re-flood the field 24 to 48 hours after application of MBI-005 EP.</p> <p>Dry Seeded Rice Apply MBI-005 EP prior to permanent flood. Flood the field 24 – 28 hours after application.</p>
<p>Sod farms and grass grown for seed</p>	<p>Broadleaf weeds (dicotyledons):</p> <p>Amaranth, Palmer <i>Amaranthus palmeri</i></p> <p>Amaranth, Powell <i>Amaranthus powelli</i></p> <p>Bedstraw, catchweed <i>Galium aparine</i></p> <p>Beggarweed, Florida <i>Desmodium tortuosum</i></p> <p>Buckwheat, wild <i>Polygonum convolvulus</i></p> <p>Buffalo bur <i>Solanum rostratum</i></p> <p>Burhead <i>Echinodorus cordifolius</i></p> <p>Carpetweed <i>Mollugo verticillica</i></p>	<p>Ground</p> <p>Aerial</p>	<p>8-12 quarts per acre</p>	<p>Apply in 20-30 gallons of water per acre.</p> <p>Apply when weed emergence is first noticed during the growing season using conventional ground or aerial application equipment.</p>

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	Chickweed, common <i>Stellaria media</i>			
	Cocklebur, common <i>Xanthium strumarium</i>			
	Deadnettle, purple <i>Lamium purpurium</i>			
	Devil's claw <i>Proboscidea louisianica</i>			
	Galinsoga <i>Galinsoga parviflora</i>			
	Henbit <i>Lamium amplexicaule</i>			
	Horseweed (marestail) <i>Conyza Canadensis</i> Jimsonweed <i>Datura stramonium</i>			
	Kochia <i>Kochia scoparia</i>			
	Lambsquarter, common <i>Chenopodium album</i>			
	Mallow, Venice <i>Hibiscus trionum</i>			
	Morning glory, ivy-leaf/entireleaf <i>Ipomoea hederacea</i>			
	Mustard, wild <i>Brassica kaber</i>			
	Nightshade, black <i>Solanum nigrum</i>			
	Nightshade, eastern black <i>Solanum ptycanthum</i>			
	Nightshade, hairy <i>Solanum sarrachoides</i>			
	Pickerelweed,			

Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	heartshape, false <i>Monochoria vaginalis</i>			
	Pigweed, redroot <i>Amaranthus retroflexus</i>			
	Pigweed, smooth <i>Amaranthus hybridus</i>			
	Puncturevine <i>Tribulus terrestris</i>			
	Purslane, common <i>Portulaca oleracea</i>			
	Pusley, Florida <i>Richardia scabra</i>			
	Radish, wild <i>Raphanus raphanistrum</i>			
	Ragweed, common <i>Ambrosia artemisiifolia</i>			
	Ragweed, giant <i>Ambrosia trifida</i>			
	Sesbania, hemp <i>Sesbania exaltata</i>			
	Shepard's-purse <i>Capsella bursa-pastoris</i>			
	Sicklepod <i>Senna obtusifolia</i>			
	Sida, prickly <i>Sida spinosa</i>			
	Smartweed, ladythumb <i>Polygonum persicaria</i>			
	Smartweed, Pennsylvania <i>Polygonum pennsylvanicum</i>			
	Sunflower, common			

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Crop	Target Pest	Application Method	Product Use per Application	Application Instructions
	<i>Helianthus annuus</i> Velvetleaf <i>Abutilon theophrasti</i> Waterclover, European <i>Marsilea quadrifolia</i>			

APPLICATION AND TIMINGS FOR ALL CROPS LISTED

MBI-005 EP will provide effective weed control when applied by ground or aerial equipment and subsequently incorporated into the soil by rainfall, sprinkler irrigation, or mechanical tillage prior to weed seedling emergence from soil.

Preplant Surface Applications. For use in minimum tillage or no-tillage production systems, apply MBI-005 EP alone or in tank-mixes from 1 to 45 days before planting. Rainfall or sprinkler irrigation after application is required to move this product into the upper soil surface where weed seeds germinate.

Pre-plant Incorporated Applications. Apply MBI-005 EP and incorporate into the upper (1 inch to 2 inches) soil surface prior to planting. Use an implement capable of giving uniform incorporation.

Surface Incorporated Applications. Uniformly apply MBI-005 EP as a broadcast or banded treatment to soil surface underneath established trees and/or in ground areas between tree rows. Incorporate into upper soil surface using either rainfall, sprinkler irrigation, or shallow mechanical incorporation using an implement capable of giving uniform incorporation.

Pre-emergence Surface Applications. Broadcast MBI-005 EP uniformly to the soil surface at planting. Rainfall, sprinkler irrigation, or shallow mechanical incorporation after application is required to move this product into the upper soil surface where weed seeds germinate. If adequate rainfall does not occur and irrigation is not available, use of shallow cultivation or rotary hoeing is required.

Layby Application. Apply MBI-005 EP directly to the soil between rows as a directed spray following the last normal cultivation. Incorporate BMI-005 into the top 1-inch of the soil surface.

Split Applications. MBI-005 EP may be applied preplant incorporated or preemergence incorporated and at layby. For split application, apply 8 quarts per acre followed by 4 quarts per acre 30-60 days after initial treatment.

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in a cool dry place. Avoid freezing.

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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). Pesticide wastes may be toxic. Improper disposal of unused pesticide, washwater or rinse water is a violation of federal law.

Container Handling: Non-refillable container. Do not reuse or refill this container.

Triple rinse container (or equivalent) 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 $\frac{1}{4}$ 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. Do not burn unless allowed by state and local ordinances.

**MARRONE BIO INNOVATIONS
WARRANTY**

To the extent consistent with applicable law, the seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product. The user assumes all risks of use, storage or handling that are not in strict accordance with the accompanying directions.

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Sublabel B: Turf & Ornamental Use

MBI-005 EP

**(Alternate Brand Name: "Opportune")
Pre and Post-emergent Herbicide
(NOP 3 Leaf) For Organic Lawn Care (OMRI Placeholder)**

For the control of listed annual grasses, broadleaf and sedge weeds (on turf and ornamental landscapes).

Active Ingredient: Killed, non-viable *Streptomyces acidiscabies* strain RL-110^T cells and spent fermentation media* 17%
Other ingredients: 83%
Total: 100%

*Product contains not less than 4 mg/ml Thaxtomin A.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none"> • 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.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.

EPA Reg. No.: (pending as File Symbol 84059-RE) **EPA Est. No.:** XXXXX-XX-XXX

Net Contents: XX
(Batch)(Lot) No: XXXX

Manufactured by: Marrone Bio Innovations, Inc.
2121 Second St., Suite B-107
Davis, CA 95618 USA
1-877-664-4476; www.marronebioinnovations.com; info@marronebio.com

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XXXX[®] is a trademark of Marrone Bio Innovations, Inc.
Marrone Bio Innovations name and logo are registered trademarks of Marrone Bio Innovations, Inc.

PRECAUTIONARY STATEMENTS

Hazards to humans and domestic animals - CAUTION. Causes moderate eye and skin irritation. Harmful if inhaled, swallowed or absorbed through skin. Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wear goggles or safety glasses and waterproof gloves. 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.

Personal Protective Equipment (PPE):

Applicators and other handlers must wear:

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

Mixer/loaders and applicators, not in aircraft or enclosed cabs, must wear a filtering face piece respirator meeting 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 the manufacturer's instructions for cleaning / maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

USER SAFETY RECOMMENDATIONS

Users should:

- 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.

Environmental Hazards: For terrestrial uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean highwater mark. Do not contaminate water when disposing of equipment washwaters or rinsate.

DIRECTIONS FOR USE

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

Non-Agricultural Use Requirements

The requirements in this box 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 WPS 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.

PRODUCT INFORMATION

MBI-005 EP is a selective biological herbicide for use on specific weeds on turf, ornamentals and landscapes. When applied as a pre-emergence herbicide, MBI-005 EP controls annual grasses and broadleaf and sedge weeds as they germinate. MBI-005 EP is also a selective post-emergent herbicide for control or suppression of broadleaf and sedge weeds infesting turf and landscapes. MBI-005 EP does not control emerged grasses. The concentrate of MBI-005 EP must be mixed with water and applied as a spray with ground or aerial equipment equipped

for conventional herbicide spraying. MBI-005 EP can also be mixed in liquid fertilizers when applied to the soil for pre-emergent weed control.

Close scouting and early attention to infestations is highly recommended. Proper timing of application prior to weed germination and/or for targeting newly emerged weeds is important for optimal results.

Pre-emergent herbicide

The efficacy of MBI-005 EP as a pre-emergent herbicide will improve if the application is followed by 1/2" of rainfall or its equivalent by sprinkler irrigation.

Post-emergent herbicide

Applications of MBI-005 EP as a post-emergent herbicide should be targeted against weeds that are 2 inches in height or less. Thorough coverage of weed foliage is necessary for control. MBI-005 EP does not have systemic activity.

Mode of action: MBI-005 EP inhibits cellulose biosynthesis in the meristem of sensitive plant species. When weeds germinate in the treated area, they contact the herbicide and both shoot and root growth stops.

USE RESTRICTIONS

Not for use on sod farms or on grass grown for seed.

Do not apply this product through any type of chemigation system.

Do not apply this product to the green foliage of ornamental plantings.

Do not apply this product when wind conditions will allow drift to adjacent, broadleaf ornamental plants.

Do not apply to pasture, grazing lands or grasses grown for hay.

APPLICATION INSTRUCTIONS

Under heavy weed populations, use the higher label rates and/or increase the spray volume to improve coverage.

Apply MBI-005 EP to prevent the germination and emergence of weeds for a period of up to 12 weeks after application.

A spreader/sticker or adjuvant which has been approved for growing plants can be added for hard to wet weed species.

GROUND APPLICATIONS

Apply MBI-005 EP with quantities of water sufficient to provide uniform coverage of the soil or foliage of targeted weed species. The amount of water needed per acre will depend upon application equipment.

Spray volumes for pre-emergent herbicide use is 40 to 200 gallons per acre. The efficacy of MBI-005 EP as a pre-emergent herbicide will improve if the application is followed by ½" of rainfall or its equivalent by sprinkler irrigation. Or, where feasible, lightly incorporate MBI-005 into the top 1-inch of the soil.

Spray volumes for post-emergent herbicide use is 30 to 40 gallons of water per acre. Target applications of MBI-005 EP against weeds that are 2 inches in height or less.

Use sprayers equipped with appropriate nozzles that provide uniform and accurate spray distribution and minimize drift. Nozzle and in-line screens must be no finer than 50 mesh. Application during windy conditions will result in uneven application and inconsistent weed control.

Ground Applications (Band)

Apply MBI-005 EP uniformly at the broadcast equivalent rate and volume per acre. To determine these:

$$\frac{\text{band width in inches}}{\text{row width in inches}} \times \text{broadcast rate per acre} = \text{band rate per acre}$$

AERIAL APPLICATIONS

Use at least 10 gallons of total volume per acre in water based sprays for pre-emergent herbicide application and use at least 20 gallons of total volume per acre in water based sprays for post-emergent herbicide application. See specific instructions for pre and post-emergent herbicide applications. DO NOT apply during periods of gusty winds or when wind conditions favor drifting.

MIXING INSTRUCTIONS

SHAKE WELL PRIOR TO USE

Important – Do not add MBI-005 EP to the mix tank before introducing the desired amount of water. Add water to the mix tank. Start the mechanical or hydraulic agitation to provide moderate circulation before adding MBI-005 EP. Add the desired volume of MBI-005 EP to the mix tank and continue circulation. Maintain circulation while loading and spraying. Do not mix more MBI-005 EP than can be used in 24 hours. Use a strainer no finer than 50 mesh in conventional spray systems.

TANK MIXING

This product can be tank mixed in accordance with the most restrictive of label limitations and precautions. No label dosage rates may be exceeded. This product cannot be mixed with any product containing a label prohibition against such mixing.

To ensure compatibility of tank-mix combinations they must be evaluated prior to use. To determine the physical compatibility of this product with other products use a jar test. Using a quart jar, add the proportionate amounts of the products to one quart of water with agitation. Add dry formulations first, then flowables, then emulsifiable concentrates last. After thoroughly mixing, let this mixture stand for 5 minutes. If the combination remains mixed or can be readily

be remixed, it is physically compatible. Once compatibility has been proven, use the same procedure for adding required ingredients to the spray tank.

AERIAL DRIFT REDUCTION ADVISORY INFORMATION

GENERAL: Avoiding spray drift at the application site is the responsibility of the applicator. The Interaction of many equipment and weather related factors determine the potential for spray drift. The applicator and the grower are responsible for considering all these factors when making decisions. Where states have more stringent regulations, they should be observed. Note: This section is advisory in nature and does not supersede the mandatory label requirements.

INFORMATION ON DROPLET SIZE: The most effective way to reduce drift potential is to apply large droplets. The best drift management strategy is to apply the largest droplets that will provide sufficient coverage and control. Applying larger droplets reduces drift potential, but will not prevent drift if applications are made Improperly, or under unfavorable environmental conditions (see Wind, Temperature and Humidity, and Temperature Inversions).

CONTROLLING DROPLET SIZE: Use high flow rate nozzles to apply the highest practical spray volume. Nozzles with higher rated flows produce larger droplets. Pressure - Do not exceed the nozzle manufacturer's recommended pressures. For many nozzle types lower pressure produces larger droplets. When high flow rates are needed, use higher flow rate nozzles instead of increasing pressure. Number of nozzles - Use the minimum number of nozzles that provide uniform coverage. Nozzle Orientation - Orienting nozzles so that the spray is released parallel to the airstream produces larger droplets than other orientations and is the recommended practice. Significant deflection from horizontal will reduce droplet size and increase drift potential. Nozzle Type - Use a nozzle type that is designed for the intended application. With most nozzle types, narrower spray angles produce larger droplets. Consider using low-drift nozzles. Solid stream nozzles oriented straight back produce the largest droplets and the lowest drift.

BOOM WIDTH: For aerial applications, the boom width must not exceed 75% of the wingspan or 90% of the rotary blade. Use upwind swath displacement and apply only when wind speed is 3-10 mph as measured by an anemometer. Use medium or coarser spray according to ASAE 572 definition for standard nozzles or VMD for spinning atomizer nozzles. If application includes a no-spray zone, do not release spray at a height greater than 10 feet above the ground or crop canopy.

APPLICATION HEIGHT: Do not make application at a height greater than 10 feet above the top of the largest plants unless a greater height is required for aircraft safety. Making applications at the lowest height that is safe reduces exposure to droplets to evaporation and wind.

SWATH ADJUSTMENT: When applications are made with a crosswind, the swath will be displaced downward. Therefore, on the up and downwind edges of the field, the applicator must compensate for this displacement by adjusting the path of the aircraft upwind. Swath adjustment distance should increase, with increasing drift potential (higher wind, smaller drops, etc.).

WIND: Drift potential is lowest between wind speeds of 2 - 10 mph. However, many factors, including droplet size and equipment type determine drift potential at any given speed. Application should be avoided above 2 mph due to variable wind direction and high inversion

potential. NOTE: Local terrain can influence wind patterns. Every applicator should be familiar with local wind patterns and how they affect spray drift.

TEMPERATURE AND HUMIDITY: When making applications in low relative humidity, set up equipment to produce larger droplets to compensate for evaporation. Droplet evaporation is most severe when conditions are both hot and dry.

TEMPERATURE INVERSIONS: Do not apply during a temperature inversion because drift potential is high. Temperature inversions restrict vertical air mixing, which causes small, suspended droplets to remain in a concentrated cloud. This cloud can move in unpredictable directions due to the light variable winds common during inversions. Temperature inversions are characterized by increasing temperatures with altitude and are common on nights with limited cloud cover and light to no wind. They begin to form as the sun sets and often continue into the morning. Their presence can be indicated by ground fog; however, if fog is not present, inversions can also be identified by the movement of smoke from a ground source or an aircraft smoke generator. Smoke that layers and moves laterally in a concentrated cloud (under low wind conditions) indicates an inversion, while smoke that moves upward and rapidly dissipates indicates good vertical air mixing.

SENSITIVE AREAS: The pesticide should only be applied when the potential for drift to adjacent sensitive areas (e.g. residential areas, bodies of water, known habitat for threatened or endangered species, non-target crops) is minimal (e.g. when wind is blowing away from the sensitive areas). Do not allow spray to drift from the application site and contact people, structures people occupy at any time and the associated property, parks and recreation areas, non-target crops, aquatic and wetland areas, woodlands, pastures, rangelands, or animals.

SHAKE WELL BEFORE USE

PRE-EMERGENT WEED APPLICATIONS FOR ESTABLISHED TURF AND ORNAMENTALS

Apply 8 to 12 quarts of MBI-005 EP in 40 – 200 gallons of water per acre or 6 to 9 fluid ounces of MBI-005 EP in 1 to 5 gallons of water per 1000 square feet.

MBI-005 EP applied as a pre-emergent herbicide controls the following annual grasses, broadleaf and sedge weed species.

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
Turf Ryegrass <i>Lolium</i> spp. Bermudagrass <i>Cynodon</i> sp. Bentgrass <i>Agrostis</i> spp. Fescues	Grasses Barnyardgrass (<i>Echinochloa crus-galli</i>)	Ground Aerial	8-12 quarts per acre	Apply in 40-200 gallons of water per acre
	Bluegrass, annual (<i>Poa annua</i>)		6 to 9 fluid ounces per 1000 square feet	Apply in 1 to 5 gallons per 1000 square feet
	Brome (<i>Bromus</i> spp.)			Annual bluegrass MBI-005 EP will prevent the germination of annual
	Crabgrass (<i>Digitaria</i>)			

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
<i>Festuca</i> spp.	spp.)			bluegrass. MBI-005 will not affect established annual bluegrass. If maintenance of annual bluegrass is desired, do not apply this product during the period of annual bluegrass germination.
Kentucky Bluegrass <i>Poa pratensis</i>	Crowfoot grass (<i>Dactyloctenium, aegyptium</i>)			
Annual bluegrass <i>Poa annua</i>	Dallisgrass (seedling (<i>Paspalum dilatatum</i>)			
Kikuyugrass <i>Pennisetum clandestinum</i>	Foxtail, giant (<i>Setaria faberia</i>)			
Zoysiagrass <i>Zoysia</i> spp.	Foxtail, green (<i>Setaria viridis</i>)			
	Foxtail, yellow (<i>Setaria glauca</i>)			
	Goosegrass (<i>Eleusine indica</i>)			
	Itchgrass <i>Rottboellia exalta</i>			
	Johnsongrass (from seed) <i>Sorghum halepense</i>			
	Junglerice <i>Echinochloa colona</i>			
	Lovegrass (from seed) <i>Eragrostis</i> spp.			
				Crabgrass MBI-005 EP provides pre-emergence control of crabgrass species in established turf in landscapes and for grounds maintenance for crabgrass control in the spring, summer, or fall. Single application Apply 8-12 qts/acre Split application Apply 8 qts/acre followed by 4 qts/A (30-60 days after initial treatment) Sequential application Apply 8-12 qts/acre every 14-42 days Apply in 40-200 gallons of water per acre Apply in 1 to 5 gallons per 1000 square feet
Established Ornamental Plantings: Flower Beds and Perennial Shrubs	Panicum, browntop <i>Panicum fasciculatum</i>	Ground Air	8-12 quarts per acre	Apply in 40-200 gallons of water per acre
	Panicum, fall <i>Panicum dichotomiflorum</i>		6 to 9 fluid ounces per 1000 square feet	Apply in 1 to 5 gallons of water per 1000 square feet
	Panicum, Texas			Apply to soil before

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
	<i>Panicum texanum</i>			transplanting bedding plants into the treated soil. Do not allow spray to come in contact with green foliage of ornamental plantings.
	Sandbur, field <i>Cenchrus incertus</i>			
	Signalgrass <i>Brachiaria platyphylla</i>			Apply into the soil surface by irrigation or raking into soil surface following application.
	Sprangletop, Mexican <i>Leptochloa uninervia</i>			
	Sprangletop, red <i>Leptochloa filiformis</i>			
	Witchgrass <i>Panicum capillare</i>			
	Woolly cupgrass <i>Eriochloa villosa</i>			
	Broadleaves			
	Bittercress <i>Cardamine spp.</i>			
	Burweed, lawn <i>Soliva pterosperma</i>			
	Carpetweed <i>Mollugo verticillata</i>			
	Chickweed, common <i>Stellaria media</i>			
	Chickweed, mouseear <i>Cerastium vulgatum</i>			
	Clover, hop <i>Trifolium procumbens</i>			
	Cudweed <i>Gnaphalium spp.</i>			
	Filaree <i>Erodium spp.</i>			
	Geranium, Carolina <i>Geranium carolinianum</i>			
	Henbit <i>Lamium amplexicaule</i>			

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
	Knotweed, prostrate <i>Polygonum aviculare</i>			
	Kochia <i>Kochia scoparia</i>			
	Lambsquarters <i>Chenopodium album</i>			
	Lespedeza, common <i>Lespedeza striata</i>			
	Mustard <i>Brassica spp.</i>			
	Oxalis, buttercup <i>Oxalis pes-caprae</i>			
	Pigweed <i>Amaranthus</i> <i>spp.</i>			
	Purslane, common <i>Portulaca oleracea</i>			
	Purslane, Florida <i>Richardia scabra</i>			
	Rocket, London <i>Sisymbrium irio</i>			
	Shepardspurse <i>Capsella bursa-pastoris</i>			
	Speedwell, corn <i>Veronica arvensis</i>			
	Smartweed, Pennsylvania <i>Polygonum</i> <i>pensylvanicum</i>			
	Spurge, annual <i>Euphorbia spp.</i>			
	Spurge, garden <i>Euphorbia hirta</i>			
	Spurge, prostrate <i>Chamaesyce</i> <i>humistrata</i>			

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
	Woodsorrel, creeping <i>Oxalis comiculata</i>			
	Woodsorrel, yellow <i>Oxalis stricta</i>			

Do not reseed or overseed treated areas within 3 months after a single application. Reseeding or overseeding too early may inhibit the establishment of desired turf grass. When reseeding or overseeding, proper cultural practices such as soil cultivation, irrigation and fertilization should be followed. Use mechanical or power seeding equipment designed to give good seed to soil contact.

POST-EMERGENT WEED APPLICATIONS FOR ESTABLISHED TURF AND ORNAMENTALS

Apply 6 to 8 quarts of MBI-005 EP in 30 – 40 gallons of water per acre or 4.4 to 6 fluid ounces per 1000 square feet. Maintain a 1 to 20 dilution ratio. MBI-005 EP is a slow acting herbicide and may require up to 21 days following application for maximum effect. Control of deep rooted species such as dandelion may require multiple applications.

MBI-005 EP for control the following broadleaf and sedge weed species:

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
Turf	Amaranth, Palmer <i>Amaranthus palmeri</i>	Ground	6 to 8 quarts	Apply in 30-40 gallons of water per acre
Ryegrass <i>Lolium</i> spp.	Amaranth, Powell <i>Amaranthus powelli</i>	Aerial	4.4 to 6 fluid ounces per 1000 square feet	Maintain a 1 to 20 dilution ratio. Mix 6.4 fluid ounces of MBI-005 per 1 gallon of spray mixture.
Bermudagrass <i>Cynodon</i> sp	Bedstraw, catchweed <i>Galium aparine</i>			
Bentgrass <i>Agrostis</i> spp.	Beggarweed, Florida <i>Desmodium tortuosum</i>			
Fescues <i>Festuca</i> spp.	Buckwheat, wild <i>Polygonum convolvulus</i>			
Kentucky Bluegrass <i>Poa pratensis</i>	Buffalo bur <i>Solanum rostratum</i>			
Annual bluegrass <i>Poa annua</i>	Bulrush, ricefield <i>Scirpus mucronatus</i>			
Kikuyugrass <i>Pennisetum</i>	Bulrush, river <i>Scirpus fluviatilis</i>			

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
<p><i>clandestinum</i></p> <p>Zoysiagrass Zoysia spp.</p>	<p>Burhead <i>Echinodorus cordifolius</i></p> <p>Carpetweed <i>Mollugo verticillica</i></p>			
<p>Established Ornamental Plantings: Flower Beds and Perennial Shrubs</p>	<p>Chickweed, common <i>Stellaria media</i></p> <p>Cocklebur, common <i>Xanthium strumarium</i></p> <p>Dandelion <i>Taraxacum</i> spp. Deadnettle, purple <i>Lamium purpurium</i> Devil's claw <i>Proboscidea louisianica</i> Galinsoga <i>Galinsoga parviflora</i> Henbit <i>Lamium amplexicaule</i> Horseweed (marestail) <i>Conyza Canadensis</i> Jimsonweed <i>Datura stramonium</i> Kochia <i>Kochia scoparia</i> Lambsquarter, common <i>Chenopodium album</i> Lespedeza, common <i>Lespedeza striata</i> Mallow, Venice <i>Hibiscus trionum</i> Morning glory <i>Ipomoea hederacea</i> Mustard <i>Brassica</i> spp. Nightshade, black</p>	<p>Ground Aerial</p>	<p>6 to 8 quarts</p> <p>4.4 to 6 fluid ounces per 1000 square feet</p>	<p>Apply in 30-40 gallons of water per acre</p> <p>Maintain a 1 to 20 dilution ratio.</p> <p>Mix 6.4 fluid ounces of MBI-005 per 1 gallons of spray mixture.</p> <p>Do not spray annual broadleaf plants or foliage of perennial shrubs.</p>

Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
	<i>Solanum nigrum</i> Nightshade, eastern black <i>Solanum ptycanthum</i> Nightshade, hairy <i>Solanum sarrachoides</i> Oxalis, buttercup <i>Oxalis pes-caprae</i> Pigweed, American <i>Amaranthus spp.</i> Puncturevine <i>Tribulus terrestris</i> Purslane, common <i>Portulaca oleracea</i> Pusley, Florida <i>Richardia scabra</i> Radish, wild <i>Raphanus raphanistrum</i> Ragweed, common <i>Ambrosia artemisiifolia</i> Ragweed, giant <i>Ambrosia trifida</i> Redstems <i>Ammania spp.</i> Rocket, London <i>Symbrium irio</i> Sesbania, hemp <i>Sesbania exaltata</i> Shepard's-purse <i>Capsella bursa-pastoris</i> Sicklepod <i>Senna obtusifolia</i> Sida, prickly <i>Sida spinosa</i> Speedwell, corn <i>Veronica arvensis</i> Smartweed, ladythumb <i>Polygonum persicaria</i> Smartweed, Pennsylvania <i>Polygonum pennsylvanicum</i> Spurge, annual <i>Euphorbia spp.</i> Spurge, garden <i>Euphorbia hirta</i> Spurge prostrate <i>Chamaesyce humistrata</i>			

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Use Site	Target Pest	Application Method	Product Use per Application	Application Instructions
	Woodsorrel, creeping <i>Oxalis cxomiculata</i> Woodsorrel, yellow <i>Oxalis stricta</i>			

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in a cool dry place. Avoid freezing.

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). Pesticide wastes may be toxic. Improper disposal of unused pesticide, washwater or rinse water is a violation of federal law.

Container Handling: Non-refillable container. Do not reuse or refill this container.

Triple rinse container (or equivalent) 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 ¼ 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. Do not burn unless allowed by state and local ordinances.

MARRONE BIO INNOVATIONS WARRANTY

To the extent consistent with applicable law, the seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product. The user assumes all risks of use, storage or handling that are not in strict accordance with the accompanying directions.

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Sublabel C: Residential Lawns

MBI-005 EP

**(Alternate Brand Name: "Opportune")
Pre and Post-emergent Herbicide
(NOP 3 Leaf) For Organic Lawn Care (OMRI Placeholder)**

For the control of listed annual grasses, broadleaf and sedge weeds on residential lawns.

Active Ingredient: Killed, non-viable *Streptomyces acidiscabies* strain RL-110^T cells and spent fermentation media* 17%
Other ingredients: 83%
Total: 100%

*Product contains not less than 4 mg/ml Thaxtomin A.

**KEEP OUT OF REACH OF CHILDREN
CAUTION**

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. • Call a poison control center or doctor for treatment advice.
If inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call poison control center or doctor for treatment advice.
If swallowed	<ul style="list-style-type: none"> • 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.
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.

HOT LINE NUMBER

Have the product container or label with you when calling a poison control center or doctor, or going for treatment. You may also contact 1-800-222-1222 for emergency medical treatment information.

EPA Reg. No.: (pending as File Symbol 84059-RE) **EPA Est. No.:** XXXXX-XX-XXX

Net Contents: XX
(Batch)(Lot) No: XXXX

Manufactured by: Marrone Bio Innovations, Inc.
2121 Second St., Suite B-107
Davis, CA 95618 USA
1-877-664-4476; www.marronebioinnovations.com; info@marronebio.com

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Marrone Bio Innovations name and logo are registered trademarks of Marrone Bio Innovations, Inc.

PRECAUTIONARY STATEMENTS

Hazards to humans and domestic animals - CAUTION. Causes moderate eye and skin irritation. Harmful if inhaled, swallowed or absorbed through skin. Avoid contact with eyes, skin or clothing. Avoid breathing spray mist. Wear goggles or safety glasses, waterproof gloves, long sleeved shirt and long pants, gloves and shoes plus socks. 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.

Environmental Hazards: To protect the environment, do not allow pesticide to enter or run off into storm drains, drainage ditches, gutters or surface waters. Applying this product in calm weather when rain is not predicted for the next 24 hours will help to ensure that wind or rain does not blow or wash pesticide off the treatment area. Rinsing application equipment over the treated area will help avoid runoff to water bodies or drainage systems.

DIRECTIONS FOR USE

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

Product Information

HOW IT WORKS

MBI-005 EP is a highly selective post-emergent herbicide for spot control of broadleaf weeds infesting residential lawns. Close scouting and early attention to infestations is highly recommended. Proper timing of application targeting newly emerged weeds is important for optimal results.

MBI-005 EP does not have systemic activity.

HOW TO APPLY

Mix MBI-005 EP with water and apply as a foliar spray with hand-held equipment. Thorough coverage of weed foliage is necessary for control.

SHAKE WELL BEFORE USE.

- Add 6.4 fl. oz. of MBI-005 EP for each 1 gallon of water in a tank sprayer. Agitate prior to use.
- Use a coarse spray pattern to reduce drift to desirable plants.
- Spray weeds to thoroughly wet foliage.
- If desirable plants are accidentally sprayed, rinse immediately with water.
- Apply when weeds are leafed out and actively growing.
- Apply when air is calm to prevent drift to desirable plants.

- Hard to kill weeds may require a repeat application if re-growth occurs. Repeat applications at 21 day intervals.

WHERE TO APPLY

Apply to the following types of turf:

- Ryegrass
- Bentgrass
- Fescues
- Kentucky bluegrass

To control the following weeds:

- Dandelion
- Plantain
- Knotweed
- Oxalis
- Ragweed
- Shepard's purse
- Buttercup
- English daisy
- Ground ivy (Creeping Charlie)

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in a cool, dry place out of direct sunlight and away from heat sources. Keep container closed when not in use.

Pesticide Disposal and Container Handling: If empty: Nonrefillable container. Do not reuse or refill this container. Place in trash and offer for recycling if available.

If partially filled: Call your local solid waste agency or (800) 858-7378 (National Pesticide Information Center) for disposal instructions. Never place unused product down any indoor or outdoor drain.

**MARRONE BIO INNOVATIONS
WARRANTY**

To the extent consistent with applicable law, the seller makes no warranty, expressed or implied, of merchantability, fitness or otherwise concerning use of this product. The user assumes all risks of use, storage or handling that are not in strict accordance with the accompanying directions.