



U.S. ENVIRONMENTAL PROTECTION AGENCY  
Office of Pesticide Programs  
Biopesticides and Pollution Prevention Division (7511M)  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

EPA Reg. Number:

70506-625

Date of Issuance:

9/30/2024

NOTICE OF PESTICIDE:

☒ Registration

☐ Reregistration

(under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

414-02

Name and Address of Registrant (include ZIP Code):

UPL NA Inc.  
PO Box 12219  
Research Triangle Park, NC 27709

**Note:** Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product, always refer to the above EPA Registration Number.


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

Registration is in no way to be construed as an endorsement or recommendation of this product by the U.S. Environmental Protection Agency. In order to protect health and the environment, the Administrator, on his or her motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under the Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration or registration review of your product when the EPA requires all registrants of similar products to submit such data.

Signature of Approving Official:

 Digitally signed by  
Alexandra Boukedes  
Date: 2024.09.30  
17:31:29 -05'00'

Alexandra Boukedes, Product Manager 92  
Microbial Pesticides Branch  
Biopesticides and Pollution Prevention Division (7511M)  
Office of Pesticide Programs

Date:

9/30/2024

2. Make the following labeling change before you release this product for shipment:
  - Revise the EPA Registration Number to read, "EPA Reg. No. 70506-625."
3. Submit one (1) copy of the final printed labeling for the record before you release this product for shipment.


Should you wish to add/retain a reference to your company's website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the EPA. If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product's label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the EPA find or if it is brought to our attention that a website contains statements or claims substantially differing from statements or claims made in connection with obtaining a FIFRA section 3 registration, the website will be referred to the EPA's Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6. A stamped copy of the labeling is enclosed for your records. Please also note that the record for this product currently contains the following acceptable Confidential Statement of Formula (CSF):

- Basic CSF dated 09/19/2024

If you have any questions, please contact me by phone at (202) -566-1511 or via email at [boukedes.alexandra@epa.gov](mailto:boukedes.alexandra@epa.gov).

Sincerely,

 Digitally signed by  
Alexandra Boukedes  
Date: 2024.09.30  
17:31:10 -05'00'

Alexandra Boukedes, Product Manager 92  
Microbial Pesticides Branch  
Biopesticides and Pollution  
Prevention Division (7511M)  
Office of Pesticide Programs

Enclosure

# 414-02

[Alternate Brand Name: to be determined]  
[Alternate Brand Name: to be determined]

**Sub-label A: Intended for: Seed Treatment**  
**Sub-label B: Intended for: Soil Application**

**ACCEPTED**

Sep 30, 2024

Under the Federal Insecticide, Fungicide  
and Rodenticide Act as amended, for the  
pesticide registered under  
EPA Reg. No. 70506-625

<b>ACTIVE INGREDIENT:</b>	<b>By Wt.</b>
<i>Bacillus licheniformis</i> strain 414-01* .....	0.88%
<b>OTHER INGREDIENTS:</b> .....	99.12%
<b>TOTAL:</b> .....	100.00%

\*Contains a minimum of  $8.0 \times 10^8$  colony-forming units (CFU) per milliliter of product.  
This product contains a total of 0.08 pound of active ingredient per gallon.

**KEEP OUT OF REACH OF CHILDREN**

## CAUTION

FIRST AID	
If on skin or clothing	<ul style="list-style-type: none"> <li>Take off contaminated clothing.</li> <li>Rinse skin immediately with plenty of water for 15-20 minutes.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
If swallowed	<ul style="list-style-type: none"> <li>Call poison control center or doctor immediately for treatment advice.</li> <li>Have person sip a glass of water if able to swallow.</li> <li>Do not induce vomiting unless told to do so by the poison control center or doctor.</li> <li>Do not give anything by mouth to an unconscious person.</li> </ul>
If inhaled	<ul style="list-style-type: none"> <li>Move person to fresh air.</li> <li>If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
If in eyes	<ul style="list-style-type: none"> <li>Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li> <li>Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li> <li>Call a poison control center or doctor for treatment advice.</li> </ul>
<b>HOTLINE NUMBER</b> Have the product container or label with you when calling a poison control center or doctor, or going for treatment. Contact Rocky Mountain Poison & Drug Safety at 1-866-673-6671 for emergency medical treatment. For information on this product (including general health concerns or pesticide incidents), call the National Pesticide Information Center (NPIC) at 1-800-858-7378, Monday through Friday, 8:00 AM to 12:00 PM Pacific Time (NPIC Website: <a href="http://www.npic.orst.edu">www.npic.orst.edu</a> ).	
<b>For chemical emergency: spill, leak, fire, exposure or accident, call CHEMTREC at 1-800-424-9300</b>	

See other panels for additional precautionary information.

UPL NA Inc.  
PO Box 12219

EPA Reg. No. 70506-AEL \_\_\_\_\_  
EPA Est. No. \_\_\_\_\_

# 414-02

SUB-LABEL A  
For Seed Treatment

For use as a biological nematicide [and insecticide] seed treatment that provides protection of seedlings from listed plant pathogenic nematodes [and listed insects]

[Alternate Brand Name: to be determined]

[Alternate Brand Name: to be determined]

**ACTIVE INGREDIENT:**

**By Wt.**

*Bacillus licheniformis* strain 414-01\* .....0.88%

**OTHER INGREDIENTS:** .....99.12%

**TOTAL:** .....100.00%

\*Contains a minimum of  $8.0 \times 10^8$  colony-forming units (CFU) per milliliter of product.

This product contains a total of 0.08 pound of active ingredient per gallon.

**KEEP OUT OF REACH OF CHILDREN**

## CAUTION

FIRST AID	
If on skin or clothing	<ul style="list-style-type: none"><li>• Take off contaminated clothing.</li><li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
If swallowed	<ul style="list-style-type: none"><li>• Call poison control center or doctor immediately for treatment advice.</li><li>• Have person sip a glass of water if able to swallow.</li><li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li><li>• Do not give anything by mouth to an unconscious person.</li></ul>
If inhaled	<ul style="list-style-type: none"><li>• Move person to fresh air.</li><li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
If in eyes	<ul style="list-style-type: none"><li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li><li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
<b>HOTLINE NUMBER</b>	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment. Contact Rocky Mountain Poison & Drug Safety at 1-866-673-6671 for emergency medical treatment. For information on this product (including general health concerns or pesticide incidents), call the National Pesticide Information Center (NPIC) at 1-800-858-7378, Monday through Friday, 8:00 AM to 12:00 PM Pacific Time (NPIC Website: <a href="http://www.npic.orst.edu">www.npic.orst.edu</a> ).	
For chemical emergency: spill, leak, fire, exposure or accident, call CHEMTREC at 1-800-424-9300	

See other panels for additional precautionary information.

UPL NA Inc.  
PO Box 12219  
Research Triangle Park, NC 27709  
1-800-438-6071

EPA Reg. No. 70506- AEL \_\_\_\_\_  
EPA Est. No. \_\_\_\_\_  
Net Contents: \_\_\_\_\_ gallons

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

#### CAUTION

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

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

#### Applicators and other handlers must wear:

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

Mixers/loaders and applicators must wear a minimum of a NIOSH-approved particulate filtering facepiece respirator with any N, R, or P filter; OR a NIOSH-approved elastomeric particulate respirator with any N, R, or P filter; OR a NIOSH-approved powered air-purifying respirator with an HE filter. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

**Important:** When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

#### User Safety Recommendations

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove clothing/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 disposing of equipment washwater 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.

This labeling must be in the possession of the user at the time of application.

#### **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.

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

- Coveralls
- Waterproof gloves
- Shoes plus socks

### **NON-AGRICULTURAL USE REQUIREMENTS**

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

Keep unprotected persons out of treatment area until seeds have dried or been packaged

### **PRODUCT INFORMATION**

414-02 is a liquid bionematicide seed treatment that when applied to seed, provides protection of seedlings from listed plant pathogenic nematodes that attack the root system in a variety of crops including corn, cotton, peanut, potato, sorghum, soybean, sugar beet, and wheat. Seed must be sound and well-cured before treatment. In areas of historically high nematode infestation, additional control measures may be warranted.

### **SEED TREATMENT EQUIPMENT – COMMERCIAL OR ON-FARM**

414-02 may be used both for commercial and for on-farm application. 414-02 can be applied with mechanical, slurry, or mist-type seed treating equipment, as long as the equipment can be calibrated to accurately and uniformly apply the product to seed without undue mechanical damage to the seed. Uniform application to seed is important for biological seed treatment products.

### **APPLICATION INSTRUCTIONS**

- Seed must be sound and well-cured before treatment. Refer to the application rates below.
- 414-02 is diluted with chlorine-free water and/or mixed with other products to attain an appropriate slurry application volume (fl oz/cwt slurry rates) to provide effective treatment.
- Mix 414-02 (application rates below) with a sufficient quantity of chlorine-free water and/or other products to attain a final targeted slurry rate of at least 4 fl oz/cwt. of seed on large seed crops such as corn and soybeans. On smaller size seeds such as grass or canola, a final targeted slurry rate of at least 8 fl oz/cwt. of seed is necessary to ensure adequate and uniform coverage.
- The appropriate volume of slurry depends on crop, temperature, humidity, type of treater, and other factors and must be adjusted per normal treating practices for the circumstances.
- 414-02 plus chlorine-free water and/or other products must be mixed thoroughly prior to treating seed. Recalibrate treating equipment to compensate for the required slurry rate to ensure all products are applied at the correct application rate.
- Do not store mixed slurries for greater than 72 hours.
- Maintain adequate agitation until treatment slurry is applied.
- Contact your local supplier or distributor representative for additional specifications for slurry volumes and questions on any tank mixes or restrictions.

**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(a), 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 humans or feed for animals.

### **SEED BAG LABEL REQUIREMENTS**

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 licheniformis* strain 414-01
- Do not use for food, feed or oil purposes. Store away from feed and food stuffs.

User is responsible for ensuring that the seed bag meets all requirements under the Federal Seed

Act.

### **USE RESTRICTIONS**

Do not use treated seed for food, feed or oil purposes. For at-planting seed treatments, treat only those seeds needed for immediate use, minimizing the interval between treatment and planting. Care must be exercised in the handling of treated seed. Augers used for handling treated seed must not be used to move seed for feed, food or oil processing. Do not reuse bags from treated seed to handle food or feed products.

### **COMPATIBILITY TESTING AND TANK MIX PARTNERS**

It's the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the application restrictions/limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements for each product in the tank mixture.

### **COMPATIBILITY**

It is essential that before using 414-02 seed treatment in any tank mixture the compatibility of the mixture be established. Add 414-02 at the labeled rate to a clean quart jar containing approximately one-half the amount of water intended for the final slurry application rate. Next follow with all the other tank mix components that will be used in the total slurry application. Add the last remaining balance of water. The total amount of volume is determined by the seed size and how much is necessary to ensure complete and uniform coverage and distribution on the seed, as well as the type of commercial seed treating application equipment that will be used.

**DO NOT USE MIXTURES THAT CURDLE, PRECIPITATE, OR GEL. USE TANK MIXTURES IMMEDIATELY AFTER MIXING WITH ADEQUATE AGITATION**

### **APPLICATION INSTRUCTIONS**

Seed may be treated either on a per unit of seed basis or on a per weight of seed basis, as shown in the table below.

414-02 may be used in combination with other UPL registered seed treatment products. Pre-test for compatibility needs to be verified with other seed treatment products. Read and follow carefully all label directions of each product used in the treating mixture. When using combinations of products, the most restrictive of label limitations and precautions must be followed.



## CROPS, PESTS AND APPLICATION RATE

CROP	APPLICATION RATE Fl oz/cwt / mL/100 kg	PESTS CONTROLLED
<b>Crop Group 15-22 Cereal Grain Group</b> Field corn, Popcorn, Sweet corn	<b>0.5 fl oz/cwt</b> <b>32.6 ml/100 kg seed</b>	<b>Dagger Nematode</b> <b>Lance Nematode</b> <b>Needle Nematode</b> <b>Pin Nematode</b> <b>Ring Nematode</b> <b>Root Knot Nematode</b> <b>Root Lesion Nematode</b> <b>Spiral Nematode</b> <b>Sting Nematode</b> <b>Stubby Root Nematode</b> <b>Stunt Nematode</b>
<b>Crop Group Subgroup 20C Cottonseed</b> Cottonseed; cultivars, varieties, and/or hybrids of these.	<b>3.0 fl oz/cwt</b> <b>195.6 ml/100 kg seed</b>	<b>Columbia lance Nematode</b> <b>Reniform Nematode</b> <b>Root Knot Nematode</b>
<b>Peanut</b>	<b>0.25 fl oz/cwt</b> <b>16.3 ml/100 kg seed</b>	<b>Peanut Root Knot nematode</b> <b>Lesion nematode</b> <b>Northern root-knot nematode</b>
<b>Crop Group Subgroup 1C Tuberous and corm vegetables</b> <b>Potato</b> Seed pieces	<b>0.25 fl oz/cwt</b> <b>16.3 ml/100 kg seed</b>	<b>Potato Cyst Nematode</b> <b>Root Knot nematode</b> <b>Root Lesion nematode</b> <b>Reniform Nematode</b> <b>Stubby root nematode</b>
<b>Crop Group 15 Cereal Grains</b> <b>Sorghum</b>	<b>1.0 fl oz/cwt</b> <b>65.2 ml/100 kg seed</b>	<b>Ring Nematode</b> <b>Root Knot Nematode</b> <b>Root Lesion Nematode</b> <b>Sting Nematode</b> <b>Stubby Root Nematode</b>
<b>Crop Group 6 Legume Vegetables (Succulent or Dried)</b> <b>Soybean</b>	<b>0.25 fl oz/cwt</b> <b>16.3 ml/100 kg seed</b>	<b>Reniform Nematode</b> <b>Root Knot Nematode</b> <b>Soybean Cyst Nematode</b>
<b>Crop Group Subgroup 1A. Root vegetables subgroup.</b> <b>Sugar beet</b>	<b>0.75 fl oz/cwt</b> <b>48.9 ml/100 kg seed</b>	<b>Early season soil plant parasitic nematodes including:</b> <b>False Root nematodes</b> <b>Root Knot nematodes</b> <b>Sugarbeet Cyst nematode</b>
<b>Crop Group 15-22 Cereal Grain Group</b> <b>Wheat</b>	<b>0.25 fl oz/cwt</b> <b>16.3 ml/100 kg seed</b>	<b>Cereal cyst nematodes</b> <b>Root lesion nematode</b> <b>Root Knot nematode</b>

## STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** Store at 62.6-79.3°F (17-26.3°C) in a cool, dry, secure location.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

**CONTAINER HANDLING: Nonrefillable containers equal to or less than 5 gallons.** Do not reuse or refill this container. 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 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. If pressure rinsing, empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

**Nonrefillable containers greater than 5 gallons.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer container for recycling, reconditioning, or puncture and dispose of in a sanitary landfill, by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

**IMPORTANT INFORMATION**  
**READ BEFORE USING PRODUCT**

**CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY**

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product reflect the opinion of experts based on field use and tests, and must be followed carefully. It is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of UPL NA Inc. or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of UPL NA Inc. and Seller. To the extent consistent with applicable law, all such risks shall be assumed by Buyer and User, and Buyer and User agree to hold UPL NA Inc. and Seller harmless for any claims relating to such factors.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, UPL NA INC. AND SELLER MAKE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ON THIS LABEL.**

To the extent consistent with applicable law, UPL NA Inc. or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product and **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF UPL NA INC. AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF UPL NA INC. OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

UPL NA Inc. and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by the duly authorized representative of UPL NA Inc.

# 414-02

SUB-LABEL B

**For Soil Treatment**[Alternate Brand Name: to be determined]  
[Alternate Brand Name: to be determined]

For use as a biological nematicide soil treatment that provides protection of plants from listed plant pathogenic nematodes

ACTIVE INGREDIENT:	By Wt.
<i>Bacillus licheniformis</i> strain 414-01* .....	0.88%
OTHER INGREDIENTS: .....	99.12%
TOTAL: .....	100.00%

\*Contains a minimum of  $8.0 \times 10^8$  colony-forming units (CFU) per milliliter of product.  
This product contains a total of 0.08 pound of active ingredient per gallon.

## KEEP OUT OF REACH OF CHILDREN CAUTION

FIRST AID	
If on skin or clothing	<ul style="list-style-type: none"><li>• Take off contaminated clothing.</li><li>• Rinse skin immediately with plenty of water for 15-20 minutes.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
If swallowed	<ul style="list-style-type: none"><li>• Call poison control center or doctor immediately for treatment advice.</li><li>• Have person sip a glass of water if able to swallow.</li><li>• Do not induce vomiting unless told to do so by the poison control center or doctor.</li><li>• Do not give anything by mouth to an unconscious person.</li></ul>
If inhaled	<ul style="list-style-type: none"><li>• Move person to fresh air.</li><li>• If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably by mouth-to-mouth, if possible.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
If in eyes	<ul style="list-style-type: none"><li>• Hold eye open and rinse slowly and gently with water for 15-20 minutes.</li><li>• Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.</li><li>• Call a poison control center or doctor for treatment advice.</li></ul>
<b>HOTLINE NUMBER</b> Have the product container or label with you when calling a poison control center or doctor, or going for treatment Contact Rocky Mountain Poison & Drug Safety at 1-866-673-6671 for emergency medical treatment. For information on this product (including general health concerns or pesticide incidents), call the National Pesticide Information Center (NPIC) at 1-800-858-7378, Monday through Friday, 8:00 AM to 12:00 PM Pacific Time (NPIC Website: <a href="http://www.npic.orst.edu">www.npic.orst.edu</a> ).	
For chemical emergency: spill, leak, fire, exposure or accident, call CHEMTREC at 1-800-424-9300	

See other panels for additional precautionary information.

UPL NA Inc.  
630 Freedom Business Center, Suite 402  
King of Prussia, PA 19406  
1-800-438-6071

EPA Reg. No. 70506-AEL \_\_\_\_\_  
EPA Est. No. \_\_\_\_\_  
Net Contents: \_\_\_\_\_ gallons

## PRECAUTIONARY STATEMENTS

### HAZARDS TO HUMANS AND DOMESTIC ANIMALS

#### CAUTION

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

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

#### Applicators and other handlers must wear:

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

Mixers/loaders and applicators must wear a minimum of a NIOSH-approved particulate filtering facepiece respirator with any N, R, or P filter; OR a NIOSH-approved elastomeric particulate respirator with any N, R, or P filter; OR a NIOSH-approved powered air-purifying respirator with an HE filter. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization.

Follow manufacturer's instructions for cleaning and maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

**Important:** When reduced PPE is worn because a closed system is being used, handlers must be provided all PPE specified above for "applicators and other handlers" and have such PPE immediately available for use in an emergency, such as a spill or equipment breakdown.

#### User Safety Recommendations

Users should:

- Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.
- Remove clothing/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 disposing of equipment washwater 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.

This labeling must be in the possession of the user at the time of application.

### **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.

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

- Coveralls
- Waterproof gloves
- Shoes plus socks

### NON-AGRICULTURAL USE REQUIREMENTS

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

Keep unprotected persons out of treatment area until seeds have dried or been packaged

### PRODUCT INFORMATION

414-02 is a liquid biological nematicide that when applied to soil, provides protection of plants from listed plant pathogenic nematodes that attack the root system in peanut and potato. Apply 414-02 as a soil drench alone or in tank mixes with other registered crop protection products. In areas of historically high nematode infestation or when conditions are conducive to heavy nematode pressure, use 414-02 in a rotational program with other registered nematicide products with different mode of action. Consult local agricultural authorities for specific IPM strategies developed for your crop(s) and location. Apply 414-02 with spray equipment commonly used for making ground applications and irrigation systems commonly used for chemigation.

**SPRAY DRIFT:** Avoiding spray drift at the application site is the responsibility of the applicator. The interaction of many equipment- and weather-related factors determines the potential for spray drift. The applicator and the grower/treatment coordinator are responsible for considering all of these factors when making decisions. Where states have more stringent regulations, they should be observed.

**GROUND:** This product can be applied by commonly used ground equipment, such as hose-end, pressurized, greenhouse and hand-held sprayers. Consult spray nozzle and accessory catalogues for specific information on proper equipment calibration. Maintain agitation during mixing and application to assure uniform product suspension. Thorough coverage of soil surface is essential for effective disease control or suppression. Use the application rate, indicated for the appropriate crop in the Application Rate tables of this label, in sufficient water to achieve thorough coverage. Overall, to achieve good coverage, use proper spray pressure, gallonage per acre, nozzles, nozzle spacing and ground speed.

**BANDED:** This product can be applied by commonly used ground equipment, such as tractor-mounted spray boom. **ONLY** for Peanut crop- See specific recommendations under Peanut.

**CHEMIGATION:** This product can be applied by drip-type irrigation systems. Refer to the Chemigation Directions for Use section of this label for additional directions and precautions. Maintain agitation during mixing and application to assure uniform product suspension. Use the application rate, indicated for the appropriate crop in the Application Rate tables of this label, in sufficient water to achieve through coverage.

### MIXING INSTRUCTIONS

**MIXING:** 414-02 must be diluted with water. Partially fill the spray tank with clean water and begin agitation. Add the specified amount of 414-02 to the tank. Finish filling the tank to the necessary volume to obtain the proper spray concentration. It is critical that the spray solution be agitated during mixing and application to assure a uniform suspension. Do not allow spray mixture to stand overnight or for prolonged periods. Maintain a spray solution pH between 4.5 and 8.5. 414-02 may be tank mixed with other registered pesticides to enhance plant disease control or suppression. This product cannot be mixed with any product with a prohibition against such mixing. When tank mixing 414-02 with other registered pesticides, always read and follow all use directions,

restrictions, and precautions of both 414-02 and the tank-mix partner(s). Use of the resulting tank mix must be in accordance with the more restrictive label limitations and precautions. Do not exceed label dosage rates.

## **COMPATIBILITY TESTING AND TANK MIX PARTNERS**

It's the pesticide user's responsibility to ensure that all products are registered for the intended use. Read and follow the application restrictions/limitations and directions for use on all product labels involved in tank mixing. Users must follow the most restrictive directions for use and precautionary statements for each product in the tank mixture.

## **COMPATIBILITY**

Do not combine 414-02 in the spray tank with pesticides, surfactants or fertilizers if there has been no previous experience or use of the combination to show it is physically compatible, effective and non-injurious under your use conditions.

414-02 is compatible with many commonly used pesticides, fertilizers, adjuvants and surfactants but has not been fully evaluated with all of these. To ensure compatibility of tank-mix combinations, evaluate them prior to use as follows:

Using a suitable container, add proportional amounts of product to water. Add wettable powders first, followed by water dispersible granules, then by liquid flowables and lastly, emulsifiable concentrates. Mix thoroughly and let stand for at least five minutes. If the combination stays mixed or can be remixed, it is physically compatible. Test the combination on a small portion of the crop to be treated to ensure that a phytotoxic response will not occur as a result of application. 414-02 is also compatible with a wide range of additives.

**DO NOT USE MIXTURES THAT CURDLE, PRECIPITATE, OR GEL. USE TANK MIXTURES IMMEDIATELY AFTER MIXING WITH ADEQUATE AGITATION**

## **CHEMIGATION DIRECTIONS FOR USE**

### **Basic Requirements:**

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

### **Requirements for Chemigation Systems Connected to Public Water Systems:**

- Public water supply means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone (RPZ), backflow preventer or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the



water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the flow outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- Do not apply when wind speed favors drift beyond the area intended for treatment.
- 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 414-02 to lose effectiveness or strength.
- Do not combine 414-02 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. 414-02 has not been fully evaluated for compatibility with all of these. Conduct a spray compatibility test if mixture with other pesticides, surfactants or fertilizers is planned.
- Maintain agitation in the pesticide supply tank.
- Apply 414-02 during the last half of the water application.
- Dilute 414-02 in enough water to be able to draw through system for the last half of the water application.

#### **Drip Chemigation Requirements:**

- The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from back flow.
- The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- The irrigation line or water pump must include a functional pressure switch, which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump), effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 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 414-02 to lose effectiveness or strength.

- Do not combine 414-02 with pesticides, surfactants or fertilizers for application through chemigation equipment unless prior experience has shown the combination physically compatible, effective and non-injurious under conditions of use. 414-02 has not been fully evaluated for compatibility with all of these. Conduct a spray compatibility test if mixture with other pesticides, surfactants or fertilizers is planned.
- Maintain agitation in the pesticide supply tank.
- Apply 414-02 according to the application instructions below during the last half of the water application.
- Dilute 414-02 in enough water to be able to draw through system for the last half of the water application.

## APPLICATION INSTRUCTIONS:

### All Soil Surface (Drench), Shank-In, Injected and In-Furrow Applications:

Mix 5 oz 414-02 in the appropriate amount of water per acre. Use the recommended rate when the field has a history of nematode problems. 414-02 can be mixed with chemical fungicides registered for soil applications.

**Soil Surface (Drench) Applications at Planting, Seeding, Transplanting:** Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.

**Shank-In or Injected Applications:** 414-02 can be shank-in or injected into the soil prior to-, at-, or post planting/transplanting of crops alone or with most types of liquid nutrients.

### In-Furrow Applications:

For in-furrow applications, apply 414-02 as an in-furrow spray in the required amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.

## APPLICATION INSTRUCTIONS

Apply 414-02 rates per unit, as shown in the table below. 414-02 may be used in combination with other UPL registered seed treatment products. Pre-test for compatibility needs to be verified with other seed treatment products. Read and follow carefully all label directions of each product used in the treating mixture. When using combinations of products, the most restrictive of label limitations and precautions must be followed.

## CROPS, PESTS AND APPLICATION RATE

CROP	PESTS CONTROLLED	APPLICATION RATE Fl oz/Acre	APPLICATION INSTRUCTIONS
Peanut	Peanut Root Knot nematode Lesion nematode Northern root-knot nematode	5 fl oz/Acre	<b>All Soil Surface (Drench), Shank-In, Injected and In-Furrow Applications:</b> Mix 5 oz of 414-02 in the appropriate amount of water per acre. Use the stated rate when the field has a history of nematode problems. 414-02 can be mixed with chemical pesticides registered for soil applications.

			<p><b>Soil Surface (Drench) Applications At Planting:</b> Use at planting, seeding or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.</p> <p><b>Shanked-In and Injected Applications:</b> 414-02 can be shanked-in or injected into the soil prior to-, at-, or post-planting/transplanting of crops alone or with most types of liquid nutrients.</p> <p><b>In-Furrow Applications:</b> For in-furrow applications, apply 414-02 as an in-furrow spray in the appropriate amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.</p> <p><b>Banded Applications At pegging Stage of Growth:</b> Banded over the row foliar application intended to reach the ground by using tractor-mounted spray boom then water down the application with at least 0.3 inches of water through the center pivot to ensure the application reach the soil.</p>
Potato	Potato Cyst Nematode Root Knot nematode Root Lesion nematode Reniform Nematode Stubby root nematode	5 fl oz/acre	<p><b>All Soil Surface (Drench), Shanked-In, Injected and In-Furrow Applications:</b> Mix 5 fl oz of 414-02 in the appropriate amount of water per acre. Use the stated rate when the field has a history of nematode problems. 414-02 can be mixed with chemical pesticides registered for soil applications.</p> <p><b>Soil Surface (Drench) Applications At Planting:</b> Use at planting, seeding or transplant. Apply finished spray mixture, at a rate to thoroughly soak the growing media through the root zone, as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems.</p> <p><b>Shanked-In and Injected Applications:</b></p>

			<p>414-02 can be shanked-in or injected into the soil prior to-, at-, or post planting/transplanting of crops alone or with most types of liquid nutrients.</p> <p><b>In-Furrow Applications:</b> For in-furrow applications, apply 414-02 as an in furrow spray in the appropriate amount of water per acre for the crop at planting. Mount the spray nozzle so the spray is directed in the furrow just before the seeds are covered.</p> <p><b>Soil Surface (Drench) Applications At planting:</b> Apply the finished spray mixture to the surface of the soil as a drench or directed spray using hand-held, mechanical or motorized spray equipment, or as a chemigation drench or directed spray using applicable sprinkler or drip irrigation systems. When applying as a spray (e.g., via hydraulic nozzles at low volumes), it is important to irrigate to move the material into the seed, root or transplant zone. Normal operation of overhead sprinklers and drip irrigation systems are sufficient for effective applications.</p>
--	--	--	--

## STORAGE AND DISPOSAL

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

**PESTICIDE STORAGE:** Store at 62.6-79.3°F (17-26.3°C) in a cool, dry, secure location.

**PESTICIDE DISPOSAL:** Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

**CONTAINER HANDLING: Nonrefillable containers equal to or less than 5 gallons.** Do not reuse or refill this container. 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 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. If pressure rinsing, empty the remaining contents into application equipment or a mix tank and continue to drain for 10 seconds after the flow begins to drip. Hold container upside down over application equipment or mix tank or collect rinsate for later use or disposal. Insert pressure rinsing nozzle in the side of the container, and rinse at about 40 PSI for at least 30 seconds. Drain for 10 seconds after the flow begins to drip. Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

**Nonrefillable containers greater than 5 gallons.** Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying. Triple rinse as follows: Empty remaining contents into application equipment or a mix tank. Fill the container 1/4 full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution, for 30 seconds. Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Repeat this procedure two more times. Then offer container for recycling, reconditioning, or puncture and dispose of in a sanitary landfill, by incineration. Do not burn, unless allowed by state and local ordinances. If burned, stay out of smoke.

**IMPORTANT INFORMATION**  
**READ BEFORE USING PRODUCT**

**CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY**

**NOTICE:** Read the entire Directions for Use and Conditions of Sale and Limitation of Warranty and Liability before buying or using this product. If the terms are not acceptable, return the product at once, unopened, and the purchase price will be refunded.

The Directions for Use of this product reflect the opinion of experts based on field use and tests, and must be followed carefully. It is impossible to eliminate all risks associated with the use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as manner of use or application, weather or crop conditions, presence of other materials or other influencing factors in the use of the product, which are beyond the control of UPL NA Inc. or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of UPL NA Inc. and Seller. To the extent consistent with applicable law, all such risks shall be assumed by Buyer and User, and Buyer and User agree to hold UPL NA Inc. and Seller harmless for any claims relating to such factors.

**TO THE EXTENT CONSISTENT WITH APPLICABLE LAW, UPL NA INC. AND SELLER MAKE NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ON THIS LABEL.**

To the extent consistent with applicable law, UPL NA Inc. or Seller shall not be liable for any incidental, consequential or special damages resulting from the use or handling of this product and **THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF UPL NA INC. AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF UPL NA INC. OR SELLER, THE REPLACEMENT OF THE PRODUCT.**

UPL NA Inc. and Seller offer this product, and Buyer and User accept it, subject to the foregoing conditions of sale and limitations of warranty and of liability, which may not be modified except by written agreement signed by the duly authorized representative of UPL NA Inc.

[label updated 09/16/2024]