

WILT DISEASES: OAK WILT AND DUTCH ELM DISEASE

Use Shepherd Fungicide **only** as a preventative for Oak Wilt and Dutch Elm Disease. These fungi infect the vascular system and cause plugging throughout the tree; treatment of infected trees is rarely successful.

Symptomless trees immediately adjacent to a diseased tree should be considered infected and may not respond to treatment. Symptomless trees separated by a primary plow line from diseased trees may be uninfected and can be treated. Do not use on trees weakened by extreme environmental conditions such as heat, drought, flooding, etc. It is recommended that Shepherd Fungicide be administered by applicators trained in injection techniques and in the identification of Oak Wilt and Dutch Elm Disease.

In the upper Midwest, treat oaks after June 15. Wounds in oaks in the upper Midwest between May 15 and June 15 attract insects that transmit the oak wilt pathogen. Applications to oaks in other areas and to elms may be made at any time during the growing season, spring through fall, provided the bark is pliable enough to accept the chemical injections. One application provides season-long protection. Reevaluate disease conditions annually, particularly in high disease-risk areas or for high-value trees – retreatment can be made 12-months after initial treatment and annually thereafter. Inject Shepherd Fungicide into the flare, or base of the tree, to ensure even distribution throughout the vascular system.

Note: (1) Accurate diagnosis of Oak Wilt and Dutch Elm Disease is important, since Shepherd Fungicide provides only suppression of the diseases listed on this label. (2) Shepherd Fungicide will be most effective when used in conjunction with other cultural practices recommended for management of Oak Wilt and Dutch Elm Disease (removal of dead elm trees, pruning of diseased tree limbs and branches, control of bark beetles, etc.).

CONIFER BLIGHTS

Diplodia Tip Blight affects a variety of pines and kills current-year shoots, major branches, and ultimately entire trees. The most conspicuous symptom of diplodia blight is brown, stunted new shoots with short, brown needles. Needles on infected new shoots often become discolored (tan, brown) while still encased in fascicle sheaths. Presence of resin droplets and one or a few very short needles are usually the first indications that a new shoot is infected. Entire new shoots are killed rapidly by the fungus. Trees repeatedly infected have some branches killed back to the main stem.

Table 2. Ornamentals – Plant Species (Numbers in parentheses refer to diseases controlled. See Table 3.)		
Wood Ornamentals		Nonbearing Fruits and Nuts (Nurseries and Landscape Plantings)
Ash (4c) Azalea (2c, 4b) Crabapple (3c, 3q, 4c, 5a) Crape Myrtle (4a) Dogwood (3h, 4c) Douglas Fir (5b) Hawthorn (5a) Juniper (1a) Lilac (4c)	Oaks (3p) Pines (1b, 1c) Poplars (5b) Pyracantha (3o) (Outdoor Uses Only) Shasta Fir (5e)	Apple (3q, 4d, 5a) Cherry (2b, 3d) Citrus (3m) Nectarine (2b) Peach (2b) Pecan (3b, 3c, 3f, 3l, 3n, 4e) Plum (2b) Walnut (3j)

Table 3. Diseases	
1. Conifer Blights a. <i>Phomopsis juniperovora</i> (Phomopsis Blight) b. <i>Sirrococcus strobilinus</i> (Tip Blight) c. <i>Sphaeropsis sapinea</i> (Diplodia Tip Blight) 2. Flower Blight a. <i>Ascochyta chrysanthemi</i> (Ray Blight) b. <i>Monilinia</i> spp. c. <i>Ovulinia</i> spp. 3. Leaf Blights/Spots a. <i>Alternaria</i> spp. b. <i>Cercospora</i> spp. (Brown Leaf Spot) c. <i>Cladosporium</i> spp. (Scab) d. <i>Coccomyces hiemalis</i> e. <i>Colletotrichum</i> spp. f. <i>Cristulariella</i> spp. (Zonate leafspot) g. <i>Diplocarpon rosae</i> (Blackspot) h. <i>Discula</i> spp. (Anthracnose) i. <i>Fabraea maculata</i> (syn. Entomosporium maculata) j. <i>Gnomonia leptostyla</i> (Anthracnose)	k. <i>Heterosporium echinulatum</i> l. <i>Mycosphaerella caryigena</i> (Downy Spot) m. <i>Mycosphaerella fructicola</i> (Greasy Spot) n. <i>Septoria</i> spp. (Leaf Scorch) o. <i>Spilocaea pyracanthae</i> p. <i>Tubakia dryina</i> q. <i>Venturia inaequalis</i> (Scab) 4. Powdery Mildew a. <i>Erysiphe</i> spp. b. <i>Microsphaera</i> spp. c. <i>Oidium</i> spp. d. <i>Podosphaera</i> spp. e. <i>Sphaerotheca pannosa</i> 5. Rust a. <i>Gymnosporangium juniperi-viginianae</i> b. <i>Melampsora occidentalis</i> c. <i>Phragmidium</i> spp. d. <i>Puccinia</i> spp. e. <i>Pucciniastrum goeppertianum</i> f. <i>Uromyces dianthi</i>

Repeated infections reduce growth, deform trees, and ultimately kill them.

Treatment will not cure already affected areas of the tree but will prevent the spread of infection. Removal of dead branches, cones and fallen debris will reduce the amount of fungal spores available to cause new infections. Wait for dry fall weather to prune to avoid spreading spores on pruning equipment. Between cuts, sanitize tools by dipping in 70% alcohol or a 10% solution of household bleach in water.

HOW TO USE THE ARBORSYSTEMS DIRECT-INJECT CHEMICALS WITH ARBORSYSTEMS DIRECT-INJECT TREE INJECTION SYSTEM

- Use only ArborSystems Direct-Inject chemicals with your unit as they have been formulated specifically for the Direct-Inject system.
- Attach the chemical pack to the Direct-Inject unit and prepare the unit to make injections.
- Set the delivery volume on the unit.
- Follow the label directions in this booklet to determine the amount of chemical and number of injection sites.
- Determine where to make injections in the bark. Generally, the injection tip is inserted into the fissure (valley) of the tree bark. Inject thin-barked trees in the thicker part of the tree bark. Thick-barked trees require a longer injection tip.
- Make injections working around the circumference of the tree. Make Wedgle® Tip injections within 6" to 12" off the ground. Use the Portle® Tip for injecting Sycamores or thick-barked hardwoods such as elms at the base or flare of the tree.
- With a smooth motion, firmly squeeze the injection unit handles. This releases a pre-measured chemical dose to the tree.
- Continue making injections moving around the tree until the entire tree trunk has been treated.
- During use, periodically clean the Direct-Inject unit to prevent clogging.

STORAGE AND DISPOSAL

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

Pesticide Storage: Store in original container in a cool, dry place.

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

Container Handling: Non-refillable container; do not reuse or refill this container. Completely empty pack into application equipment, then offer for recycling, if available, or dispose of empty pack in a sanitary landfill or by incineration.



Tree Injection Solutions

800-698-4641 • Fax: 402-339-5011
10168 L Street • Omaha, NE 68127

NOTICE OF WARRANTY

ArborSystems warrants that this product conforms to the chemical description on the label and is reasonably fit for use when used strictly in accordance with the directions on the labeling. To the extent consistent with applicable law, ArborSystems® does not make or authorize any agent or representative to make any other warranty, guarantee or representation, express or implied, concerning this product.

ArborSystems®, Shepherd®, Portle® and Wedgle® are registered trademarks of ArborSystems.

Direct-Inject™ and WedgeChek™ are trademarks of ArborSystems.

Direct Inject™ unit is protected by U.S. Patent #5,901,498
Wedgle® Tip is protected by U.S. Patent #5,239,773
WedgeChek™ is protected by U.S. Patent #5,797,215
Portle® Tip is protected by U.S. Patent #7,178,286

See Inside for First Aid, additional Precautionary Statements and complete Directions for Use.

CAUTION
Keep Out of Reach of Children

Contains 4.25 oz (117 grams) active ingredient per 1 qt 2 fl oz (1000 ml) pack.

per 4 fl oz (120 ml) pack.

Contains 0.5 oz (14 grams) active ingredient

Total.....100.00%

OTHER INGREDIENTS.....85.7%

Propiconazole (CAS No. 60207-90-1).....14.3%

ACTIVE INGREDIENT:

For Systemic Fungicide Suppression of Selected Diseases in Ornamental Trees

An ArborSystems® Direct-Inject™ Chemical

SHEPHERD® Fungicide

THIS PANEL
GLUES TO
CHEMICAL PACK

SHEPHERD® Fungicide

An ArborSystems® Direct-Inject™ Chemical
 • Easy • No Drilling • Saves Time and Money

For Systemic Fungicide Suppression of Selected Diseases in Ornamental Trees

Intended for use by professional arborists/ applicators, foresters, grounds maintenance professionals and landscapers.

To be used only with the ArborSystems Direct-Inject Tree Injection System.



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EPA Reg. No. 69117-3 EPA Est. 69117-NE-1

FIRST AID

If Swallowed: Immediately call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by the poison control center or doctor. Do not give anything by mouth to an unconscious person.

If on Skin or Clothing: Take off contaminated clothing. Immediately rinse skin with plenty of water for 15-20 minutes. 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 by mouth-to-mouth, if possible. Call a poison control center or doctor for further treatment advice.

If in Eyes: Hold eye 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.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

You may also contact 1-800-222-1222 for emergency medical treatment advice.

Note to Physician: If ingested, induce emesis or lavage stomach; treat symptomatically.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Harmful if swallowed, inhaled or absorbed through the skin. Avoid breathing vapor. Thoroughly wash with soap and water after handling. Remove and wash contaminated clothing before reuse.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

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

All handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves, such as barrier laminate; butyl, nitrile and neoprene rubber; polyvinyl chloride (PVC); or Viton
- Shoes plus socks
- Protective eyewear

In addition, all handlers (mixers, loaders and applicators or individuals performing one or more of these tasks), who are applying this pesticide using hand-held equipment must wear:

- Long-sleeved shirt and long pants
- Shoes and socks and
- Chemical-resistant gloves.

USER SAFETY REQUIREMENTS

Users should:

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.

USER SAFETY RECOMMENDATIONS

- Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet.
- Immediately remove clothing/PPE if pesticide gets inside; then thoroughly wash and put on clean clothing.

- Immediately remove PPE after handling this product. Wash the outside of gloves before removing. As soon as possible thoroughly wash and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and shrimp. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwater or rinsate.

PHYSICAL OR CHEMICAL HAZARDS

Do not use or store near heat or open flame.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application.

Intended for use by professional arborists/ applicators, foresters, grounds maintenance professionals and landscapers.

RESTRICTIONS

Do Not Inject Food-Bearing Plants

PRODUCT INFORMATION

ARBORSYSTEMS® DIRECT-INJECT™ TREE INJECTION SYSTEM

The ArborSystems Direct-Inject Tree Injection System is a no-drill trunk injection method and is easy to use. Most trees are treated in as little as five minutes or less, allowing applicators to treat trees quickly. There is no need to wait for absorption (translocation). Chemical is injected into the cambial area (the active vascular system) of the tree. Because the chemical is placed right where the tree can use it, effectiveness of the chemical is increased. Use in sunny or overcast conditions, rainy or dry, at any time of day. As no drilling or implants are required, you can treat trees year after year, with no threat of long-term or permanent damage to the tree. This system minimizes wounding and promotes long-term tree health and vigor.

INDICATIONS AND TREATMENT TIMING

Table 1. Overview of Diseases and Treatments

See Table 2 and Table 3 for additional information

Note: Apply the specified rate for a particular type of disease and evaluate for phytotoxicity and disease control prior to widespread use. Before using on trees or diseases which are not listed, test on a small scale basis.

Treatments	Dosage per injection site	Treatment timing
Make 1 injection for every 3" to 5" of trunk circumference	Higher dosages generally provide longer control	
Conifer Blights (See additional notes below)		
Diplodia Tip Blight and other Conifer Blights such as Tip Blight in Pines and Junipers	2-4 ml	Use for curative or preventive treatment. Treatments can be made any time during the growing season including in the fall providing protection for up to two years.
Wilt Diseases (See additional notes below)		
Oak Wilt Disease for an uninfected Oak (not including Red Oak)	3-5 ml	Apply only to uninfected trees. Wilt diseases can only be prevented, not cured.
Dutch Elm Disease for an uninfected Elm	5-10 ml	Applications should be made only during the growing season; spring through late summer, providing a minimum of 12-month protection.
Anthracnose and Leaf Diseases in Hardwoods		
Anthracnose in Sycamore	2 ml	For these diseases, use for prevention only. Applications are most effective when applied in late summer, around one month prior to the typical first frost, to suppress/prevent leaf disease in the following year. Late summer applications allow chemical to translocate into the bud before leaf drop. Next spring when the tree leafs out, the chemical will be in place to protect the leaf. Trees with leaf disease symptoms can be treated to prevent recurrence for the following year. Annual treatments are required for prevention.
Leaf diseases in Oaks, Crabapple, and non-bearing ornamentals including Cherry, Citrus, Pecan, Pyracantha and Walnut	1-2 ml	
Powdery Mildew in Ash, Dogwood, Lilac and non-bearing ornamental Crabapple and Pecan	1-2 ml	
Flower Blight of non-bearing ornamental Cherry, Peach, Plum	1-2 ml	
Rust on Douglas Fir, Hawthorn, Poplars, Shasta Fir, and non-bearing ornamental Crabapple	1-2 ml	

Note: Because some treatments require large amounts of chemical per site, there may be occasions where it is difficult to keep all of the chemical dose in the injection site. If this is experienced, several options are possible:

- 1) Use the Portle or WedglePlus Injection Tips which have a check valve in the hub of each tip which keeps chemical in the tree until it is absorbed.
- 2) Reduce dosage volume by half and double the number of injection sites.
- 3) Inject half the dose at each site, mark the tree, continue treating other trees, then return to the marked tree and inject remaining dosage in each site.