



TREE INSECTS AND TREATMENT

PEST / DISEASE	SCIENTIFIC NAME	TREE HOSTS	ACE-jet	IMA-jet	TREE-äge®	AzaSol™
Adelgids	Many species	Coniferous species, including hemlock, fir and spruce	Х	Х		
Aphids	Many species	Ash, oak, maple, willow, fruit trees	Х	Х		Х
Asian Longhorned Beetle	Anoplophora glabripennis	Elm, maple, birch, willow, box elder, horsechestnut, Buckeye, European Mountain Ash, ash, poplar, Albizzia, London Plane, sycamore				
Bagworm	Thyridopteryx ephemeraformis	Juniper, arborvitae, cedars, pine, hemlock, spruce, Chinese Elm, honeylocust, crabapple, maple, sycamore, box elder, willow, linden, poplar.	X		Х	X
Bark Beetles	Subfamily: Scolytinae *TREE-äge® ONLY - Ips Engraver Beetles, Dendroctonus ponderosae, Dendroctonus frontalis Zimmermann, Dendroctonus rufipennis, Dendroctonus brevicomis	Conifers, including pine, spruce, and fir; hardwoods including oak	x			
Birch Leafminer	Fenusa pusilla; Mesa nana	Mesa nana - White, gray, Yellow Birch Fenusa pusilla - Gray, European, Cut-Leaf Birch	X	X	×	X
Black Vine Weevil	Otiorhynchus sulcatus	Broad host range, including yew, hemlock, Japanese andromeda, Euonymus, mountain laurel and Japanese holly		X		X
Boxelder Bug	Leptocoris trivittatus	Boxelder, ash, maple, fruit trees	Χ			X
Bronze Birch Borer (flatheaded borer)	Agrilus anxius	European white birch, water birch, paper birch, yellow birch, Whitebarked Himalayan Birch, Gray Birch, Sweet Birch	×	×	×	×
Browntail Moth	Euproctis chrysorrhoea	Oak, shadbush, apple, cherry, beach plum, hawthorn	X			X
Budworms	Eupoicillia spp	Spruce, fir, Fraser Fir,tamarack, pine, hemlock	X			X
Flatheaded borers (Buprestid borers)	Family: Buprestidae	Many tree species including ash, oak, and birch trees and more.	X	X	×	
Cankerworms	Paleacrita Vernata	Red and white oak groups, maples, elms, hickories, ash, and cherry	X	х		×
Carpenterworm	Prionoxystus robiniae	Red Oak, black locust, cottonwood, elm, maple, and willow	X			
Casebearer	Coleophora species	Elm, pecan, larch, paper, gray, white birch	Х			
Citrus Longhorned Beetle	Anoplophora chinensis	Citrus trees, pecan, apple, hibiscus, sycamore, willow, pear, pigeon pea, poplar, oak, ficus and more		X		
Clear Winged Borers	Parathrene dollii, P. tricinicta	Alder, ash, birch, dogwood, hawthorn, Mountain Ash, maple, oak, pine, poplar, sycamore, willow	Х		×	
Clear Winged Borers	Parathrene dollii, P. tricinicta	Alder, ash, birch, dogwood, lilac, hawthorn, Mountain Ash, maple, oak, pine, poplar, sycamore, viburnum, willow, and fruit trees and plum	×			×
Cottonwood Twig Borer	Gypsonoma haimbachiana	Cottonwood, poplar	X			
Eastern Oak Looper	Phigalia titea	Red and white oak groups, maples, elms, hickories, ash, and cherry	X			
Eastern Tent Caterpillar	Malscosoma americanum	Ornamental crabapple, hawthorn, maple	X		×	
Eastern Tent Caterpillar	Malscosoma americanum	Wild cherry, apple, and crabapple, hawthorn, maple, cherry, peach, pear, plum			×	
Elm Leaf Beetle (larvae)	Pyrralta luteola	All variety of elm species X X			×	
Elm Spanworm	Ennomos subsignarius	Elms	X			Х
Emerald Ash Borer	Agrilus planipennis	Ash (Fraxinus) species, including green, white, black and blue ash	X	×	×	
Eucalyptus Longhorned Beetle	Phoracantha recurva	Eucalyptus		Х	×	





TREE INSECTS AND TREATMENT (CONTINUED)

PEST / DISEASE	SCIENTIFIC NAME	TREE HOSTS	ACE-jet	IMA-jet	TREE-äge®	AzaSol™
Ips Engraver Beetles	Family: Scolytidae	Conifers: Including spruce, Ponderosa and Lodgepole Pines, Engelman Spruce, Limber pines			×	×
Fall Cankerworm	Alsophila pometaria	Red and white oak groups, maples, elms, hickories, ash, cherry	X			X
Fall Webworm	Hyphantria cunea	Many hardword species including Pecan, walnut, American Elm, hickory, fruit trees	X		×	X
Flathead Borers	Family: Buprestidae	Many tree species including ash, oak and birch trees and more	X	X	×	X
Forest Tent Caterpillar	Malocosoma disstria	Sugar maple and aspens, oaks; Water Tupelo, sweetgum, Swamp Black Gum; cottonwood,elms; Red Alder and willow, birch, flowering cherry, basswood, ash	×		X	×
Gall Midges	Subfamily: Cecidomyiinae	Oak, willow, elm, maple, walnut, hickory, pine, locust	X			
Gypsy Moth	Lynamtria dispar	Many oak species, White Oaks preferred	X		X	X
Hemlock Woolly Adelgid	Adelges tsugae	Hemlock	Х	X		
Honeylocust Plant Bug	Diaphnocoris chlorionis	Honeylocust	X		X	
Japanese Beetle	Popillia japonica	Horsechestnut, maple, birch, eucalyptus, black walnut, Crape Myrtle, larch, sycamore, poplar, Pin Oak, Sas- safras, Mountain Ash, linden, elm	×	×		
Japanese Beetle	Popillia japonica	Horsechestnut, maple, birch, citrus, eucalyptus, black walnut, Crape Myrtle, larch, crabapple, sycamore, pop- lar, cherry, plum, peach, Pin Oak,Sassafras, Mountain Ash, Linden, elm	×	×		×
Lacebugs	Corythucha spp.; Stephanitis spp.	Sycamore, oak, hackberry, basswood, hawthorne, crabapple, Mt. Ash, Shadbush	Х	Х		
Leaf Miners	Orders: Lepidoptera, Diptera, Hymenoptera	Oak, birch, beech, elm, flowering cherry, hawthorn, and honeylocust	X	X	X	X
Leafhoppers	Family: Cicadellidae	Broad host range	X	X		
Leafrollers	Family:Tortricidae	Ornamental trees including ash, birch, box elder, elm, locust, maple, poplar, rose and willow. AzaSol - Fruit and nut trees including almond, apple, apricot, cherry, citrus, pear, plum, and walnut	×			×
Linden Looper	Erannis tiliaria	Linden, red and White Oak, maples, elms, hickories, ash, and cherry	Х			Х
Longhorned Borers	Cerambycidae	Many tree species including hardwoods and conifers susceptible, in particular, stressed trees	Х	Х		
Mealy Bugs	Family: Pseudococcidae	Many species; ficus, palm, Catalpa, peach, pear, citrus, and more	Х	Х		Х
Mimosa Webworm	Homadaula anisocentra	Mimosa, honeylocust			×	
Mountain Pine Beetle	Dendroctonus pondero- sae	Pine, frequently on Lodgepole and sugar pine			X	×
Nantucket Pine Tip Moth	Rhyacionia frustrana	Pitch, Virginia, Scotch Pine, in New England and Mid- Atlantic, Shortleaf Pine in Central States, Monterey Pine in California, Loblolly and Shortleaf in South	×			Х
Oak Worms	Anisota senatoria; A.Virginiensis; A. Stigma	Most species of oak	Х		×	
Peach Twig Borer	Anarsia lineatella	Fruit trees including apricots, nectarines, plums and prunes, as well as peaches				Х
Peach Tree Borer	Synanthedon exitiosa	Fruit trees including peach, cherry, plum and other stone fruits				X
Pine Cone Seed Bug	Leptoglossus and Tetyra spp.	Conifers		X	X	
Pine Cone Worm	Dioryctria spp.	Loblolly, longleaf, pond, sand, shortleaf, slash and spruce, Virginia Pine. Douglas fir, True Fir, spruce, Western & Mt. Hemlock also susceptible.	×		Х	
Pine Needle Miner	Exoteleia pinifoliella	Pitch pine and jack pine are preferred, found on red, Scotch,Virginia, shortleaf, longleaf, table mountain, Ponderosa and Lodgepole Pines	X			
Pine Needle Scale	Chionaspis pinifoliae	Mugo pine and Scotch pine. Other pines affected: Austrian pine, red pine, and eastern white pine, spruce, firs, Douglas-fir and cedars			Х	





TREE INSECTS AND TREATMENT (CONTINUED)

PEST / DISEASE	SCIENTIFIC NAME	TREE HOSTS	ACE-jet	IMA-jet	TREE-äge®	AzaSol™
Pine Tip Moth	Rhyacionia spp.	Scotch, Muhgo, Ponderosa	×	×		×
Plant Bugs (Lygus)	Lygus spp.	Fruit trees such as peach trees, strawberries, stone fruits, and more	Х			X
Poplar Tentmaker	Clostera inclusa	Poplar & willow species	Х			
Psyllids	Family: Psyllidae	Several species of eucalyptus, acacia, pepper, and more.		X		X
Red Oak Borer	Enaphalodes rufulus	Red Oak group	X			
Red Palm Mite	Raoiella indica Hirst	Coconut and areca palms, ornamental palms including hurricane or princess palm, Christmas palm, bird of paradise, Strelitzia reginae Banks gingers, Alpinia purpurata Vieill., and Etlingera elatior			×	
Pinewood Nematode	Bursaphelenchus xylophilis	Pine, cedar, spruce			×	
Root Weevil (adults)	Family: Curculionidae	Hemlock, spruce, Arborvitae, oaks, magnolia, Sassafras, yellow poplar	X			
Roundheaded Borers	Family: Cerambycidae	Many species of hardwoods including beech, birch, elm, ash, hickory and more. Also seen in softwoods including elm and pine		×	×	
Royal Palm Bugs	Xylastodoris luteolus	Cuban royal palms (Roystonea regia)	X	X		
Sawfly Larvae	Suborder: Symphyta	Pines, spruce, ash, larch, birch, willow	X	X	X	X
Scale Insects	Superfamily: Coccoidea	Pines, spruce, firs, hemlock, lilac, ash, willow, Mountain Ash, maple, linden, elms	Х			X
Soft Scale Insects	Family: Coccidae	Pine (pine tortoise), magnolia, tuliptree, shade trees and ornamental plants (European fruit lecanium), spruce (spruce bud), and maple (cottony maple scales)		×		×
Southern Pine Beetle	Dendroctonus frontalis Zimmermann	All species of pine, but they show a strong preference for southern yellow pine species such as shortleaf, Virginia and pitch pines			×	×
Spider Mites	Tetranychidae Family	Coniferous plants, and many other hosts	Х			
Spring Cankerworm	Paleacrita vernata	Oak, elm, most common	Х			Х
Spruce Beetle	Dendroctonus rufipennis	Spruce			×	Х
Tent Caterpillars	Family: Lasiocampidae	Alder, ash, birch, cottonwood, and willow			×	Х
Thrips	Order:Thysanoptera	Dogwood, magnolia,maple, palm, viburnum, maple	Х	Х		Х
Tussock Moth	Family: Lymantriidae	Douglas fir, fir, maple, horsechestnut, birch, sycamore, poplar, linden, elm, rose & larch	X		×	X
Twig Girdler	Oncideres cingulata	Pecan plantations, but also to lumber trees such as hickory, oak, poplar and elm				
Variable Oakleaf Caterpillar	Heterocampa manteo	Oaks: Southern red, northern red, pin, willow, black, laurel, bur, and post oaks. Exotic oaks, beech, bass- wood, paper birch, and American Elm	×			
Western Pine Beetle	Dendroctonus brevicomis	Coulter and Ponderosa Pines			×	X
Western Spruce Budworm	Choristoneura occidenta- lis Freeman	Douglas-fir, grand fir, white fir, subalpine fir, corkbark fir, blue spruce, Engelmann Spruce, white spruce, and western larch	×		×	
White Pine Weevil	Pissodes strobi	Sitka; white, Engelmann spruce, black spruce, Norway Spruce, Lodgepole Pine , white pine, red pine, jack pine, Scots pine, red spruce, Colorado Blue Spruce, Douglas-fir, pitch pine	×			
Whiteflies	Family: Aleyrodidae	Ash, Red Bud, Bradford Pear, oak, chestnut, citrus spp		X		X
Whitemarked Tussock Moth	Hemerocampa leu- costigma	Pecan, hickory, walnut, oak, willow, honey locust	Х		×	X
Willow Leaf Beetle (larvae)	Plagiodera versicolora	White & Black Willow preferred	Х	X		Х
Winter Moth	Operophtera brumata	Oaks, maples, basswood, ash, crabapples, certain spruces	X		×	X
Yellownecked Caterpillar	Datana ministra	Birch, elm, oak, maple, apple & crabapple	X			X
Zimmerman Pine Moths	Dioryctria zimmermani	Austrian, Scotch, Ponderosa Pine	Х			





TREE DISEASES AND TREATMENT

PEST / DISEASE	SCIENTIFIC NAME	TREE HOSTS	PHOSPHO-jet	ALAMO [®]	
Anthracnose	Aplognomonia spp.; Gnomonia platani	Ash, Maple, Beech, Birch, Elm, Linden, Oak, Sycamore, Willow	Х		
Anthracnose	Discula destructiva	Dogwood	×		
Anthracnose	Gnomonia platani	Sycamore		Х	
Apple Scab	Venturia inaequalis	Crabapples; Hawthorne, Ornamental Pear	X		
Black Spot	Diplocarpon rosae	Crabapples; Hawthorne, Ornam. Pear	X		
Citrus Collar Rot	Phytophthora citrophthora	Citrus spp.	X		
Citrus Root Rot	Phytophthora nicotiane	Citrus spp.	X		
Coconut Bud Rot/ Nut Fall	Phytophthora katsurae	Coconut (Cocos nucifera)	X		
Dogwood Phytophthora	Phytophthora spp.	Dogwood	Х		
Dutch Elm Disease	Ophiostoma ulmi	Elms		Х	
Fireblight	Erwinia amylovora	Crabapples; Hawthorne, Ornam. Pear	X		
Leaf Diseases		Crabapples		Х	
Oak Wilt	Ceratocystis fagacearum	Red & White Oaks		Х	
Phytophthora	Phytophthora spp.	Tan oak, Coast live oak, Black oak	X		
Phytophthora	Phytophthora spp.	Crabapples; Hawthorne, Ornam. Pear	X		
Phytophthora Canker	Phytophthora citricola	Avocado	X		
Phytophthora Root Rot	Phytophthora cinnamomi	Avocado	X		
Root and Collar Rot	Phytophthora spp.	Stone Fruits; Cherries, Peaches, Plums	X		
Root Rots	Phytophthora spp.	Cedars, Chamaecyparis, Fir, Hemlock	X		
Stem Cankers	Phytophthora spp.	Ash, Maple, Beech, Birch, Elm, Linden, Oak, Sycamore, Willow	X		
Stem Cankers	Phytophthora spp.	Cedars, Chamaecyparis, Fir, Hemlock, Junipers and Pine spp.	X		
Sudden Oak Death	Phytophthora ramoram	Oak spp.	X		





NUTRITIONAL SUPPLEMENTS

TREETYPE Suggested Supplements	MIN-jet IRON	MICRO-jet MIXABLE	ROOT-jet IRON	PALM-jet
American Hornbeam	X	×	X	
Ash	X	X	X	
Beech	×	X	X	
Birch	×	X	X	
Catalpa	×	X	X	
Cherry	×	X	X	
Chestnut	X	X	X	
Conifer spp.	X	X	X	
Dogwood	×	X	X	
Elm	X	X	X	
Eucalyptus	X	X	Х	
Hackberry	X	X	X	
Hickory	X	X	Х	
Honey Locust	X	X	X	
Hornbeam	X		X	
Horse Chestnut	X	X	X	
Kentucky Coffee Tree	Х	Х	Х	
Linden	×	X	X	
Live Oak	×	X	X	
Magnolia	×	X	X	
Maple	×	X	X	
Oak	×	X	X	
Osage Orange	×	X	X	
Palm spp.	×			X
Poplar	X	Х	X	
Sourwood	X	X	X	
Sweetgum	×	Х	X	
Sycamore	X	X	X	
Walnut	×	Х	X	
Willow	X	X	X	
Yellow Poplar	Х	X	Х	





VASCULAR CHARACTERISTICS & SOLUTION UPTAKE

RING POROUS TREES		DIFFUSE POROUS	STREES	NON-POROUS TREES			
Ash Butternut Catalpa Chestnut Elm Hackberry Hickory Golden Chain Kentucky Coffeetree	Mulberry Osage-Orange Pin Oak Red Oak Sassafras White Oak	American Hornbeam Ash Beech Birch Blackgum Cherry Crab Apple Dogwood Holly Hophornbeam Horse Chestnut Hawthorne	Linden Live Oak Pear Poplar spp. Magnolia Maple Serviceberry Sourwood Sweetgum Sycamore Tulip Poplar Willow Walnut	RESINOUS CONIFERS Pine Spruce Douglas Fir Larch NON-RESINOUS CONIFERS Hemlock Fir Redwood Cedar Yew			

HELPFUL HINTS

- Many factors effect injection uptake time including; soil moisture, temperature, wind, humidity, and plant health.
- Size and type of vascular system also play a key role in uptake speed when other factors are equal.
- Trees are grouped above by vascular system type:
- Ring porous tree types absorb fluids most rapidly
- Diffuse porous tree types are moderate in speed of absorption and translocation
- Non-porous trees will absorb fluids least rapidly
- Non-porous trees which are also "resinous" require slightly different injection techniques

NUTRITIONAL PRODUCTS

		MACRO & MICRO NUTRIENTS %									
ARBORJET NUTRITIONAL PRODUCTS	DESCRIPTION	BORON	CALCIUM	COPPER	IRON	MANGANESE	NITROGEN	PHOSPHORUS	POTASSIUM	SULFUR	ZINC
MIN-jet Iron	Alleviates symptoms of iron or manganese chlorosis. Promotes development & function of roots, stems, foliage	0.10%	-	0.10%	0.75%	0.38%	-	-	-	-	0.20%
PALM-jet	For use on palm and monocots, especially in manganese deficient soils, and where "Frizzle top" is prevalent	0.20%	-	-	2.1%	2.2%	1.0%	-	3.0%	1.5%	-
ROOT-jet Iron	Promotes root growth; recommended for trees suffered root damage from construction, or environmental stresses	-	-	-	2.0%	1.0%	2.0%	4.0%	4.0%	0.8%	-
MICRO-jet Mix- able	Mix w/ Arborjet insect control in one injection to alleviate symptoms of chlorosis, supports root, stem and foliage systems, especially for trees under stress, insect or disease attack	-	4.0%	-	-	-	-	-	-	-	-



EQUIPMENT





TREE I.V. 2-PACK KIT

(070-0010

Our most versatile injection system. For coniferous and hardwood trees. High volume, low pressure, can be used with mixable products. A perfect starter kit.



DELUXE KIT

(070-0035)

For high and low dosage applications in all tree sizes and all tree types. Everything you need for high production use in one box!



TREE LV. PRO KIT

(070-0036)

Designed for high dosage applications in all tree sizes and types. All the components you need for high production, including an extra TREE I.V. and Arborjet bucket instead of a carrying case.



PALM INJECT

(070-0161)

For palm trees. Only one injection site is needed to apply the formulations to each

Introducing Arborjet's Palm Injector Kit!

Designed specifically for palms, this kit can be

Designed specifically for palms, this kit can be added to your TREE I.V. or QUIK-jet device to give maximum flexibility when treating palm trees. The Palm Injector Kit offers two needle choices and the ability to inject directly or remotely with or without and Arborplug.



QUIK-jET KIT

(070-2250)

The QUIK-jet is a cost effective injection tool designed for lower dose applications. It can also be used as a diagnostic tool to assess tree health and vascular activity. The QUIK-jet kit is a good starter kit for someone just getting into trunk injection and a great complementary tool to the Tree I.V.



VIPER HYDRAULIC KIT

(010-1002) Without Dose Sizer (010-1001) With Dose Sizer

For high production programs, government contracts, and agriculture.

For deciduous and ornamental trees.



QUIK-jef PRO KIT

(070-2260)

The QUIK-jet Pro Kit was designed for the tree care professional. Using the same fast and effective QUIK-jet injector device, it also includes a utility belt for ready access to tools, a professional "Doctor's" style carry bag, and all the ancillary tools and accessories for production injection.



ORDERING INFORMATION

Call **781.935.9070** for technical support or visit us online at **arborjet.com** to find a distributor near you.



FORMULATIONS



TREE-äge® insecticide is delivered into the tree's vascular tissue to assure rapid distribution and consistent results. It has been proven in independent studies to be very effective against Emerald Ash Borer. (040-4100) - I liter*

(040-4105) - 1 liter / Case of 8

*I liter treats 33 trees (10" DBH)



NSECTICID

Micro-injectable systemic insecticide for the management of specific insect pests of forests, trees, landscape ornamentals and interior plantscapes.

(040-2003) - I liter*

(040-2004) - I liter case of 8

(040-20096) - I liter round case of 9

(5% Imidacloprid)

*I liter treats 25 trees (10" DBH)



Water Soluble Bio-Insecticide from Neem

A non-oil based water soluble powder bioinsecticide, from the botanical plant Neem, for the management of a wide spectrum of insect pests of trees, shrubs, turf, lawn, garden, vegetables, fruit trees, and a variety of crops. Can be used as a spray, soil drench, tree injection or through chemigation.

(040-5001) - 6 oz Container (8 packets, 0.75 oz each*) (040-5010) - Single Packet (1 packet, 0.75 oz each) *6 oz treats approx. I to 3 acres, 43 trees (IO" DBH) (soil) drench and mixes with 50-150 gallons of water.



Micro-injectable broad spectrum systemic insecticide for the management of specific insect pests of forests, trees, landscape ornamentals and interior plantscapes.

(040-2011) - Box of 20/15gms* (040-2013) - Single Packet/15gms* (97% Acephate)

*I I5gram packet treats I tree (I0" DBH)



All purpose cleaner and lubricant for all Arborjet injection devices; extends the life of the internal device o-rings.

(030-2030) - I liter (030-2034) - I liter case of 12 (0.5% Alkylary Polyalkoxylated Alcohols - Trace Fragrance)



PHOSPHO-JET

Systemic fungicide and plant health response elicitor for the suppression of various plant diseases - for use in spring or fall. (040-3011) - 1 liter* (040-3016) - I liter case of 8 (45.8% Phosphorous Acid)

*I liter treats 50 trees (10" DBH)



Preventative and therapeutic treatment of vascular fungal diseases in trees.

(040-6000) - I quart* (040-6100) - Case of 4 quarts (14.3% Propiconazole)

*I gt treats I0 trees (I0" DBH)

Alamo® is a registered trademark of Syngenta Group Company.



IRON with Manganese

Works for iron chlorosis caused by iron deficiency. A good choice as a general tree nutrition. Trunk injecting minerals makes them immediately available for use by the tree to enhance health, growth, and development.

(030-4010) - I gallon*

(0.75% Fe - 0.38% Mn - 0.2% Zn - 0.10% Cu - 0.10% B)

*I gallon treats 37 trees (10" DBH)



(1.2% N - 2.6% Potassium - 1.5% Sulfur - 2.1% Fe 2.2% Mn - 0.2% Zn - 0.2% B)

Specifically formulated for palm; for Manganese deficiency. PALM-jet supplies balanced micro-elements, particularly Manganese (5,000 ppm) for immediate use where Manganese deficiency (Frizzle top) is predominant.

(030-4030) - I gallon*

*I gallon treats 75 trees (medium size palms) (I0" DBH)



ROOT FT IRON with Manganese

ROOT-jet Iron is formulated to supply Phosphorus, Iron and Manganese, essential minerals for root growth and leaf greening. ROOT-jet Iron helps to promote root growth and is recommended for trees in high pH soils that have chronic symptoms of Chlorosis (leaf yellowing). ROOT-jet Iron helps to acidify calcareous soils. (040-9000) - 2.5 gallons*

(4% Phosphate - 3% Potassium - 2% Fe - 1% Mn)

*2.5 gallons treats 62 trees (10" DBH)