TARGET SPECIALTY PRODUCTS™

Lessons learned in Southern California: pest control company, pesticide applications

Dawn Fluharty

Dawn Fluharty

Target Specialty Products
Landscape Sales Specialist, T&O

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- 18 years in the green industry including; sales and sales management, horticultural education and training and operations management.
- PCA (Pest Control Advisor) license
- Member of CAPCA (California Association of Pest Control Advisors), Western Chapter of the International Society of Arboriculture
- Board Member of Street Tree Seminars and Bay Area Urban Forest Ecosystems Council Board.
- QAL license and board member of PAPA (Pesticide Applicators Professional Association).

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Identifying contractors who will competently perform the tree treatment work at the best available cost.

Preserving trees has been proven to be more cost effective to municipalities than remove and replace

Urban tree canopy provides numerous quantifiable benefits to the community

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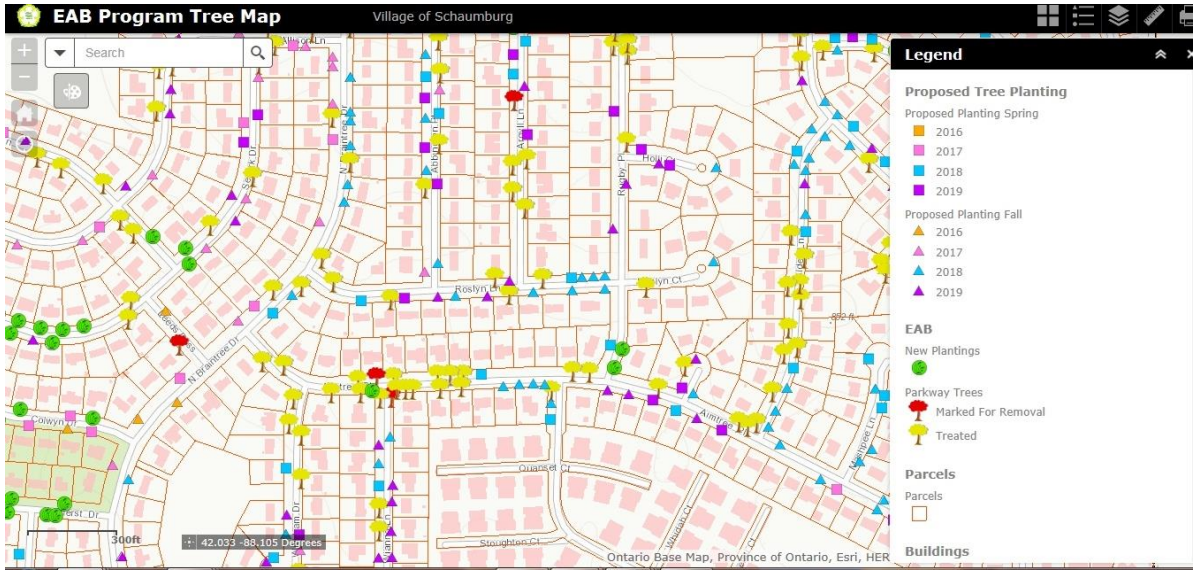
Identifying Scope of Work

- Identify approximate quantity of trees to be preserved
- Identify species, dbh, condition and location
- Identify treatment time frame desired

  Consider pest location and activity



Sources of Data

GIS Inventory

Windshield Inventory

Record as you treat

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Background to develop project

- Develop work maps with tree locations
- Research potential contractors
- Determine contract duration and likelihood of renewal
- Develop or utilize city indemnity clause
  - Insurance provision
  - Limit city liability
- What credentials required? ISA, TCIA cert?
- Pesticide Licensure
- Determine if a performance bond is required
- Any WMBE requirement?

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Scope of Project

Create a Project Manual

- Location and size of trees
- Contract interval
- Application equipment to be used
- Specific material rates/size class
- Supervision of Work Crews
- Record keeping requirements
- Payment terms

- Maximum contract amount
- Training requirements
- Contingencies
- Certification requirements
- Product procurement distributor relationship

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Request For Proposal

Cover Letter

- Title of project
- Bid or RFP number
- Closing or due date – with address where due
- Pre bid meeting time and location (1 week prior to close)
- List of requirements
  - Insurance certificate
  - Signed contract
  - Deposit

  References

  Etc

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Project Manual

Utilize an existing city project manual *(perhaps pruning or removal)* and imbed treatment language

- Table of Contents
- Standard Terms and Conditions
- Scope of Work – Treatment specifics
- Evaluation and Award Criteria
- Signature Page

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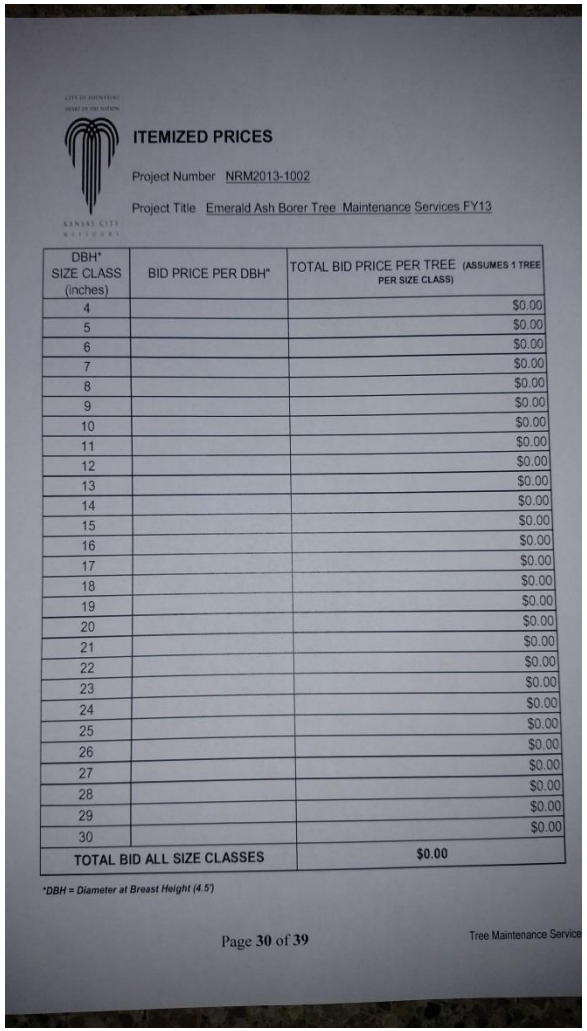
Determining Contract Prices

- Total Contract Price
- Price per DBH Class
- Lowest and Best Bid



ITEMIZED PRICES

Project Number NRM2013-1002

Project Title Emerald Ash Borer Tree Maintenance Services FY13

DBH* SIZE CLASS (inches)	BID PRICE PER DBH*	TOTAL BID PRICE PER TREE (ASSUMES 1 TREE PER SIZE CLASS)
4		$0.00
5		$0.00
6		$0.00
7		$0.00
8		$0.00
9		$0.00
10		$0.00
11		$0.00
12		$0.00
13		$0.00
14		$0.00
15		$0.00
16		$0.00
17		$0.00
18		$0.00
19		$0.00
20		$0.00
21		$0.00
22		$0.00
23		$0.00
24		$0.00
25		$0.00
26		$0.00
27		$0.00
28		$0.00
29		$0.00
30		$0.00
TOTAL BID ALL SIZE CLASSES		$0.00

*DBH = Diameter at Breast Height (4.5')

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Tree Maintenance Service

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Pre-Bid Meeting

Requiring all bidders or their representatives to attend a pre bid meeting is strongly advised

- Washes out questions
- Helps you determine potential bidder qualifications

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Period of Questions

Common Questions

- What rate
- Can I substitute a different chemical?
- Can I utilize a different treatment technique?
- Insurance questions
- Extension of treatment timeframe?

Require questions in writing to be considered

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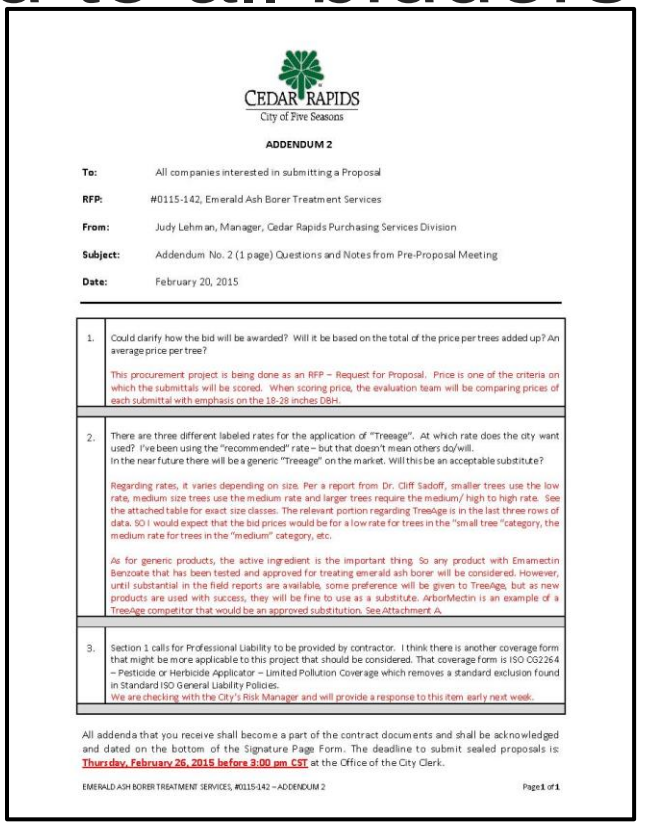
RFP Amendments

Publish amendment and send to all bidders

Clarifies any questions raised

at pre bid meeting or submitted

in writing



CEDAR RAPIDS
City of Five Seasons

ADDENDUM 2

To: All companies interested in submitting a Proposal

RFP: #0115-142, Emerald Ash Borer Treatment Services

From: Judy Lehman, Manager, Cedar Rapids Purchasing Services Division

Subject: Addendum No. 2 (1 page) Questions and Notes from Pre-Proposal Meeting

Date: February 20, 2015

1. Could clarify how the bid will be awarded? Will it be based on the total of the price per trees added up? An average price per tree?

   This procurement project is being done as an RFP – Request for Proposal. Price is one of the criteria on which the submittals will be scored. When scoring price, the evaluation team will be comparing prices of each submittal with emphasis on the 18-28 inches DBH.

2. There are three different labeled rates for the application of "Treeage". At which rate does the city want used? I've been using the "recommended" rate – but that doesn't mean others do/will.
   In the near future there will be a generic "Treeage" on the market. Will this be an acceptable substitute?

   Regarding rates, it varies depending on size. Per a report from Dr. Cliff Sadoff, smaller trees use the low rate, medium size trees use the medium rate and larger trees require the medium/ high to high rate. See the attached table for exact size classes. The relevant portion regarding TreeAge is in the last three rows of data. SO I would expect that the bid prices would be for a low rate for trees in the "small tree "category, the medium rate for trees in the "medium" category, etc.

   As for generic products, the active ingredient is the important thing. So any product with Emamectin Benzoate that has been tested and approved for treating emerald ash borer will be considered. However, until substantial in the field reports are available, some preference will be given to TreeAge, but as new products are used with success, they will be fine to use as a substitute. ArborMectin is an example of a TreeAge competitor that would be an approved substitution. See Attachment A.

3. Section 1 calls for Professional Liability to be provided by contractor. I think there is another coverage form that might be more applicable to this project that should be considered. That coverage form is ISO CG2264 – Pesticide or Herbicide Applicator – Limited Pollution Coverage which removes a standard exclusion found in Standard ISO General Liability Policies.
   We are checking with the City's Risk Manager and will provide a response to this item early next week.

All addenda that you receive shall become a part of the contract documents and shall be acknowledged and dated on the bottom of the Signature Page Form. The deadline to submit sealed proposals is: **Thursday, February 26, 2015 before 3:00 pm CST** at the Office of the City Clerk.

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Training and Proof of Performance

- Require Manufacturer training of all applicators
- Recommend city staff training by manufacturer
- Assign a project coordinator
- Require material usage logs
- Training on evaluating tree health

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Evaluating Performance

- Require Cell Phone Contact with job Foreman
- Week 1 – Assure record keeping requirements
- Require local distributor relationship
- Inspect injected trees randomly
- Material Usage Reports

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Record Keeping

- Inventory tag – Not necessary with GIS
- GIS updates
- Follow DOA posting requirement
- Excel Work Reports
  - Address nearest tree
  - DBH
  - Species
  - ML product used
  - Treated date
  - Notes

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Property Address	DBH	Species	EPA Reg # Product	ML used	Tag number	Date
1231 Oak	15	BE	100-1309-74578	75	1301	4/7/2016
1234 Oak	18	BE	100-1309-74578	90	1302	4/7/2016
1347 Oak	11	BE	100-1309-74578	44	1303	4/7/2016
1349 Oak	30	Syc	100-1309-74578	180	1304	4/7/2016
1411 Oak	22	LO	100-1309-74578	110	1305	4/7/2016
1512 Sycamore	32	Syc	100-1309-74578	192	1306	4/7/2016
1410 Elm	15	BE	100-1309-74578	75	1307	4/7/2016

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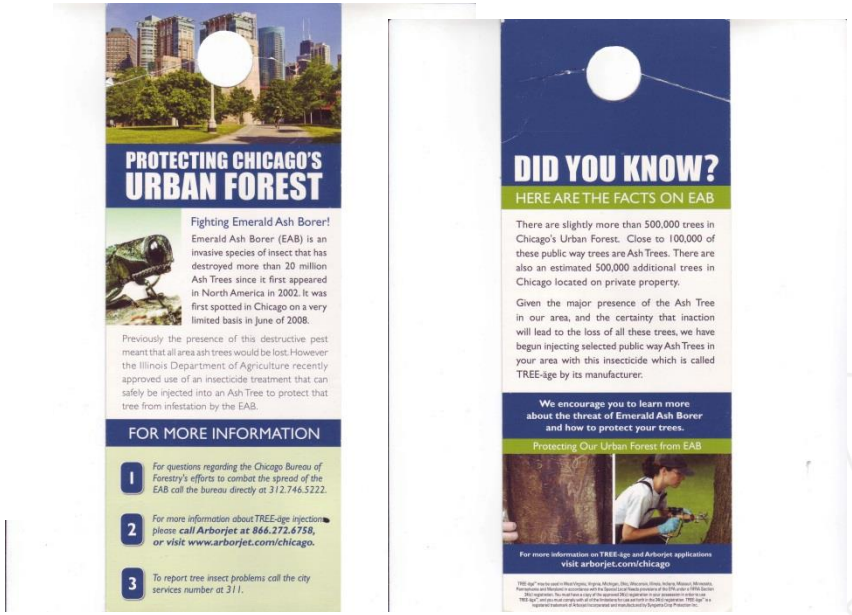
Public Information Campaign

- Door explaining project
- Special contractor pricing for private trees
- City newsletter or mailer
- PSA
- Awareness ribbons
- Tree valuation tags
- Media Shoot



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Maintaining Community Forests

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- Easy
- Injects in the Xylem
- No equipment to purchase
- Low Pressure – 4-6 psi
- Use on small numbers of trees
- Do not leave unattended

Measure

Drill

Insert

Drain


ArborSystems
Tree Injection Solutions

Rainbow Treecare™
Scientific Advancements
SPECIALTY PRODUCTS™

Easy to use gate value shut offs

Stainless Steal durable direct inject tip – no plugs needed

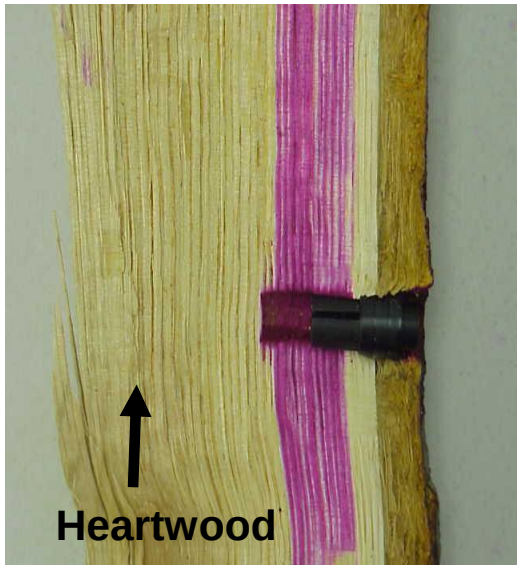
TARGET SPECIALTY PRODUCTS™

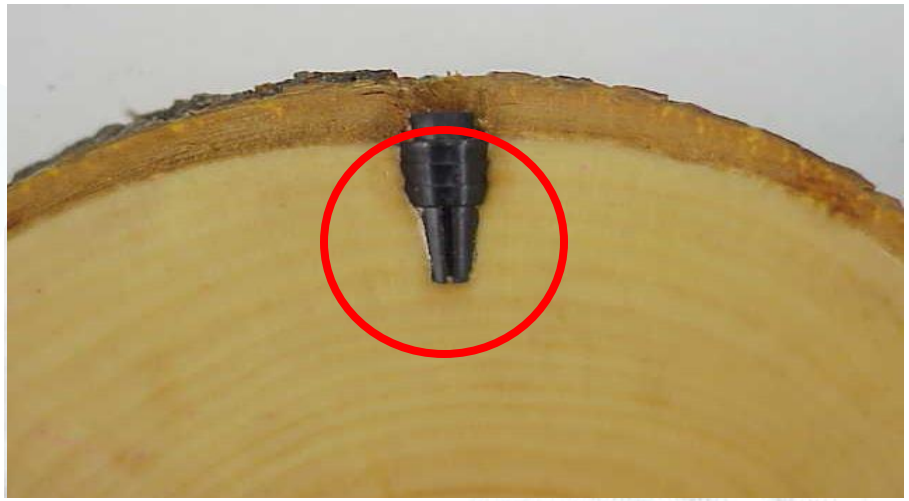
QUIK-JET AIR™

- Precise – Dose & measurement visible
- Easy – One thumb operation
- Fast – Fast and smooth injections
- Air Powered – Connects to an air tank
- Lightweight & Durable - Only 2 pounds

To Plug or not to Plug…….?

Internal Septum
Assures Material
Remains in Tree





TARGET SPECIALTY PRODUCTS™

Getting Started with Treatment

TARGET SPECIALTY PRODUCTS™

Licensing

Licensing and Certification Program

A to Z Licensing Index

Sign up to receive e-mail updates on DPR's Licensing Program activities.

About Licensing

Visit the local County Agricultural Commissioner for private applicator certificate information.
Visit the Structural Pest Control Board for structural pest control licensing information.
Visit the California Department of Public Health for vector control technician certification information.

What's New in Licensing

- UPDATED College courses currently approved to meet the PCA minimum education requirements
- UPDATED 2017 Exam schedule, PDF (102 kb)
- License Renewal: Frequently Asked Questions (FAQ) for Individual License Holders, PDF (286 kb) – Contains answers to the most common questions DPR receives from license holders about license renewals.
- Letter to all CE Sponsors about topics that can be approved for CE:
  - Approval of CE topics, PDF (81 kb)

LICENSE & CERTIFICATE VERIFICATION

- Valid Licenses and Certificates (Individual and Businesses)
- Expired Pest Control Business Licenses

INDIVIDUAL LICENSES & CERTIFICATES

- UPDATED Agricultural Pest Control Adviser License
- Pest Control Aircraft Pilot Certificate
- UPDATED Pest Control Dealer Designated Agent License
- Qualified Applicator Certificate
  - Maintenance Gardener Pest Control
- Qualified Applicator License

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LICENSING

- A-Z Licensing Index
- Current Licensees
- License Types and Requirements
- Exam Schedule
- Study Materials
- Continuing Education
- Fees
- Forms

Qualified Applicator License

Back to Licensing and Certification Program
Back to License Types and Requirements

Sign up to receive e-mail updates on DPR's Licensing Program activities.

New and Amended Applications

- Complete application packet, PDF (216 kb)
  - Category descriptions, PDF (65 kb)
  - Study materials, PDF (345 kb)

- Exam Preparation
  - Knowledge Expectations
    - Laws, Regulations, and Basic Principles of Safe and Effective Pesticide Use (Core Exam), PDF (154 kb)
    - Residential, Industrial, and Institutional (Category A), PDF (158 kb)
    - Landscape Maintenance (Category B), PDF (152 kb)
    - Right-of-Way Pest Control (Category C), PDF (258 kb)
    - Plant Agriculture (Category D), PDF (160 kb)
    - Forest Pest Control (Category E), PDF (256 kb)
    - Demonstration and Research (Category J), PDF (142 kb)
    - Field Fumigation Pest Control (Subcategory O), PDF (314 kb)
    - Microbial Pest Control (Subcategory P), PDF (274 kb)
  - Sulfur dioxide use in wineries, PDF (136 kb), En Español, PDF (198 kb) – licensing requirements related to sulfur dioxide use
  - UPDATED 2017 Exam schedule, PDF (102 kb)
  - Re-examination or adding new category application, PDF (220 kb) (PR-PML-083)

Control Options

Cultural /Sanitation -

Tree removal, branch pruning, chipping, wound painting, solarization, restrict firewood movement

Biological – Native shift or introduction of natural enemies, biocontrol of fungal symbionts

Trapping/Pheromones (attractants/repellents) –

New karimone (quercivorol) being used for detection

Chemical -

Contact sprays create barrier (bifenthrin)

Systemics – soil injection/drench, trunk injection

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IMA-jet

Systemic Insecticide for Micro-Infusion®

SYSTEMIC INSECTICIDE

Microinjectable Systemic Insecticide for use with the Arborjet Injection System in the Management of Specific Insect Pests of Forests, Trees, Landscape Ornamentals and Interior Plantscapes.

ACTIVE INGREDIENT:

Imidacloprid 1-[(6-chloro-3-pyridinyl)methyl]-N-nitro-2-imidazolidinimine	5.0%
OTHER INGREDIENTS	95.0%
TOTAL	100.0%

Net Contents: See Individual Container EPA Reg. No. [illegible] • EPA Est. No. [illegible]

KEEP OUT OF REACH OF CHILDREN

WARNING!

STOP - READ THE ENTIRE LABEL BEFORE USE

[illegible]

Manufactured by: ARBORJET INC., [illegible]

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS: WARNING: Harmful if swallowed, inhaled or absorbed through the skin. Causes substantial, but temporary eye injury. Do not get in eyes or on clothing. Wear safety glasses. 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. Keep children and pets away from treatment area until injection and uptake are complete.

FIRST AID

IF SWALLOWED:

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

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 a doctor for further treatment advice.

IF INHALED:

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible.
- Call a poison control center or a 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 a doctor for further 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 the Infotrac Chemical Emergency Response System at 1-800-535-5053.

Note to Physician: No specific antidote is available. Treat the patient symptomatically.

ENVIRONMENTAL HAZARDS:

This pesticide is highly toxic to fish 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 or rinsate. This product is highly toxic to honeybees. Do not apply this product to pollen-shedding or nectar producing plants visited by honeybees while plant is in bloom.

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.

IMPORTANT: Read the entire label before use. Failure to follow label directions may result in poor control or plant injury. Failure to follow label directions may cause injury to people, animals and environment. The buyer accepts and understands that failure to follow label directions is the responsibility of the buyer.

APPLICATION TO TREES AND ORNAMENTALS

IMA-jet is a systemic insecticide used to control a variety of insect pests of ornamental or forest trees. Pests controlled include aphids, whiteflies, soft scales, adelgids, gall forming wasps, leafhoppers, lace bugs, mealybugs, psyllids, serpentine leafminers, sawflies, thrips and leaf feeding beetles. Use IMA-jet as directed in trees in residential, business and commercial areas, golf courses, airports, cemeteries, parks, street trees, playgrounds, athletic fields, commercial forestry production, seed orchard trees, nurseries, and in private, municipal, state, federal, county and local recreational forests.

WHEN TO TREAT: For optimum results, apply IMA-jet prior to infestation. Also apply when insects are infesting and feeding upon the tree. IMA-jet insecticide moves upward into the tree's canopy from the application sites. Systemic activity occurs only after the active ingredient is translocated upward in the tree. This product must be applied below the bark into the sapwood (i.e., the vascular) tissues.

In the case of severe infestation, use the highest label rate for the targeted pest. In trees larger than 24" use the highest rate listed for that insect pest. Dosages are designed for insect control and retreatment is generally not necessary during the year after initial treatment. Monitor insect activity to establish a damage threshold for retreatment. Repeat applications as necessary.

The need for an application can be based on historical monitoring of the site, previous records or experiences, current season adult trapping and other methods. Due to potential foliar injury or poor (i.e. slow) uptake, do not apply to trees stressed by drought or extreme heat.

BASIC INJECTION PROCEDURE: For insect control, this product must be placed into the tree's sapwood, the conductive tissue that moves water to the canopy. Make applications around the base of the tree. Inject into tree roots exposing them by careful excavation or, alternatively into the trunk flare or tissue immediately above the trunk flare, locating the injection site in the first few xylem (i.e., sapwood) elements. Drill holes through the bark and into the sapwood a minimum of 3/8" deep. When using the Arborjet Arborplug, drill a minimum of 5/8" deep into the sapwood.

CALCULATING APPLICATION RATE: The dosages and number of application sites are based on tree diameter.

To determine the application/dose rate per tree:

1) Measure the tree diameter in inches at chest height (54" from ground) to find the Diameter at Breast Height (DBH). (If measuring tree circumference, divide circumference by 3 to obtain the DBH in inches.)
2) Calculate the number of injection sites by dividing the DBH in inches by 2.
3) Multiply the tree DBH by the dosage rate (see table below for appropriate dosage rate) to calculate the total dose in milliliters per tree.
4) Divide the total dose by the number of injection sites to determine required dosage per injection site.

Example: For a tree with a DBH of 12 inches (or circumference of 36 inches) and 4 mL dosage rate:

1) DBH = 12" (circumference 36" ÷ 3 = 12")
2) Divide DBH of 12" by 2 = 6 injection sites.
3) Multiply DBH of 12 by 4mL = 48 mL total dose per tree.
4) Divide 48 mL by 6 injection sites = 8 mL per injection site to deliver the required dosage.

To apply a higher dosage into trees or to speed application, increase the number of injection sites, placing them from 2 to 8" apart. Treat Cycads (i.e., gymnosperms) using this method of application. In resinous conifers (such as pine and spruce), start the injection immediately after drilling. A prolonged delay may reduce uptake on account of resin flow. In palms (i.e., monocots), only one injection site is required: locate the application site 1-3' from the soil level and drill 4" deep into the stem.

APPLICATION EQUIPMENT: IMA-jet is designed for use with the Arborjet Tree Injection Systems or with other tree injection devices that meet the label requirements and are chemically resistant. For all injection systems, read carefully and follow manufacturer's directions for use.

USE OF IMA-JET: Use as formulated. Do not mix with water.

APPLICATIONS FOR USE IN LISTED TREES AND ORNAMENTALS AND FOREST AND WOODLAND AREAS

(For [illegible] trees, make applications post bloom)

For trees less than 12" in diameter, use the lower rate for the targeted pest. If trees are severely infested, use the highest label rate specified for control of the targeted pest. For trees larger than 24" diameter, always use the highest label rate for the targeted pest.

CROP	PEST	DOSAGE
Trees & Ornamentals: Trees, Shrubs, Evergreens, Interior Plantscapes, Palms. Forest areas: Non-urban Forests, Tree Plantations, Planted Christmas Trees, Parks, Rural Shelter Belts, Rangeland Trees and Woodland Trees including Conifers	Adelgids (including Hemlock Woolly Adelgid*), Aphids, Gall Wasps (including Erythrina Gall Wasp), Lacebugs, Leafhoppers, Leaf miners, Mealybugs, Psyllids, Soft scales, Thrips, Whiteflies	2.0 – 4.0 mL IMA-jet Systemic Insecticide per inch of cumulative trunk diameter at breast height (54" from the ground). Space injection holes approximately 6" apart, around the circumference of the tree.
Trees & Ornamentals: Trees, Shrubs, Evergreens, Interior Plantscapes, Palms. Forest areas: Non-urban Forests, Trees Plantations, Planted Christmas Trees, Parks, Rural Shelter Belts, Rangeland Trees and Woodland Trees including Conifers	Adelgids (including Hemlock Woolly Adelgid*), Gall Wasps (including Erythrina Gall Wasp), Flatheaded Borers (including Bronze birch borer, Emerald ash borer) adults, Japanese Beetles (adults), Leaf Beetles (including elm leaf beetle), Leaf bugs (including leaf footed seed bug), Leaf miners, Pine tip moth larvae, Round-headed Borers (including Eucalyptus longhorned borer), Royal palm bug, Sawfly larvae, Soft scales, Thrips, Whiteflies	4.0 – 8.0 mL IMA-jet Systemic Insecticide per inch of cumulative trunk diameter at breast height (54" from the ground). Space injection holes approximately 6" apart, around the circumference of the tree.

*IMA-jet provides 1-2 years of residual control of Hemlock Woolly Adelgid. Trees infested with Hemlock Woolly Adelgid might require two applications before significant control is seen.

FOR USE UNDER USDA SUPERVISION ONLY

HOST TREES	PEST	DBH RANGE	DOSE RATE mL/DBH"
Elm, Maple, Birch, Willow, Box elder, Horse Chestnut, Buckeye, European Mountain Ash, Ash, Poplar, Albizia, London Plane, Hackberry and Sycamore	Asian Longhorned Beetle	2 - 23" 24" +	4.0 mL 8.0 mL

COMPATIBILITY

Test the physical compatibility of IMA-jet before use with other products.

NOTE: Before applying any tank mixture not specifically on this label, it is best to test the safety to the target tree. Do NOT apply liquid flowables, suspension concentrates, or dispersible granules that do not completely dissolve.

RESTRICTIONS

This product is not to be used on trees that will produce food within the year following treatment.

Do not use on syrup-producing sugar maples where sap is harvested.

ARBORJET MICRO-INFUSION® PROCEDURES

Basic Arborjet Micro-Infusion® Procedures:

1. Determine the dosage based on target pest and tree diameter.
2. Pour concentrate into the medicament bottle and cap.
3. For Tree I.V. pressurize the contents from 25 to 60 PSI and prime the lines by opening each injector valve slowly to purge the air; close the valve when liquid begins to flow, or For Hydraulic Device pressurize the contents to 15 PSI and prime the lines by depressing the trigger and pulling back slowly on the dose-size.
4. Determine the number and placement of injection sites around the base of the tree. Drill through the bark then 5/8" into the sapwood using the appropriate sized drill bit. For best results, use clean and sharp Brad point drill bits.
5. Insert the Arborplug™ using the set tool and mallet. Use the #4 Arborplug (3/8" d) for most applications, including conifers. In hardwoods, you may also use smaller diameter Arborplugs including the #3 (9/32" d). Insert the VIPER needle into the Arborplug. To start the Tree I.V. infusion, open the needle valve. Close the valve and remove the VIPER needle upon completion of infusion. To inject with the Hydraulic Device, depress the trigger to apply the dose.

Alternative Arborjet STINGER Procedures:

6. Alternatively, insert the #2 (7/32" drill bit) STINGER injector tip 5/8" deep into the sapwood in the predrilled hole with a hand push or by gently tapping the injector tip into the sapwood with a mallet. Remove STINGERS upon completion of infusion process by pulling and twisting out counter-clockwise. Use a cleaner or an EPA registered disinfectant between trees when using the reusable STINGER tips.

INJECTION PROCEDURES FOR M3 INJECTOR

Use root flare injections — IMA-jet Infusible Insecticide can be used with a variety of refillable tree infusion devices. For all injection devices, read carefully and follow all manufacturer use directions.

Installation and Application using the Rainbow Treecare Scientific Advancement M3 injector:

1. Examine the tree for the presence of root flare. If flares are not visible, excavate the root collar. Make infusion sites 5-10 inches below the top of the root flare.
2. Thoroughly brush all dirt from the tree. A dirty root flare will dull the drill bit and increase uptake time.
3. Lay the injectors around the tree to select injection sites. The application rate is 1 injection site for every 2 diameter inches (approximately 1 injection site every 6 inches) evenly spaced around the root-flares. Using a 11/64" or 3/16" (4.5 to 5 cm) HIGH HELIX drill bit, drill a hole at a downward angle into each selected buttress root flare above the soil line. Drill to a depth of 1 to 1.5 cm (3/8 to 1/2") into healthy xylem tissue.
4. Insert the injector tip into the hole and seat firmly with hand pressure.
5. Close the control valve.
6. Inject treatment liquid into the M3 injector reservoir through the black duckbill (filling) valve.
7. Inject air into the M3 injector reservoir through the filling valve. Do not inject more than 25 cc of air.

   Note: Care must be taken when pressurizing the capsule. If the tool used to pressurize the capsule passes all of the way through the duckbill, the duckbill will not close and the capsule will not be pressurized.
8. Open the control valve just to the point where the liquid starts to flow into the tree.
9. Check for leaks. If leaks are found close the valve, seat firmly into the tree and re-open the valve. If leaks persist the problem may be too shallow of a hole, close the valve, remove the injector and re-drill to a deeper depth.
10. Uptake usually occurs within minutes. When all of the treatment liquid is out of the injector, a wash solution of water can be injected into the M3 injector and it can be re-pressurized or the M3 injector can be closed and removed from the tree. Wash solutions are not compatible with all formulations. Check for compatibility prior to rinsing the M3 injector into the tree.
11. Remove the M3 injector from the tree and store properly for reuse.

STORAGE AND DISPOSAL

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

PESTICIDE STORAGE: Store bottles in a cool, dry place above 45° F. Store in original container out of reach of children, preferably in a locked storage area.

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

CONTAINER DISPOSAL: Nonrefillable container. Do not reuse or refill this container. Offer for recycling, if available, or puncture and dispose of empty bottle in a sanitary landfill.

NOTICE OF WARRANTY

ARBORJET, Inc. makes no warranty of fitness of this product for any other purpose, beyond its uses under normal conditions in keeping with the statements made on this label.

ARBORjet

Revolutionary Plant Health Solutions

Micro-Infusion® is a registered trademark of Arborjet, Inc. REV [illegible]

TARGET SPECIALTY PRODUCTS™

Find the Right Equipment for You

- What types of trees will you be treating?
- How many trees will you be treating?
- Where will you be doing your applications?
- What types of pests are you treating for?
- How much are willing to invest initially?
- Do you plan on working with HOAs or municipalities?
- What labor force do you have available for applications?

Getting Started

A	B	C	D	E	F	G	H	I	J	K	L	M	N
	Ima-jet Price is approximately $299.00						Avg. Labor rate $80. /						
		$299.00					$1.33			$6.00		$10.00	
Tree Size BDH (inches)	Insect Control (ml) / Tree	Cost of Insect Control / ml	Total Cost of Chemical / tree	Number of Arborplugs / tree	Cost Arborplugs (50.0 cents ea)	Total Cost Materials / Tree	Labor / tree @ 1.33 / minute	Labor Time / Tree (minutes)	**Total Cost per Tree**	Low Billing Rate $6/diameter inch	Low rate % profit margin	High Billing Rate $10/diameter inch	High rate % profit margin
6	12	$0.30	$3.59	3	$1.50	$5.09	$10.64	8	$15.73	$36.00	56%	$60.00	74%
7	14	$0.30	$4.19	4	$2.00	$6.19	$10.64	8	$16.83	$42.00	60%	$70.00	76%
8	24	$0.30	$7.18	4	$2.00	$9.18	$10.64	8	$19.82	$48.00	59%	$80.00	75%
9	27	$0.30	$8.07	5	$2.50	$10.57	$10.64	8	$21.21	$54.00	61%	$90.00	76%
10	30	$0.30	$8.97	5	$2.50	$11.47	$10.64	8	$22.11	$60.00	63%	$100.00	78%
11	44	$0.30	$13.16	6	$3.00	$16.16	$10.64	8	$26.80	$66.00	59%	$110.00	76%
12	48	$0.30	$14.35	6	$3.00	$17.35	$10.64	8	$27.99	$72.00	61%	$120.00	77%
13	52	$0.30	$15.55	7	$3.50	$19.05	$11.97	9	$31.02	$78.00	60%	$130.00	76%
14	56	$0.30	$16.74	7	$3.50	$20.24	$11.97	9	$32.21	$84.00	62%	$140.00	77%
15	75	$0.30	$22.43	8	$4.00	$26.43	$11.97	9	$38.40	$90.00	57%	$150.00	74%
16	80	$0.30	$23.92	8	$4.00	$27.92	$11.97	9	$39.89	$96.00	58%	$160.00	75%
17	85	$0.30	$25.42	9	$4.50	$29.92	$11.97	9	$41.89	$102.00	59%	$170.00	75%
18	108	$0.30	$32.29	9	$4.50	$36.79	$11.97	9	$48.76	$108.00	55%	$180.00	73%
19	114	$0.30	$34.09	10	$5.00	$39.09	$13.30	10	$52.39	$114.00	54%	$190.00	72%
20	140	$0.30	$41.86	10	$5.00	$46.86	$13.30	10	$60.16	$120.00	50%	$200.00	70%
21	147	$0.30	$43.95	11	$5.50	$49.45	$13.30	10	$62.75	$126.00	50%	$210.00	70%
22	154	$0.30	$46.05	11	$5.50	$51.55	$13.30	10	$64.85	$132.00	51%	$220.00	71%
23	184	$0.30	$55.02	12	$6.00	$61.02	$13.30	10	$74.32	$138.00	46%	$230.00	68%
24	192	$0.30	$57.41	12	$6.00	$63.41	$13.30	10	$76.71	$144.00	47%	$240.00	68%

Ima-jet at $80hr | Ima-jet 10 at $80hr | Tree-age at $80hr | Azasol at $80hr | Ace-jet at $80hr | Phospho-jet at $80hr | Propizol $80H

TARGET SPECIALTY PRODUCTS™

Market Implications

TREE-äge alone can be used to effectively reduce the colonization of healthy trees by PSHB. Preventatively only.
Lightly-infested trees can be therapeutically-treated with a combination of TREE-äge + Propizol at the medium label rate.
Moderately-infested trees can be therapeutically-treated with a combination of TREE-äge + Propizol at the high label rate. Bifenthrin should be applied during high pressure
Sanitation is very important: Remove highly- infested and dying trees ASAP to prevent large emergence when the trees die.

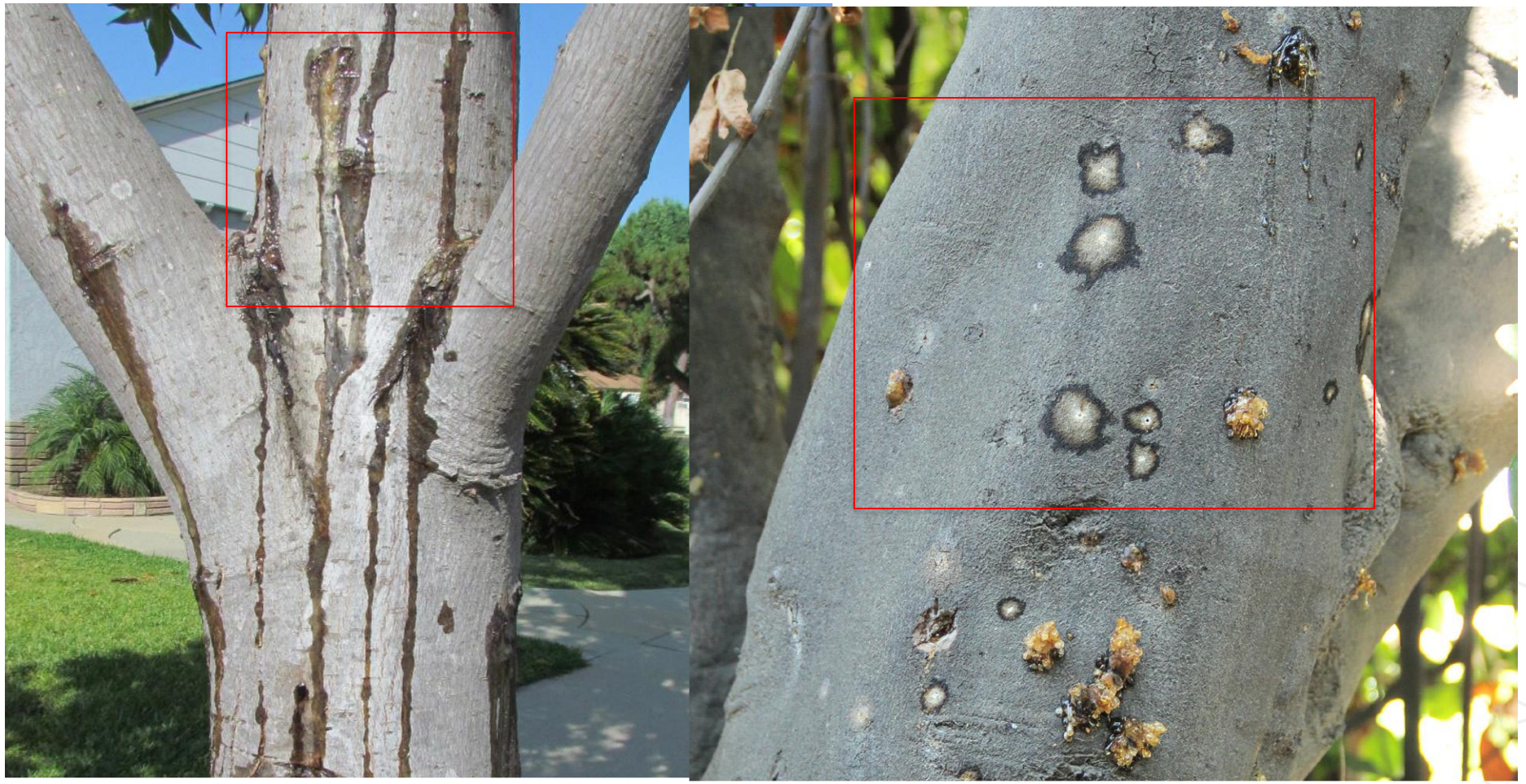
TARGET SPECIALTY PRODUCTS™

Light Infestation –

No more than 10 attack sites on the entire tree

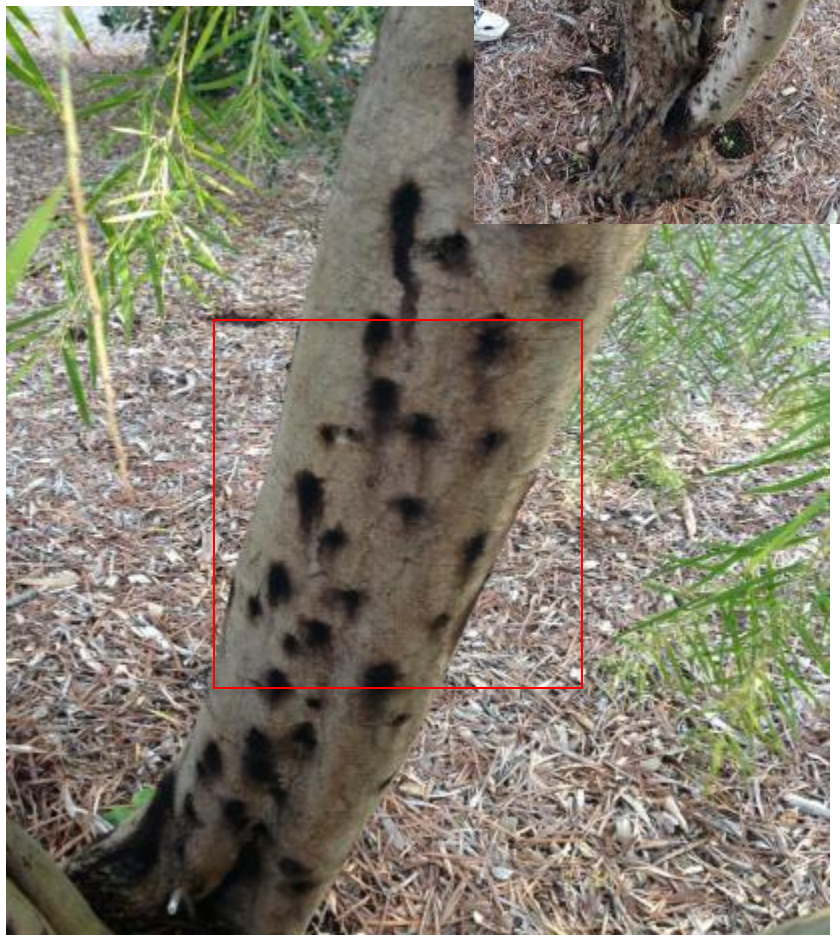
Photo Credit: Donald Hodel

Moderate level of Attack – draw one foot square on most heavily attacked section of the tree and count less then 10 attack sites



TARGET SPECIALTY PRODUCTS™

High level of Attack – cannot draw a one foot square anywhere on the tree and count less than 10 attack sites



TARGET SPECIALTY PRODUCTS™

Isolated Attack Area – remove attacked area and treat the tree with both insecticide and fungicide

TARGET SPECIALTY PRODUCTS™

Updated Recommendations

- Not all trees die from ISHB attacks
- More susceptible trees are Sycamore, Oak, Liquid Amber, and Willow
- Misnomer that ISHB prefers healthy trees – they thrive during conditions that stress trees
- Trees should not be pruned between April & October
- Trees need micro-nutrients to bolster natural defenses against the ISHB
- Pay attention to per acre limits on neonic products

TARGET SPECIALTY PRODUCTS™

TREE-äge® G4

Injected insecticide for two-year control of listed insect and mite pests in deciduous, coniferous, and palm trees

ACTIVE INGREDIENT:
Emamectin benzoate*.....4.0%
OTHER INGREDIENTS:.....96.0%
TOTAL:.....100.0%
*CAS No. 155569-91-8 Contains 0.36 lb emamectin per gallon.

KEEP OUT OF REACH OF CHILDREN

CAUTION / AVISO

Si usted no entiende la etiqueta, busque a alguien 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 additional precautionary statements and directions for use on label or booklet.

EPA Reg. No. 74578-10 EPA Est. No. 74578-TX-1
Product of United States
SOPPL-ARJ-18-LA 0815
4061003
Net Contents: 1 Quart (.946 Liter)
Manufactured for Arborjet, Inc. 99 Blueberry Hill Road, Woburn, MA 01801

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

CAUTION/AVISO: Moderately irritating to the eye. Do not get in eyes or on clothing. Wear protective eyewear. Harmful if swallowed. 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.

FIRST AID	
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.
If swallowed	• Call poison control center or doctor immediately for treatment advice. • Have person sip 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.
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; apply after exposure in 15 minutes). Administer repeatedly medical charcoal in a large quantity of water or sorbitol. If toxicity from exposure has progressed to cause severe vomiting, the extent of intubated fluid and electrolyte imbalance should be considered. 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 function(by) 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.	
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
HOT LINE NUMBER For 24-Hour Medical Emergency Assistance (Human or Animal), Or Chemical Emergency Assistance (Spill, Leak, Fire or Accident) Call 1-800-255-3924	

Personal Protective Equipment (PPE)

Applicators and other handlers must wear:

- Long-sleeved shirt and long pants
- Chemical-resistant gloves such as barrier laminate, butyl rubber, nitrile rubber, or neoprene rubber
- Shoes and socks
- 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 washwaters. 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.

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 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 ARBORJET, INC. or Seller. To the extent permitted by applicable law, Buyer and User agree to hold ARBORJET, INC. and Seller harmless for any claims relating to such factors.

ARBORJET, 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. To the extent permitted by applicable law, (1) this warranty does not extend to the use of the product contrary to label instructions or under conditions not reasonably foreseeable to or beyond the control of Seller or ARBORJET, INC., and (2) Buyer and User assume the risk of any such use. TO THE EXTENT PERMITTED BY APPLICABLE LAW, ARBORJET, INC. MAKES NO WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE NOR ANY OTHER EXPRESS OR IMPLIED WARRANTY EXCEPT AS WARRANTED BY THIS LABEL.

To the extent permitted by applicable law, in no event shall ARBORJET, INC. be liable for any incidental, consequential or special damages resulting from the use or handling of this product. TO THE EXTENT PERMITTED BY APPLICABLE LAW, THE EXCLUSIVE REMEDY OF THE USER OR BUYER, AND THE EXCLUSIVE LIABILITY OF ARBORJET, INC AND SELLER FOR ANY AND ALL CLAIMS, LOSSES, INJURIES OR DAMAGES (INCLUDING CLAIMS BASED ON BREACH OF WARRANTY, CONTRACT, NEGLIGENCE, TORT, STRICT LIABILITY OR OTHERWISE) RESULTING FROM THE USE OR HANDLING OF THIS PRODUCT, SHALL BE THE RETURN OF THE PURCHASE PRICE OF THE PRODUCT OR, AT THE ELECTION OF ARBORJET, INC. OR SELLER, THE REPLACEMENT OF THE PRODUCT.

ARBORJET, INC. and Seller offer this product, and Buyer and User accept it, subject to the foregoing Conditions of Sale and Limitation of Warranty and Liability, which may not be modified except by written agreement signed by a duly authorized representative of ARBORJET, INC.

DIRECTIONS FOR USE

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

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

APPLICATION TO TREES

TREE-äge G4 is for control of mature and immature arthropod pests of deciduous, coniferous, and palm trees, including, but not limited to, those growing in residential and commercial landscapes, parks, plantations, seed orchards, and forested sites on private, municipal, state, tribal and national areas). TREE-äge G4 contains the active ingredient emamectin benzoate and is formulated to be 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.

USE DIRECTIONS

TREE-äge G4 is designed for use with tree injection devices that meet the label and dose requirements (for example, the Arborjet Tree Injection System) 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). Breast height is defined as 4.5 feet (1.37m) above the ground on the uphill side of the tree.

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 to 24" 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 2 to 8 inches of tree's circumference.

Drill Depth: Drill through the bark then 5/8" to 2" into the sapwood with the appropriate sized drill bit. Use clean, sharp drill bits. Precautions should be taken 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.

Palms

Make applications into palms 2-8 feet from the soil level, above the lignified tissues. One (1) drill (2 injection points may be installed. Drill into the palm tissue 4" deep, at up to 1/2 inch diameter.

WHEN TO TREAT

TREE-äge G4 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 TREE-äge G4 is dependent upon the tree's transpiration. For better uptake, apply when soil is moist, soil temperatures are above 65°F, while and temperatures are between 65° to 85°F, and during the 24 hour period when transpiration is greatest, typically before 2:00 PM. Applications to drought or heat-stressed trees may result in injury to tree tissues, 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., insect) and healthy vascular system. Once these tissues are compromised by arthropod damage (larval galleries, defoliation, leaf mining, etc.) an effective and uniform application of TREE-äge G4 may be difficult to achieve and subsequent control may be poor. Optimally, treatment should be made preventively at least 2 to 3 weeks before arthropods historically infest the host tree. As a result of systemic movement and longevity of TREE-äge G4 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.

TREE-äge G4 may also be effective as a remedial treatment against some pests, such as those with slower development or if multiple life stages occur. Pests that attack the stem and branches may disrupt vascular tissue, resulting in poor distribution of the product in an infested tree. However, control may be achieved if susceptible larvae come into contact or feed on TREE-äge G4-treated tissues.

USE

Use as formulated or dilute with equivalent of 1 to 9 volumes of water. Refer to Application in Trees table for specific instructions.

USE RATE TABLE [*]

Tree Diameter (DBH) (Inches)	Low† rel. product/tree	Medium rel. product/tree	High rel. product/tree
4 to 6	10-20	20-35	45-60
7 to 9	20-30	30-45	60-90
10 to 12	25-35	35-60	90-120
13 to 15	30-45	45-110	110-150
16 to 18	40-55	55-135	135-180
19 to 21	50-60	60-160	160-210
22 to 24	55-70	70-180	180-240
25 to 27	60-80	80-200	200-270
28 to 30	70-90	90-225	225-300
31 to 33	80-100	100-250	250-330
34 to 36	85-110	110-275	275-360
37 to 39	90-120	120-300	300-390
40	120-150	150-300	300-600

(Optional Use Rate Table)

[CALIFORNIA USE RATE TABLE]

Tree Diameter (DBH) (Inches)	Low† rel. product/tree	Medium rel. product/tree	High rel. product/tree
4 to 6	10-20	20-35	45-60
7 to 9	20-30	30-45	60-90
10 to 12	25-35	35-60	90-120
13 to 15	30-45	45-110	110-150
16 to 18	40-55	55-135	135-180
19 to 21	50-60	60-160	160-210
22 to 24	–	110-180	180-240
25 to 27	–	130-200	200-270
28 to 30	–	165-225	225-300
31 to 33	–	160-250	250-330
34 to 36	–	170-275	275-360
37 to 39	–	190-300	300-390
40	–	200-300	300-600

The use of low, medium, or high dose per tree is based on the experienced judgment of the applicator as to what constitutes a low, medium or high infestation.

Higher rates tend to provide longer residual and control of more difficult to control insects. See Target Pest for additional information in choosing the amount of product to apply.

If the tree canopy has been significantly reduced, i.e., excessive tree pruning or turning trees into a hedge, reduce dose accordingly.

†In Palms always use the low rel. product/tree.

(*Not for use in the State of California)

Applications in Trees

Tree Tissue	Target Pest	Application Rate†	Comments
Seed and Cone	Cankerworm (Chrysoteuchia spp.) Cone beetle (Conophthorus spp.) Pine Cone Seed Bug Suppression of Lepidopterous and Sciyus spp. in the year of treatment‡	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	Bud Caterpillars including Eastern, Forest, Pacific, and Western) Western Spruce Budworm Winter Moth	Low to Medium	For best results, apply at least 7-8 weeks before the pest has historically been present. Consult with local extension agent for when this will occur in your area. For more uniform distribution in the canopy (foliage), dilute product with equivalent 1 to 9 volumes of water prior to application.
	Bagworm Cankerworm Casebearer* Eastern Oak Looper Elm Spanworm Fall Webworm Gypsy Moth Leafrollers Linden Looper Mimosa Webworm Oak Worm Pine Needle Miner* Poplar Tentmaker* Tussock Moth Variable Oakleaf Caterpillar* Yellownecked Caterpillar* Leafminers (including Lepidoptera, Coleoptera, Hymenoptera) Hemlocksoud Plant Bug Pine Needle Scale Conifer Mite Red Palm Mite Slowly Emerging Elm, Pine)	Low to High	

Shoot, Stem, Trunk and Branch	Chewing Borers (including Ash, and Emerald Pine Pitch Tube Moth) Carpenterworm* Cottonwood Twig Borer Zimmerman Moth	Low to Medium	For best results, apply at least 30 days before historical egg hatch or adult flight and to trees whose vascular tissue is not damaged. For more uniform distribution in the canopy (foliage), dilute product with equivalent 1 to 9 volumes of water prior to application. If vascular tissue is damaged or plugged by insect galleries, excavations or fungi, uniform treatment and control may not be achieved. For bark beetles that attack the tree bole, inject every 4 inches of stem circumference. For bark beetles that attack the canopy, dilute product with equivalent 1 to 9 volumes of water prior to application.
	Flatheaded Borers (including adult and larvae of Emerald Ash Borer)	Medium to High	
	Gall Wasps, including Banyan Stem Gall Wasp* Roundheaded Borers (excluding Asian Longhorned Beetle) Ambrosia Beetles (including Polygraphus Shot Hole Borer, Xyosandrus Germanus)*†	Medium to High	
	Bark Beetles (including Ips Engraver Beetles *†, Mountain Pine Beetle *†, Southern Pine Beetle *, Spruce Beetle *, Western Pine Beetle *, Black Turpentine Beetle *, Walnut Twig Beetle *†) Pinewood Nematode		

* Use medium to high rates for remedial and longer residual control.
* Use of TREE-äge G4 to control this insect may not result in the control of diseases vectored by the insect.
‡ Bark beetles that attack the tree bole
† Bark beetles that attack the canopy
*Not for use in the State of California.

Compatibility

Do not mix TREE-äge G4 before injection with other products such as insecticides, fungicides, plant growth regulators, surfactants, adjuvants, and fertilizers.

RESTRICTION

Do not apply to trees that may yield food consumed by humans or used in animal feed.

TREE-äge G4 is not to be re-formulated or blended.

STORAGE AND DISPOSAL

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

Pesticide Storage

Store in a cool, dry place, away from children and pets. Keep from freezing.

Pesticide Disposal

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

Container Handling

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly 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 ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration.

For non-emergency (e.g., current product information), call Arborjet, Inc. at 1-781-935-4070.

Manufactured for:
Arborjet, Inc.
99 Blueberry Hill Road
Woburn, Massachusetts 01801
REV 1009

ARBORjet

TAI SPECIAL

Propizol®

ARBORjet

SYSTEMIC FUNGICIDE

Date: June 16, 2015

Product: Propizol® EPA Reg. No. 74578-8

Use: Additional Pests for Control in Deciduous, Coniferous, and Palm Trees

State/District: AL, AR, CA, CO, CT, DC, DE, FL, GA, HI, ID, IL, IN, IA, KS, KY, LA, ME, MD, MA, MI, MN, MS, MO, MT, NC, ND, NE, NH, NJ, NM, NV, OH, OK, OR, PA, RI, SC, SD, TN, UT, VT, VA, WA, WV, WI, WY

APPLICATION IN TREES

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

The user must refer to the federally approved labels for the above noted product and read and follow all directions for use, restrictions, and precautions.

The user should have this recommendation in his/her possession at the time of use.

This recommendation for use of this product is permitted under Section 2(ee) of FIFRA and has not been submitted to or been approved by EPA.

DIRECTIONS FOR INJECTION USE

For fungi infecting vascular tree tissues causing wilt and tree dieback such as:

Laurel wilt *(Raffaelea spp.)*

Thousand Canker Disease *(Geosmithia morbida)*

Fusarium Dieback of trees including Western Sycamore *(Fusarium euwallaceae)*

Blue Stain Disease *(Graphiomyia clavigera, Leptographium longiclavatum)*

Fusarium Wilt of Canary Date Palms *(Fusarium oxysporum f. sp. canariensis)*

Fusarium Wilt of Queen Palms *(Fusarium oxysporum f. sp. palmarum)*

Ganoderma Butt Rot of Palms *(Ganoderma zonatum)*

Oak Dieback *(Diplodia corticola)*

For leaf, bud, branch and stem fungi such as:

Phomopsis Canker and indirect needle cast of spruce *(Phomopsis occulta)*

Oak Anthracnose *(Apiognomonia spp.)*

Sycamore Anthracnose *(Apiognomonia veneta)*

Use 6-10 ml of this product in up to 1 liter of water per inch DBH. For very high disease pressure, use 20 ml of this product per inch DBH. Make applications when the trees are in full leaf and actively growing for control of the next season's disease development.

2(ee) Registrant:
Arborjet, Inc.
99 Blueberry Hill Rd.
Woburn, MA 01801

Expiration Date: November 16, 2019 Label Code:

RESTRICTED USE PESTICIDE

DUE TO ACUTE TOXICITY TO HUMANS FOR RETAIL SALE TO AND USE ONLY BY CERTIFIED APPLICATORS OR PERSONS UNDER THEIR DIRECT SUPERVISION, AND ONLY FOR THOSE USES COVERED BY THE CERTIFIED APPLICATOR'S CERTIFICATION.

TREE-äge®

Date: September 12, 2014

Product: TREE-äge® EPA Reg. No. 100-1309-74578

Use: Additional Pests for Two-year Control in Deciduous, Coniferous, and Palm Trees

State: AL, AZ, AR, CA, CO, CT, DE, DC, FL, GA, HI, ID, IL, IN, IA, KS, KY, LA, ME, MD, MA, MI, MN, MS, MO, MT, NE, NV, NH, NJ, NM, NY, NC, ND, OH, OK, OR, PA, RI, SC, SD, TN, TX, UT, VT, VA, WA, WV, WI, WY

Manufactured for Arborjet, Inc. 99 Blueberry Hill Road, Woburn, MA 01801 SCPPLABJ 1309A-LIC 1210

DIRECTIONS FOR USE

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

The user must refer to the federally approved labels for the above noted product and read and follow all directions for use, restrictions, and precautions.

The user should have this recommendation in its possession at the time of use.

Use of this product according to this bulletin has not been reviewed or endorsed by the Office of the Indiana State Chemist.

This recommendation for use of this product is permitted under Section 2(ee) of FIFRA and has not been submitted to or been approved by EPA.

APPLICATION IN TREES

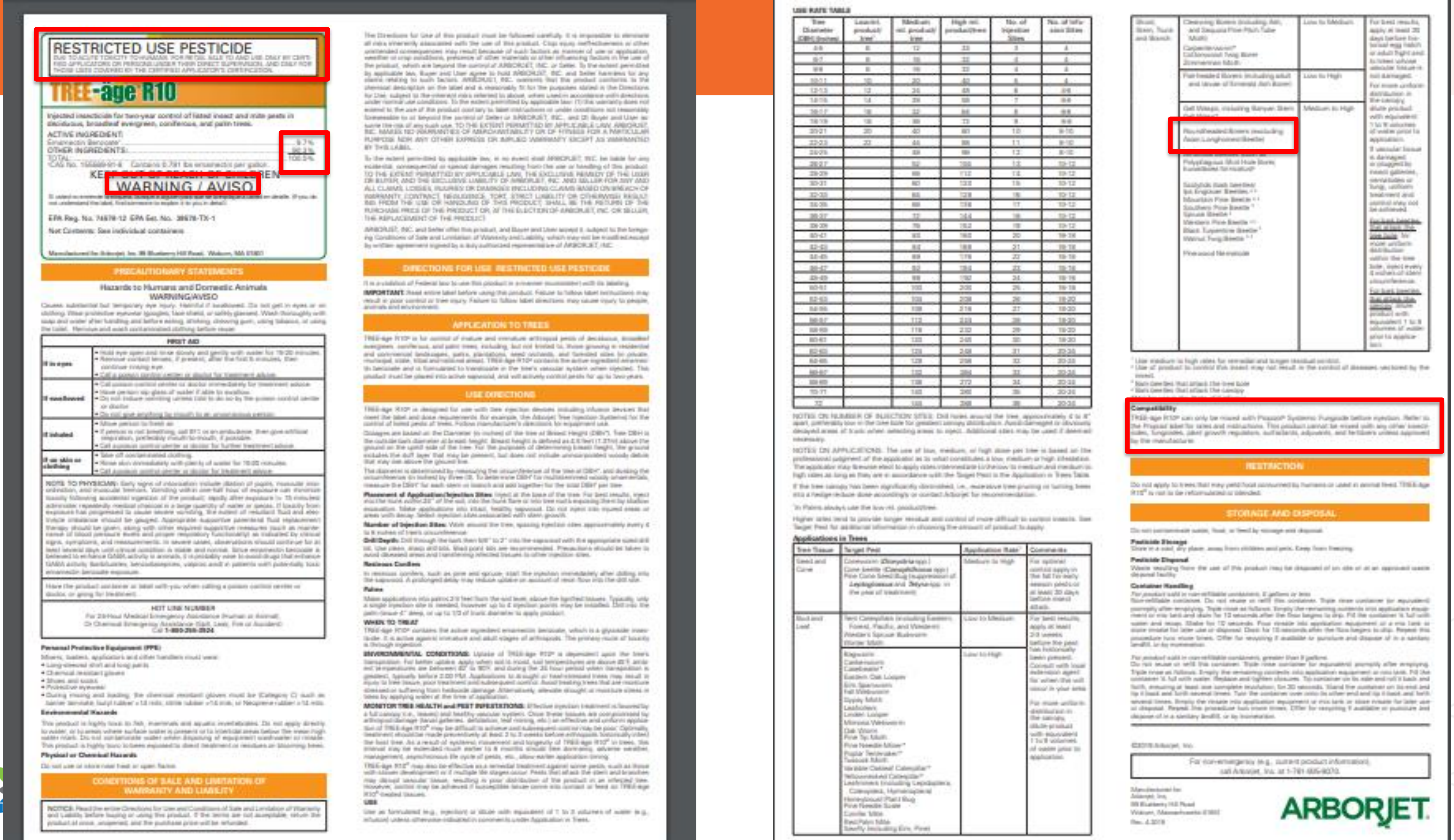
Tree Tissue	Target Pest	Application Rate[1]	Comments
Bud and Leaf	Cankerworms, Casebearer, Conifer Mites, Eastern Oak Looper, Elm Spanworm, Leafrollers, Linden Looper, Pine Needle Miner, Pine Tip Moth, Poplar Tentmaker, Variable Oakleaf Caterpillar, Yellownecked Caterpillar	Low to High	For best results, apply at least 2-3 weeks before the pest has historically been present. Consult with local extension agent for when this will occur in your area.
Shoot, Stem, Trunk and Branch	Ambrosia Beetles (such as Polyphagous shot hole borer, *Euwallacea fornicatus*),[2] Banyan Stem Gall Wasp, Black Oak Gall Wasp, Black Turpentine Beetle, Carpenterworm, Cottonwood Twig Borer, Walnut Twig Beetle,[2] White Pine Weevil, Zimmerman Moth	Medium to High	For best results, 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.

[1] Use medium to high rates for remedial and longer residual control.

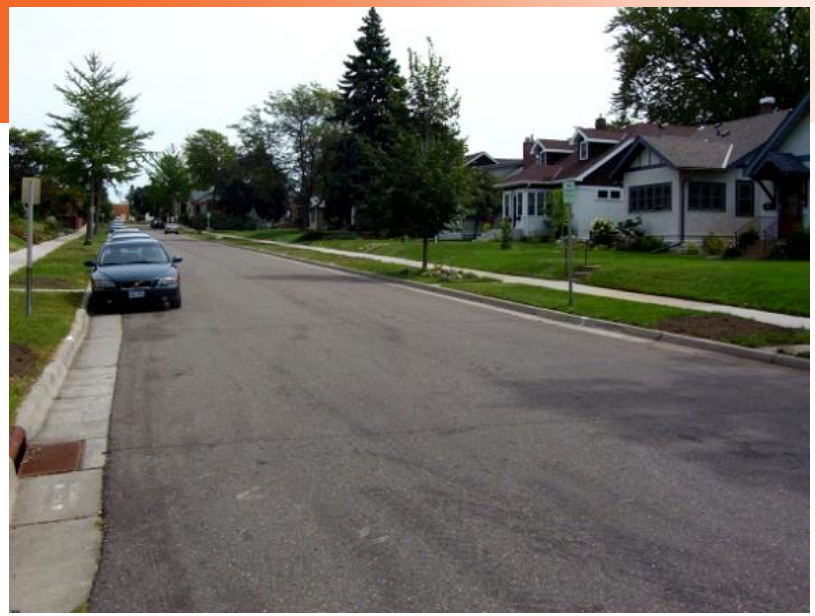
[2] Use of TREE-äge to control this insect may not result in the control of diseases vectored by the insect.

2(ee) Registrant:

Make sure to have 2ee labels on site


RESTRICTED USE PESTICIDE
TREE-äge R10
ACTIVE INGREDIENT:
OTHER INGREDIENTS:
TOTAL
WARNING / AVISO
EPA Reg. No. 74578-12
Net Contents: See individual containers
PRECAUTIONARY STATEMENTS
Hazards to Humans and Domestic Animals
WARNING/AVISO
FIRST AID
HOT LINE NUMBER
CONDITIONS OF SALE AND LIMITATION OF WARRANTY AND LIABILITY
DIRECTIONS FOR USE RESTRICTED USE PESTICIDE
APPLICATION TO TREES
USE DIRECTIONS
USE RATE TABLE
Applications to Trees
Compatibility
RESTRICTION
STORAGE AND DISPOSAL
ARBORJET

Tree Removal Impacts



- Permanent loss of this Urban Forest
- Replacement forest takes generations to develop
- Increased storm water run-off
- Increased water consumption
- Enhanced Heat Island ⟹ Greater heating/cooling costs
- Significant Property Value Reduction
- Loss of Neighborhood Character
- More stress on poorest neighborhoods, increasing cost to: maintain, heat, cool homes, & decreases property value.

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Unanticipated Impacts of Urban Canopy Removal

- Citizen Complaints - Public response can be profound
- Removing stumps in Spring, before must re-plant
- Enough Dig-Safe personnel to mark all utilities
- Forestry Crews focused on nothing but removals, all regular pruning suspended.
- Damage to sidewalks requiring additional funds
- Falling limbs risk, trees die rapidly after attack
- Sprouts on trees limiting vision of motorists
- Storm water flow increased
- Lawsuits due to falling branches from dying trees

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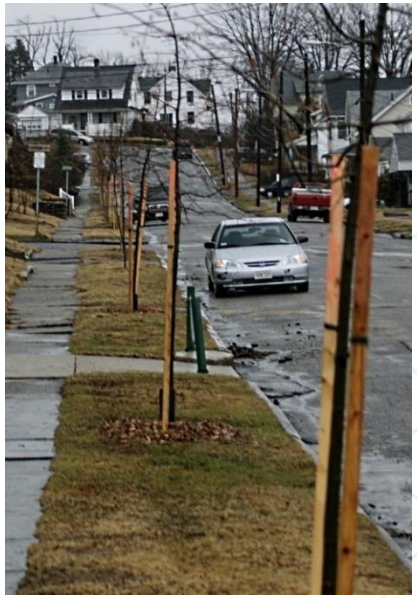
City Removal & Replacement Costs

- Labor & worker-benefits, to remove the tree
- Stump grinding & chip disposal
- Equipment used in removal (rental, lease, use)
- Fuel for all these operations
- Indirect labor – ex. manager; administrative
- New tree, equipment to plant that tree, & labor
- Top soil, fertilizer, mulch, & stakes
- Watering trees 1st yr, or replacing them 2nd yr.
- Easy to Reach $750. - $ 1000. cost per tree



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City Tree Removal & Replacement Costs

Mt. Pleasant, Michigan	
145 Trees Removed for EAB	
$35,000	Salaries, Planting, Watering, Maintenance
$34,940	Trees, Mulch, Topsoil & Supplies
$33,151	Equipment Costs (lease/rent/use)
$ 9,420	Fuel Expenses
$112,511	**Total Project Cost**
$776	Total Cost Per Tree to Remove/ Replace

Good Rainfall Reduced Watering Costs

Akron, Ohio

- **Seek $762,000 to Remove 1,075 Trees**

$708 Cost Per Tree to Remove

Milwaukee, WI

- Have 36,000 Boulevard Ash Trees
- Estimate $27,000,000 to R & R

$750 Cost Per Tree to Remove/Replace

Chicago, IL

- 81,000 Boulevard Ash Trees
- Estimate $95 Million to R & R

$1,173 Cost Per Tree to Remove/Replace

Rockford, IL

- 15,000 Boulevard Ash Trees
- Estimate $8.2 Million Just to Remove

$1,093 Cost Per Tree to Remove/ Replace

Cleveland, Ohio

Contracted Remove/Replace 300 trees

$1,000 Per Tree – Actual Cost

What Does It Really Cost?
How Should Costs Be Compared?

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ISHB Injection Pricing

- 78 Sycamore trees averaging 16” diameter
- To remove/replace these trees will be $750 - $1000. / tree
- To remove/replace this one streets’ trees is at least:
  - 78 trees x $750. = $58,500.
- City treatment of these trees at $8.24 per inch of diameter
  - Treatment cost per tree $8.24 x 16” = $131.84
  - Retreatment every 2 years
  - Annualized cost is $65.92/tree or **$5,142** for the street
- This street can be treated for 11 years before the cost of treatment would equal cost to remove and replace.
  - $58,500/$5,142 = 11

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Questions?

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