

71840-5

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

12/10/2014

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George Fountas  
Product Registration Manager  
BASF Corporation  
Research Triangle Park  
27709 Research Triangle Park, USA

DEC 10 2014

Subject: Product Name - Integral  
EPA Reg. No: 71840-5  
Decision No. D-490238, D-497460, and D-470737  
Notification for revision of the label and CSF. Amendments to revise the label  
Notification Completed, Dated December 10, 2014.

Dear Mr. Fountas:

The Biopesticides and Pollution Prevention Division is in receipt of your applications, as indicated above, for notification under PR Notice 98-10 and two amendments to revise the label for the above product. This letter is being sent to you in response to all of these actions.

You submitted an application to amend the product label on October 5, 2012. The most current submitted label does take into account the concerns raised in the EPA e-mail of January 4, 2013 from D. Greenway to G. Sargent in regards to the label submission of October 5, 2012, and these changes to the label are acceptable.

You submitted a request for notification of changes to the label and CSF for this product on March 28, 2014. A preliminary screen of this request has been conducted for its applicability under PR Notice 98-10, and it has been determined that the action requested falls within the scope of this document. These changes have been captured on the label submitted with the amendment described below. The CSF dated March 28, 2014 is on file as the current CSF for this product.

You submitted an additional application to amend the product label on September 12, 2014. Changes include modifying the product descriptor from "A Liquid Biological Fungicide" to "Liquid Biofungicide;" removing "Liquid Natural Growth Promoter" component (co-packed with Integral®) from the Vault® Liquid Inoculant System for Peanuts from the "For Use as an In-Furrow Treatment" section; changing the name of the "Vault® Liquid Inoculant System for Peanuts" to "Vault® Liquid Peanut Rhizobial Inoculant;" removing two instances of "Integral® co-packed with Dyna-Start® Pro Liquid Soybean Inoculation System" in: a) one instance from the section labeled "For Use as a Pre-Plant Seed Treatment ("On-Farm")", and b) one instance from the section labeled "For Use as a Commercial Seed Treatment."

CONCURRENCES

SYMBOL	▶ 7511P	7511P					
SURNAME	▶ Hynes	Hynes					
DATE	▶ 12/10/14	12/10/14					

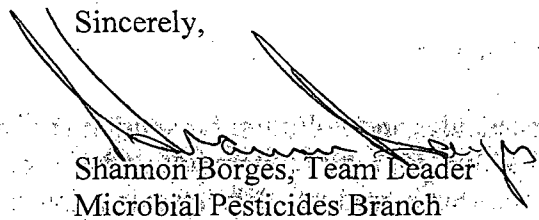
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The changes described above, submitted in connection with registration under FIFRA section 3(c)(5), are acceptable provided that you:

1. Submit and/or cite all data required for registration 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. Submit two (2) copies of your final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for a further description of final printed labeling.

Questions concerning these actions should be directed to Dr. Kenneth Haymes by phone (703-347-0398) or email ([haymes.kenenth@epa.gov](mailto:haymes.kenenth@epa.gov)).

Sincerely,



Shannon Borges, Team Leader  
Microbial Pesticides Branch  
Biopesticides and Pollution  
Prevention Division (7511P)

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The Chemical Company

# Master Label

## Integral<sup>®</sup>

Liquid Biofungicide

{Alternate Brand Name: SUBTILEX<sup>®</sup> L}

**For Use as an In-Furrow Treatment; or For Use as a Soil or Growing Media Treatment; or For Use as a Pre-Plant Seed Treatment (“On-Farm”); or For Use as a Commercial Seed Treatment**

**ACTIVE INGREDIENT:**

<i>Bacillus subtilis</i> , strain MBI 600*	5.00%
OTHER INGREDIENTS	95.00%
TOTAL	100.00%

\* Contains not less than 2.2 x 10<sup>10</sup> viable spores per mL

**KEEP OUT OF REACH OF CHILDREN**

*{For containers with capacities less than or equal to 5 gallons}*

See inside for complete **First Aid, Precautionary Statements, Directions For Use, and Conditions of Sale and Warranty.**

EPA Reg. No. 71840-5

EPA Est. No. 67064-IA-001

BASF Corporation  
26 Davis Drive  
Research Triangle Park, NC 27709

**Notification Accepted**

Date: 12/10/2014

Reviewer: *[Signature]*

NET CONTENTS:

{Batch code: Located on physical container}

# e-Submission

## PRECAUTIONARY STATEMENTS

### FIRST AID HOTLINE 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 BASF Corporation for emergency medical treatment information at 1-800-832-HELP (4357).

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

The PPE requirements below apply to both Worker Protection Standard (WPS) uses (in general, agricultural-plant uses are covered by the Worker Protection Standard (40 CFR Part 170)) and Non-WPS uses.

Applicators and other handlers must wear:

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

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.

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## **ENVIRONMENTAL HAZARDS**

{Environmental hazards statements for the following container sizes: 3.4 fl oz, 6.8 fl oz, and 13.6 fl oz}

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 disposing of equipment washwater or rinsate.

{Environmental hazards statements for the following container sizes: 30 gal and 265 gal}

Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans, or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

## **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 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.

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.

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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
- chemical-resistant gloves (made of any waterproof material)
- shoes plus socks

**NON-AGRICULTURAL USE REQUIREMENTS**

The requirements in this box apply to uses 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 treatment area until seeds have dried or been packaged.

**PRODUCT INFORMATION**

**Integral**<sup>®</sup> contains bacteria that colonize germinating seeds and inhibit seed pathogens such as *Alternaria spp.* The same bacteria then colonize the developing root systems of plants and suppress disease organisms that attack such root systems (e.g., *Fusarium spp.*, *Rhizoctonia spp.* and under some conditions, *Pythium spp.*). As root systems develop, the bacteria grow with the roots, extending the protection throughout the growing season. Because of this biological protection, vigorous root systems are established by plants, which often results in more uniform stands, and greater yields.

In addition, **Integral**<sup>®</sup> has been shown to increase root nodulation by nitrogen-fixing bacteria when used on legumes. This increase in nodulation is a result of a healthier root system allowing formation of more sites for nitrogen-fixing nodules.

**USE LIMITATIONS**

**Chemigation:** Do not apply this product through any type of irrigation system.

**FOR USE AS AN IN-FURROW TREATMENT**

**Mixing Instructions:** Apply **Integral**<sup>®</sup> as a water-based slurry alone, or with other in-furrow products (fungicides, insecticides, nematicides, fertilizers, etc.). Additionally, rhizobial inoculant products, such as BASF's **Vault**<sup>®</sup> **Liquid Peanut Rhizobial Inoculant**, can be added to the tank mix.

Prior to mixing, determine physical compatibility by mixing proportional quantities of the products in water. Do not mix **Integral**<sup>®</sup> with any other in-furrow product that bears a label prohibition against such mixing. When tank mixing **Integral**<sup>®</sup> with any other in-furrow product, observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

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**ATTENTION:** If rhizobial 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 *Rhizobia*. Likewise, use only cool, 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.

To mix, first add the other in-furrow product(s) and/or the rhizobial inoculant product(s) to the mix tank with approximately ½ of the required water. Slowly add **Integral**® to the slurry until a uniform suspension is obtained. Add the remainder of the water while maintaining constant agitation. Do not store mixed slurries for longer than 24 hours.

**Application Instructions:** For preventative control and suppression of seed pathogens (e.g., *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral**® in 5 – 20 gal (19 – 76 L) of water per acre via standard agricultural application machinery. Some ingredients in **Integral**® may not completely solubilize; therefore, it is important to maintain a uniform suspension by continuously agitating the solution throughout the application process. Do not exceed label application dosage rates.

**COTTON, 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), SOYBEANS AND CORN (FIELD AND SWEET)**

Apply **Integral**® at a rate of 0.1 – 1.2 fl oz (3 – 35 mL) per acre, after following the mixing and dilution procedures described above. Use the high end of the specified application rate when severe disease pressure is anticipated.

**PEANUTS- Integral**® **ONLY**

Apply **Integral**® at a rate of 0.1 – 1.2 fl oz (3 – 35 mL) per acre, after following the mixing and application procedures described above. Use the high end of the specified application rate when severe disease pressure is anticipated.

**PEANUTS - Integral**® **CO-PACKED WITH Vault**® **LIQUID PEANUT RHIZOBIAL INOCULANT**

**Integral**® can also be used in conjunction with *Rhizobia*-based inoculant products, such as BASF's **Vault**® **Liquid Peanut Rhizobial Inoculant**. When used in combination with the **Vault**® **Liquid Peanut Rhizobial Inoculant**, **Integral**® provides the additional benefit of improving the nodulation of the roots by *Rhizobia* bacteria in the **Vault**® **Liquid Peanut Rhizobial Inoculant**.

The **Vault**® **Liquid Peanut Rhizobial Inoculant** consists of one (1) plastic bladder containing 1.1 gal (4.2 L).

The **Vault**® **Liquid Peanut Rhizobial Inoculant** is co-packed in the same box with one (1) 3.4 fl oz (101 mL) plastic bottle of **Integral**®.

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One (1) **Vault<sup>®</sup> Liquid Peanut Rhizobial Inoculant** and one (1) 3.4 fl oz (100 mL) bottle of **Integral<sup>®</sup>** are designed be used together to treat approximately 10 acres of peanuts.

Note that **Integral<sup>®</sup>** is designed to work with the **Vault<sup>®</sup> Liquid Peanut Rhizobial Inoculant**. Furthermore, the **Vault<sup>®</sup> Liquid Peanut Rhizobial Inoculant** does not affect the activity of **Integral<sup>®</sup>**.

Mix the one (1) plastic bottle of **Integral<sup>®</sup>** with the one (1) plastic bladder of **Vault<sup>®</sup> Liquid Peanut Rhizobial Inoculant**, and an appropriate quantity of chlorine-free water. For more detailed mixing instructions see directions on the outside panel of the **Integral<sup>®</sup> - Vault<sup>®</sup> Liquid Peanut Rhizobial Inoculant** co-pack box.

### **FOR USE AS A SOIL OR GROWING MEDIA TREATMENT**

**Mixing Instructions:** Apply **Integral<sup>®</sup>** as a water-based slurry alone, or with other soil or growing media treatment products (fungicides, insecticides, nematicides, fertilizers, etc.).

Prior to mixing, determine physical compatibility by mixing proportional quantities of the products in water. Do not mix **Integral<sup>®</sup>** with any other soil and growing media treatment product that bears a label prohibition against such mixing. When tank mixing **Integral<sup>®</sup>** with any other soil or growing media treatment product, observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

To mix, first add the other soil and growing media treatment product(s) to the mix tank with approximately ½ of the required water. Slowly add **Integral<sup>®</sup>** to the slurry until a uniform suspension is obtained. Add the remainder of the water while maintaining constant agitation. Do not store mixed slurries for longer than 24 hours.

**Application Instructions:** For preventative control and suppression of seed pathogens (e.g., *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral<sup>®</sup>**, as indicated below, for pre-plant growing media amendment applications and post-plant applications (field and greenhouse). **Integral<sup>®</sup>** is also effective in controlling *Pythium spp.* when growing conditions are at elevated temperatures as they would be in a greenhouse. Some ingredients in **Integral<sup>®</sup>** may not completely solubilize; therefore, it is important to maintain a uniform suspension by continuously agitating the solution throughout the application process. Do not exceed label application dosage rates.

### **FOR PRE-PLANT GROWING MEDIA AMENDMENT APPLICATIONS**

Apply **Integral<sup>®</sup>** at a rate of 0.12 – 0.17 fl oz/cubic yard (4.64 – 6.58 mL/cubic meter) of soil or growing media. Use the higher rate when environmental conditions are favorable for disease development. Apply **Integral<sup>®</sup>** as a water-based slurry in a volume of water sufficient for uniform distribution. Typical application volume is 1 – 20 gal/cubic yard (5



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– 100 L/cubic meter) of soil or growing media. Ensure product is thoroughly mixed into the soil or growing media.

**FOR FIELD AND GREENHOUSE POST-PLANT APPLICATIONS**

Mix 0.5 – 1.0 fl oz of **Integral**<sup>®</sup> in 100 gal of water (39 – 78 mL/1000 L). Use the higher rate when environmental conditions are favorable for disease development. Apply evenly with conventional application equipment to thoroughly soak the growing media or soil through the root zone.

For containerized soil or growing media, refer to the table listed below for minimum drench volumes and approximate number of pots treated per 100 gal of solution.

Container size	Min. drench volume (fl. oz. [mL])	Approximate number of containers treated per 100 gallons
Standard 4 inch (10 cm) round pot	1.5 [44]	8530
Standard 6 inch (15 cm) round pot	5.5 [163]	2330
Standard 8 inch (20 cm) round pot	12.75 [377]	1000

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.

**FOR USE AS A PRE-PLANT SEED TREATMENT (“ON-FARM”)**

Do not use treated seed for food or feed purposes or process for oil. Treat only those seeds needed for immediate use, minimizing the interval between treatment and planting. Do not store excess treated seeds beyond planting time.

**Mixing Instructions:** Apply **Integral**<sup>®</sup> as a water-based slurry alone or with other seed treatment products (fungicides, insecticides, nematicides, fertilizers, rhizobial inoculants, etc.).

Prior to mixing, determine physical compatibility by mixing proportional quantities of the products in water. Do not mix **Integral**<sup>®</sup> with any other seed treatment product that bears a label prohibition against such mixing. When tank mixing **Integral**<sup>®</sup> with any other seed treatment product, observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

**ATTENTION:** If rhizobial 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 *Rhizobia*. Likewise, use only cool, 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.

To mix, first add the other seed treatment product(s) and/or the rhizobial inoculant product(s) to the mix tank with approximately ½ of the required water. Slowly add

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**Integral**<sup>®</sup> to the slurry until a uniform suspension is obtained. Add the remainder of the water while maintaining constant agitation. Do not store mixed slurries for longer than 24 hours.

**Application Instructions:** For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*) and/or to increase the amount of nutrient uptake and root nodulation by nitrogen-fixing bacteria (legumes), use the application rates specified below. Apply at least 5.0 fl oz of total slurry per 100 lb of seed or at least 3.9 gal of total slurry per 10,000 lb of seed. Some ingredients in **Integral**<sup>®</sup> may not completely solubilize; therefore, it is important to maintain a uniform suspension by continuously agitating the solution throughout the application process. Do not exceed label application dosage rates.

Because smaller seed has a greater surface area to volume ratio than larger seed, the average size of the seed being treated influences the application rate. Therefore, for each crop that has a range in the rate of application, apply **Integral**<sup>®</sup> at rates from the higher end of the specified application rate range when treating smaller seed. Additionally, use the higher end of the specified application range when treated seed is to be planted in fields that historically experience severe disease pressure.

#### **COTTON**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral**<sup>®</sup> at a rate of 0.6 – 2.4 fl oz (18 – 71 mL) per 100 lb (45 kg) of delinted cotton seed. Follow the mixing and dilution procedures described above.

#### **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 preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral**<sup>®</sup> at a rate of 0.6 – 2.4 fl oz (18 – 71 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

For improvement of nodulation by *Rhizobia* in fields where appropriate strains are detectable, apply **Integral**<sup>®</sup> at a rate of 0.6 – 1.2 fl oz (18 – 35 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

#### **ALFALFA, FORAGE AND TURF GRASSES**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*) and stimulation of germination and plant vigor, apply **Integral**<sup>®</sup> at a rate of 0.2 – 2.4 fl oz (6 – 71 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

#### **WHEAT AND BARLEY**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and

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plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral**<sup>®</sup> at a rate of 0.1 – 0.6 fl oz (3 – 18 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

#### **CORN (FIELD AND SWEET)**

For suppression of root disease caused by *Fusarium spp.*, apply **Integral**<sup>®</sup> at a rate of 0.6 – 2.4 fl oz (18 – 71 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

#### **SOYBEANS - Integral<sup>®</sup> ONLY**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*) and to increase the nutrient uptake and amount of nodulation by nitrogen-fixing bacteria, apply **Integral**<sup>®</sup> at a rate of 0.136 fl oz (4 mL) per 100 lb (45 kg) of soybean seed. Follow the mixing and dilution procedures described above.

#### **FOR USE AS A COMMERCIAL SEED TREATMENT**

**Note:** This product does not contain dye and is not covered by an appropriate tolerance, tolerance exemption, or other clearance under the Federal Food, Drug and Cosmetic Act. To comply with 40 CFR 153.155, therefore, all seed treated commercially with this product must be colored with an EPA-approved dye or colorant of a suitable color to prevent accidental use as food for man or feed for animals.

The Federal Seed Act requires that bags containing seed treated with this product shall be labeled with the following information: "This seed has been treated with *Bacillus subtilis*, strain MBI 600. Do not use for food, feed or oil purposes."

**Mixing Instructions:** Apply **Integral**<sup>®</sup> as a water-based slurry alone, or with other seed treatment products (fungicides, insecticides, nematicides, fertilizers, etc.). Additionally, rhizobial inoculant products, such as **Vault**<sup>®</sup> **HP Growth Enhancement System**, can be added to the tank mix.

Prior to mixing, determine physical compatibility by mixing proportional quantities of the products in water. Do not mix **Integral**<sup>®</sup> with any other seed treatment product that bears a label prohibition against such mixing. When tank mixing **Integral**<sup>®</sup> with any other seed treatment product, observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

**ATTENTION:** If rhizobial 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 *Rhizobia*. Likewise, use only cool, 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.

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To mix, first add the other seed treatment product(s) and/or the rhizobial inoculant product(s) to the mix tank with approximately ½ of the required water. Slowly add **Integral**<sup>®</sup> to the slurry until a uniform suspension is obtained. Add the remainder of the water while maintaining constant agitation. Do not store mixed slurries for longer than 24 hours.

**Application Instructions:** For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*) and/or to increase nutrient uptake and the amount of nodulation by nitrogen-fixing bacteria (legumes), apply at least 5.0 fl oz of total slurry per 100 lb of seed or at least 3.9 gal of total slurry per 10,000 lb of seed. Some ingredients in **Integral**<sup>®</sup> may not completely solubilize; therefore, it is important to maintain a uniform suspension by continuously agitating the solution throughout the application process. Do not exceed label application dosage rates.

Because smaller seed has a greater surface area to volume ratio than larger seed, the average size of the seed being treated influences the application rate. Therefore, for each crop that has a range in the rate of application, apply **Integral**<sup>®</sup> at rates from the higher end of the specified application rate range when treating smaller seed. Additionally, use the higher end of the specified application range when treated seed is to be planted in fields that historically experience severe disease pressure.

**CANOLA {FOR 3.4 FL OZ, 6.8 FL OZ, and 13.6 FL OZ CONTAINER SIZES}**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral**<sup>®</sup> at a rate of 2.44 fl oz (72.2 mL) per 100 lb (45 kg) of canola seed. Follow the mixing and dilution procedures described above.

**CANOLA {FOR 30 GAL AND 265 GAL CONTAINER SIZES}**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral**<sup>®</sup> at a rate of 1.91 gal (7.2 L) per 10,000 lb (4,536 kg) of canola seed. Follow the mixing and dilution procedures described above.

**COTTON**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral**<sup>®</sup> at a rate of 0.6 – 2.4 fl oz (18 – 71 mL) per 100 lb (45 kg) of delinted cotton seed. Follow the mixing and dilution procedures described above.

**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 preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral®** at a rate of 0.6 – 2.4 fl oz (18 – 71 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

For improvement of nodulation by *Rhizobia* in fields where appropriate strains are detectable, apply **Integral®** at a rate of 0.6 – 1.2 fl oz (18 – 35 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

**ALFALFA, FORAGE AND TURF GRASSES**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*) and stimulation of germination and plant vigor, apply **Integral®** at a rate of 0.2 – 2.4 fl oz (6 – 71 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

**WHEAT AND BARLEY**

For preventative control and suppression of seed pathogens (e.g. *Alternaria spp.*) and plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*), apply **Integral®** at a rate of 0.1 – 0.6 fl oz (3 – 18 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

**CORN (FIELD AND SWEET)**

For preventative control and suppression of plant root pathogens such as *Fusarium spp.*, apply **Integral®** at a rate of 0.6 – 2.4 fl oz (18 – 71 mL) per 100 lb (45 kg) of seed. Follow the mixing and dilution procedures described above.

**SOYBEANS - Integral® ONLY**

For preventative control and suppression of plant root pathogens (e.g., *Rhizoctonia spp.* and *Fusarium spp.*) and to increase the amount of nodulation by nitrogen-fixing bacteria, apply **Integral®** at a rate of 0.136 fl oz (4 mL) per 100 lb (45 kg) of soybean seed. Follow the mixing and dilution procedures described above.

**SOYBEANS - Integral® CO-PACKED WITH Vault® HP GROWTH ENHANCEMENT SYSTEM**

**Integral®** can also be used in conjunction with *Rhizobia*-based inoculant products, such as BASF's **Vault® HP Growth Enhancement System**. When used in combination with **Vault® HP Growth Enhancement System**, **Integral®** provides the additional benefit of improving root nodulation by *Bradyrhizobium japonicum* bacteria in the **Vault® HP Growth Enhancement System**.

The **Vault® HP Growth Enhancement System** consists of two (2) components –

- Liquid Growth Enhancer – a liquid mixture packaged in plastic bladders.
- **Vault® Liquid Rhizobial Inoculant** – packaged in plastic bladders.

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Both **Integral**<sup>®</sup> and the Liquid Growth Enhancer are designed to work with the **Vault**<sup>®</sup> **Liquid Rhizobial Inoculant**. Furthermore, neither the Liquid Growth Enhancer nor the **Vault**<sup>®</sup> **Liquid Rhizobial Inoculant** affects the activity of **Integral**<sup>®</sup>.

The **Vault**<sup>®</sup> **HP Growth Enhancement System** (co-packed with **Integral**<sup>®</sup>) is available in three (3) configurations. The "4 x 50" case contains four (4) individual 1 x 50 packages; the "2 x 100" case contains two (2) individual 1 x 100 packages and the "2 x 200" case contains two (2) individual 1 x 200 packages.

Package Designation	Total Pounds of Seed Treated*	Integral <sup>®</sup>		Vault <sup>®</sup> Liquid Rhizobial Inoculant		Liquid Growth Enhancer	
		# of Bottles	Contents Per Bottle	# of Bladders	Contents Per Bladder	# of Bladders	Contents Per Bladder
"4 x 50"	10,000	4	3.4 fl oz	4	25 fl oz	4	21.6 fl oz
"2 x 100"	10,000	2	6.8 fl oz	2	50 fl oz	2	43.2 fl oz
"2 x 200"	20,000	2	13.6 fl oz	2	100 fl oz	2	86.4 fl oz

\*at an average seed size of 2,500 seeds per pound

Mix one (1) bottle of **Integral**<sup>®</sup> with one (1) bladder of Liquid Growth Enhancer, one (1) bladder of **Vault**<sup>®</sup> **Liquid Rhizobial Inoculant**, and a sufficient quantity of cool, chlorine-free water to equal at least 5.0 fl oz of total slurry per 100 lb of seed or 3.9 gal of slurry per 10,000 lb of seed when not used with additional treatments (*see **Integral**<sup>®</sup> - **Vault**<sup>®</sup> **HP Growth Enhancement System** co-pack insert for more detailed mixing instructions*).

The final mixture will result in the following application rates per 10,000 lb (4,536 kg) of soybean seed:

- 13.6 fl oz (402 mL) **Integral**<sup>®</sup>
- 86.4 fl oz (2,555 mL) Liquid Growth Enhancer
- 100 fl oz (2,957 mL) **Vault**<sup>®</sup> **Liquid Rhizobial Inoculant**

### STORAGE AND DISPOSAL

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

#### PESTICIDE STORAGE:

Ensure container closures are tight. Store in a cool, 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 state or local governments or by industry).

#### CONTAINER HANDLING:

*{For containers with capacities less than or equal to 5 gallons}*

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 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. If burned, stay out of smoke.

*{For containers with capacities more than 5 gallons}*

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. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Once cleaned, some agricultural plastic pesticide containers can be taken to a container collection site or picked up for recycling. To find the nearest site, contact your chemical dealer or manufacturer, or contact Ag Container Recycling Council at 877-952-2272 or [www.acrecycle.org](http://www.acrecycle.org). Alternatively, puncture and dispose of in a sanitary landfill or by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

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**NOTICE— READ CAREFULLY BEFORE USING**

**Conditions of Sale and Warrantee**

The **Directions For Use** of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and must be followed carefully. However, it is impossible to eliminate all risks inherently associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as the presence of other or untested or unapproved materials, seed of low quality or low vigor or low germination, use of the product in a manner inconsistent with its labeling, misapplication of the product, or weather conditions at planting or environmental conditions during seed storage, all of which are beyond the control of BASF CORPORATION (“BASF”) or the Seller. To the extent consistent with applicable law, all such risks shall be assumed by the Buyer.

BASF warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes referred to in the **Directions For Use**, subject to the inherent risks, referred to above.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF MAKES NO OTHER EXPRESS OR IMPLIED WARRANTY OF FITNESS OR MERCHANTABILITY OR ANY OTHER EXPRESS OR IMPLIED WARRANTY.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BUYER’S EXCLUSIVE REMEDY AND BASF’S EXCLUSIVE LIABILITY, WHETHER IN CONTRACT, TORT, NEGLIGENCE, STRICT LIABILITY, OR OTHERWISE, SHALL BE LIMITED TO REPAYMENT OF THE PURCHASE PRICE OF THE PRODUCT.**

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, BASF AND THE SELLER DISCLAIM ANY LIABILITY FOR CONSEQUENTIAL, EXEMPLARY, SPECIAL OR INDIRECT DAMAGES RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT.**

BASF and the Seller offer this product, and the Buyer and User accept it, subject to the foregoing **Conditions of Sale and Warranty** which may be varied only by agreement in writing signed by a duly authorized representative of BASF.

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