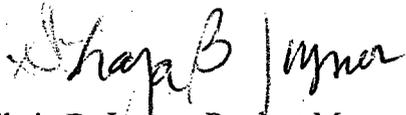


73545-13

10/08/2008

1/37

 <p align="center"><b>U.S. ENVIRONMENTAL PROTECTION AGENCY</b>  <b>Office of Pesticide Programs</b>  <b>Registration Division (7505P)</b>  <b>Ariel Rios Building</b>  <b>1200 Pennsylvania Ave., NW</b>  <b>Washington, D.C. 20460</b></p> <p align="center"><b>NOTICE OF PESTICIDE:</b>  <input type="checkbox"/> Registration  <input checked="" type="checkbox"/> Reregistration  <small>(under FIFRA, as amended)</small></p>	<b>EPA Registration Number:</b>  73545-13	<b>Date of Issuance:</b>  OCT 08 2008
	<b>Term of Issuance:</b> Unconditional	
	<b>Name of Pesticide Product:</b> Topsin 4.5FL	
<b>Name and Address of Registrant (include ZIP Code):</b> Timothy Formella Nisso TM LLC d/b/a Cerexagri, Inc 630 Freedom Business CTR, Suite 402 King of Prussia, PA 19406		
<p><small>Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Registration Division prior to use of the label in commerce. In any correspondence on this product always refer to the above EPA registration number.</small></p> <p>On the basis of information furnished by the registrant, the above named pesticide is hereby reregistered 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 Agency. In order to protect health and the environment, the Administrator, on his 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 this 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.</p> <p>Based on your response to the Reregistration Eligibility Decision for Thiophanate Methyl, EPA has reregistered the product listed above provided the change listed below is made. This action is taken under the authority of section 4(g)(2)(c) of the Federal Insecticide, Fungicide, and Rodenticide Act, as amended.</p> <p>Reregistration under this section does not eliminate the need for continual reassessment of pesticides. EPA may require submission of data at any time to maintain the registration of your product.</p> <p>Continued on Page 2</p>		
<b>Signature of Approving Official:</b>    Shaja B. Joyner, Product Manager 20 Fungicide Branch Registration Division (7505P)	<b>Date:</b>  10/8/08	

This reregistration notice and the accompanying stamped label supercede the notice stamped September 26, 2008 which was attached to the incorrect version of the label. We apologize for the error.

A copy of your label stamped "Accepted" is enclosed for your records. If you have any questions, contact Lisa Jones of my team at (703) 308-9424 or at [jones.lisa@epa.gov](mailto:jones.lisa@epa.gov).

Sincerely,

Shaja B. Joyner, Product Manager  
Product Manager 20  
Fungicide Branch  
Registration Division (7505P)

Enclosure: Stamped copy of label

# TOPSIN<sup>®</sup> 4.5FL

## Fungicide

**ACTIVE INGREDIENT:**

Thiophanate-methyl (dimethyl[1,2-phenylene]-bis(iminocarbonothioyl)]bis[carbamate])* .....	45.0%
OTHER INGREDIENTS: .....	55.0%
TOTAL: .....	100.0%

Contains 4.5 pounds thiophanate-methyl per gallon.

\*Also known as dimethyl 4,4'-o-phenylenebis[3-thioallophanate]

TOPSIN is a registered trademark of Nippon Soda Company, Ltd., and is licensed to NISSO TM LLC, and is covered by one or more of the following U.S. Patents: 3,769,308; 3,856,847; 4,020,095; and 4,029,813.

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**

**FIRST AID**

**If inhaled:**

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

**If on skin or clothing:**

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

Have the product container or label with you when calling a poison control center or doctor or going for treatment. Contact the Rocky Mountain Poison Control Center at 1-866-767-5089 for emergency medical treatment information.

EPA Reg. No.73545-13

EPA Est. No. 66196-CA-1

NET CONTENTS: \_\_\_\_\_ Gallons

**ACCEPTED**

**OCT 08 2008**

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

Sold by: United Phosphorus, Inc.  
630 Freedom Business Center, Suite 402  
King of Prussia, PA 19406

73545-13

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS  
CAUTION**

Harmful if absorbed through the skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. 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)**

Some materials that are chemical-resistant to this product are nitrile and butyl rubber. If you want more options, follow the instructions for category C on an EPA chemical-resistance category selection chart.

Handlers mixing, loading, and applying the product as a dip (including application of product in Kaolinite clay to conifer seedling roots) must wear:

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant footwear plus socks,
- Chemical-resistant apron.

All other mixers, loaders, and applicators must wear:

- Long-sleeved shirt and long pants,
- Shoes plus socks,
- Chemical-resistant gloves,
- Chemical-resistant apron for mixers, loaders, and other handlers exposed to the concentrate.

**User Safety Requirements**

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

**ENGINEERING CONTROLS**

When handlers use enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**USER SAFETY RECOMMENDATIONS**

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Users should 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**  
Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash water.

**DIRECTIONS FOR USE**

**SHAKE WELL BEFORE USING**

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 agency responsible for pesticide regulation.

Do not apply when wind speed favors drift beyond the area intended for treatment.

**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). Exemption: 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.  
  
Do not enter or allow workers entry into treated areas during the restricted-entry interval (REI). The REI for each crop is listed in the directions for use associated with that crop.  
  
Exemption: If this product is applied by drenching, 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.  
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 over long-sleeved shirt and long pants,
- Chemical-resistant gloves made of any waterproof material,
- Chemical-resistant footwear plus socks,

- Chemical-resistant headgear for overhead exposures.

**GENERAL INSTRUCTIONS AND INFORMATION**

Apply Topsin 4.5FL with ground or aerial equipment, using sufficient volume of spray to provide thorough coverage. Continuous agitation is required to keep the material in suspension. United Phosphorus, Inc. does not recommend tank mixes with highly alkaline pesticides, such as Bordeaux mixture or lime sulfur. No claim of compatibility with other pesticides is implied. Use the higher rate under conditions of severe disease pressure. Also, see local State Extension Service recommendations for application schedules.

Use the fl. oz./Acre rate for concentrate sprays (less than 400 gallons on apples, less than 300 gallons on stonefruit). Use the fl. oz./100 gal rate for dilute ground applications. For aerial applications, use a minimum of 5 gallons/A for row crops, and a minimum of 10 gallons/A for tree crops. For ground applications use a minimum of 20 gallons/A for row crops and 30 gallons/A for tree crops. Higher spray volume will generally result in better coverage and better disease control. Lack of control when using below minimum spray volumes is solely at the risk of the applicator/user, including use of electrostatic sprayers.

Chemigation instructions follow. Do not apply through any irrigation system unless these instructions are followed.

For crops without labeled uses of thiophanate-methyl, observe a 30-day plantback restriction.

**Use on all labeled non-bearing tree fruit and tree nuts:** Topsin 4.5FL may be used for control of the diseases listed on the label for these crops during the non-bearing years of new plantings, and on nursery stock. All use directions and limitations must be followed, except for the PHI, which is not applicable. Begin applications as disease is first observed or expected. Tank mixing with a protectant fungicide is strongly recommended for resistance management.

**RESISTANCE MANAGEMENT:** To avoid the development of tolerant or resistant strains of fungi, Topsin 4.5FL should always be tank-mixed with a fungicide of different chemistry, and/or a fungicide of different chemistry should be alternated with Topsin 4.5FL. **DO NOT USE PRODUCTS CONTAINING THIABENDAZOLE OR OTHER PRODUCTS CONTAINING THIOPHANATE-METHYL IN COMBINATION, IN ROTATION, OR AS A SUBSTITUTE FOR TOPSIN 4.5FL AS THEY ARE OF SIMILAR CHEMISTRY AND WILL CONTRIBUTE TO THE DEVELOPMENT OF RESISTANCE.** If after using Topsin 4.5FL as recommended, and the treatment is not effective, a tolerant or resistant strain of fungi may be present. Discontinue the use of Topsin 4.5FL for at least one season. As long as these precautions are followed, Topsin 4.5FL can be useful for disease control, even if resistant strains are present.

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
<p>Almonds</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 3 days.</p>	<p>Brown Rot Blossom Blight (Monilinia) Scab (Cladosporium) Jacket Rot (Monilinia, Sclerotinia, Botrytis) Leaf Blight (Seimatosporium)</p>	<p>20 - 30</p>		<p>Apply as needed between pink bud and petal fall. Topsin 4.5FL may be applied alone at pink bud for Brown Rot control. For all other applications, Topsin 4.5FL should be applied with a contact fungicide such as Ziram 76DF for broad-spectrum control and resistance management. Do not apply more than 60 fl oz of product (2.1 lbs a.i.)/A/year.</p>
<p>Apples</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 2 days.</p>	<p>Apple Scab (Venturia) Black Pox* (Helminthosporium papulosum) Flyspeck (Zygophiala) Powdery Mildew (Podosphaera) Sooty Blotch (Gloeodes) Black Rot (Botryosphaeria obtusa) Brooks Fruit Spot (Mycosphaerella) White Rot* (Botryosphaeria dothidia)</p>	<p>15-20 (in CA use 30)</p>	<p>3.75 - 5</p>	<p>Apply at 5- to 10-day intervals from green tip through petal fall; continue at 7- to 14-day intervals in cover sprays. Do not apply more than 80 fl oz of product (2.8 lbs a.i.)/A/year. Pre-harvest interval: 1 day Follow resistance management guidelines under Directions for Use.</p>
<p>Pre-Harvest use to control Post-Harvest Diseases on Apples</p>				
	<p>Storage Rot Blue Mold (Penicillium expansum) Gray Mold (Botrytis cinerea) Bulls-Eye Rot (Neofabraea spp.)</p>	<p>1</p>	<p>3.75 - 5</p>	<p>Apply as a pre-harvest spray within 2 weeks to 3 days of harvest. Thorough coverage of the fruit is required. Application closer to harvest may provide better efficacy. For resistance management, do not use a benzimidazole fungicide (i.e. Mertect®) post-harvest following Topsin 4.5FL pre-harvest application.</p>

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
				<p>Application of a non-benzimidazole post-harvest fungicide such as Penbotec™ or Schlor® will provide additional protection from post-harvest diseases.</p> <p>Do not apply more than 80 fl oz of product (2.8 lbs a.i.)/A/year. Pre-harvest interval: 1 day</p>
<p>Beans, dry and succulent</p> <p>Including: Lima bean Snap bean Kidney bean Mung bean Navy bean Pinto bean Wax bean Broad bean Fava bean Asparagus bean Blackeyed pea Cowpea Sweet lupine White lupine White Sweet lupine Grain lupine Chick pea Garbanzo bean</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours for succulent beans and 3 days for dry beans.</p>	<p>White Mold (Sclerotinia) Gray Mold (Botrytis) Anthracnose (Colletotrichum)</p>	<p>30-40</p> <p><b>OR</b></p> <p>20-30</p>		<p>For one application: Apply when 100% of plants have at least one open bloom or when conditions are favorable for disease development.</p> <p><b>OR</b></p> <p>For multiple applications: Make the first application when 10% to 30% of plants have at least one open bloom and follow with sequential applications on a 4 to 7-day interval. Apply prior to the development of disease for best results.</p> <p>Do not apply more 80 fl oz of product (2.8 lbs a.i.)/A/year.</p> <p>Pre-harvest Interval: <b>California only</b>, 14 days for succulent beans, 28 days for dry beans and lima beans.</p> <p>Pre-harvest Interval: <b>all other States</b>, 14 days for succulent beans and lima beans, 28 days for dry beans.</p>

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
<p>Cucurbits: Cantaloupe, Casaba, Cucumbers, Melons, Pumpkins, Summer and Winter Squash, and Watermelons</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.</p>	<p>General Information</p>			<p>Do not apply more than 60 fl. oz. of product (2.1 lbs a.i.)/A/year from any combination of application timings. Pre-harvest interval: 1 day</p> <p>Topsin 4.5FL can be used in a tank mix with Penncozeb® (mancozeb) or chlorothalonil for additional disease control and resistance management. Follow resistance management guidelines under Directions for Use.</p>
	<p>Acremonium/ Cephalosporium Hypocotyl Rot</p>	<p>10</p>		<p>Apply in-furrow, on top of the seeds at planting. Do not use less than 10 gallons of water per acre.</p>
	<p>Anthracnose* (Colletotrichum) Gummy Stem Blight* (Didymella) Powdery Mildew (Erysiphe, Sphaerotheca) Target Spot* (Corynespora)</p>	<p>10</p>		<p>Begin applications when plants begin to run or when disease first appears, and repeat at 7 to 14 day intervals or as needed. For Target Spot, use at 7-day intervals as needed.</p>
	<p>Belly Rots* (Rhizoctonia, Fusarium)</p>	<p>10</p>		<p>Apply in sufficient volume to allow runoff to the soil. Will not control Pythium or Phytophthora.</p>
	<p>Suppression of Vine Decline (Monosporascus) Charcoal Rot (Macrophomina)</p>	<p>10</p>		<p>Apply through buried drip irrigation (chemigation) to the root zone. For disease suppression, apply at 14-day intervals, beginning at emergence and continuing to harvest. Applications weekly or biweekly, beginning 4 to 6 weeks prior to harvest will also offer suppression, but may not be as effective as a season-long program.</p>
<p>Garlic (clove treatment)</p>	<p>Penicillium Clove Rot</p>		<p>20</p>	<p>Completely immerse garlic cloves in suspension for at least 5 minutes. Continuously agitate the solution tank by hydraulic or mechanical means.</p>

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
				<p>After treatment, remove cloves from solution and drain.</p> <p>Dry cloves after treatment and prior to planting.</p>
<p>Onions* Garlic (In furrow)</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 3 days.</p>	<p>White Rot (Sclerotium cepivorum)</p>	<p>40 broadcast</p>		<p>Spray directly into the open furrow at the time of planting seed, sets or bulbs. Not for this use through any type of irrigation system.</p> <p>Do not apply more than 40 fl oz of product (1.4 lbs a.i.)/A/year.</p>
<p>Peanuts</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.</p>	<p>Early Leaf Spot (Cercospora) Late Leaf Spot (Cercosporidium) Rust (Puccinia) Limb Rot (Rhizoctonia) Web Blotch (Ascochyta)</p>	<p>10</p>		<p>Begin applications when disease first appears and repeat at 14-day intervals as needed.</p> <p>Do not apply more than 40 fl oz of product (1.4 lbs a.i.)/A/year.</p> <p>Pre-harvest interval: 14 days</p> <p>Topsin 4.5FL should not be used alone. Use only in combination with a non-benzimidazole fungicide such as Penncozeb® 75DF (mancozeb) at 1½ lbs per acre or chlorothalonil.</p> <p>Follow resistance management guidelines under Directions for Use.</p>
<p>Pecans</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 3</p>	<p>Brown Spot (Cercospora) Downy Spot (Mycosphaerella) Liver Spot (Gnomonia) Powdery Mildew (Microsphaera) Scab (Fusicladium)</p>	<p>20</p>		<p>Begin applications when first leaves are showing and repeat at 3 to 4-week intervals until shuck split. Do not apply after shuck split.</p> <p>Do not apply more than 60 fl oz of product (2.1 lbs a.i.)/A/year.</p> <p>Follow resistance management guidelines under Directions for Use.</p>

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
days.	Stem End Blight (Botryosphaeria) Zonate Leaf Spot (Cristulariella)			
Pistachios  Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 3 days.	Shoot Blight (Botrytis, Botryosphaeria)	30 - 40		Apply at bloom. Apply in a minimum of 100 gallons per acre by ground or 20 gallons per acre by air. For aerial application, fly over every row or center. Do not apply more than 40 fl oz of product (1.4 lbs a.i.)/A/year.
Potatoes  Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 2 days.	White Mold (Sclerotinia sclerotiorum)	20-30		Make the first application at row closure to full bloom of the primary flower clusters (prior to petal drop). Repeat the application within 7 to 14 days and at 7- to 14-day intervals if conditions for disease development are favorable. Thorough coverage of the flowers, stems, and branches is essential for disease control. Use a minimum of 6 gallons/A for aerial application. Apply prior to the development of disease for the best results.  Do not apply more than 80 fl oz of product (2.8 lbs a.i.)/A/year. Pre-harvest interval: 21 days May be tank mixed with Penncozeb® (mancozeb) for Early and Late Blight control.
Soybeans  Do not enter or allow worker entry into treated areas during the restricted entry interval	General Information		Do not apply more than 40 fl oz of product (1.4 lbs a.i.)/A/year. Pre-harvest interval: 21 days Do not graze or feed treated vines or hay to livestock.	
	Anthracnose (Colletotrichum) Brown Spot	10-20		

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
(REI) of 24 hours.	(Septoria) Frogeye Leaf Spot (Cercospora) Pod and Stem Blight (Diaporthe, Phomopsis) Purple Seed Stain (Cercospora)			Do not make the second application later than 14 days after pods average 1/4" in length or when beans form in the pod. Use the high rate under severe disease pressure.
		20		FOR SEED BEANS ONLY---For seed quality, make a single application when beans form in the pod.
	White Mold (Sclerotinia)	15-20		Make one application at early bloom (R-1 to R-2 stage) followed by a second application 7 to 14 days later if conditions are favorable for continued disease pressure. Thorough coverage of the flowers, stems, and branches is essential for disease control. Use a minimum of 5 gallons water/A by air.
	Aerial Blight (suppression)	20		Make initial application when disease threatens and repeat 14 to 21 days later if needed.
<u>Stone Fruit</u>  Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 2 days.	General Information			Do not apply more than 80 fl oz of product (2.8 lbs a.i.)/A/year. Pre-harvest interval: 1 day Follow resistance management guidelines under Directions for Use.
Apricots	Brown Rot Blossom Blight Fruit Brown Rot (Monilinia)	20-30 (in CA use 30)	6.7-10	Apply at early bloom (red bud). Make a second application at full bloom. If needed under severe disease pressure, apply additional sprays at 10- to 14-day intervals between full bloom and final pre-harvest sprays.
Cherries	Brown Rot	20-30	6.7-10	Apply at early bloom (early popcorn).

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
Sweet and Sour	Blossom Blight Fruit Brown Rot (Monilinia)	(in CA use 30)		Make a second application at full bloom. If needed under severe disease pressure, apply additional sprays at 10- to 14-day intervals between full bloom and final pre-harvest sprays.
	Cherry Leaf Spot (Coccomyces)	22.5-30	7.5-10	Applications may be made at petal fall or before (when leaves first unfold) and at first, second, and third cover at 10- to 14-day intervals and one spray 14 to 21 days after harvest.
	Powdery Mildew (Podosphaera, Sphaerotheca)	20-30 (in CA use 30) <b>PLUS</b> 22.5-30	6.7-10  <b>PLUS</b> 7.5-10	Apply at early bloom (early popcorn). Make a second application at full bloom. <b>PLUS</b> Apply at shuck fall and first cover.
Nectarines	Brown Rot Blossom Blight Fruit Brown Rot (Monilinia)	20-30 (in CA use 30)	6.7-10	Apply at early bloom (pink bud). Make a second application at full bloom if conditions favor disease development. If needed under severe disease pressure, apply additional sprays at 10- to 14-day intervals between full bloom and final pre-harvest sprays.
Peaches	Brown Rot Blossom Blight Fruit Brown Rot (Monilinia)	20-30 (in CA use 30)	6.7-10	Apply at early bloom (pink bud). Make a second application at full bloom if conditions favor disease development. If needed under severe disease pressure, apply additional sprays at 10- to 14-day intervals between full bloom and final pre-harvest sprays.
	Peach Scab (Cladosporium)	20-30 (in CA use 30)  <b>PLUS</b> 22.5-30	6.7-10  <b>PLUS</b> 7.5-10	Apply at early bloom (pink bud). Make a second application at full bloom if conditions favor disease development. <b>PLUS</b> Apply at shuck split and at first cover sprays.
Plums and	Brown Rot	20-30	6.7-10	Apply at early bloom (green tip).

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
Prunes	Blossom Blight Fruit Brown Rot (Monilinia)	(in CA use 30)		Make a second application at full bloom. If needed under severe disease pressure, apply additional sprays at 10- to 14-day intervals between full bloom and final pre-harvest sprays.
	Black Knot (Dibotryon)	20-30 (in CA use 30)	6.7-10	Apply at pre-bloom, petal fall, and at first, second, or third cover sprays at 10- to 14-day intervals.
	Leaf Spot (Coccomyces)	20-30 (in CA use 30)	6.7-10	Applications may be made at petal fall, shuck split, and at first, second, and third cover sprays at 10- to 14-day intervals and 1 spray 14 to 21 days after harvest.
Strawberries  Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.	General Information			Do not apply more than 80 fl oz of product (2.8 lbs. a.i.)/A/year. Pre-harvest interval: 1 day Follow resistance management guidelines under Directions for Use.
	Crown Rot* (Colletotrichum spp.)  Suppression only	15-20		Begin applications after establishment of the transplants and continue through first bloom at 10 to 14-day intervals. Use the high rate if the fields have a history of Colletotrichum crown rot and/or conditions are favorable for development of the disease. Will not control Phytophthora species.
	Fruit Rot (Botrytis) Leaf Blight (Dendrophoma) Leaf Scorch (Diplocarpon) Powdery Mildew (Sphaerotheca)	15-20		Begin applications at early bloom and continue at 7- to 10-day intervals. Use the higher rate under conditions of severe disease pressure.

Crop	Diseases	Fl Oz/ Acre	Fl Oz/100 gal	Remarks
<p>Sugar Beets</p> <p>Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 24 hours.</p>	General Information			<p>Do not apply more than 60 fl oz of product (2.1 lbs a.i.)/A/year. Pre-harvest interval: 21 days. Follow resistance management guidelines under Directions for Use.</p>
	Cercospora Leaf Spot (Cercospora)	10-20		<p>Apply when conditions become favorable for disease development before the disease appears and follow with a non-benzimidazole fungicide within 14 days of application or as needed.</p> <p>Topsin 4.5FL should be tank mixed with a protectant fungicide such as Penncozeb® or super Tin® when resistant strains of Cercospora are present in the field.</p> <p>For areas east of the Rocky Mountains: Do not make more than one application of Topsin 4.5FL per season for Cercospora Leaf Spot.</p>
	Powdery Mildew (Erysiphe)	10-20		<p>Apply as soon as disease symptoms appear and follow with a non-benzimidazole fungicide at a 14-day interval or as needed.</p> <p>Topsin 4.5FL can be tank-mixed with sulfur products such as Microthiol® Disperss® at 5 to 10 lbs/A for additional disease control and resistance management.</p>
<p>Triticale and Fall-seeded Wheat</p> <p><b>For this use in Idaho, Oregon, and Washington ONLY</b></p> <p>Do not enter or allow worker entry into treated areas</p>	Foot Rot, Strawbreaker, Eye Spot (Pseudocercospora)	20		<p>Apply Topsin 4.5FL at the rate indicated in a single application by air or ground after tillering but before stem elongation has begun. Use sufficient water to obtain thorough coverage.</p> <p>Do not apply more than 20 fl oz of product (0.7 lb a.i.)/A/year. Do not cut for hay within 90 days of application. Do not allow livestock to graze in treated areas before harvest.</p>

Crop	Diseases	Fl Oz/Acre	Fl Oz/100 gal	Remarks
during the restricted entry interval (REI) of 24 hours.				

\* Not for this use in California

NOTE: Dilute sprays are not to exceed maximum rate per acre.

**DIRECTIONS FOR USE ON CONIFERS**  
(Not for this use in California)

CROP	DISEASE		RATE (Lb/A), MINIMUM GALLONAGE	REMARKS
Conifers (Pine) Austrian Red Scots Christmas Trees	Tip Blight (Diplodia)		20 fl oz per 100 gal/A	Apply at bud break. Repeat 10 to 14 days later, just before needles emerge from sheath; repeat again 10 to 14 days after needle emergence. Do not apply more than 60 fl oz of product (2.1 lbs. a.i.)/A/year.
(Fir) Douglas	Swiss Needle Cast (Phaenocarpa) Rhabdochloa Needle Cast		20 fl oz per 50 gal/A	Apply initially in early May. Repeat at 4-week intervals. Do not apply more than 100 fl oz of product (3.5 lbs. a.i.)/A/year.
<ul style="list-style-type: none"> <li>- Add a spreader/sticker to improve coverage.</li> <li>- Use minimum gallonage with mist-blower types of sprayers and higher gallonage with conventional sprayers.</li> <li>- Do not graze livestock in treated areas.</li> <li>- Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.</li> </ul>				
Conifers (seedling treatment) Longleaf	Brown Needle Blight (Scirrhia)		1.25 fl oz product per 9.5 oz. dry Kaolinite clay for seedling	Wet seedling roots in clean water, then apply Topsin 4.5FL/Kaolinite mixture to wet roots. Do not apply mixture to

			roots	seedling foliage.
Loblolly Longleaf Slash	Fusarium and Rhizoctonia Root Rot		2.5 fl oz. product per 50oz. Kaolinite clay, plus enough water to make a slurry	Thoroughly cover seedling roots with Topsin 4.5FL/Kaolinite slurry. Do not apply mixture to seedling foliage.
<p>- During treatment, avoid excessive drying of roots or exposure to temperatures greater than 90 °F or less than 32 °F.</p> <p>- Topsin 4.5FL does not control Pythium or Phytophthora.</p> <p>- Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 12 hours.</p>				

**DIRECTIONS FOR USE THROUGH CHEMIGATION SYSTEMS**

USE IN CALIFORNIA BY CHEMIGATION ONLY FOR BEANS, CUCURBITS (CANTALOPE, CASABA, CUCUMBERS, MELONS, PUMPKINS, SQUASH, WATERMELONS), PEANUTS, POTATOES, SOYBEANS, STRAWBERRIES, AND SUGAR BEETS.

**GENERAL INSTRUCTIONS**

Apply this product only through sprinkler irrigation systems including center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set or hand move; or drip (mini-micro sprinklers, strip tubing, trickle) irrigation systems. Do not apply this product through any other type of irrigation system. Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have any questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

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.

Do not connect chemigation system (including greenhouse systems) used for pesticide irrigation to any public water system unless the pesticide label-prescribed safety devices for public water systems are in place. Public water system means a system for the provision of piped water for human consumption if such a 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.

**SYSTEM REQUIREMENTS**

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.

Systems utilizing a pressurized water and pesticide injection system must meet the following 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 backflow. 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 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.

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.

#### **APPLICATION INSTRUCTIONS**

Observe the requirements in the System Requirements section above.

Apply Topsin 4.5FL only through systems containing anti-syphon and check valves designed to prevent water source contamination or overflow of the mix tank and containing interlocking controls between the metering device and the water pump to insure simultaneous shut-off.

Maintain a gentle continuous agitation in mix tank during mixing and application to assure a uniform suspension.

Greater accuracy in calibration and distribution will be achieved by injecting a larger volume of a more dilute suspension per unit time.

Application of more than recommended quantities of irrigation water per acre may result in decreased product performance.

Do not apply when wind speed favors drift, when system connections or fittings leak, when nozzles do not provide uniform distribution or when lines containing the product cannot be flushed and must be dismantled and drained. In a center pivot system, block the nozzle set nearest the well/pivot/injection unit to prevent spray being applied to this area.

Where sprinkler distribution patterns do not overlap sufficiently, unacceptable disease control may result.

Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water.

Topsin 4.5FL may be applied in conjunction with chemically neutral liquid fertilizers. Application in conjunction with highly alkaline fertilizers, such as aqueous ammonia, is likely to cause a degradation of the pesticide, resulting in reduced performance and should be avoided.

#### **SPRAY PREPARATION:**

Remove scale, pesticide residues, and other foreign matter from the chemical tank and entire injector system. Flush with clean water. Prepare a suspension of Topsin 4.5FL in a mix tank. Fill the tank with  $\frac{1}{2}$  or  $\frac{3}{4}$  the desired amount of water. Start mechanical or hydraulic agitation. Slowly add the required amount of Topsin 4.5FL and then the remaining volume of water.

#### **Sprinkler Irrigation - Notes**

Observe all System Requirements and Application Instructions above.

Set sprinkler system to deliver a maximum of 0.4 inch of water per acre. Volumes of water higher than this may reduce efficacy. Start sprinkler and then uniformly inject the suspension of Topsin 4.5FL into the irrigation water line so as to deliver the desired rate per acre. The suspension of Topsin 4.5FL should be injected with a positive displacement pump into the main line ahead of a right angle turn to insure adequate mixing. When treatment with Topsin 4.5FL has been completed, do not irrigate the treated area for 24 to 48 hours to prevent washing the chemical off the crop.

Do not apply when wind speed favors drift beyond the area intended for treatment.

Where sprinkler distributed patterns do not overlap sufficiently, unacceptable disease control may

result.

Check local restrictions and requirements regarding sprinkler irrigation applications, as they may vary from state to state.

**Drip (Mini-Micro Sprinklers, Strip Tubing, Trickle) Irrigation - Notes**

Observe all System Requirements and Application Instructions above.

A pesticide supply tank is recommended.

**STORAGE AND DISPOSAL**

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

**PESTICIDE STORAGE:** Store in the original container in a dry area. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. If spilled during storage or handling, absorb with sand or other inert material and dispose of absorbent in accordance with the Pesticide Disposal Instructions listed below.

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be used according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:** Do not re-use empty container. Triple rinse (or equivalent), then offer for recycling or reconditioning, 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.

**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 inherently 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 United Phosphorus, Inc. or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of United Phosphorus, Inc. and Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold United Phosphorus, Inc. and Seller harmless for any claims relating to such factors.

To the extent consistent with applicable law, United Phosphorus, Inc. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or United Phosphorus, Inc., and Buyer and User assume

the risk of any such use. To the extent consistent with applicable law, UNITED PHOSPHORUS, INC. MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS STATED ABOVE.

To the extent consistent with applicable law, United Phosphorus, 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 UNITED PHOSPHORUS, 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, AT THE ELECTION OF UNITED PHOSPHORUS, INC. OR SELLER, THE REPLACEMENT OF THE PRODUCT, OR COMPENSATION LIMITED TO DAMAGES NOT EXCEEDING THE FAIR MARKET PURCHASE PRICE, AND SHALL NOT INCLUDE INCIDENTAL OR CONSEQUENTIAL DAMAGES.**

United Phosphorus, 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 United Phosphorus, Inc.

Rev. 08/21/08

# Fanate<sup>®</sup> 4.5F

## Turf and Ornamental Fungicide

**ACTIVE INGREDIENT:**

Thiophanate-methyl (dimethyl[1,2-phenylene]-bis(iminocarbonothioyl)]bis[carbamate])* .....	45.0%
OTHER INGREDIENTS: .....	55.0%
TOTAL: .....	100.0%

Contains 4.5 pounds thiophanate-methyl per gallon.  
\*Also known as dimethyl 4,4'-o-phenylenebis[3-thioallophanate]

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**

**FIRST AID**

**If inhaled:**

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

**If on skin or clothing:**

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

Have the product container or label with you when calling a poison control center or doctor or going for treatment. Contact the Rocky Mountain Poison Control Center at 1-866-767-5089 for emergency medical treatment information.

EPA Reg. No.73545-13

EPA Est. No. 66196-CA-1

NET CONTENTS: \_\_\_\_\_ Gallons

Sold by: United Phosphorus, Inc.  
630 Freedom Business Center, Suite 402  
King of Prussia, PA 19406

**PRECAUTIONARY STATEMENTS  
HAZARDS TO HUMANS AND DOMESTIC ANIMALS**

**CAUTION**

Harmful if absorbed through the skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing vapor or spray mist. 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)**

Some materials that are chemical-resistant to this product are nitrile and butyl rubber. If you want more options, follow the instructions for category C on an EPA chemical-resistance category selection chart.

Handlers mixing, loading, and applying the product as a dip (including application of product in Kaolinite clay to conifer seedling roots) must wear:

- Coveralls over long-sleeved shirt and long pants,
- Chemical-resistant gloves,
- Chemical-resistant footwear plus socks,
- Chemical-resistant apron.

All other mixers, loaders, and applicators must wear:

- Long-sleeved shirt and long pants,
- Shoes plus socks,
- Chemical-resistant gloves,
- Chemical-resistant apron for mixers, loaders, and other handlers exposed to the concentrate.

**User Safety Requirements**

Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry. Discard clothing and other materials that have been drenched or heavily contaminated with this product's concentrate. Do not reuse them.

**ENGINEERING CONTROLS**

When handlers use enclosed cabs in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240(d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

**USER SAFETY RECOMMENDATIONS**

Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.

Users should remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.

Users should 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**  
Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment wash water.

**DIRECTIONS FOR USE**

**SHAKE WELL BEFORE USING**

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 agency responsible for pesticide regulation.

Do not apply when wind speed favors drift beyond the area intended for treatment.

**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). Exemption: 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.  
  
Do not enter or allow workers entry into treated areas during the restricted-entry interval (REI). The REI for each crop is listed in the directions for use associated with that crop.  
  
Exemption: If this product is applied by drenching, 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.  
  
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 over long-sleeved shirt and long pants,
- Chemical-resistant gloves made of any waterproof material,

- Chemical-resistant footwear plus socks,
- Chemical-resistant headgear for overhead exposures.

### NON-AGRICULTURAL USE REQUIREMENTS

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

Do not allow others to enter until sprays have dried.

Fanate 4.5F is a broad spectrum fungicide exhibiting preventative, curative, and systemic properties. It is useful on a wide variety of turf and ornamental disease problems. Apply Fanate 4.5F with ground equipment, using sufficient volume of spray to provide thorough coverage. Use the higher rates under conditions of severe disease pressure. Also, see local State Extension Service recommendations for application schedules.

Chemigation instructions follow Directions For Use. Read and follow these instructions carefully for this method of application.

**Mixing instructions:** **SHAKE WELL BEFORE USING.** Some settling may occur during prolonged periods of non-use. When high pH tank mixes exist, the interval between mixing and application should be minimized. The buffering of tank water to pH 6-7 prior to the addition of Fanate 4.5F is recommended. Add required amount of Fanate 4.5F to partially filled tank (1/2 total volume), agitate by mechanical or hydraulic means, add tank mix product if used (see below), agitate again and then add remaining required amount of water. Continuous agitation is recommended to keep the material in proper suspension. For best results, use spray mixture the same day it is prepared.

**Tank mixing instructions:** Fanate 4.5F is compatible with most commonly used pesticides. If tank mixing with other materials, add products in the following order: wettable powders, dry flowables, liquid flowables, emulsifiable concentrates, and soluble materials such as fertilizers. No claim of compatibility with other products is implied. Do not tank mix with copper-containing materials or with highly alkaline pesticides, such as Bordeaux mixture or lime sulfur. Consult the intended tank mix partner product label for appropriate application rates and use instructions. Follow the label directions for the most restrictive of label precautions and limitations. This product may not be mixed with any product containing a label prohibition against such mixing. Read and observe the most restrictive precautionary statements and other information appearing on product labels used in mixtures. Fanate 4.5F may be applied in conjunction with chemically neutral liquid fertilizers. Application in conjunction with highly alkaline fertilizers, such as aqueous ammonia, may cause a degradation of the pesticide, resulting in reduced performance and should be avoided.

**RESISTANCE MANAGEMENT:** To avoid the development of tolerant or resistant strains of fungi, Fanate 4.5F should always be tank-mixed with a fungicide of different chemistry, and/or a fungicide of different chemistry should be alternated with Fanate 4.5F. **DO NOT USE PRODUCTS CONTAINING THIABENDAZOLE OR OTHER PRODUCTS**

CONTAINING THIOPHANATE-METHYL IN COMBINATION, IN ROTATION, OR AS A SUBSTITUTE FOR FANATE 4.5F AS THEY ARE OF SIMILAR CHEMISTRY AND WILL CONTRIBUTE TO THE DEVELOPMENT OF RESISTANCE. If after using Fanate 4.5F as recommended, and the treatment is not effective, a tolerant or resistant strain of fungi may be present. Discontinue the use of Fanate 4.5F for at least one season. As long as these precautions are followed, Fanate 4.5F can be useful for disease control, even if resistant strains are present.

**TURF APPLICATION –Not for homeowner use. For use only by certified applicators or those under their immediate supervision. Do not apply with fixed wing or rotary aircraft. Not for use on turf being grown for sale or other commercial use as sod.**

**Do not enter or allow others to enter until sprays have dried.**

For use on all fine turf applications such as commercial and residential lawns, parks, athletic fields, golf course greens, tees, and fairways, and cemeteries, consisting of cool and warm season grasses such as Bentgrass, Bluegrass, Bermudagrass, Fescue, Ryegrass, St. Augustinegrass, Zoysiagrass, or their mixtures. When used in accordance with the label, Fanate 4.5F is not phytotoxic to any of the above mentioned grasses. Fanate 4.5F has both preventive and curative activity, and is to be used for the prevention and control of the diseases mentioned below.

Ground Application: Apply Fanate 4.5F with properly calibrated hand held, mechanical or motorized spray equipment or by chemigation through appropriate sprinkler irrigation systems. Spray uniformly over the area to be treated. Apply recommended amounts in sufficient water to obtain thorough coverage of treatment area (2-4 gal of finished spray per 1,000 sq ft is suggested). When treating golf greens, always treat aprons and approaches. Use the highest recommended rate under conditions of severe disease pressure. For best results, apply after mowing or avoid mowing for at least twelve hours after application.

Lightly water the treatment area with one to two tenths inch of water to move the fungicide into active root zone. Excessive irrigation may move Fanate 4.5F below active root zone and reduce application effectiveness. Green design and drainage will influence irrigation practices. When tank mixing with contact action fungicides for foliar diseases, applications should be allowed to dry on leaf surfaces. Normal watering may proceed after sprays have dried.

#### General Restrictions

- Do not graze animals on treated turf.
- Do not feed clippings to livestock or poultry.
- Do not apply with fixed wing or rotary aircraft.
- Minimum retreatment interval on turf is 14 days.
- Do not enter or allow others to enter until sprays have dried.

Restrictions for use on residential or public turf (commercial and residential lawns, parks, athletic fields, cemeteries):

- do not apply more than 1.8 fl oz product/1000 ft<sup>2</sup> in one application
- do not apply more than 7.2 fl oz product/1000 ft<sup>2</sup> per year

Restrictions for use on golf courses (tees, greens, apron):

- Do not apply more than 5.34 fl oz product/1000 ft<sup>2</sup> in one application
- Do not apply more than 14.4 fl oz product/1000 ft<sup>2</sup> to tees or greens per year
- Do not apply more than 3.6 fl oz product/1000 ft<sup>2</sup> to fairways (except Florida) per year
- In Florida, do not apply more than 1.8 fl oz product/1000 ft<sup>2</sup> to fairways per year

	Rate: fl oz product/1,000 sq. ft.			
	Golf courses		Non Golf Course	
Diseases	Tees & Greens	Fairways **	*	Instructions
Anthracnose: basal <i>Colletotrichum graminicola</i> Anthracnose: foliar <i>Colletotrichum graminicola</i>	3.6 – 5.4  2 – 4	3.6	1.8	For prevention in historic areas of disease pressure, apply twice at 14-day intervals when soil temperature reaches 60°F. For curative control, apply when disease first appears and continue at 14-day intervals as needed. Rotations and/or tank mix combinations with chlorothalonil or triadimefon can be used.
Bermudagrass decline: <i>Gaeumannomyces graminis</i> var. <i>graminis</i> Take-All-Patch: <i>Gaeumannomyces graminis</i> var. <i>avenae</i>	3.6 – 5.4	3.6	1.8	Apply in mid-July or when disease symptoms first appear and repeat at 14-day intervals for suppression. Use higher rates under most severe disease pressure. Follow proper agronomic recommendations to maintain plant vigor.
Cool Season Brown Patch: <i>Rhizoctonia cerealis</i> Necrotic Ring Spot: <i>Leptosphaeria korrea</i> Spring Dead Spot: <i>Leptosphaeria korrea</i>	3.6 – 5.4	3.6	1.8	For prevention, apply in fall before turf has stopped all growth activity. Make second application in early spring when soil temperatures reach 55-60°F or when disease first appears. For curative action, apply when disease first appears in early spring and continue at 14-day intervals.
Coprinus Snow Mold: <i>Coprinus psychromorbidus</i>	3.6 – 5.4	3.6	1.8	Make 2 treatments at 21-day intervals in late fall to early winter, with the last application made just prior to first permanent snow cover.
Fusarium Blight: <i>Fusarium roseum</i> , <i>F. triticum</i>	3.6 – 5.4	3.6	1.8	Apply when disease first appears at 14-day intervals.

Diseases	Rate: fl oz product/1,000 sq. ft.			Instructions
	Golf courses		Non Golf Course	
	Tees & Greens	Fairways **	*	
Dollar Spot: <i>Moellerodiscus, Lanzia</i> Large Brown Patch: <i>Rhizoctonia solani</i> Ascochyta Leaf Blight: <i>Ascochyta</i> Copper Spot: <i>Gloeocercospora sorghi</i> Fusarium patch: <i>Fusarium nivale</i> Red Thread: <i>Corticium fuciforme</i> Zoysia Patch: <i>Rhizoctonia solani</i>	2 - 3.6	2 - 3.6	1.8	Apply when disease first appears and continue at 14-day intervals. Rotations and/or tank mix combinations with chlorothalonil, iprodione, or mancozeb can be used.
Gray Leaf Spot (Blast): <i>Pyricularia grisea</i>	3.6 - 5.4	3.6	1.8	Make preventative application before expected period of disease development. Continue applications at 14 day intervals.
Leaf Spot: <i>Drechlsera</i> Leaf, crown, and root diseases: <i>Bipolaris, Curvularia, Exserohilum</i>	3.6 - 5.4	3.6	1.8	Apply when disease first appears and make applications at 14-day intervals as needed. Rotations and/or tank mix combinations with chlorothalonil, iprodione, or mancozeb are recommended under severe conditions.
Pink Snow Mold: <i>Microdochium nivale</i>	2 - 3.6	2 - 3.6	1.8	Apply in late fall to early winter before turf has stopped all growth activity. A second application may be used in combination with chlorothalonil, or thiram at recommended rates before snow cover or during spring thaw.

	Rate: fl oz product/1,000 sq. ft.			
	Golf courses		Non Golf Course	
Diseases	Tees & Greens	Fairways **	*	Instructions
Rusts: <i>Puccinia</i> , <i>Uromyces</i>	3.6 – 5.4	3.6	1.8	Make 2 applications at 14-day intervals when disease first appears. Rotations and/or tank mix combinations with chlorothalonil or mancozeb are recommended.
Stripe Smut: <i>Ustilago striiformis</i>	3.6 – 5.4	3.6	1.8	Apply at 14-day intervals when disease first appears. For prevention, apply in spring and fall.
Summer Patch: <i>Magnaporthe poae</i>	3.6 – 5.4	3.6	1.8	For prevention, make 3 applications starting late April or early May using 21-day intervals. Rotations and/or tank mix combinations may be used as part of the three application program. For suppression, apply at 14-day intervals when disease first appears.

\* public turf (commercial and residential lawns, parks, athletic fields, cemeteries)

\*\* In Florida, do not apply more than 1.8 fl oz product/1000 ft<sup>2</sup> per year to fairways

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**HORTICULTURAL APPLICATIONS**

Nursery Greenhouse, Landscape & Interiorscape  
Annual and Perennial Flowers, Bedding Plants, Foliage Plants, Ground Covers, plus  
Deciduous and Evergreen Trees and Shrubs

Do not apply this product in a way that will contact any person, pet, either directly or through drift. Keep people and pets out of the area during application.

**Homeowners: For use on ornamentals only. Do not apply to home orchards/fruit trees. DO NOT ALLOW PEOPLE OR PETS TO ENTER THE TREATED AREA UNTIL SPRAYS HAVE DRIED.**

**Certified applicators: Do not enter or allow others to enter until sprays have dried.**

**Do not use fruit, nuts, or sap from treated trees as food or feed.**

**Not for homeowner use in New York State.**

Fanate 4.5F is a broad spectrum systemic fungicide which controls a variety of foliar, stem, and root diseases on a wide range of commercially important plants. Fanate 4.5F is also effective as a pre-plant dip on cuttings and bulbs. For soil drench applications, best plant protection is achieved with preventative treatments repeated every 21-28 days. For foliar applications, begin treatments when disease first appears, or during suspected periods of disease development. Make additional applications every 7-14 days or as otherwise instructed for the prevention or control of the listed diseases. Use of a wetting agent is recommended for plants that have leaves that are difficult to wet properly. Use of a spreader-sticker is recommended to enhance product performance in wet weather conditions or during periods of overhead irrigation. Fanate 4.5F may be used to control listed diseases on "backyard" ornamental fruit and nut trees such as almond, apple, apricot, cherry, nectarine, peach, pecan, plum, and prune trees. Fanate 4.5F may be applied as a ground application using hand held, mechanical or motorized spray equipment, or as a chemigation spray or through an applicable sprinkler irrigation system; or as an aerial application where applicable. See specific instructions below.

Note: The "Directions For Use" of this product reflect the cumulative inputs from both historical field use and product testing programs. However, it is impossible to test this product on all species and cultivars. A preliminary trial is suggested on a small scale before a full treatment is applied to any plant type not shown on this label but found in a similar use site with a listed disease problem. Wait 5-7 days after treatment to evaluate results. This product is not recommended for use on Swedish Ivy (*Neprolepis exhaltata*), Boston Fern (*Plectranthus australis*), and Easter Cactus (*Hatiora gaertneri*).

Some plants may occasionally show some sensitivity to Fanate 4.5F applications, primarily as seedlings. Symptoms rarely affect marketability of the plants. Please check compatibility under your conditions on small groups of plants to see if there is any sensitivity.

Application Instructions: Apply material with properly calibrated hand held, mechanical or motorized spray equipment or by chemigation thorough appropriate sprinkler irrigation, flood, or drip systems. Begin applications when disease first appears and repeat at 7-14 day intervals or as needed during the growing season. Use the shortest interval when conditions are unusually favorable for the development of disease. For hand held, mechanical, or motorized applications, mix 10 - 20 oz of Fanate 4.5F per 100 gal and apply as a full coverage spray to drip for the prevention and control of the diseases listed below. Spray volume may range up to 400 gallons of finished spray per acre depending upon plant species and plant growth stage. For applications through irrigation systems, refer to aerial use rates indicated in the foliar application chart. For small volume applications less than 100 gallons, divide recommended rate by 16 to get the number of teaspoons of Fanate 4.5F/gallon water.

Special Instructions For Proportional Injectors (e.g. Dosatron, Dosmatic, Anderson, and similar equipment): Determine the treatment rate as indicated below in the ground application column for crop and pathogen. Determine the injection ratio for the individual system to be used for application. For systems using a 1:100 ratio, measure and add the exact amount of recommended material per 100 gallons to each gallon of water in a stock bucket or tank. For systems using a 1:200 ratio, multiply the recommended amount per 100 gallons by 2. For systems using a 1:50 ratio, divide the recommended amount per 100 gallons by 2. For systems using a 1:16 ratio, divide the recommended amount per 100 gallons by 6. Greater accuracy in calibration and distribution will be achieved by injecting a larger volume of a more dilute suspension per unit time. An injection ratio of 1:100 is recommended for most greenhouse and nursery systems.

Note: homeowners do not apply more than 51.4 fl oz product per acre per single application (1.2 fl oz per 1000 sq. ft.).

For cut flowers do not apply more than 14.2 fl oz Fanate 4.5F (0.5 lb a.i.) per acre per application.

FOLIAR APPLICATION

Diseases Controlled	Rate fl oz product/100 gallons or per acre	Instructions
Anthracoise	10 - 20	Apply as buds break or at first sign of disease period. Repeat at 7-14 day intervals as needed during disease period.
Black Spot of Rose <i>Diplocarpon rosae</i>	10 - 20	Apply in early summer or at first sign of disease. Repeat at 7-14 days as needed during disease period.
Brown Rot and Blight <i>Monilinia, Sclerotinia, Whetzellinia</i>	10 - 20	Apply in late spring or at first sign of disease. Repeat every 7-14 days as needed during disease period.
Fusicladium and	10 - 20	Apply as buds break. Repeat every 7-14 days

Venturia Leaf Scabs on: Crabapple, Hawthorn, Pear, Mountain Ash, Pyracantha, etc.		as needed during disease period. Effective control requires coverage during leaf expansion. Rotations and/or tank mix combinations with mancozeb, chlorothalonil or propiconazole can be utilized.
Leaf Spots and Blights caused by: <i>Ascochyta, Blumeriella, Botrytis, Cercospora, Cocomycès, Corynespora, Curvularia, Didymellina, Entomosporium, Fabraea, Fusarium, Ramularia, Rhizoctonia, Marssonina, Mycosphaerella, Myrothecium, Phoma, Physalospora, Schizothyrium, Septoria, Sphaceloma</i>	10 - 20	Apply when disease symptoms first appear. Repeat every 7-14 days as needed during disease period. Rotations and/or tank mix combinations with mancozeb or chlorothalonil can be utilized.
Ovulinia Blight	10 - 15	Apply as flowers open. Repeat every 7-14 days as needed during disease period.
Powdery Mildews <i>Erysiphe, Microsphaera, Phyllactinia, Podosphaera, Oidium, Sphaerotheca</i>	10 - 20	Apply when disease first appears and repeat every 7-14 days during disease period. Rotations and/or tank mix combinations with mancozeb or triadimefon can be utilized.
Rust Diseases caused by: <i>Puccinia, Gymnosporangium, Uromyces</i>	10 - 20	Apply in late spring or when symptoms first appear. Repeat every 7-14 days as needed during disease period. Rotations and/or tank mix combinations with mancozeb or chlorothalonil are recommended.
Tip Blight of Pine <i>Sphaeropsis sapinea, Diplodia pinea</i>	15 - 20	Begin application in spring when new growth starts. Make a second application just before needles emerge from the sheath and a third application 14 days later. Thorough coverage is essential for optimal disease control.
Twig Blights, Cankers, and Diebacks <i>Diaporthe, Kabatina, Phoma, Phomopsis</i>	15 - 20	Apply when symptoms first appear. Repeat every 7-14 days as needed during disease period.

SOIL DRENCH APPLICATION

Germination of seedlings of some species and cultivars planted in soil drenched with Fanate 4.5F may be delayed slightly, but the plants typically recover, and will be protected from seedling root infection. Soil drenches on young plants may cause a slight chlorosis (yellowing) of lower leaves, but typically do not affect the upper foliage. Other plants may also show a temporary stunting.

Diseases Controlled	Rate Fl. Oz. product/100 gal	Instructions
Stem, Crown, and Root Rots caused by: <i>Botrytis</i> , <i>Cylindrocladium</i> , <i>Fusarium</i> , <i>Gliocladium</i> , <i>Myrothecium</i> , <i>Penicillium</i> , <i>Ramularia</i> , <i>Rhizoctonia</i> , <i>Sclerotinia</i> Black Root Rot: <i>Thielaviopsis</i>	10 – 20	Apply 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 irrigation systems, after seeding or sticking of cuttings (7 oz) or after transplanting (11-14 oz) to propagation beds, containers, pots, trays, or nursery or landscape beds at a rate to thoroughly soak the growing media through the root zone. A general guide is 0.25-3 pints of finished mixture per sq ft depending on the media type and depth (about 4 oz per 4 inch pot or 8 oz per 6 inch pot). Repeat every 21-28 days for adequate crop protection. Note: Fanate 4.5F does not control <i>Pythium</i> or <i>Phytophthora</i> . Tank mix combinations with metalaxyl, mfenoxam, etridiazole, fosetyl-AI or propamocarb are required for the control of <i>Pythium</i> and <i>Phytophthora</i> .

PLANT DIP APPLICATIONS

Diseases Controlled	Rate Fl. Oz. product/100 gal	Instructions
Plant or Cutting Diseases caused by: <i>Botrytis</i> , <i>Cylindrocladium</i> , <i>Fusarium</i> , <i>Gliocladium</i> , <i>Myrothecium</i> , <i>Penicillium</i> , <i>Ramularia</i> , <i>Rhizoctonia</i> , <i>Sclerotinia</i> , <i>Thielaviopsis</i>	10 – 20	Immerse plants or cuttings for 10-15 min. Remove and allow to drain. Note: Follow accepted hygiene practices to minimize the introduction and spread of water borne bacterial and water mold fungal diseases.

<p>Bulb, Corm, and Rhizome Rots caused by:  <i>Botrytis, Cylincladium, Fusarium, Gliocladium, Myrothecium Penicillium, Ramularia, Rhizoctonia, Sclerotinia, Thielaviopsis</i></p>	<p>10 - 20</p>	<p>Soak cleaned bulbs for 15-30 min in warm solution (80-85 °F). For storage disease prevention, treat bulbs preferably within 48 hours after digging. After treatment, dry well before storing. If bulbs are for forcing, treat bulbs that have been heat-cured. Note: Follow accepted hygiene practices to minimize the introduction and spread of water borne bacterial and water mold fungal diseases.</p>
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**DIRECTIONS FOR USE THROUGH CHEMIGATION SYSTEMS**

**GENERAL INSTRUCTIONS**

Apply this product only through sprinkler irrigation systems including center pivot, lateral move, end tow, side (wheel) roll, traveler, solid set or hand move; or drip (mini-micro sprinklers, strip tubing, trickle) irrigation systems. Do not apply this product through any other type of irrigation system.

Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from nonuniform distribution of treated water.

If you have any questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.

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.

Do not connect chemigation system (including greenhouse systems) used for pesticide irrigation to any public water system unless the pesticide label-prescribed safety devices for public water systems are in place. Public water system means a system for the provision of piped water for human consumption if such a 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.

**SYSTEM REQUIREMENTS**

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.

Systems utilizing a pressurized water and pesticide injection system must meet the following 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 backflow.

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 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.

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.

#### **APPLICATION INSTRUCTIONS**

Observe the requirements in the System Requirements section above.

Apply Fanate 4.5F only through systems containing anti-siphon and check valves designed to prevent water source contamination or overflow of the mix tank and containing interlocking controls between the metering device and the water pump to insure simultaneous shut-off.

Maintain a gentle continuous agitation in mix tank during mixing and application to assure a uniform suspension.

Greater accuracy in calibration and distribution will be achieved by injecting a larger volume of a more dilute suspension per unit time.

Application of more than recommended quantities of irrigation water per acre may result in decreased product performance.

Do not apply when wind speed favors drift, when system connections or fittings leak, when nozzles do not provide uniform distribution or when lines containing the product cannot be flushed and must be dismantled and drained. In a center pivot system, block the nozzle set nearest the well/pivot/injection unit to prevent spray being applied to this area.

Where sprinkler distribution patterns do not overlap sufficiently, unacceptable disease control may result.

Allow sufficient time for pesticide to be flushed through all lines and all nozzles before turning off irrigation water.

Fanate 4.5F may be applied in conjunction with chemically neutral liquid fertilizers. Application in conjunction with highly alkaline fertilizers, such as aqueous ammonia, is likely to cause a degradation of the pesticide, resulting in reduced performance and should be avoided.

#### **SPRAY PREPARATION:**

Remove scale, pesticide residues, and other foreign matter from the chemical tank and entire injector system. Flush with clean water. Prepare a suspension of Fanate 4.5F in a mix tank. Fill the tank with  $\frac{1}{2}$  or  $\frac{3}{4}$  the desired amount of water. Start mechanical or hydraulic agitation. Slowly add the required amount of Fanate 4.5F and then the remaining volume of water.

#### **Sprinkler Irrigation - Notes**

Observe all System Requirements and Application Instructions above.

Set sprinkler system to deliver a maximum of 0.4 inch of water per acre. Volumes of water higher than this may reduce efficacy. Start sprinkler and then uniformly inject the suspension of Fanate 4.5F into the irrigation water line so as to deliver the desired rate per acre. The suspension of Fanate 4.5F should be injected with a positive displacement pump into the main line ahead of a right angle turn to insure adequate mixing. When treatment with Fanate 4.5F has been completed, do not irrigate the treated area for 24 to 48 hours to prevent washing the chemical off the crop.

Do not apply when wind speed favors drift beyond the area intended for treatment.

Where sprinkler distributed patterns do not overlap sufficiently, unacceptable disease control may result.

Check local restrictions and requirements regarding sprinkler irrigation applications, as they may vary from state to state.

#### **Drip (Mini-Micro Sprinklers, Strip Tubing, Trickle) Irrigation - Notes**

Observe all System Requirements and Application Instructions above.

A pesticide supply tank is recommended.

**STORAGE AND DISPOSAL**

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

**PESTICIDE STORAGE:** Store in the original container in a dry area. Do not store in a manner where cross-contamination with other pesticides, fertilizers, food or feed could occur. If spilled during storage or handling, absorb with sand or other inert material and dispose of absorbent in accordance with the Pesticide Disposal Instructions listed below.

**PESTICIDE DISPOSAL:** Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be used according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

**CONTAINER DISPOSAL:** Do not re-use empty container. Triple rinse (or equivalent), then offer for recycling or reconditioning, 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.

**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 inherently 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 United Phosphorus, Inc. or Seller. Handling, storage, and use of the product by Buyer or User are beyond the control of United Phosphorus, Inc. and Seller. All such risks shall be assumed by Buyer and User, and Buyer and User agree to hold United Phosphorus, Inc. and Seller harmless for any claims relating to such factors.

To the extent consistent with applicable law, United Phosphorus, Inc. warrants that this product conforms to the chemical description on the label and is reasonably fit for the purposes stated in the Directions for Use, subject to the inherent risks referred to above, when used in accordance with directions under normal use conditions. This warranty does not extend to the use of this product contrary to label instructions, or under abnormal conditions or under conditions not reasonably foreseeable to or beyond the control of Seller or United Phosphorus, Inc., and Buyer.

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