

INTEGRAL® II
A Liquid Biological Fungicide

MASTER LABEL

Sub-label A: Agricultural Use Only – In-Furrow Treatment, Foliar Applications, or Applications to Soil or Growing Media

Sub-label B: Commercial Seed Treatment

ACTIVE INGREDIENT:	
<i>Bacillus subtilis</i> , MBI 600*	5.0%
OTHER INGREDIENTS	95.0%
TOTAL:	100.0%

* Contains not less than 2.2×10^{10} viable spores per mL

EPA Registration No. 71840-A

EPA Est. No. 67064-IA-001

Becker Underwood
801 Dayton Avenue
P.O. Box 667
Ames, IA 50010
www.BeckerUnderwood.com

ACCEPTED

DEC 22 2009

Under the Federal Insecticide, Fungicide,
and Rodenticide Act, as amended, for
the pesticide registered under
EPA Reg. No.

71840-6

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* Contains not less than 2.2×10^{10} viable spores per mL

KEEP OUT OF REACH OF CHILDREN

See Additional Precautionary Statements Inside Leaflet

EPA Reg. No. 71840- A EPA Est. No. 67064-IA-001
U.S. Patent No. 5,061,495 • U.S. Patent No. 5,344,647 • Canada Patent No. 1,324,099

NET CONTENTS:

Another quality biological product from:

Becker Underwood
801 Dayton Avenue
P.O. Box 667
Ames, IA 50010
Tel. 515-232-5907 * 800-232-5907
www.BeckerUnderwood.com

Batch code: Located on physical container.

INTEGRAL is a Reg. TM of Becker Underwood, Inc.
Bacillus subtilis, MBI 600 strain is a product of Becker Underwood, Inc.

PRECAUTIONARY STATEMENTS

FIRST AID

Have the product container or label with you when calling your poison control center or doctor or going for treatment. You may also contact Poison Control Center at 1-800-222-1222 for emergency information.

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

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

As a general precaution when exposed to concentrations of living microbial products such as this, all mixers/loaders and applicators must wear a dust/mist filtering 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 such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

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.

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 high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash waters 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 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 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 area if there will be no contact with anything that has been treated.

GENERAL INFORMATION

INTEGRAL® II contains bacteria that colonize developing root and shoot systems of plants, suppressing by competition, disease organisms such as *Botrytis*, *Fusarium*, *Rhizoctonia*, and *Alternaria* as well as those organisms causing powdery mildew and anthracnose. Protection against root and soil borne pathogens is extended throughout the growing season as bacteria grow with the roots. As a result of this biological protection, vigorous root and shoot systems are established by treated plants, resulting in more uniform stands and greater yields.

In addition, INTEGRAL® II has been shown to increase the amount of nodulation by nitrogen-fixing bacteria when used on many legumes. This improvement in nodulation is a result of a healthier root system allowing more sites for nodules to form from inoculated or naturally occurring soil borne nitrogen-fixing bacteria.

INTEGRAL® II is for use in foliar and in-furrow applications or for treatment of soil or growing media. Apply INTEGRAL® II using conventional application equipment as well as irrigation systems commonly used for chemigation.

FOR USE AS AN IN-FURROW TREATMENT

Apply INTEGRAL® II as a water-based suspension with other in-furrow treatments (including Becker Underwood liquid inoculants such as VAULT®, *Rhizobium* inoculants, etc.) via standard application equipment.

To mix, first add the in-furrow treatment(s) and/or the *Rhizobium* liquid inoculant to the mix tank with approximately ½ of the required water. Slowly add INTEGRAL® II to the slurry until a uniform suspension is obtained. Add the remainder of the water and maintain constant agitation throughout the application. Do not mix INTEGRAL® II with any product containing a label prohibition against such mixing. When tank-mixing INTEGRAL® II with any other registered in-furrow treatment insecticide and/or fungicide, always read and follow all use directions, restrictions, and precautions of both INTEGRAL® II and the tank mix partner(s). The resulting tank mix must be in accordance with the most restrictive label limitations and precautions. Do not exceed label dosage rates.

Apply the slurry at 5-20 gallons (19-76 L) per acre. Do not store mixed slurries for longer than 4 hours.

ATTENTION: If *Rhizobium* inoculants are to be used in the tank mix with other in-furrow treatments (fungicides, insecticides, nematicides, fertilizers, etc.), make sure that they are compatible (not harmful) to the *Rhizobium*. Use only chlorine-free water in the tank mix. If one or more treatments are not compatible (harmful), mix those products in and apply them from a separate mix tank.

COTTON AND POD VEGETABLES, SOYBEANS CORN AND OTHER AGRONOMIC ROW CROPS

Apply INTEGRAL® II concentrate at 0.1-1.2 fl. oz. per acre (7.3-87.7 mL per hectare) following the application procedures listed above. Use higher rates of INTEGRAL® II when disease pressure is severe.

PEANUTS

Apply INTEGRAL® II concentrate at 0.1-1.2 fl. oz. per acre (7.3-87.7 mL per hectare) following the application procedures listed above. Use higher rates of INTEGRAL® II when disease pressure is severe.

When INTEGRAL® II is co-packed with VAULT® Liquid Peanut Inoculant, you will also find a bottle labeled Natural Growth Promoter plus a bladder of liquid *Rhizobium* inoculant in the same box. Note that the Natural Growth Promoter, which is packaged with INTEGRAL® II, is designed to work with the *Rhizobium* inoculant. Neither the Natural Growth Promoter nor the *Rhizobium* inoculant affects the activity of INTEGRAL® II. Combine INTEGRAL® II, *Rhizobium* inoculant, and the Natural Growth Promoter, plus a sufficient quantity of de-chlorinated water, into a homogeneous mixture prior to application to the seed furrow. Apply 0.1-1.2 fl. oz. per acre (7.3-87.7 mL per hectare)

FOR USE AS A SOIL OR GROWING MEDIA TREATMENT

Apply INTEGRAL® II as a water-based slurry to soil or growing media for preventative control and suppression of plant root pathogens like *Rhizoctonia spp.* and *Fusarium spp.* INTEGRAL® II can be tank-mixed with other registered insecticides, fungicides or fertilizers. Pretest for physical compatibility and always read and observe all directions, restrictions, and precautions listed on the labels of all products used. The resulting tank mix must be in accordance with the most restrictive label limitations and precautions. Do not exceed label dosage rates.

APPLICATION RATES: Mix 1.0 to 100.0 fl. oz. of INTEGRAL® II in 100 gallons of water (78-7812 mL per 1000 L). Constant agitation is required to maintain INTEGRAL® II in suspension. Apply evenly with conventional application equipment to thoroughly soak the growing media or soil through the root zone. For loose growing media, apply water-based slurry at a rate of 0.5 to 5 gallons per cubic yard of growing media (2.48-24.8 L per cubic meter).

Begin applications during or after seeding, sticking of cuttings or transplanting to pots, trays or containers, or when environmental conditions are favorable for disease development. For optimal control use every 21-28 days throughout the growing cycle. Use higher rates of INTEGRAL® II and shorter application intervals when disease pressure is severe.

FOR USE AS A FOLIAR TREATMENT

INTEGRAL® II provides broad spectrum control of several foliar diseases, including *Botrytis*, powdery mildew, and anthracnose. INTEGRAL® II is most effective as a preventative treatment. Apply when environmental conditions are favorable for disease development, but prior to disease onset. INTEGRAL® II can be tank-mixed with most pesticides and fertilizers, but physical compatibility should be determined prior to use by mixing proportional quantities of the products in water. The resulting tank mix must be in accordance with the most restrictive label limitations and precautions. Do not exceed label dosage rates.

APPLICATION RATES:

FOR FIELD CROPS: Apply INTEGRAL® II at a rate of 1 quart to 2.5 gallons per acre (2.3-23.4 L per hectare) at 7 to 10 day intervals as needed. Mix and apply INTEGRAL® II in a sufficient volume of water to ensure uniform dispersion of product in the spray tank and thorough coverage of foliage and shoot tissue, applying a minimum volume of 50 gallons per acre. Constant agitation of the spray mixture during mixing and application is necessary to maintain uniform suspension. Use higher rates of INTEGRAL® II and shorter application intervals when disease pressure is severe.

FOR GREENHOUSE CROPS: Tank mix INTEGRAL® II at a ratio of 1 quart–2.5 gallons in 100 gallons (2.5 – 25 L/1000 L). Spray plant until solution runs-off foliage and shoot tissue. Apply at 7 to 10 day intervals or as needed. Constant agitation of the spray mixture during mixing and application is necessary to maintain uniform suspension. Use higher rates of INTEGRAL® II and shorter application intervals when disease pressure is severe.

USES AND APPLICATION RATES FOR SELECTED CROPS

Field Crops	USE	DISEASES	RATE
Agronomic Row or Other Field Crops: Cotton, Pod vegetables, Soybeans, Corn, Peanuts and other agronomic row crops	In-furrow	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	0.1-1.2 fl. oz./acre ¹ 7.3-87.7 mL/ha ¹
Asparagus	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Botrytis blight (<i>Botrytis cinera</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Brassica (cole crops): Broccoli, Cabbage, Cauliflower, Brussels Sprouts, Collards, Kale, Mustard Greens, Kolrabi, and other brassica crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Erysiphe polygoni</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Bulb Vegetables: Onion, garlic, shallots and other bulb vegetables	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Botrytis neck rot (<i>Botrytis spp.</i>) Botrytis leaf blight (<i>Botrytis squamosa</i>) Powdery mildew (<i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/ acre ² 2.3-23.4 L/ha ²
Berry Crops: Blueberry, Bushberry, Caneberry, other berry crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Botrytis Blight (<i>Botrytis cinerea</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Cucurbits: Cucumber, Cantaloupe, Melon, Muskmelon, Squash, Watermelon and other cucurbit crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Sphaerotheeca spp.</i> , <i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²

¹ Thoroughly soak soil or growing media through root zone

² Spray plant until run-off.

Flowers, Bedding Plants, Ornamentals, and Tropical Plants	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Gray mold (<i>Botrytis cinerea</i>) Powdery mildew (<i>Podosphaera spp.</i> , <i>Oidiopsis spp.</i> , <i>Sphaerotheca spp.</i> , <i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Fruiting Vegetables: Pepper, Tomato, Eggplant, and other fruiting vegetables	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Leveillula taurica</i> , <i>Oidiopsis taurica</i> , <i>Sphaerotheca spp.</i> , <i>Erysiphe spp.</i>) Gray mold (<i>Botrytis cinerea</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Grape	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Gray mold (<i>Botrytis cinerea</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Leafy Vegetables: Lettuce, Celery, Spinach, Parsley and other vegetable crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Erysiphe cichoracearum</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Pome Fruit: Apple, Crabapple, Pear, Quince, Mayhaw, and other pome fruit	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Podosphaera leucotricacha</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Stone Fruit: Apricot, Cherry, Nectarine, Peach, Plum, Prune, and other stone fruit crop	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Gray mold (<i>Botrytis cinerea</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Strawberry	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Botrytis (<i>Botrytis spp.</i>) Gray mold (<i>Botrytis cinerea</i>) Powdery mildew (<i>Erysiphe spp.</i> , <i>Sphaerotheca macularis</i>) Anthracnose (<i>Colletotrichum spp.</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²

¹ Thoroughly soak soil or growing media through root zone

² Spray plant until run-off.

Trees and shrubs: Conifers, deciduous trees, shrubs, and other tree and shrub crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Podoshiera spp.</i> , <i>Oidiopsis spp.</i> , <i>Sphaerotheca spp.</i> , <i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Tuber/Root and Corm Vegetables: Carrot, Potato, Sweet Potato, Beets, Ginger, Horseradish, Ginseng, Turnip, and other tuber/root and corm crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Erysiphe spp.</i>) Gray mold (<i>Botrytis spp.</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²
Turf, Sod, Lawns, and Golf Courses: Bluegrasses, Bentgrasses, Bermudagrass, Zoysiagrass and other grasses	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/acre ² 2.3-23.4 L/ha ²

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Greenhouse Crops	USE	DISEASES	RATE
Brassica (cole crops): Broccoli, Cabbage, Cauliflower, Brussels Sprouts, Collards, Kale, Mustard Greens, Kohlrabi, and other brassica crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Erysiphe polygoni</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²
Bulb Vegetables: Onion, garlic, shallots and other bulb vegetables	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Botrytis neck rot (<i>Botrytis spp.</i>) Botrytis leaf blight (<i>Botrytis squamosa</i>) Powdery mildew (<i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²
Cucurbits: Cucumber, Cantaloupe, Melon, Muskmelon, Squash, Watermelon and other cucurbit crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Sphaerotheca spp.</i> , <i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²
Flowers, Bedding Plants, Ornamentals, and Tropical Plants	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Gray mold (<i>Botrytis cinerea</i>) Powdery mildew (<i>Podoshaera spp.</i> , <i>Oidiopsis spp.</i> , <i>Sphaerotheca spp.</i> , <i>Erysiphe spp.</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²
Fruiting Vegetables: Pepper, Tomato, Eggplant, and other fruiting vegetables	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Leveillula taurica</i> , <i>Oidiopsis taurica</i> , <i>Sphaerotheca spp.</i> , <i>Erysiphe spp.</i>) Gray mold (<i>Botrytis cinerea</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²
Leafy Vegetables: Lettuce, Celery, Spinach, Parsley and other vegetable crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Erysiphe cichoracearum</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²
Tuber/Root and Corm Vegetables: Carrot, Potato, Sweet Potato, Beets, Ginger, Horseradish, Ginseng, Turnip, and other tuber/root and corm crops	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	Powdery mildew (<i>Erysiphe spp.</i>) Gray mold (<i>Botrytis spp.</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²

¹Thoroughly soak soil or growing media through root zone

²Spray plant until run-off

Strawberry	Soil or growing media	<i>Rhizoctonia spp.</i> and <i>Fusarium spp.</i>	1.0-100.0 fl. oz./100 gal ¹ 78-7812 mL/1000 L ¹
	Foliar	<i>Botrytis (Botrytis spp.)</i> Gray mold (<i>Botrytis cinerea</i>) Powdery mildew (<i>Erysiphe spp.</i> , <i>Sphaerotheca macularis</i>) Anthracnose (<i>Colletotrichum spp.</i>)	1.0 qt - 2.5 gal/100 gal ² 2.5-25 L/1000 L ²

¹Thoroughly soak soil or growing media through root zone

²Spray plant until run-off

CHEMIGATION:

General Requirements –

- 1) Apply this product only through a drip (trickle) system or sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set or hand move irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- 3) If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- 4) 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.
- 5) 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.

Specific Requirements for Chemigation Systems Connected to Public Water Systems –

- 1) 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.
- 2) Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) 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 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.
- 3) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 4) 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.

- 5) 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.
- 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.
- 7) Apply INTEGRAL® II at the end of the water application, and in sufficient water for adequate coverage without excessive run off. Set the metering pump to the selected label use rate. Agitate the pesticide supply tank throughout the application of INTEGRAL® II.
- 8) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Drip (Trickle) Chemigation –

- 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 backflow.
- 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 filled with a system interlock.
- 7) Apply INTEGRAL® II at the end of the water application, and in sufficient water for adequate coverage without excessive run off. Set the metering pump to the selected label use rate. Agitate the pesticide supply tank throughout the application of INTEGRAL® II.

Specific Requirements for Sprinkler Chemigation –

- 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 backflow.

- 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 filled with a system interlock.
- 7) Apply INTEGRAL® II at the end of the water application, and in sufficient water for adequate coverage without excessive run off. Set the metering pump to the selected label use rate. Agitate the pesticide supply tank throughout the application of INTEGRAL® II.
- 8) Do not apply when wind speed favors drift beyond the area intended for treatment.

Application Instructions –

- 1) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 2) Determine the treatment rates as indicated in the directions for use and make proper dilutions.
- 3) Prepare a solution in the chemical tank by filling the tank with the required water and then adding product as required.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE:

Store in a dry place.

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 stated or local governments or by industry).

CONTAINER DISPOSAL:

Nonrefillable 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 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.

NOTICE – READ CAREFULLY BEFORE USING

CONDITIONS OF SALE AND LIMITED WARRANTY STATEMENT

Becker Underwood, Inc. warrants that this product conforms to the specifications on the label and is reasonably fit for the purposes stated on the label when used in strict accordance with the directions, subject to the inherent risks set forth below.

To the extent permitted by applicable law, Becker Underwood, Inc. MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.

Inherent Risks of Use: It is impossible to eliminate all risks associated with use of this product. Lack of performance, injury, or other unintended consequences may result because of such factors as use of product contrary to strict label instructions and established safe practice, abnormal conditions (such as excessive rainfall, drought, and Acts of God), presence of other materials, use in combination with other materials, the manner of application, or other factors, all of which are beyond the control of Becker Underwood, Inc. or the seller. All such risks shall be assumed by the buyer.

Limitations of Remedies: To the extent permitted by applicable law, the exclusive remedy for losses or damages resulting from this product (including claims based on contract, negligence, strict liability, or other legal theories), shall be limited to, at Becker Underwood, Inc. election, one of the following: (1) replacement of the amount of the product used; or (2) refund of the purchase price paid for the product. Becker Underwood Inc. shall not be liable for losses or damages resulting from handling, storage, or use of this product contrary to label instructions unless Becker Underwood Inc. is promptly notified of such loss and damage in writing. To the extent permitted by applicable law, Becker Underwood, Inc. shall not be liable for consequential or incidental damages or losses. Becker Underwood, Inc. neither assumes nor authorizes any person to assume for it, any other liability in connection with the sale, storage, use, or handling of this product other than expressly set forth herein.

Another quality biological product from:

Becker Underwood

801 Dayton Avenue

PO Box 667

Ames, IA 50010

Tel. 515-232-5907 • 800-232-5907

www.beckerunderwood.com

VAULT® and INTEGRAL®, are registered trademarks of Becker Underwood, Inc.
Bacillus subtilis, MBI 600 strain is a product of Becker Underwood, Inc.

INTEGRAL® II
A Liquid Biological Fungicide

SUB-LABEL B

For Commercial Seed Treatment Only

SUB-LABEL B

INTEGRAL® II

A Liquid Biological Fungicide
FOR USE AS A COMMERCIAL SEED TREATMENT

ACTIVE INGREDIENT:

<i>Bacillus subtilis</i> , MBI 600*	5.0%
OTHER INGREDIENTS	95.0%
TOTAL:	100.0%

* Contains not less than 2.2×10^{10} viable spores per mL

KEEP OUT OF REACH OF CHILDREN

See Additional Precautionary Statements Inside Leaflet

EPA Reg. No. 71840- EPA Est. No. 67064-IA-001
U.S. Patent No. 5,061,495 • U.S. Patent No. 5,344,647 • Canada Patent No. 1,324,099

NET CONTENTS:

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801 Dayton Avenue
P.O. Box 667
Ames, IA 50010
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www.BeckerUnderwood.com

Batch code: Located on physical container.

INTEGRAL is a Reg. TM of Becker Underwood, Inc.
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PRECAUTIONARY STATEMENTS

FIRST AID

Have the product container or label with you when calling your poison control center or doctor or going for treatment. You may also contact Poison Control Center at 1-800-222-1222 for emergency information.

Personal Protective Equipment (PPE)

As a general precaution when exposed to concentrations of living microbial products such as this, all mixers/loaders and applicators must wear a dust/mist filtering 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.

Environmental Hazards

For terrestrial uses: Do not contaminate water when cleaning equipment or disposing of equipment wash waters or rinsate

DIRECTIONS FOR USE

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

Not for use on agricultural establishments in hopper-box, planter-box, slurry-box or other seed treatment applications at or immediately before planting.

GENERAL INFORMATION

INTEGRAL® II contains bacteria, which colonize on the developing root system, suppressing disease organisms such as *Fusarium*, *Rhizoctonia*, and *Alternaria* that attack root systems. As the root system develops, the bacteria grow with the roots extending the protection throughout the growing season. As a result of this biological protection, a vigorous root system is established by the plant, which often results in more uniform stands and greater yields. In addition, INTEGRAL® II has been shown to increase the amount of nodulation by nitrogen-fixing bacteria when used on many legumes. This improvement in nodulation is a result of a healthier root system allowing more sites for nodules to form from inoculated or naturally occurring soil borne nitrogen-fixing bacteria.

FOR COMMERCIAL SEED TREATMENT

Dilute INTEGRAL® II with water and apply directly to dry seed or mix INTEGRAL® II with liquid *Rhizobium* inoculants and/or other registered seed treatment insecticides and fungicides. Do not mix INTEGRAL® II with any product containing a label prohibition against such mixing. When tank-mixing INTEGRAL® II with any other registered seed treatment insecticide and/or fungicide, always read and follow all use directions, restrictions, and precautions of both INTEGRAL® II and the tank mix partner(s). The resulting tank mix must be in accordance with the most restrictive label limitations and precautions. Do not exceed label dosage rates.

ATTENTION: If *Rhizobium* inoculants are to be used in the tank mix with other seed treatments (fungicides, insecticides, nematicides, fertilizers, etc.), make sure that they are compatible (not harmful) to the *Rhizobium*. Use only chlorine-free water in the tank mix. If one or more treatments are not compatible (harmful), mix the products in and apply them from a separate mix tank.

COTTON

For suppression of root diseases caused by *Rhizoctonia* and *Fusarium* seedling diseases, and *Fusarium* wilt, apply at 0.6-2.4 fl. oz. of INTEGRAL® II per 100 lbs (18-70 mL per 45 kg) of delinted cotton seed. Use higher rates of INTEGRAL® II when disease pressure is severe. Dilute with water to achieve improved application coverage to the seed. Please consult manufacturer for additional information.

SOYBEANS

For suppression of root diseases caused by *Rhizoctonia* and *Fusarium*, and for improvement of nodulation by *Bradyrhizobium japonicum*, combine with inoculant products (i.e., Becker Underwood's VAULT®). Apply 0.136 fl. oz. (4 mL) of INTEGRAL® II per 100 lbs (45 kg) of soybeans or in combination with *Bradyrhizobium japonicum* inoculant to improve nodule formation.

When INTEGRAL® II is co-packed with **VAULT® LVL Soybean Inoculant**, you will also find a bottle labeled Liquid Conditioner/Natural Growth Promoter plus a bladder of liquid *Rhizobium* inoculant in the same box. Note that the Liquid Conditioner/Natural Growth Promoter, which is packaged with INTEGRAL® II, is designed to work with the *Rhizobium* inoculant. Neither the Liquid Conditioner/Natural Growth Promoter nor the *Rhizobium* inoculant affects the activity of INTEGRAL® II. Combine contents of all three containers together and mix into a homogeneous mixture prior to application to the soybean seed. The final mixture will result in the following rates per 100 lbs (45 kg) of seed:

- 0.136 fl. oz. (4 mL) INTEGRAL® II Liquid Biological Fungicide
- 0.40 fl. oz. (12 mL) Liquid Conditioner/Natural Growth Promoter
- 2.60 fl. oz. (75 mL) *Rhizobium* inoculant

The **VAULT® HP Ultra-Low Volume, High Performance Growth Enhancement System for Soybeans** is comprised of three (3) components:

- Component A: Growth Enhancer
- Component B: INTEGRAL® II Biological Fungicide
- Component C: Concentrated Rhizobia Inoculant

Each case contains two (2) containers of each of the components and all together, treats a total of 10,000 lb. of seeds.

The Growth Enhancer co-packed with INTEGRAL® II is designed to work with the *Rhizobium* inoculant. Neither the liquid Growth Enhancer nor the *Rhizobium* inoculant affects the activity of INTEGRAL® II. Combine one (1) container of INTEGRAL® II with one (1) container of Growth Enhancer and one (1) container of *Rhizobium* Inoculant. Mix into a homogeneous mixture prior to application to the soybean seed. The final mixture will result in the following rates per 100 lbs (45 kg) of seed:

- 0.136 fl. oz. (4.0 mL) INTEGRAL® II Liquid Biological Fungicide
- 0.864 fl. oz. (25.6 mL) Growth Enhancer
- 1.000 fl. oz. (29.6 mL) *Rhizobium* inoculant

Always apply all three (3) components of the VAULT® HP System together. Applying only one or two components will not provide the desired results.

SEED AND POD VEGETABLES (SUCH AS GREEN BEANS, SNAP BEANS, LIMA BEANS, KIDNEY BEANS, NAVY BEANS, PINTO BEANS, WAX BEANS, POLE BEANS, GARDEN PEAS, PEAS, AND FIELD BEANS)

For suppression of root diseases caused by *Rhizoctonia* and *Fusarium*, apply 0.6-2.4 fl. oz. of INTEGRAL® II per 100 lbs (18-70 mL per 45 kg) of seed. Use higher rates of INTEGRAL® II when disease pressure is severe.

For improvement of nodulation by *Rhizobium* in fields where appropriate strains are detectable, apply 0.6-1.2 fl. oz. of INTEGRAL® II per 100 lbs (18-35 mL per 45 kg) of seed.

ALFALFA, FORAGE AND TURF GRASSES

For suppression of root diseases caused by *Rhizoctonia* and *Fusarium*, apply 0.2-12 fl. oz. of INTEGRAL® II per 100 lbs (6-352 mL per 45 kg) (large – small seed varieties respectively) of seed as a blend, or mixed with other registered seed treatments or liquid seed coating agents. Use higher rates of INTEGRAL® II when disease pressure is severe.

WHEAT AND BARLEY

For suppression of root diseases caused by *Rhizoctonia* and *Fusarium*, apply 0.1-0.6 fl. oz. of INTEGRAL® II per 100 lbs (3-18 mL per 45 kg) of seed. Use higher rates of INTEGRAL® II when disease pressure is severe.

CORN (Field and Sweet)

For suppression of root disease caused by *Fusarium*, apply 0.6-2.4 fl. oz. of INTEGRAL® II per 100 lbs (18-70 mL per 45 kg) of seed. Use higher rates of INTEGRAL® II when disease pressure is severe.

CANOLA

For suppression of root diseases caused by *Rhizoctonia* and *Fusarium*, apply 1.6-38 fl. oz. of INTEGRAL® II per 100 lbs (47-1115 mL per 45 kg) of seed. Use higher rates of INTEGRAL® II when disease pressure is severe.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE:

Store in a dry place.

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 stated or local governments or by industry).

CONTAINER HANDLING:

Nonrefillable 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 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.

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Inherent Risks of Use: It is impossible to eliminate all risks associated with use of this product. Lack of performance, injury, or other unintended consequences may result because of such factors as use of product contrary to strict label instructions and established safe practice, abnormal conditions (such as excessive rainfall, drought, and Acts of God), presence of other materials, use in combination with other materials, the manner of application, or other factors, all of which are beyond the control of Becker Underwood, Inc. or the seller. All such risks shall be assumed by the buyer.

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