

# DoubleNickel™ LC

BIOFUNGICIDE

## Aqueous Suspension Biofungicide/Bactericide

 FOR ORGANIC PRODUCTION

### ACTIVE INGREDIENT:

*Bacillus amyloliquefaciens* strain D747\* .....98.85%

OTHER INGREDIENTS: .....1.15%

TOTAL .....100.00%

\*Contains a minimum of  $1 \times 10^{10}$  colony-forming units (cfu) per milliliter



### Net Contents:

2.5 Gallons / 250 Gallons

EPA Reg. No. 70051-107

EPA Est. No. 70051-CA-001

Lot No:

Manufactured by  
Certis USA, L.L.C.  
9145 Guilford Road  
Suite 175  
Columbia, MD 21046



**KEEP OUT OF REACH OF CHILDREN  
CAUTION**

See Inside Panels for Additional Precautionary Statements

### FIRST AID

**If on skin:** Take off contaminated clothing. Rinse skin with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.

**If in eyes:** Hold eyes open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

**If inhaled:** Move person to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or doctor for further treatment advice.

Have the product label with you when calling a poison control center or doctor. Hot Line No.: 1-800-255-3924 for additional information

### PRECAUTIONARY STATEMENTS

#### HAZARDS TO HUMANS & DOMESTIC ANIMALS

#### CAUTION

Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. Avoid contact with eyes, or clothing. Avoid breathing spray mist. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco and using the toilet.

### PERSONAL PROTECTIVE EQUIPMENT (PPE)

#### Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Waterproof gloves
- Shoes plus socks
- Mixer/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 and maintaining PPE. If no instructions are available, use detergent and hot water for washables. Keep and wash PPE separately from other laundry.

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides, the handler PPE requirements may be reduced or modified as specified in the WPS.

### USER SAFETY RECOMMENDATIONS

Users should:

- Remove clothing/PPE immediately if pesticides get inside. Then wash thoroughly and put on clean clothing.
- Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

### ENVIRONMENTAL HAZARDS

For Terrestrial Uses: Do not apply directly to water or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters or rinsate. Do not apply when weather conditions favor drift or runoff from treated areas.

### GENERAL INFORMATION

Double Nickel™ LC is a broad-spectrum preventative biofungicide/bactericide for control or suppression of fungal and bacterial plant diseases. The active ingredient of Double Nickel™ LC is a naturally occurring strain (D747) of the beneficial bacterium *Bacillus amyloliquefaciens*. Double Nickel™ LC also colonizes plant root hairs, preventing establishment of disease-causing fungi and bacteria.

Double Nickel™ LC can be applied alone or in combination and/or rotation with chemical fungicides as a tool for integrated disease management in agricultural crops, ornamental and nursery plants, and turfgrass. Double Nickel™ LC offers a valuable tool for management of resistance to chemical fungicides through its multiple and unique modes of action.

Double Nickel™ LC can be applied up to and including the day of harvest.

### DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

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.

### 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 intervals. The requirements in this box only apply to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 4 hours.

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

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

### MIXING AND HANDLING INSTRUCTIONS

Mix the required amount of Double Nickel™ LC in water with sufficient agitation to maintain a uniform suspension in the spray or mixing tank. Tank should be cleaned prior to use. Do not use highly alkaline or highly acidic water to mix sprays. Use a buffering agent if necessary to maintain neutrality (pH 6 to 8) of water in the tank. Maintain agitation during application. Apply immediately after mixing; do not allow spray mix to stand overnight.

Double Nickel™ LC can be mixed and used with other agricultural chemicals for which such mixing is permitted by the product labels, in accordance with the most

restrictive of those label limitations and precautions. If such a mixture is planned, a compatibility "jar test" should first be conducted by mixing the correct proportions of Double Nickel™ LC and these products in a small volume of water.

**APPLICATION METHODS**

**Ground:** Double Nickel™ LC can be applied in most commonly-used ground application equipment, such as (but not limited to): tractor-mounted boom, airblast, high clearance, hose-end, backpack, and other pressurized sprayers; hose-end or hand-held sprayers; foggers or mist blowers; water wheel and other drench applicators; and shank or other soil injection method.

**Aerial:** Double Nickel™ LC can be applied by fixed or rotary winged aircraft in a minimum of 3 gallons of water per acre. Standard precautions should be taken to minimize spray drift.

**Chemigation:** Double Nickel™ LC can be applied through drip (trickle) and sprinkler type irrigation equipment. Refer to the section entitled "Chemigation Instructions" for detailed instructions.

**Agricultural crops**

CROPS	DISEASES/PATHOGENS (See footnotes for additional information)
<b>Vegetables and melons</b>	
<b>Brassica vegetables</b> such as broccoli, cabbage, cauliflower, Brussels sprouts, kohlrabi, and other cole crops (including those grown for seed production).	Pin rot complex ( <i>Alternaria/Xanthomonas</i> )* Leaf spots ( <i>Alternaria</i> spp., <i>Xanthomonas</i> spp.) Downy mildew ( <i>Peronospora</i> spp.) Powdery mildew ( <i>Erysiphe polygoni</i> ) "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp. (see instructions below for "Soil application").
<b>Bulb vegetables</b> such as onions, garlic, shallots, and others (including those grown for seed production).	<i>Botrytis</i> spp. (neck rot, leaf blight) Purple blotch ( <i>Alternaria</i> spp.) Downy mildew ( <i>Peronospora</i> spp.) Powdery mildew ( <i>Erysiphe</i> spp.) Rust ( <i>Puccinia porii</i> )* "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp. (see instructions below for "Soil application").
<b>Cucurbits</b> such as cucumbers, squash (all types), cantaloupes, muskmelons, watermelons, and other melons (including those grown for seed production).	Powdery mildew ( <i>Erysiphe</i> and <i>Sphaerotheca</i> spp.) Downy mildew ( <i>Pseudoperonospora</i> spp.) Gummy stem blight ( <i>Didymella bryoniae</i> and <i>Phoma cucurbitacearum</i> ) See instructions below for "Soil application" against the following diseases: Vine decline ( <i>Monosporascus cannonballus</i> )** Charcoal rot ( <i>Macrophomina phaseoli</i> )** "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp.
<b>Fruiting vegetables</b> such as tomatoes, peppers, eggplant, tomatillo, okra, and others (including those grown for seed production).	Bacterial spot ( <i>Xanthomonas</i> spp.)* <sup>1</sup> Bacterial speck ( <i>Pseudomonas syringae</i> pv. <i>tomato</i> )* <sup>1</sup> Gray mold ( <i>Botrytis cinerea</i> ) Powdery mildew* ( <i>Leveillula</i> , <i>Oidiopsis</i> , <i>Erysiphe</i> , and <i>Sphaerotheca</i> spp.) Early blight ( <i>Alternaria solani</i> )* Late blight ( <i>Phytophthora infestans</i> )* See instructions below for "Soil application" against the following diseases: "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp. Southern blight ( <i>Sclerotium rolfsii</i> )* and **
<b>Leafy vegetables</b> such as head and leaf lettuce, celery, spinach, radicchio, arugula, watercress, and others (including leafy Brassica vegetables such as mustard and collard greens, kale, bok choy, and related crops), including those grown for seed production.	Downy mildew ( <i>Bremia lactucae</i> , <i>Peronospora</i> spp.)* Powdery mildew ( <i>Golovinomyces</i> ( <i>Erysiphe</i> ) <i>cichoracearum</i> )* Bacterial blights Head and leaf drop ( <i>Sclerotinia</i> spp.) <sup>2</sup> Pink rot ( <i>Sclerotinia sclerotiorum</i> ) <sup>2</sup> Leaf spots ( <i>Cercospora</i> spp.) See instructions below for "Soil application" against the following diseases: "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp. Bottom rot ( <i>Rhizoctonia solani</i> )

(continued)

CROPS	DISEASES/PATHOGENS (See footnotes for additional information)
<b>Vegetables and melons (continued)</b>	
<b>Legume vegetables</b> succulent and dried beans and peas such as green, snap, shell, and Lima beans, garbanzo beans, chickpeas, soybeans, dry beans, peas, split peas, lentils, and other legumes, including those grown for seed production.	White mold ( <i>Sclerotinia sclerotiorum</i> ) <sup>2</sup> Gray mold ( <i>Botrytis cinerea</i> ) Powdery mildew ( <i>Microsphaera diffusa</i> ) Rusts*, including <i>Uromyces appendiculatus</i> , <i>Puccinia</i> spp., and Asian soybean rust ( <i>Phytophthora pachyrhizi</i> ) "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp. (see instructions below for "Soil application").
<b>Root, tuber, and corn vegetables</b> such as potato, sweet potato, carrot, cassava, beets, ginger, radish, horseradish <sup>22</sup> , ginseng, turnip, and other root, tuber and corn crops (including those grown for seed production).	Black root/crown rot ( <i>Alternaria</i> spp.) Bacterial leaf blight ( <i>Xanthomonas campestris</i> ) Downy mildew ( <i>Peronospora</i> spp.) Powdery mildew ( <i>Erysiphe</i> spp.) Gray mold ( <i>Botrytis</i> spp.) White mold ( <i>Sclerotinia sclerotiorum</i> ) <sup>2</sup> Black leg /bacterial soft rot ( <i>Erwinia carotovora</i> )** Early blight ( <i>Alternaria solani</i> )* Late blight ( <i>Phytophthora infestans</i> )* See instructions below for "Soil application" against the following diseases: Black scurf ( <i>Rhizoctonia solani</i> ) Cavity spot ( <i>Pythium</i> spp.) "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp.
<b>Other vegetables</b> such as sweet corn, popcorn, asparagus, peanut, and watercress	<i>Botrytis</i> spp. Rusts ( <i>Puccinia</i> spp.) White mold ( <i>Sclerotinia sclerotiorum</i> ) <sup>2</sup> Leaf spots ( <i>Cercospora</i> and <i>Cercosporidium</i> spp.)* "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp. (see instructions below for "Soil application").
<b>Tree fruits and nuts</b>	
<b>Citrus</b> such as orange, lemon, lime, grapefruit, tangerine (mandarin), tangelo, pummelo, and other citrus	<i>Alternaria</i> leaf spot ( <i>Alternaria alternata</i> ) Postbloom fruit drop ( <i>Colletotrichum acutatum</i> )* Greasy spot ( <i>Mycosphaerella citri</i> )* <sup>3</sup> Citrus canker ( <i>Xanthomonas campestris</i> pv. <i>citri</i> ) <sup>1</sup> Scab ( <i>Elsinoe fawcettii</i> )* <sup>4</sup> Melanose ( <i>Diaporthe citri</i> )*
<b>Pome fruits</b> such as apple, pear, crabapple, quince, and others	Powdery mildew ( <i>Podosphaera leucotricha</i> ) <sup>5</sup> Scab ( <i>Venturia</i> spp.)* Fliespeck ( <i>Zygophiala jamaicensis</i> ) <sup>6**</sup> Sooty blotch disease complex <sup>6**</sup> Brooks spot ( <i>Mycosphaerella pomi</i> ) <sup>6**</sup> Bot rot/white rot ( <i>Botryosphaeria dothidea</i> ) <sup>6**</sup> Bitter rot ( <i>Colletotrichum</i> spp.) <sup>6</sup> Cedar apple rust ( <i>Gymnosporangium juniperi-virginianae</i> ) <sup>6**</sup> Fire blight ( <i>Erwinia amylovora</i> ) <sup>7</sup>
<b>Stone fruits</b> such as apricot, cherry, nectarine, peach, plum, prune, pluot, and others	Powdery mildew ( <i>Sphaerotheca</i> and <i>Podosphaera</i> spp.) <sup>8</sup> Bacterial canker ( <i>Pseudomonas</i> spp.) Brown rot blossom blight ( <i>Monilinia laxa</i> ) <sup>9</sup> Brown rot ( <i>Monilinia fructicola</i> ) <sup>10</sup> Gray mold ( <i>Botrytis cinerea</i> ) <sup>10</sup> Peach leaf curl ( <i>Taphrina deformans</i> ) Bacterial leaf spot ( <i>Xanthomonas arbuticola</i> pv. <i>pruni</i> ) <sup>1</sup> Rusty spot ( <i>Podosphaera leucotricha</i> ) <sup>1</sup>
<b>Tree nuts</b> such as almond, pistachio, pecan, walnut, filbert, hazelnut, chestnut, macadamia, and other tree nuts.	Walnut blight ( <i>Xanthomonas campestris</i> ) <sup>11</sup> Anthracnose ( <i>Colletotrichum acutatum</i> )* Bacterial canker ( <i>Pseudomonas syringae</i> ) Shot hole ( <i>Vilsonomyces carpophilus</i> )* Brown rot ( <i>Monilinia</i> spp.)* Pecan scab ( <i>Cladosporium caryigenum</i> ) <sup>11</sup> and **
<b>Pomegranates</b>	Leaf and fruit spots ( <i>Cercospora</i> , <i>Gloeosporium</i> and <i>Pestalotia</i> spp.) <sup>1</sup> Fruit rots ( <i>Alternaria</i> , <i>Botrytis</i> , and other spp.) <sup>10</sup> Powdery mildew ( <i>Sphaerotheca pannosa</i> )

(continued)

CROPS	DISEASES/PATHOGENS (See footnotes for additional information)
<b>Other fruits</b>	
<b>Strawberry</b>	Powdery mildew ( <i>Sphaerotheca macularis</i> , <i>Erysiphe</i> spp.) <sup>12</sup> Gray mold ( <i>Botrytis cinerea</i> ) <sup>11</sup> Anthracnose ( <i>Colletotrichum acutatum</i> ) Angular leaf spot ( <i>Xanthomonas fragariae</i> ) <sup>1</sup> For the following diseases, see instructions below for "Soil application" (and also root dip instructions <sup>22</sup> ): "Damping off" and root or crown diseases caused by <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Pythium</i> , <i>Phytophthora</i> , and/or <i>Verticillium</i> * spp. Charcoal rot ( <i>Macrophomina phaseolina</i> ) <sup>**</sup>
<b>Berries</b> , including blueberry, blackberry, raspberry, loganberry, huckleberry, kiwifruit, gooseberry, elderberry, cranberry (non-flooded fields), currant, and other berries	Mummy berry ( <i>Monilinia vaccinii-corymbosi</i> ) <sup>*</sup> Botrytis blight ( <i>Botrytis cinerea</i> ) Bacterial canker ( <i>Pseudomonas</i> spp.) <sup>13</sup> Anthracnose fruit rot ( <i>Colletotrichum acutatum</i> ) <sup>10</sup> Sclerotinia ( <i>Sclerotinia sclerotiorum</i> )
<b>Grapes</b> including wine grapes, table grapes, and raisins	Powdery mildew ( <i>Erysiphe</i> (formerly <i>Uncinula</i> ) <i>necator</i> ) <sup>14</sup> Gray mold ( <i>Botrytis cinerea</i> ) <sup>15</sup> Sour rot complex <sup>15</sup> Downy mildew ( <i>Plasmopara viticola</i> ) <sup>*</sup> Phomopsis ( <i>Phomopsis viticola</i> ) <sup>16</sup> Eutypa ( <i>Eutypa lata</i> ) <sup>17</sup>
<b>Tropical fruits</b> such as avocado <sup>18</sup> , mango <sup>18</sup> , papaya <sup>19</sup> , pineapple <sup>19</sup> , banana, plantain, and others.	Anthracnose ( <i>Colletotrichum</i> spp.) Scab ( <i>Sphaceloma perseae</i> ) Bacterial canker ( <i>Xanthomonas campestris</i> ) Sigatoka ( <i>Mycosphaerella fijiensis</i> ) <sup>20</sup>
<b>Other Crops</b>	
<b>Herbs and spices</b> such as basil, thyme, coriander, dill, cilantro, parsley, mint, and others.	Powdery mildews ( <i>Oidium</i> spp. and others) Downy mildews ( <i>Peronospora</i> spp. and others) <sup>*</sup> Damping off diseases ( <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Alternaria</i> , and <i>Fusarium</i> spp.) Leaf spots ( <i>Alternaria</i> , <i>Septoria</i> , <i>Colletotrichum</i> , and <i>Cercospora</i> spp.) <sup>*</sup> Bacterial diseases ( <i>Erwinia</i> , <i>Xanthomonas</i> , and <i>Pseudomonas</i> spp.) Rusts ( <i>Puccinia</i> spp. and others) "Damping off" and root or crown diseases caused by <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Pythium</i> , <i>Phytophthora</i> , and/or <i>Verticillium</i> * spp. (see instructions below for "Soil application").
<b>Coffee</b>	Coffee berry disease ( <i>Colletotrichum coffeanum</i> ) <sup>1</sup> Coffee rust ( <i>Hemileia vastatrix</i> ) <sup>1**</sup> Anthracnose ( <i>Colletotrichum</i> spp.) <i>Botrytis</i> flower blight <i>Cercospora</i> leaf spot <sup>**</sup> and berry blotch <sup>**</sup> "Damping off" and root or crown diseases caused by <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Pythium</i> , <i>Phytophthora</i> , and/or <i>Verticillium</i> * spp. (see instructions below for "Soil application").
<b>Tobacco</b>	Angular leaf spot ( <i>Pseudomonas</i> spp.) Anthracnose ( <i>Colletotrichum</i> and <i>Glomerella</i> spp.) Blue mold or downy mildew ( <i>Peronospora</i> spp.) <sup>*</sup> Brown spot ( <i>Alternaria</i> ) Barn spot/ frog-eye leaf spot ( <i>Cercospora nicotianae</i> ) <sup>10</sup> Collar rot ( <i>Sclerotinia sclerotiorum</i> ) <sup>2</sup> Gray mold ( <i>Botrytis cinerea</i> ) Powdery mildew ( <i>Erysiphe cichoracearum</i> ) Black root rot ( <i>Rhizoctonia solani</i> ) See instructions below for "Soil application" against the following diseases: "Damping off," seedling blights, and root or crown diseases caused by <i>Pythium</i> , <i>Rhizoctonia</i> , <i>Fusarium</i> , <i>Oididium</i> , <i>Phytophthora</i> , or <i>Verticillium</i> * spp. Charcoal rot ( <i>Macrophomina phaseolina</i> ) Black root rot ( <i>Thielaviopsis basicola</i> ) Black shank ( <i>Phytophthora</i> spp.) <sup>*</sup> Southern blight/southern stem rot ( <i>Sclerotium rolfsii</i> ) <sup>*</sup>

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CROPS	DISEASES/PATHOGENS (See footnotes for additional information)
<b>Other Crops (continued)</b>	
<b>Corn</b> , including field corn, sweet corn, popcorn, silage corn, seed corn, and other corn crops.	Common rust ( <i>Puccinia sorghi</i> ) <sup>*</sup> Southern leaf blight ( <i>Bipolaris maydis</i> / <i>Cochliobolus heterostrophus</i> / <i>Helminthosporium maydis</i> )
<b>**Cereal grains</b> , such as barley, millet, oats, rice, rye, sorghum, triticale, wheat, and other cereal grain crops (including those grown for seed).	Powdery mildew ( <i>Erysiphe graminis</i> ) Rust ( <i>Puccinia</i> spp.) <sup>*</sup> Rice blast ( <i>Pyricularia oryzae</i> ) Sheath spot/blight ( <i>Rhizoctonia</i> and <i>Thanatephorus</i> spp.) Smut ( <i>Tilletia barclayana</i> ) Bacterial blight/streak ( <i>Xanthomonas</i> spp.) Stem rots ( <i>Magnaporthe</i> and <i>Sclerotium</i> spp.) <i>Cercospora</i> leaf spot Brown rot/leaf spots/smuts ( <i>Ceratobasidium</i> , <i>Cochliobolus</i> , <i>Dreschlera</i> , and <i>Entyloma</i> spp.)
<b>**Oilseed crops</b> , including canola, castor, coconut, cotton, flax, oil palm, olive, peanut, rapeseed, safflower, sesame, sunflower, soybeans, and other oilseed crops, including those grown for seed production.	White mold/Stem rot ( <i>Sclerotinia sclerotiorum</i> ) Rusts <sup>*</sup> , including <i>Uromyces appendiculatus</i> , <i>Puccinia</i> spp., and Asian soybean rust ( <i>Phyospora pachyrhizi</i> ) Bacterial Speck ( <i>Pseudomonas syringae</i> pv. <i>glycinea</i> ) Bacterial Pustule ( <i>Xanthomonas</i> spp.) Brown Spot ( <i>Septoria glycines</i> ) <i>Cercospora</i> Leaf Spot Pod and Stem Blights ( <i>Diaporthe</i> and <i>Phomopsis</i> spp.) Downy Mildew ( <i>Peronospora mansherica</i> )
<b>Mint</b>	Rust ( <i>Puccinia</i> spp.)
<b>Hops</b>	Powdery mildew ( <i>Sphaerotheca macularis</i> ) <sup>21</sup>
<b>**Sugar beets</b> (including crops grown for seed production)	Leaf spots ( <i>Cercospora</i> and <i>Ramularia</i> spp.) Powdery mildew ( <i>Erysiphe</i> spp.) Rust ( <i>Uromyces betae</i> )
<b>Footnotes:</b>	
*Suppression only; for improved control mix or rotate with chemical fungicide approved for such use. ** NOT FOR USE IN CALIFORNIA	
1 Tank mix or rotate with copper-based fungicides at label rates for improved control.	
2 Apply at or immediately following planting (but before plant emergence) as a banded seed-line treatment 4 to 6 inches wide. Make second application at thinning or cultivation in sufficient water and multiple nozzles to ensure thorough coverage of lower leaves and surrounding soil surface. Incorporation with light irrigation after application may improve disease control. Repeat at 10-14 day intervals if conditions promoting disease persist.	
3 For greasy spot suppression, apply at first new foilar flush and repeat with each new flush. Tank mix with spray oil or copper based fungicide at labeled rates.	
4 For suppression of citrus scab, start applications at first new foliage flush and repeat at petal fall and when fruit are 1/2 inch in diameter.	
5 Make first application at or before tight cluster if conditions favor disease development. Repeat at 7-10 day intervals through the second cover spray or longer on susceptible varieties or if environmental conditions favor rapid disease development.	
6 Begin applications before bloom when environmental conditions favor disease development, repeating at 7 to 14 day intervals or as needed. Control may be enhanced by addition of a surfactant to improve spray coverage. Use only surfactants known to be safe for use on the crop and for which such use is allowed.	
7 Rotate with antibiotics registered for fire blight control for improved performance. Begin applications at 1-5% open blossoms and repeat every 3-7 days as necessary until petal fall, when intervals can be increased to 7 days. Double Nickel™ LC can also be used in summer "cover spray" applications to control the shoot blight phase of fire blight and summer diseases. Can be mixed with copper fungicides to improve control.	
8 Make first application at popcorn stage and repeat every 7 days.	
9 Start applying at early bloom stage and repeat every 7 days through petal fall.	
10 Pre-harvest applications in sufficient water to cover fruit or other harvested plant parts may improve control of postharvest infections.	
11 Begin applications at or before pistillate bloom, repeating every 7-10 days. Apply before rainfall if possible, and tank mix or rotate with a copper-based bactericide registered for such use for improved control.	
12 Start applications at or just before flowering and repeat every 7-10 days as needed through harvest.	
13 Apply before fall rains and again during dormancy before spring growth.	
14 Start applications when new shoots are 1/2 to 1 1/2 inches long. Repeat at 3-5 inches, 8-10 inches, and then at 7-10 day intervals until disease conditions no longer exist.	
15 Apply at bloom, before bunch closure, at veraison, and before harvest.	
16 Apply when shoots are 1/2 to 1 inch long and again when 6-8 inches long.	
17 Mix 2 fluid ounces Double Nickel™ LC per gallon of water and apply to pruning wounds.	
18 Apply at budbreak and repeat on 14-21 day interval as needed through harvest.	
19 Apply at flowering and repeat on 14-21 day interval as needed through harvest	
20 Apply at first appearance of leaves and repeat at 7-21 day intervals as needed, in sufficient water to obtain thorough coverage of foliage. Tank mix with spray oil or other registered fungicides for improved control.	
21 Mix 6 to 10 fluid ounces Double Nickel™ LC per 100 gallons of water and apply in minimum of 20 gallons per acre from emergence to training, 50 gallons per acre from training to wire, and 100 gallons per acre from wire touch through harvest.	
22 For treatment of horseradish or strawberry roots immediately before transplanting: immerse bare roots (individually or in bunches) for 10 seconds in a suspension of 1 to 2 pints Double Nickel™ LC per gallon of water.	



**Foliar application:** For control of diseases on foliage, flowers, fruit, or other above-ground parts of plants: Mix Double Nickel™ LC in water and apply as a spray at a rate of **0.5 to 6 quarts** of Double Nickel™ LC per acre in sufficient water to achieve thorough coverage of the crop canopy with minimal runoff. Begin applications at crop emergence, transplanting, or when conditions are conducive to development of disease. Repeat application every 3 to 10 days, or as needed, for as long as conditions favor disease development. Lower rates (0.5 to 3 quarts per acre) may be applied under light disease pressure, to smaller (e.g. newly-emerged) plants, or when Double Nickel™ LC is used in a tank mix with other fungicides whose labels allow such use. Under moderate to severe disease pressure, or when environmental conditions and plant stage are conducive to rapid disease development, use higher label rates (3-6 quarts/acre), apply more frequently (every 3-7 days), and mix or rotate Double Nickel™ LC with other fungicides for improved performance.

**Soil application:** For control of soilborne diseases infecting seeds, seedlings, roots, crown, stems, or other plant parts below ground or in contact with soil: Apply Double Nickel™ LC at **0.5 to 4.5 pints per acre**. Mix the required amount in sufficient water to apply by one of the following methods:

- Soil drench applied to transplants in flats or pots in the greenhouse or nursery any time prior to transplanting (see additional drench instructions under “Nurseries, greenhouses, shade houses, and ornamental plants” below).
- Soil drench at transplanting, using a “water wheel” injector, spray nozzles/hoses, or other method to drench each root ball and/or planting hole.
- Soil or seedline drench, or banded spray (in-furrow) at planting. See the section on “Banded (in-furrow) application” below for additional instructions.

**Rates for banded (in-furrow) application:** Find desired application rate of Double Nickel™ LC per acre in the left column. Read across that line to the correct row spacing indicated at the top to find the number of fluid ounces per 1,000 row feet that will provide the desired application rate per acre.

Double Nickel™ LC rate/acre		Space between rows (inches)															
Pints	fl oz	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	
0.5	8	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	
0.75	12	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9	0.9	
1.0	16	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.1	1.2	1.2	
1.25	20	0.5	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.1	1.2	1.3	1.4	1.5	1.5	
1.5	24	0.6	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.7	1.8	
1.75	28	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	
2.0	32	0.7	0.9	1.0	1.1	1.2	1.3	1.5	1.6	1.7	1.8	2.0	2.1	2.2	2.3	2.4	
2.25	36	0.8	1.0	1.1	1.2	1.4	1.5	1.7	1.8	1.9	2.1	2.2	2.3	2.5	2.6	2.8	
2.5	40	0.9	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.3	2.4	2.6	2.8	2.9	3.1	
2.75	44	1.0	1.2	1.3	1.5	1.7	1.9	2.0	2.2	2.4	2.5	2.7	2.9	3.0	3.2	3.4	
3.0	48	1.1	1.3	1.5	1.7	1.8	2.0	2.2	2.4	2.6	2.8	2.9	3.1	3.3	3.5	3.7	
3.25	52	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.8	4.0	
3.5	56	1.3	1.5	1.7	1.9	2.1	2.4	2.6	2.8	3.0	3.2	3.4	3.6	3.9	4.1	4.3	
3.75	60	1.4	1.6	1.8	2.1	2.3	2.5	2.8	3.0	3.2	3.4	3.7	3.9	4.1	4.4	4.6	
4.0	64	1.5	1.7	2.0	2.2	2.4	2.7	2.9	3.2	3.4	3.7	3.9	4.2	4.4	4.7	4.9	
4.25	68	1.6	1.8	2.1	2.3	2.6	2.9	3.1	3.4	3.6	3.9	4.2	4.4	4.7	4.9	5.2	
4.5	72	1.7	1.9	2.2	2.5	2.8	3.0	3.3	3.6	3.9	4.1	4.4	4.7	5.0	5.2	5.5	

**Nurseries, greenhouses, shadehouses, and ornamental plants**

**Spray application:** Mix **0.5 to 6 quarts of Double Nickel™ LC per 100 gallons of water** and apply as a foliar spray of sufficient volume to wet the entire plant with minimal runoff. Begin preventative applications at plant emergence and repeat every 3-28 days as needed (every 3-7 days if disease pressure is high or environmental conditions are highly favorable to disease outbreak, 10-28 days under low pressure or less conducive conditions).

**Drench application:** Mix **0.5 to 4.5 pints of Double Nickel™ LC per 100 gallons of water** and apply as a drench or coarse spray to soil or other growing media in pots, flats, plugs, trays, or planting beds, for control or suppression of soilborne diseases of seedlings, cuttings, bedding plants, and transplants (including vegetables and other transplanted food crops). Make first application at or immediately before seeding, sticking, germination, or transplanting. Repeat applications every 14-28 days as needed. Transplants can be treated immediately before transplanting into field soils to protect against damping-off and other diseases that reduce plant establishment.

**Cutting or root dip:** Dip basal end of cuttings or bare roots (individually or in bunches) in a suspension of **1 to 2 pints of Double Nickel™ LC per gallon of water**. Immerse for 5-10 seconds immediately before planting.

**Chemigation:** Mix **0.5 to 4.5 pints of Double Nickel™ LC per 100 gallons of water** and apply via drip, handheld, or sprinkler irrigation systems. Refer to “Chemigation Instructions” for more details.

Follow-up (post-planting) preventative applications can be made every 2-4 weeks by one or more of the following methods, if needed:

- Drip (trickle) or any type of sprinkler irrigation, any time after planting or transplanting. See Chemigation Instructions for additional information.
- Spray directly onto the soil surface and/or lower plant parts. If targeting root disease, follow immediately with sufficient overhead sprinkler irrigation to move Double Nickel™ LC to the root zone.
- Injection directly into the rooting zone using shanks or similar equipment.

Lower rates (0.5 to 2 pints of Double Nickel™ LC per acre) may be applied under light disease pressure, to smaller plants, or when Double Nickel™ LC is used in a tank mix with other fungicides whose labels allow such use. Under moderate to severe disease pressure, or when environmental conditions and plant stage are conducive to rapid disease development, use higher label rates (2 - 4.5 pints per acre), apply more frequently (every 2 weeks), and mix or rotate Double Nickel™ LC with other fungicides for improved performance.

**Banded (in-furrow) application:** Use the table below (rate Double Nickel™ LC per acre) to determine the correct application rate in fluid ounces per 1,000 row feet based on row spacing and desired rate per acre. Mix the required amount of Double Nickel™ LC in water and apply as banded spray (4” to 6” wide) or seedline drench centered over the planting furrow. Apply directly over seeds in the furrow just before they are covered with soil. The volume of water required per acre or per 1,000 row feet will depend on the application equipment used. Consult your local cooperative extension service if you need assistance calibrating band spraying equipment.

CROPS/USE SITES	DISEASES/PATHOGENS
Indoor, outdoor, and shade- or other cover-grown ornamental trees and shrubs, flowering plants, foliage plants, tropical plants, potted plants, potted or cut flowers, bedding plants, forestry seedlings, conifer production for reforestation, fruit trees, vegetables and other crops grown in greenhouses or nurseries.	Powdery mildews caused by <i>Erysiphe</i> , <i>Podosphaera</i> , <i>Sphaerotheca</i> , <i>Oidium</i> , and <i>Golovino-mycetes</i> spp. Anthracnose ( <i>Colletotrichum</i> spp.) Bacterial leaf spots caused by <i>Erwinia</i> , <i>Pseudomonas</i> , and <i>Xanthomonas</i> spp. Damping-off disease ( <i>Rhizoctonia</i> , <i>Pythium</i> , <i>Fusarium</i> spp.) Late blight, blackeye, and root rots caused by <i>Phytophthora</i> spp. Gray mold and blight caused by <i>Botrytis cinerea</i> Black root rot ( <i>Aspergillus</i> spp.) Black spot of roses ( <i>Diplocarpon rosae</i> ) Downy mildew ( <i>Peronospora</i> spp.) Leaf spots caused by <i>Alternaria</i> , <i>Septoria</i> , <i>Cercospora</i> , <i>Entomosporium</i> , <i>Helminthosporium</i> , and <i>Myrothecium</i> spp.) Rust ( <i>Puccinia</i> spp.) Scab ( <i>Venturia</i> spp.) Root rot, bottom rot, or stem rot caused by <i>Rhizoctonia solani</i> <i>Sclerotinia</i> blight <i>Fusarium</i> wilts

### Turfgrass application

For control of foliar diseases, apply Double Nickel™ LC at **1 to 4 fluid ounces per 1,000 square feet** as a ground-directed spray in sufficient water to provide thorough coverage. To control root and crown diseases in or on the soil, immediately follow the spray with sufficient overhead sprinkler irrigation to move the product into the root zone.

CROPS/USE SITES	DISEASES/PATHOGENS
Turf, sod, lawns, golf course (fairways, roughs, greens, tees), grass seed production Including but not limited to: Bluegrass, Bentgrass, Bermudagrass (common & hybrid), Dichondra, Fescue, Orchardgrass, <i>Poa annua</i> , St. Augustine grass, Ryegrass, <i>Zoysia</i> , mixtures, and other grasses or ornamental turf	Anthraxnose ( <i>Colletotrichum graminicola</i> ) Brown patch ( <i>Rhizoctonia solani</i> ) Dollar spot ( <i>Lanzia and Moellerodiscus</i> spp., formerly <i>Sclerotinia homeocarpa</i> ) Powdery mildew ( <i>Erysiphe graminis</i> ) Rust ( <i>Puccinia</i> spp.) Gray leaf spot ( <i>Pyricularia grisea</i> ) "Damping off" or seedling blights caused by <i>Pythium</i>

### NON-AGRICULTURAL USE REQUIREMENTS

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

### STORAGE AND DISPOSAL

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

**Pesticide Storage:** Store in a dry area inaccessible to children. Store in original containers only. Keep container closed when not in use.

**Pesticide Disposal:** Wastes resulting from the use of this product may be disposed of onsite or at an approved waste disposal facility.

**Container Handling:** Nonrefillable container. Do not reuse or refill this container.

**-for containers equal to or less than 5 gallons-**

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 1/4 full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling, if available or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

**-for containers greater than 5 gallons-**

Triple rinse as follows: Empty the 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 for recycling, if available, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by burning. If burned, stay out of smoke.

### CHEMIGATION INSTRUCTIONS

#### General information:

Apply this product only through drip (trickle) irrigation (including micro-irrigation through spaghetti tubes or individual tubes) or sprinkler irrigation (including impact or micro-sprinklers, microjet, overhead boom, water gun, solid set, lateral move, end tow, side-roll, center pivot, or hand move, including mist-type systems); or with hand-held calibrated irrigation equipment (such as a hand-held wand with injector). Do not apply this product through any other type of irrigation system.

Crop injury or lack of effectiveness can result from non-uniform distribution of treated water.

If you have questions about calibration, 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 necessary adjustments should the need arise.

Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service

connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.

Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.

The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection.

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 injector system and flush with clean water before use. Failure to provide a clean tank, free of scale or residues may reduce effectiveness of this product.

#### Drip (trickle) and micro-irrigation chemigation

1. The system must contain a functional check valve, vacuum relief valve and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Dilute the product in water following the label mixing directions. It may be pre-mixed in a supply tank with water, fertilizer, or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply to moderately moist soils. Use volumes that thoroughly wet the soil but that do not cause significant runoff or excessive drip from pots. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.

#### Sprinkler chemigation:

1. The system must contain a functional check valve, vacuum relief valve, and low pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
2. The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
3. The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
4. The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
5. The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
6. Systems must use a metering pump, such as a positive displacement injection pump (i.e., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
7. Dilute the product in water following the label mixing directions. It may be pre-mixed in a supply tank with water, fertilizer or other appropriate tank-mixed agricultural chemicals. Agitation is necessary. Apply to moderately moist soils. Use volumes that thoroughly wet the soil but that do not cause significant runoff or excessive drip from pots. Application should be continuous in sufficient water to apply the recommended rate evenly to the entire treated area.
8. Do not apply when wind speed favors drift beyond the area intended for treatment.

**WARRANTY**

Certis USA, L.L.C. warrants that the material contained herein conforms to the description on the label and is reasonably fit for the purpose referred to in the directions for use. Timing and method of application, weather, watering practices, nature of soil, the disease problem, condition of the crop, incompatibility with other influencing factors in the use of this product are beyond the control of the seller. To the extent consistent with applicable law, buyer assumes all risks of use, storage, or handling of this material not in strict accordance with directions given herein. NO OTHER EXPRESS OR IMPLIED WARRANTY OF THE FITNESS OR MERCHANTABILITY IS MADE.