TED STATES ENVIRONMENTAL PROTE ON AGENCY

FEB 16 2011

Mr. Gordon Sargent
Regulatory & Compliance Manager
Becker Underwood, Incorporated
801 Dayton Avenue, P.O. Box 667
Ames, IA 50010

Re: Becker Underwood, Incorporated; Integral®
EPA Registration No. 71840-5
Minor Label ("Fast Track") Amendment
Submissions dated 11/12/09, 09/01/10, 11/12/10, 01/10/11, 02/04/11, and 02/15/11
Decision No. 423309

Dear Mr. Sargent:

The Agency has reviewed your request to amend the subject product registration, which included the following changes to the product label:

1) Correction of minor formatting inconsistencies and typographical errors.
2) Addition of container sizes (i.e., 6.8 fl oz, 30 gal, and 265 gal)
3) Addition of distinct Environmental Hazards statements, commercial seed treatment instructions, and Storage and Disposal statements for the 30 gal and 265 gal container sizes
4) Revision, removal, and addition of certain statements and text in the Directions for Use (e.g., enhancement of the soil and growing media treatment instructions) to improve consistency throughout the label and presentation to the user.
5) Removal of the Vault® Liquid Peanut Inoculant co-pack reference from the in-furrow treatment instructions.
6) Addition of the Dyna-Start® PRO Liquid Soybean Inoculation System and Vault® HP Growth Enhancement System co-pack references to the commercial or pre-plant seed treatment instructions.

The changes referred to above, submitted in connection with registration under section 3(c)(5) of the Federal Insecticide, Fungicide, and Rodenticide Act, are acceptable provided that you submit two (2) copies of your final printed labeling before you release the product for shipment. Refer to the A-79 enclosure for further description of final printed labeling.

CONCURRENCES								
SYMBOL ▶	7511P	7511P	7511P					
SURNAME ▶	KAUSCH	Reynolds	Cull					
DATE ▶	02/16/2011	2/16/11	2/16/11					

* U.S. Government Printing Office: 2005 206-899 (mac)

Your release for shipment of the product bearing the amended labeling constitutes acceptance of these conditions. If you have any questions regarding this letter, please contact Ms. Jeannine Kausch by telephone (703-347-8920) or email (*kausch.jeannine@epa.gov*).

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

Sincerely,

Sheryl K. Reilly, Ph.D., Chief
Microbial Pesticides Branch
Biopesticides and Pollution
Prevention Division (7511P)

Enclosures (2):
-Integral® Accepted Label
-A-79 Enclosure

INTEGRAL®

A Liquid Biological Fungicide
{Alternate Brand Name: SUBTILEX® 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:	
Bacillus subtilis, strain MBI 600*	0.18%
OTHER INGREDIENTS	99.82%
TOTAL	100.00%

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

KEEP OUT OF REACH OF CHILDREN

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

See Additional Precautionary Statements Inside Panel

EPA Reg. No. 71840-5 EPA Est. No. 67064-IA-001

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P.O. Box 667
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Tel. 515-232-5907 800-232-5907
www.beckerunderwood.com

ACCEPTED
FEB 16 2011

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No. 71840-5

NET CONTENTS:

{Batch code: Located on physical container}

PRECAUTIONARY STATEMENTS

FIRST AID
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.

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 manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables are provided, 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

{Environmental hazards statements for the following container sizes: 3.4 fl oz, 6.8 fl oz, 13.6 fl oz, and 27.66 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 apply to uses of this product that are covered by the Worker Protection Standard.

No restricted-entry interval (REI) is required for this product.

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.

PRODUCT INFORMATION

INTEGRAL® 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 improved nutrient uptake, more uniform stands, and greater yields.

In addition, INTEGRAL® 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 RESTRICTIONS

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

FOR USE AS AN IN-FURROW TREATMENT

Mixing Instructions: INTEGRAL® can be applied as a water-based slurry alone or with other in-furrow products (fungicides, insecticides, nematicides, fertilizers, etc.). Additionally, *Rhizobium* inoculant products 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® with any other in-furrow product that bears a label prohibition against such mixing. When tank mixing INTEGRAL® with any other in-furrow product, observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

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*. Likewise, 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.

To mix, first add the other in-furrow product(s) and/or the *Rhizobium* 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
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.

FOR USE AS A SOIL OR GROWING MEDIA TREATMENT

Mixing Instructions: INTEGRAL® can be applied 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® with any other soil and growing media treatment product that bears a label prohibition against such mixing. When tank mixing INTEGRAL® 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® 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®, as indicated below, for pre-plant growing media amendment applications and post-plant applications (field and greenhouse). INTEGRAL® 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® 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® 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® as a water-based slurry in a volume of water sufficient for uniform distribution. Typical application volume is 1 – 20 gal/cubic yard (5 – 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® 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: INTEGRAL® can be applied as a water-based slurry alone or with other seed treatment products (fungicides, insecticides, nematicides, fertilizers, *Rhizobium* inoculants, etc.).

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

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*. Likewise, 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.

To mix, first add the other seed treatment product(s) and/or the *Rhizobium* 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.*) 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® 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 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® 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® 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 *Rhizobium* 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 suppression of root disease caused by *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 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® 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 DYNA-START® PRO LIQUID SOYBEAN INOCULATION SYSTEM
INTEGRAL® can also be used in conjunction with *rhizobia*-based inoculant products, such as Loveland Products' Dyna-Start® PRO liquid inoculation system. When used in combination with Dyna-Start® PRO liquid inoculation system, INTEGRAL® provides the additional benefit of improving the nodulation of roots by the *rhizobia* bacteria in the Dyna-Start® PRO liquid inoculation system.

The Dyna-Start® PRO liquid inoculation system (co-packed with INTEGRAL®) is available in two (2) configurations. The "4 x 50" case contains four (4) individual 1 x 50 packages and the "1 x 200" case contains one (1) individual 1 x 200 package.

Package	Total Pounds of Seed* Treated	INTEGRAL®		Liquid *Rhizobia*		Conditioner	
		# of Bottles	Contents Per Bottle	# of Bladders	Contents Per Bladder	# of Bottles	Contents Per Bottle
1 x 50	2,500	1	3.4 fl oz	1	65 fl oz	1	10 fl oz
1 x 200	10,000	1	13.6 fl oz	1	260 fl oz	1	40 fl oz

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

{For the "1 x 50" individual package}
Combine the complete contents of the 3.4 fl oz bottle of INTEGRAL® biological fungicide, the 65 fl oz Dyna-Start® PRO liquid inoculant bladder and the 10 fl oz bottle of Conditioner in a clean mixing container. Mix together thoroughly. Continuous, gentle agitation throughout the mixing and application process will enhance *rhizobia* survival in

the mixture. This mixture will treat 2,500 lb of soybean seed (at an average seed size of 2,500 seeds per pound) when applied according to the label directions. The combined INTEGRAL® and Dyna-Start® PRO liquid soybean inoculation system mixture may be applied either alone or with a compatible seed treatment as follows:

If applied without additional seed treatment, thoroughly mix 47 fl oz of cool, clean, non-chlorinated water with the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components and apply the resulting mixture at a rate of 5.0 fl oz per 100 lb of seed. While the material may be applied without the additional water, *rhizobia* survival will be enhanced when the total volume of liquid applied to the seed is at least 5.0 fl oz per 100 lb of seed.

If applied in a slurry or in a tank mix with a *rhizobia*-compatible chemical seed treatment, no additional dilution with water is necessary as long as the total volume is at least 5.0 fl oz per 100 lb of seed. Add the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components to an amount of seed treatment appropriate to treat 2,500 lb of soybean seed. Mix thoroughly and apply the total volume to the seed. **NOTE:** Tank-mix application will reduce the effective on-seed survival of the *rhizobia*; therefore, a wet sequential application method is preferred for maximum product performance. Always read and follow the use instructions on the seed treatment label(s).

If applied in a wet sequential application (simultaneous method) with a chemical seed treatment from a separate inoculant application tank, no additional dilution with water is necessary as long as the total volume of liquid being applied (inoculant system and INTEGRAL® mixture plus treatment mixture) is at least 5.0 fl oz per 100 lb of seed.

See INTEGRAL® - Dyna-Start® PRO liquid inoculation system co-pack box for more detailed instructions.

{For the "1 x 200" individual package}
Combine the complete contents of the 13.6 fl oz bottle of INTEGRAL® biological fungicide, the 260 fl oz Dyna-Start® PRO liquid inoculant bladder and the 40 fl oz bottle of Conditioner in a clean mixing container. Mix together thoroughly. Continuous, gentle agitation throughout the mixing and application process will enhance *rhizobia* survival in the mixture. This mixture will treat 10,000 lb of soybean seed (at an average seed size of 2,500 seeds per pound) when applied according to the label directions. The combined INTEGRAL® and Dyna-Start® PRO liquid soybean inoculation system mixture may be applied either alone or with a compatible seed treatment as follows:

If applied without additional seed treatment, thoroughly mix 186 fl oz of cool, clean, non-chlorinated water with the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components and apply the resulting mixture at a rate of 5.0 fl oz per 100 lb of seed. While the material may be applied without the additional water, *rhizobia* survival will be enhanced when the total volume of liquid applied to the seed is at least 5.0 fl oz per 100 lb of seed.

If applied in a slurry or in a tank mix with a *rhizobia*-compatible chemical seed treatment, no additional dilution with water is necessary as long as the total volume is at least 5.0 fl oz per 100 lb of seed. Add the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components to an amount of seed treatment appropriate to treat 10,000 lb of soybean seed. Mix thoroughly and apply the total volume to the seed. **NOTE:** Tank-mix application will reduce the effective on-seed survival of the *rhizobia*; therefore, a wet sequential application method is preferred for maximum product performance. Always read and follow the use instructions on the seed treatment label(s).

If applied in a wet sequential application (simultaneous method) with a chemical seed treatment from a separate inoculant application tank, no additional dilution with water is necessary as long as the total volume of liquid being applied (inoculant system and INTEGRAL® mixture plus treatment mixture) is at least 5.0 fl oz per 100 lb of seed.

See INTEGRAL® - Dyna-Start® PRO liquid inoculation system co-pack box for more detailed instructions.

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: INTEGRAL® can be applied as a water-based slurry alone or with other seed treatment products (fungicides, insecticides, nematicides, fertilizers, etc.). Additionally, *Rhizobium* inoculant products, such as VAULT® 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® with any other seed treatment product that bears a label prohibition against such mixing. When tank mixing INTEGRAL® with any other seed treatment product, observe the most restrictive of the labeling limitations and precautions of all products used in mixtures.

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*. Likewise, 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.

To mix, first add the other seed treatment product(s) and/or the *Rhizobium* 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.*) 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® 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 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® 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, 13.6 FL OZ, AND 27.66 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® 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® 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® 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 *Rhizobium* 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 Becker Underwood'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.
- Liquid *Rhizobium* Inoculant – packaged in plastic bladders.

Both INTEGRAL® and the Liquid Growth Enhancer are designed to work with the Liquid *Rhizobium* Inoculant. Furthermore, neither the Liquid Growth Enhancer nor the Liquid *Rhizobium* Inoculant affects the activity of INTEGRAL®.

The VAULT® HP GROWTH ENHANCEMENT SYSTEM (co-packed with INTEGRAL®) is available in three (3) configurations:

Package Designation	Total Pounds of Seed Treated	INTEGRAL®		Liquid *Rhizobium* 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

Mix one (1) bottle of INTEGRAL® with one (1) bladder of Liquid Growth Enhancer, one (1) bladder of Liquid *Rhizobium* Inoculant, and a sufficient quantity of 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® - VAULT® 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®
- 86.4 fl oz (2,555 mL) Liquid Growth Enhancer
- 100 fl oz (2,957 mL) Liquid *Rhizobium* Inoculant

SOYBEANS - INTEGRAL® CO-PACKED WITH DYNA-START® PRO LIQUID INOCULATION SYSTEM

INTEGRAL® can also be used in conjunction with *rhizobia*-based inoculant products, such as Loveland Products' Dyna-Start® PRO liquid inoculation system. When used in combination with Dyna-Start® PRO liquid inoculation system, INTEGRAL® provides the additional benefit of improving the nodulation of roots by the *rhizobia* bacteria in the Dyna-Start® PRO liquid inoculation system.

The Dyna-Start® PRO liquid inoculation system (co-packed with INTEGRAL®) is available in two (2) configurations. The "4 x 50" case contains four (4) individual 1 x 50 packages and the "1 x 200" case contains one (1) individual 1 x 200 package.

Package	Total Pounds of Seed* Treated	INTEGRAL®		Liquid *Rhizobia*		Conditioner	
		# of Bottles	Contents Per Bottle	# of Bladders	Contents Per Bladder	# of Bottles	Contents Per Bottle
1 x 50	2,500	1	3.4 fl oz	1	65 fl oz	1	10 fl oz
1 x 200	10,000	1	13.6 fl oz	1	261 fl oz	1	40 fl oz

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

{For the "1 x 50" individual package}
Combine the complete contents of the 3.4 fl oz bottle of INTEGRAL® biological fungicide, the 65 fl oz Dyna-Start® PRO liquid inoculant bladder and the 10 fl oz bottle of Conditioner in a clean mixing container. Mix together thoroughly. Continuous, gentle agitation throughout the mixing and application process will enhance *rhizobia* survival in the mixture. This mixture will treat 2,500 lb of soybean seed (at an average seed size of 2,500 seeds per pound) when applied according to the label directions. The combined INTEGRAL® and Dyna-Start® PRO liquid soybean inoculation system mixture may be applied either alone or with a compatible seed treatment as follows:

If applied without additional seed treatment, thoroughly mix 47 fl oz of cool, clean, non-chlorinated water with the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components and apply the resulting mixture at a rate of 5.0 fl oz per 100 lb of seed. While the material may be applied without the additional water, *rhizobia* survival will be enhanced when the total volume of liquid applied to the seed is at least 5.0 fl oz per 100 lb of seed.

If applied in a slurry or in a tank mix with a *rhizobia*-compatible chemical seed treatment, no additional dilution with water is necessary as long as the total volume is at least 5.0 fl oz per 100 lb of seed. Add the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components to an amount of seed treatment appropriate to treat 2,500 lb of soybean seed. Mix thoroughly and apply the total volume to the seed. **NOTE:** Tank-mix application will reduce the effective on-seed survival of the *rhizobia*; therefore, a wet sequential application method is preferred for maximum product performance. Always read and follow the use instructions on the seed treatment label(s).

If applied in a wet sequential application (simultaneous method) with a chemical seed treatment from a separate inoculant application tank, no additional dilution with water is necessary as long as the total volume of liquid being applied (inoculant system and INTEGRAL® mixture plus treatment mixture) is at least 5.0 fl oz per 100 lb of seed.

See INTEGRAL® - Dyna-Start® PRO liquid inoculation system co-pack box for more detailed instructions.

{For the "1 x 200" individual package}
Combine the complete contents of the 13.6 fl oz bottle of INTEGRAL® biological fungicide, the 260 fl oz Dyna-Start® PRO liquid inoculant bladder and the 40 fl oz bottle of Conditioner in a clean mixing container. Mix together thoroughly. Continuous, gentle agitation throughout the mixing and application process will enhance *rhizobia* survival in the mixture. This mixture will treat 10,000 lb of soybean seed (at an average seed size of 2,500 seeds per pound) when applied according to the label directions. The combined INTEGRAL® and Dyna-Start® PRO liquid soybean inoculation system mixture may be applied either alone or with a compatible seed treatment as follows:

If applied without additional seed treatment, thoroughly mix 186 fl oz of cool, clean, non-chlorinated water with the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components and apply the resulting mixture at a rate of 5.0 fl oz per 100 lb of seed. While the material may be applied without the additional water, *rhizobia* survival will be enhanced when the total volume of liquid applied to the seed is at least 5.0 fl oz per 100 lb of seed.

If applied in a slurry or in a tank mix with a *rhizobia*-compatible chemical seed treatment, no additional dilution with water is necessary as long as the total volume is at least 5.0 fl oz per 100 lb of seed. Add the mixture of INTEGRAL® and the Dyna-Start® PRO liquid inoculation system components to an amount of seed treatment appropriate to treat 10,000 lb of soybean seed. Mix thoroughly and apply the total volume to the seed. **NOTE:** Tank-mix application will reduce the effective on-seed survival of the *rhizobia*; therefore, a wet sequential application method is preferred for maximum product performance. Always read and follow the use instructions on the seed treatment label(s).

If applied in a wet sequential application (simultaneous method) with a chemical seed treatment from a separate inoculant application tank, no additional dilution with water is necessary as long as the total volume of liquid being applied (inoculant system and INTEGRAL® mixture plus treatment mixture) is at least 5.0 fl oz per 100 lb of seed.

See INTEGRAL® - Dyna-Start® PRO liquid inoculation system co-pack box for more detailed instructions.

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 one nearest you, contact your chemical dealer or manufacturer, or contact Ag Container Recycling Council at 877-952-2272 or 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.

NOTICE – READ CAREFULLY BEFORE USING

CONDITIONS OF SALE AND LIMITED WARRANTY STATEMENT

Becker Underwood, Inc. warrants that this product conforms to the specifications on this label and is reasonably fit for the purposes stated on this 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 warranted by this label.

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