



U.S. ENVIRONMENTAL PROTECTION AGENCY

Office of Pesticide Programs  
Registration Division (7505P)  
1200 Pennsylvania Ave., N.W.  
Washington, D.C. 20460

EPA Reg. Number:

69117-12

Date of Issuance:

9/17/15

NOTICE OF PESTICIDE:

Registration  
 Reregistration  
(under FIFRA, as amended)

Term of Issuance:

Conditional

Name of Pesticide Product:

Boxer Insecticide-Miticide

Name and Address of Registrant (include ZIP Code):

Kim Davis  
Arbor Systems, Inc. d/b/a Arbor Systems  
c/o RegWest Company, LLC  
8203 West 20<sup>th</sup> Street, Suite A  
Greeley, CO 80634-4696

**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.

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

Registration is in no way to be construed as an endorsement or recommendation of this product by the 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.

This product is conditionally registered in accordance with FIFRA section 3(c)(7)(A). You must comply with the following conditions:

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

Signature of Approving Official:

Mark Suarez, Product Manager 07  
Invertebrate & Vertebrate Branch 3, Registration Division  
(7505P), Office of Pesticide Programs

Date:

9/17/15

2. You are required to comply with the data requirements described in the DCI identified below:
  - a. Emamectin Benzoate GDCI-122806-1204

You must comply with all of the data requirements within the established deadlines. If you have questions about the Generic DCI listed above, you may contact the Chemical Review Manager in the Pesticide Reevaluation Division: [http://www.epa.gov/oppsrrd1/contacts\\_prd.htm](http://www.epa.gov/oppsrrd1/contacts_prd.htm)

3. Make the following label changes before you release the product for shipment:
  - Revise the EPA Registration Number to read, “EPA Reg. No. 69117-12.”
4. Submit one copy of the final printed label for the record before you release the product for shipment.

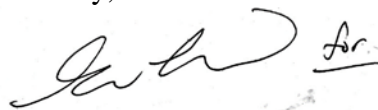
Should you wish to add/retain a reference to the company’s website on your label, then please be aware that the website becomes labeling under the Federal Insecticide Fungicide and Rodenticide Act and is subject to review by the Agency. If the website is false or misleading, the product would be misbranded and unlawful to sell or distribute under FIFRA section 12(a)(1)(E). 40 CFR 156.10(a)(5) list examples of statements EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the Agency find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance.

If you fail to satisfy these data requirements, EPA will consider appropriate regulatory action including, among other things, cancellation under FIFRA section 6(e). Your release for shipment of the product constitutes acceptance of these conditions. A stamped copy of the label is enclosed for your records. Please also note that the record for this product currently contains the following CSFs:

- Basic CSF dated 04/24/2015

If you have any questions, please contact Jessica Rogala by phone at 703-347-0263, or via email at [rogala.jessica@epa.gov](mailto:rogala.jessica@epa.gov).

Sincerely,



Mark Suarez, Product Manager 07  
Invertebrate & Vertebrate Branch 3  
Registration Division (7505P)  
Office of Pesticide Programs

Page 3 of 3  
EPA Reg. No. 69117-12  
Decision No. 503797

Enclosure

# BOXER™ Insecticide-Miticide

{Container [and Box] Label}

**BOXER™ Insecticide-Miticide**  
Injected insecticide for two-year control of listed insect and mite pests  
in deciduous and coniferous trees and palm trees.

<b>Active Ingredient:</b>		
Emamectin Benzoate (CAS No. 155569-91-8) .....	4%	
<b>Other Ingredients</b> .....	<u>96%</u>	
<b>Total</b> .....	100%	

Contains 0.36 lb Emamectin per gallon

Net Contents: \_\_ fl oz (\_\_ ml [L])  
{0.8 fl oz through 1 qt}

**Keep Out of Reach of Children**  
**CAUTION**

[Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.  
(If you do not understand the label, find someone to explain it to you in detail.)]

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

EPA Reg. No. 69117-RE • EPA Est. 69117-NE-1



The No-Drill Injection Solution  
800-698-4641 • Fax: 402-339-5011  
P.O. Box 34645 • Omaha, NE 68134

{Booklet}

**BOXER™ Insecticide-Miticide**  
Injected insecticide for two-year control of listed insect and mite pests  
in deciduous and coniferous trees and palm trees.

<b>Active Ingredient:</b>		
Emamectin Benzoate (CAS No. 155569-91-8) .....	4%	
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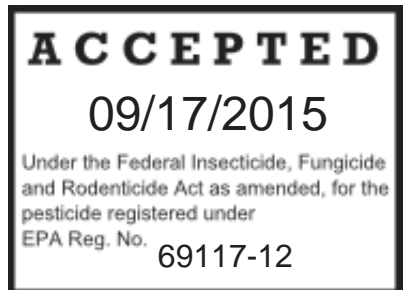
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See inside for First Aid, additional Precautionary Statements and complete Directions for Use.

EPA Reg. No. 69117-RE • EPA Est. 69117-NE-1





**The No-Drill Injection Solution**  
800-698-4641 • Fax: 402-339-5011  
P.O. Box 34645 • Omaha, NE 68134

### **Notice of Warranty**

ArborSystems warrants that this product conforms to the chemical description on the label and is reasonably fit for use under average conditions when used strictly in accordance with the directions on the labeling. 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™ and BOXER™ are trademarks of ArborSystems.

### **BOXER™ Insecticide-Miticide DIRECTIONS FOR USE**

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

**Important:** Read the entire label before using this product. Failure to follow label instructions may result in poor control or tree injury and may cause injury to people, animals and the environment.

### **Product Information**

BOXER™ Insecticide-Miticide [This product] is for the control of mature and immature insect and mite pests of deciduous and coniferous trees and palm trees including, but not limited to, those growing in residential and commercial landscapes, parks, plantations, seed orchards and forested sites in private, municipal, state, tribal and national areas. BOXER™ Insecticide-Miticide [This product] contains the active ingredient Emamectin Benzoate and is formulated to translocate in the tree's vascular system when injected. This product must be placed into active sapwood and will actively control pests for up to two years.

### **DIRECTIONS FOR USE**

BOXER™ Insecticide-Miticide [This product] is designed to be used with tree injection devices that meet the label and dose requirements for the control of listed pests of trees. Follow manufacturer's directions for equipment use.

Dosages are based on the Diameter (in inches) of the tree at Breast Height ("DBH"). DBH is the outside bark diameter of the trunk at 4.5 feet (1.37 m) above the ground on the uphill side of the tree. For the purposes of determining breast height, the ground includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line. The diameter is determined by measuring the circumference of the tree at DBH and dividing the circumference (in inches) by three (3). To determine DBH for multi-stemmed woody ornamentals, measure the DBH for each stem or branch and add together for the total DBH per tree.

**Placement of Application/Injection Sites:** Inject at the base of the tree. Inject into the stem within 12" of the soil, into the trunk flare or into tree roots exposing them by shallow excavation. Make applications into intact, healthy sapwood. Do not inject into injured areas or areas with decay.

**Number of Injection Sites:** Work around the tree, spacing injection sites approximately every 4 to 8 inches of the tree's circumference or according to the manufacturer's recommendation for the application device.

**Drill Depth:** Drill through the bark, then 5/8" to 1-5/8" (hardwoods) or 1-5/8" to 2" (conifers) into the sapwood with the appropriate sized drill bit. Use clean, sharp drill bits. Take precautions to avoid diseased areas and transferring infected tissues to other injection sites.

**Resinous Conifers:** In resinous conifers, such as pine and spruce, start the injection immediately after drilling into the sapwood. A prolonged delay may reduce uptake due to resin flow into the opening.

**When to Treat:** BOXER™ Insecticide-Miticide [This product] contains the active ingredient Emamectin Benzoate which is a glycoside insecticide. It is active against immature and adult stages of arthropods. The primary route of toxicity is through ingestion.

**Environmental Conditions:** Uptake of BOXER™ Insecticide-Miticide [this product] is dependent upon the tree's transpiration which is dependent upon a number of abiotic and biotic factors such as soil moisture/temperature, ambient temperature and time of day. For uptake, apply when soil is moist, soil temperature is 45° to 90°F and during the 24-hour period when transpiration is greatest (typically before 2:00 p.m.). Applications to drought- or heat-stressed trees may result in injury to tree tissue, poor treatment and subsequent control. Avoid treating trees that are moisture stressed or suffering from herbicide damage.

**Monitor Tree Health and Pest Infestations:** Effective injection treatment is favored by a full canopy (i.e., leaves) and healthy vascular system. Once these tissues are compromised by pest damage (larval galleries, defoliation, leaf mining, etc.) an effective and uniform application of BOXER™ Insecticide-Miticide [this product] may be difficult to achieve and subsequent control may be poor. For optimum results, treat at least 2 to 3 weeks before pests historically infest the host tree. As a result of systemic movement and longevity of BOXER™ Insecticide-Miticide [this product] in trees, this interval may be extended much earlier to 6 months should tree dormancy, adverse weather, management, asynchronous life cycle of pests, etc. allow earlier application timing.

BOXER™ Insecticide-Miticide [This product] may also be effective as a remedial treatment against some pests, such as those with slower development or if multiple life stages are susceptible to Emamectin Benzoate. Pests that attack the stem and branches, such as bark beetles and clearwing borers, may disrupt vascular tissue resulting in poor distribution in an infested tree. This includes the initial larval stages of pests, such as flat-headed borers and clearwing borers, which attack the stem and branch, which may disrupt vascular tissue resulting in poor distribution of the product in an infested tree. However, control may be achieved if larvae come into contact with or feed on Emamectin Benzoate-treated tissues.

*(Optional Use Directions "A")*

#### Use Rates

Use as formulated or dilute with equivalent 1 to 3 volumes of water or more, as necessary.

Tree Diameter (DBH) (Inches)	Low (mL product/tree)	Medium (mL product/tree)	Medium-High (mL product/tree)	High (mL product/tree)
4 to 6	15	25	50	-
7 to 9	20	40	80	-
10 to 12	30	55	110	165
13 to 15	35	70	140	210
16 to 18	42	85	170	225
19 to 21	50	100	200	300
22 to 24	-	115	230	345
25 to 27	-	130	260	390
28 to 30	-	145	290	435
31 to 33	-	160	320	480
34 to 36	-	175	350	525
37 to 39	-	190	380	570
40 to 42	-	205	410	615

## Use Rates (continued)

Tree Diameter (DBH) (Inches)	Low (mL product/tree)	Medium (mL product/tree)	Medium-High (mL product/tree)	High (mL product/tree)
43 to 45	-	220	440	660
46 to 48	-	235	470	705
49 to 51	-	250	500	750
52 to 54	-	265	530	795
55 to 57	-	280	560	840
58 to 60	-	295	590	885
61 to 63	-	310	620	930
64 to 66	-	325	650	975
67 to 69	-	340	680	1020
70 to 72	-	355	710	1065

The use of low, medium, medium-high and high rates is based on the professional judgement of the applicator as to what constitutes a low, medium or high infestation. Higher rates tend to provide a longer residual and control of more difficult-to-control insects. See *Target Pests* table for additional information in choosing the amount of product to apply.

## Additional Directions for Application in Trees

Tree Tissue	Target Pest	Application Rate Range <sup>1</sup>	Comments
Seed and Cone	<b>Cone Beetle<sup>2</sup></b> ( <i>Conophora</i> spp.) <b>Pine Cone Seed Bug</b> (suppression of <i>Leptoglossus</i> and <i>Tetyra</i> spp. in the year of treatment) <b>Pine Coneworm</b> ( <i>Dioryctria</i> spp.)	Medium to High	For optimal control, apply in the fall for early season pests or at least 30 days before insect attack.
Bud and Leaf	<b>Aphid<sup>2</sup></b> <b>Bagworm</b> <b>Conifer Mites<sup>2</sup></b> <b>Fall Webworm</b> <b>Gypsy Moth</b> <b>Honeylocust Plant Bug</b> <b>Japanese Beetle</b> <b>Leafminers</b> (such as <i>Coleoptera</i> , <i>Hymenoptera</i> <i>Lepidoptera</i> ) <b>Mimosa Webworm</b> <b>Oak Worm</b> <b>Pine Needle Scale</b> <b>Red Palm Mite</b> <b>Sawfly</b> (such as Elm, Pine) <b>Tussock Moth</b>	Low to High	Apply at least 2-3 weeks before the pest has historically been present. Consult with a local extension agent for when this will occur in your area.
Shoot, Stem Trunk and Branch	<b>Flatheaded Borers</b> (such as adult and larvae of Bronze Birch Borer <sup>2</sup> , Emerald Ash Borer and Two-lined Chestnut Borer <sup>2</sup> ) <b>Tent Caterpillars</b> (such as Eastern, Forest, Pacific and Western) <b>Western Spruce Budworm</b> <b>Winter Moth</b>		For optimal control, apply at least 30 days before historical egg hatch or adult flight and to trees whose vascular tissue is not damaged.  If vascular tissue is damaged or plugged by insect galleries, nematodes or fungi, uniform treatment and control may not be achieved.

## Additional Directions for Application in Trees (continued)

Tree Tissue	Target Pest	Application Rate Range <sup>1</sup>	Comments
Shoot, Stem Trunk and Branch (continued)	Clearwing Borers (such as Ash and Sequoia Pine Pitch Tube Moth)	Low to High	
	Ambrosia Beetles <sup>2</sup> Cynipid Gall Wasps <sup>2</sup> Pinewood Nematode Roundheaded Borers (excluding Asian Longhorn Beetles) Scolytids (Bark Beetles) /ps Engraver Beetles, Mountain Pine Beetle, Southern Pine Beetle, Spruce Beetle, Western Pine Beetle	Medium to High	

<sup>1</sup>Use medium to high rates for remedial and longer residual control.

<sup>2</sup>Not registered for use in California

**Compatibility:** Do not mix BOXER™ Insecticide-Miticide [this product] before injection with other products such as insecticides, fungicides, plant growth regulators, surfactants, adjuvants and fertilizers with labels indicating that the other product should not be mixed with BOXER™ Insecticide-Miticide [this product]. If there is no prior experience with a particular tank mix, check the physical compatibility by making a small clear jar test using correct proportions to be tank mixed.

**Restriction:** Do not apply to trees/plants or tree/plant crops that may be harvested for food consumption by humans or used in animal feed.

{Optional Use Directions "B"}

## Use Rates

Use as formulated or dilute with equivalent 1 to 3 volumes of water or more, as necessary.

Tree Diameter (DBH) (Inches)	Low (mL product/tree)	Medium (mL product/tree)	High (mL product/tree)
4 to 6	15	25	50
7 to 9	20	40	80
10 to 12	30	55	110
13 to 15	35	70	140
16 to 18	42	85	170
19 to 21	50	100	200
22 to 24	-	115	230
25 to 27	-	130	260
28 to 30	-	145	290
31 to 33	-	160	320
34 to 36	-	175	350
37 to 39	-	190	380
40 to 42	-	205	410
43 to 45	-	220	440
46 to 48	-	235	470
49 to 51	-	250	500
52 to 54	-	265	530



## Use Rates (continued)

Tree Diameter (DBH) (Inches)	Low (mL product/tree)	Medium (mL product/tree)	High (mL product/tree)
55 to 57	-	280	560
58 to 60	-	295	590
61 to 63	-	310	620
64 to 66	-	325	650
67 to 69	-	340	680
70 to 72	-	355	710

The use of low, medium and high rates is based on the professional judgement of the applicator as to what constitutes a low, medium or high infestation. Higher rates tend to provide a longer residual and control of more difficult-to-control insects. See *Target Pests* table for additional information in choosing the amount of product to apply.

## Additional Directions for Application in Trees

Tree Tissue	Target Pest	Application Rate Range <sup>1</sup>	Comments
Seed and Cone	<b>Cone Beetle<sup>2</sup></b> ( <i>Conophora</i> spp.) <b>Pine Cone Seed Bug</b> (suppression of <i>Leptoglossus</i> and <i>Tetyra</i> spp. in the year of treatment) <b>Pine Coneworm</b> ( <i>Dioryctria</i> spp.)	Medium to High	For optimal control, apply in the fall for early season pests or at least 30 days before insect attack.
Bud and Leaf	<b>Aphid<sup>2</sup></b> <b>Bagworm</b> <b>Conifer Mites<sup>2</sup></b> <b>Fall Webworm</b> <b>Gypsy Moth</b> <b>Honeylocust Plant Bug</b> <b>Japanese Beetle</b> <b>Leafminers</b> (such as <i>Coleoptera</i> , <i>Hymenoptera</i> <i>Lepidoptera</i> ) <b>Mimosa Webworm</b> <b>Oak Worm</b> <b>Pine Needle Scale</b> <b>Red Palm Mite</b> <b>Sawfly</b> (such as Elm, Pine) <b>Tussock Moth</b>	Low to High	Apply at least 2-3 weeks before the pest has historically been present. Consult with a local extension agent for when this will occur in your area.
Shoot, Stem Trunk and Branch	<b>Flatheaded Borers</b> (such as adult and larvae of Bronze Birch Borer <sup>2</sup> , Emerald Ash Borer and Two-lined Chestnut Borer <sup>2</sup> ) <b>Tent Caterpillars</b> (such as Eastern, Forest, Pacific and Western) <b>Western Spruce Budworm</b> <b>Winter Moth</b> <b>Clearwing Borers</b> (such as Ash and Sequoia Pine Pitch Tube Moth)		For optimal control, apply at least 30 days before historical egg hatch or adult flight and to trees whose vascular tissue is not damaged.  If vascular tissue is damaged or plugged by insect galleries, nematodes or fungi, uniform treatment and control may not be achieved.

### Additional Directions for Application in Trees (continued)

Tree Tissue	Target Pest	Application Rate Range <sup>1</sup>	Comments
Shoot, Stem Trunk and Branch (continued)	<b>Ambrosia Beetles</b> <sup>2</sup> <b>Cynipid Gall Wasps</b> <sup>2</sup> <b>Pinewood Nematode</b> <b>Roundheaded Borers</b> (excluding Asian Longhorn Beetles) <b>Scolytids</b> (Bark Beetles) <i>/ps</i> Engraver Beetles, Mountain Pine Beetle, Southern Pine Beetle, Spruce Beetle, Western Pine Beetle	Medium to High	

<sup>1</sup>Use medium to high rates for remedial and longer residual control.

<sup>2</sup>Not registered for use in California

**Compatibility:** Do not mix BOXER™ Insecticide-Miticide [this product] before injection with other products such as insecticides, fungicides, plant growth regulators, surfactants, adjuvants and fertilizers with labels indicating that the other product should not be mixed with BOXER™ Insecticide-Miticide [this product]. If there is no prior experience with a particular tank mix, check the physical compatibility by making a small clear jar test using correct proportions to be tank mixed.

**Restriction:** Do not apply to trees/plants or tree/plant crops that may be harvested for food consumption by humans or used in animal feed.

#### 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 away from children and pets. Keep from freezing. **Pesticide Disposal:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. **Container Disposal:** Non-refillable container; do not reuse or refill this container. Offer for recycling if available. Promptly clean container after emptying. Triple rinse as follows: Empty the remaining contents into application equipment or mix tank and drain for 10 seconds after the flow begins to drip. Fill the container 1/4 full with water and recap. Shake for 10 seconds then pour rinsate into application equipment or a mix tank or store rinsate for use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times, then offer the container for recycling, if available; or puncture and dispose of in a sanitary landfill; or by incineration, if allowed by local and state authorities. Stay out of smoke from burning container.

*{Optional Low-Pressure Injection Technology Use Directions}*

**Factors Affecting Application:** Applications are most effective when made prior to insect infestation and in conjunction with good cultural management practices. The species and health of the tree, as well as local environmental conditions, will determine the rate of uptake when using low-pressure injection technology.

**Environmental Conditions:** This technology relies on the natural uptake rate of the tree; and thus, factors that affect the transpiration rate can greatly affect the uptake rate. Transpiration is dependent on a number of factors, such as soil moisture/temperature, ambient temperature and time of day. For optimum uptake, apply when soil moisture is adequate and soil temperatures are above 45°F. Preferred conditions for injections are morning to early afternoon hours with warm temperatures (55°F to 85°F/13°C to 30°C) accompanied by low humidity, clear skies and a slight breeze. Sunny conditions along with moist soil and a well-hydrated tree will also increase the transpiration rate and

will therefore improve uptake. Conversely, cool temperatures, cloudy and/or evening skies and trees under moisture stress will slow down the uptake rate. Extreme heat and cold temperatures will adversely affect rates as well.

Trees that have a healthy vascular system will have correspondingly higher uptake rates. Trees in advanced stages of pest development may not respond to treatment, as vascular plugging caused by disease inhibits transpiration. If the device has not started to absorb within one hour consider removing the device (following the proper sequence provided in the removal instructions) and drill a new hole in a different area of the trunk and inject again. The injection devices need to be evenly placed at points on the trunk free of visible decay areas and wounds from the point of injection to where branching begins. If the device has not started to absorb within one hour after the second attempt, the vascular system of the tree may be too compromised for treatment and there is significant decay in that local injection areas.

**Do not** inject trees that are drought stressed. Applications to drought- or heat-stressed trees may result in injury to tree tissue, poor treatment and subsequently poor control. Avoid treating trees that are moisture-stressed or suffering from herbicide damage.

**Do not** inject trees that are in a state of dormancy.

**Monitor Tree Health and Pest Infestations:** Effective injection treatment is favored by a full canopy (i.e., leaves) and a healthy vascular system. Once these tissues are compromised by pest damage (larval galleries, defoliation, leaf mining, etc.) an effective and uniform application of BOXER™ Insecticide-Miticide [this product] may be difficult to achieve and subsequent control may be poor. For optimum results, treat at least 2 to 3 weeks before pests historically infest the host tree. As a result of systemic movement and longevity of BOXER™ Insecticide-Miticide [this product] in trees, the interval may be extended much earlier to 6 months should tree dormancy, adverse weather, management, asynchronous life cycle of pests, etc., allow earlier application timing.

BOXER™ Insecticide-Miticide [This product] may also be effective as a remedial treatment against some pests, such as those with slower development or if multiple life stages are susceptible to Emamectin Benzoate. Pests that attack the stem and branches, such as clearwing borers, may disrupt vascular tissue resulting in poor distribution in an infested tree. However, control may be achieved if larvae come into contact or feed on tissues treated with BOXER™ Insecticide-Miticide [this product].

#### Application Instructions

Injection dosages are based on the Diameter (inches or centimeters) of the tree at Breast Height ("DBH"). DBH is the outside bark diameter of the trunk at 4.5 feet (1.37 m) above the ground on the uphill side of the tree. For the purposes of determining breast height, the ground includes the duff layer that may be present, but does not include unincorporated woody debris that may rise above the ground line.

The diameter is determined by measuring the circumference of the tree at DBH and dividing the circumference (in inches) by three (3). To determine DBH for multi-stemmed woody ornamentals, measure the DBH for each stem or branch and add together for the total DBH per tree (*Figure 1*).

**Number of Injection Devices Required for Treatment:** Take the DBH of the tree and divide by five (5) to determine the appropriate number of devices to adequately treat the tree at the desired application rate. **Do not** treat newly established trees less than 5" DBH or 15" in circumference.

In the event that the tree has multiple trunks that separate less than three (3) feet from the ground (i.e., avocado, citrus, peach, etc.) each individual trunk must be treated separately to ensure equally homogenous distribution of solution to all parts of the tree. In this instance, each individual trunk must be measured in the same way as if the trunks were standing individually (*Figure 1*).

Refer to the *Application Rate/Number of RTU Injection Devices* chart. **Do not** exceed calculated number of RTU injection devices per tree as injury may occur.

**Preparing the Holes:** To ensure an equal and homogenous delivery of Emamectin Benzoate to all parts of the tree's branching structure, evenly space the required number of holes around the tree's circumference. Hole placement can range from lowest point at the root flare to highest point of chest height (approximately 4.5 ft. (1.358 m) above the ground). Injection holes must be at least 20" (50.8 cm) below the lowest branch on the trunk. The preferred method is to inject at the base of the tree, within 12" (30.48 cm) of the soil. Prepare injection sites in healthy wood free from any defects such as old wounds or decayed areas. Avoid any placement of devices in between the root flare where there is tight compressing of the bark and cambium tissue.

Using an electric drill, select a 15/64" (0.5842 cm) fast spiral drill bit (for optimal performance, a high-helix drill bit is recommended). It is necessary to drill holes into the tree deep enough to reach the tree's vascular system for translocation of Emamectin Benzoate throughout the tree. Make injection holes at least 1/2 to 3/4 inch into healthy xylem (white wood) with actual depth up to 2 inches (5.08 cm) or more from the outer trunk surface, depending upon the tree species and outer bark thickness. For conifer species with high resin pressure, drill holes higher on the trunk (36-48" or 91.44-121.92 cm) and to a deeper drill depth of 2+ inches (5.08+ cm).

For optimal device performance, to minimize leakage and improve holding capacity of the injector be sure to:

1. Use clean, sharp drill bits;
2. Slightly angle depth of hole downwards;
3. Make one clean drill entrance into the tree (i.e., avoid multiple in-and-out motions of drill bit in hole) to reduce shavings' residual left inside the hole (*Figure 2*); and
4. Follow good application practices by disinfecting drill bits prior to use on each tree to minimize the spread of disease where known infections occur.

**Inserting the Connector:** Once the injection site is drilled, insert the longer and thicker part of the connector into the tree hole; secure its placement by pushing and twisting of hand, or by gently tapping the connector with a nylon hammer or rubber mallet. Insert the connector only to the point where it fits snugly in the hole. **Do not** force the connector too deep into the hole. Be sure to leave approximately 1/2" (1.27 cm) of open chamber at the end of the connector to allow the solution to collect and be pulled through the vascular system of the tree (*Figure 3*).

**Connecting the RTU Injection Device:** Remove the colored device cap and connect the RTU Injection Device to the connector by firmly pushing the connector through the membrane of the device top. To ensure the device is securely inserted, slightly twist and gently force the RTU Injection Device until it snaps into final position. The RTU Injection Device can be placed upright, sideways or upside-down on the connector depending upon the placement of the connector on the tree (*Figure 4*).

**Resinous Conifers:** In resinous conifers, such as pine and spruce, start the injection immediately after drilling into the sapwood. A prolonged delay may reduce uptake due to resin flow into the opening.

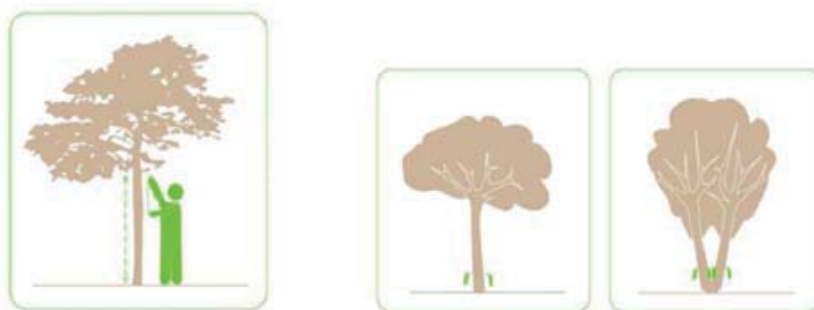
**Removing the RTU Injection Device:** When the RTU Injection Device is emptied, remove the device from its connector then remove the connector from the tree. Gently shake the device to ensure all contents have been injected. If there is remaining solution, re-insert the connector and connect the device for further uptake. **Note:** The RTU Injection Device membrane will re-seal itself to avoid any leakage or spillage until it is re-penetrated with the connector (*Figure 5*).

It is not necessary to treat the drill holes with wound paint or other sealing compounds.

**Retreatment:** At the time of initial application, make note of the health level of each tree. Re-evaluate level in treated trees at 12-month intervals to determine the need for additional treatment. Consider applying preventative

applications 12-36 months after the initial injection. Trees in high pest pressure areas or highly valued trees should be evaluated for retreatment 12 months after each treatment. Follow application procedures described above for repeat injections; new drill holes will be required for subsequent treatment. To ensure proper intake equally stagger the holes in subsequent applications.

**Figure 1:** When making a determination for the application site using the RTU Injection Device, consider trunk configuration.



- A. Single trunk trees: The RTU Injection Device can be injected anywhere from the root flare to at least 20" (50.8 cm) below the branches, preferably at the base of the tree, within 12" (30.48 cm) of the soil.
- B. Multi-stem trees: Be sure to calculate the combined total diameter of the stems and install the devices evenly between the stems, preferably at the base of the tree, within 12" (30.48 cm) of the soil.



**Figure 2:** Using an electric drill, select a 15/64" (0.5842 cm) fast-spiral high-helix drill bit and drill a hole 2" (5.08 cm) deep slightly angled downwards. Hole depth will vary depending on bark thickness. Hole placement can range from injection at the root flare to chest height (approximately 4.5 ft. (1.368 m) above the ground) remaining at least 20" (40.8 cm) below lowest branch. The preferred method is to inject at the base of the tree within 12" (30.48 cm) of the soil.

**Figure 3:** Insert the longer and thicker branch of the connector into tree hole and secure its placement by pushing and twisting of hand OR by gently tapping the connector with a nylon hammer or rubber mallet.

**Figure 4:** Remove colored cap and connect RTU Injection Device to the connector by firmly pushing the connector through the membrane of the device top. To ensure the device is securely inserted, slightly twist and snap the device into final position.

**Figure 5:** When the device is emptied, (1) first remove the device from its connector; (2) remove the connector from the tree. Gently shake the device to ensure all contents have been injected. If there is any remaining solution, re-insert the connector and connect the device for further uptake. Uptake rate will vary and there is no need to cover the holes – the tree will heal naturally. **Note:** The RTU Injection Device membrane will re-seal itself to avoid any leakage or spillage until it is re-penetrated with the connector.

Use Rates  
(25 ml RTU Injector)  
Application Rate/RTU Injector Table

Tree Diameter (DBH) (Inches)	Circumference (Inches)	Number of RTU Injectors	Application Rate	
			fl oz	mls
4 to 6	12 to 18	1	0.8	25
7 to 9	21 to 27	2	1.7	50
10 to 12	30 to 36	3	2.5	75
13 to 15	39 to 45	3	2.5	75
16 to 18	48 to 54	4	3.4	100
19 to 21	57 to 63	4	3.4	100
22 to 24	66 to 72	5	4.2	125
25 to 27	75 to 81	6	5.1	150
28 to 30	84 to 90	6	5.1	150
31 to 33	93 to 99	7	5.9	175
34 to 36	102 to 108	7	5.9	175
37 to 39	111 to 117	8	6.8	200
40 to 42	120 to 126	9	7.6	225
43 to 45	129 to 135	9	7.6	225
46 to 48	138 to 144	10	8.4	250
49 to 51	147 to 153	10	8.4	250
52 to 54	156 to 162	11	9.3	275
55 to 57	165 to 171	12	10.1	300
58 to 60	174 to 180	12	10.1	300
61 to 63	183 to 189	13	11.0	325
64 to 66	192 to 198	13	11.0	325
67 to 69	201 to 207	14	11.8	350
70 to 72	210 to 216	15	12.7	375

Additional Directions for Application in Trees

Tree Tissue	Target Pest	Comments
Seed and Cone	Cone Beetle <sup>1</sup> ( <i>Conophora</i> spp.) Pine Cone Seed Bug (suppression of <i>Leptoglossus</i> and <i>Tetyra</i> spp. in the year of treatment) Pine Coneworm ( <i>Dioryctria</i> spp.)	For optimal control, apply in the fall for early season pests or at least 30 days before insect attack.
Bud and Leaf	Aphid <sup>1</sup> Bagworm Conifer Mites <sup>2</sup> Fall Webworm Gypsy Moth Honeylocust Plant Bug Japanese Beetle Leafminers (such as <i>Coleoptera</i> , <i>Hymenoptera</i> , <i>Lepidoptera</i> ) Mimosa Webworm Oak Worm Pine Needle Scale Red Palm Mite Sawfly (such as Elm, Pine) Tussock Moth	Apply at least 2-3 weeks before the pest has historically been present. Consult with a local extension agent for when this will occur in your area.

**Additional Directions for Application in Trees (continued)**

Tree Tissue	Target Pest	Comments
Shoot, Stem Trunk and Branch	<b>Flatheaded Borers</b> (such as adult and larvae of Bronze Birch Borer <sup>2</sup> , Emerald Ash Borer and Two-lined Chestnut Borer <sup>2</sup> )	For optimal control, apply at least 30 days before historical egg hatch of adult flight and to trees without vascular tissue damage.
	<b>Tent Caterpillars</b> (such as Eastern, Forest, Pacific and Western)	
	<b>Western Spruce Budworm</b> <b>Winter Moth</b>	If vascular tissue is damaged or plugged by insect galleries, nematodes or fungi, uniform treatment and control may not be achieved.
	<b>Clearwing Borers</b> (such as adult and larvae of Bronze Birch Borer, Emerald Ash Borer <sup>1</sup> and Two-lined Chestnut Borer <sup>1</sup> )	
<b>Ambrosia Beetles</b> <sup>1</sup> <b>Cynipid Gall Wasp</b> <sup>1</sup> <b>Pinewood Nematode</b> <b>Roundheaded Borers</b> (excluding Asian Longhorn Beetles)		

<sup>1</sup>Not registered for use in California.

**Restriction:** Do not apply to trees/plants or tree/plant crops that may be harvested for food consumption by humans or used in animal feed.

**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 away from children and pets. Keep from freezing. **Pesticide Disposal:** Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility. **Container Disposal:** Non-refillable container; do not reuse or refill this container. Offer for recycling if available.

**PRECAUTIONARY STATEMENTS**

**Hazards to Humans & Domestic Animals**

**CAUTION:** Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Avoid contact with skin, eyes or on clothing. Thoroughly wash with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove contaminated clothing and wash before reuse.

**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 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.

### First Aid (continued)

#### Note to Physician

Early signs of intoxication include dilation of pupils, muscular incoordination and muscular tremors. Vomiting within one-half hour of exposure can minimize toxicity following accidental ingestion of the product; rapidly after exposure (< 15 minutes) repeatedly administer medical charcoal in a large quantity of water or ipecac. If toxicity from exposure has progressed to cause severe vomiting, the extent of resultant fluid and electrolyte imbalance should be gauged. Appropriate supportive parenteral fluid replacement therapy should be given, along with other required supportive measures (such as maintenance of blood pressure levels and proper respiratory functionality) as indicated by clinical signs, symptoms and measurements. In severe cases, observations should continue for at least several days until clinical condition is stable and normal. Since Emamectin Benzoate is believed to enhance GABA activity in animals, it is probably wise to avoid drugs that enhance GABA activity (barbiturates, benzodiazepines, valproic acid) in patients with potentially toxic Emamectin Benzoate exposure.

#### Hot Line Number

For 24-hour Medical Emergency Assistance (Human or Animal) call 1.800.222.1222. For Chemical Emergency Assistance (Spill, Leak, Fire or Accident) call ChemTrec at 1.800.424.9300.

### Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants;
- Chemical-resistant gloves (Category C) such as barrier laminate, butyl rubber  $\geq$  14 mils, nitrile rubber  $\geq$  14 mils or neoprene rubber  $\geq$  14 mils;
- Shoes and socks; and
- Protective eyewear.

### Environmental Hazards

This product is highly toxic to fish, mammals and aquatic invertebrates. 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 disposing of equipment washwater. This product is highly toxic to bees exposed to direct treatment or residues on blooming trees.

### Physical or Chemical Hazards

Do not use or store near heat or open flame. Do not mix or allow product to come into contact with an oxidizing agent; hazardous chemical reaction may occur.

*{Optional Graphics}*



[Emerald Ash Borer Winter Moth Japanese Beetle]

*[ ] Denotes alternate/optional verbiage*

*{ } Denotes language that does not appear on market labeling*