Zylam® Liquid

SYSTEMIC INSECTICIDE

Technical Bulletin

November 2015

Introduction

Zylam® Liquid Systemic Insecticide controls many of the damaging insects on trees and shrubs. It contains the active ingredient dinotefuran, a third generation neonicotinoid insecticide belonging to the IRAC Group 4A. It is the first and only liquid dinotefuran formulation available for the professional landscape market. Use on ornamental plants such as trees, shrubs, vines and flowering plants.

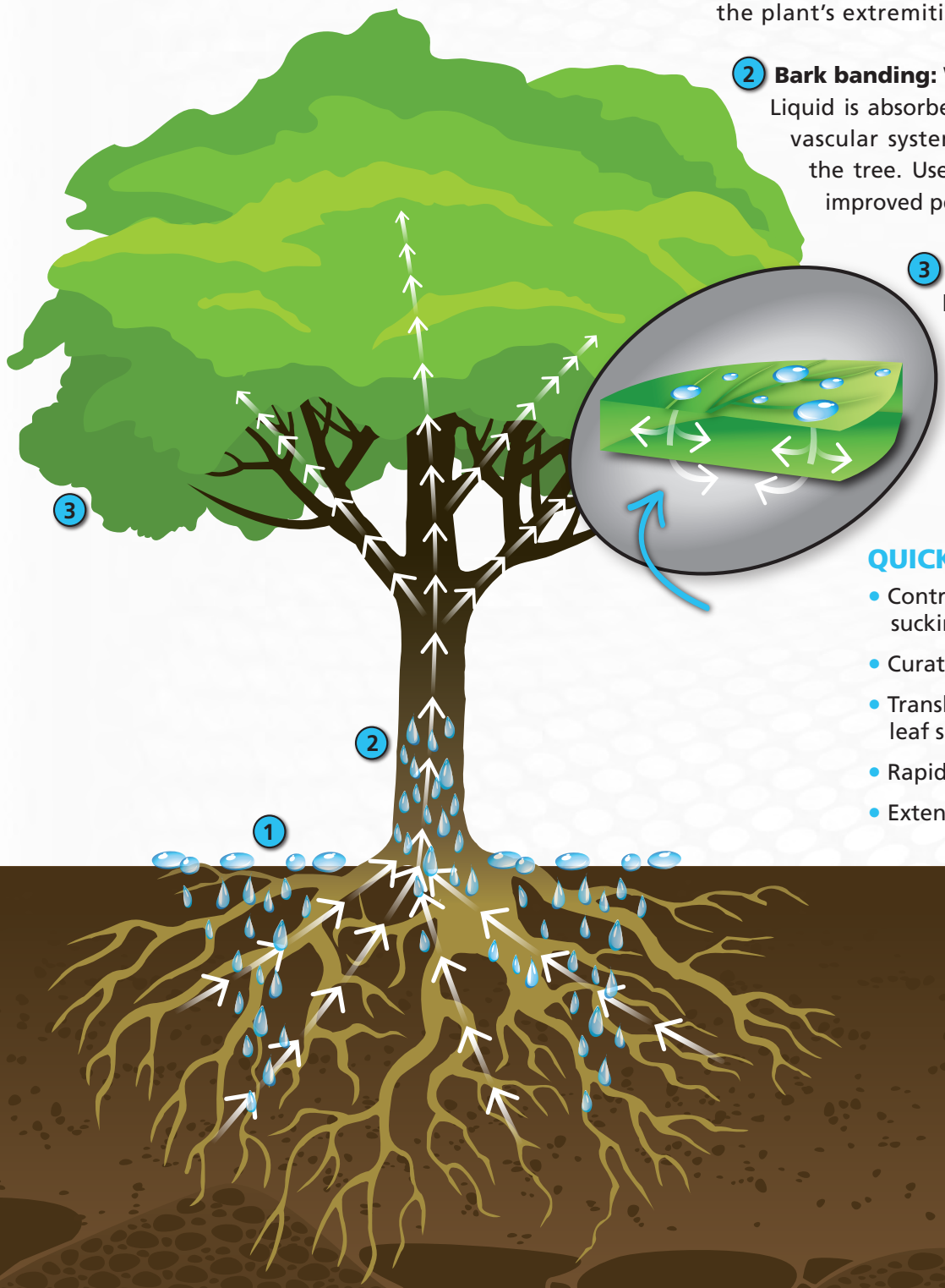
Application Options

High water solubility allows for rapid plant uptake and translocation with movement through root and plant tissue for fast insect control. Various application methods allow for flexibility based on target insects, plant species, and application timing.

1. **Soil drench or injection:** Due to its solubility in soil water, Zylam Liquid can be absorbed quickly into the vascular plant tissue (xylem) working it's way to the plant's extremities.

2. **Bark banding:** When applied on the trunk, Zylam Liquid is absorbed through the bark and into the vascular system, then transported throughout the tree. Use an organosilicone surfactant for improved penetration into the vascular system.

3. **Foliar spray:** Certain insects can be controlled through applications made to leaf surfaces. Thorough coverage is required.



QUICK FACTS:

- Controls listed chewing and sucking insects
- Curative and preventative applications
- Translaminar movement protects all leaf surfaces
- Rapid uptake and translocation
- Extended systemic control

General Information

Zylam Liquid works by targeting the acetylcholine receptors in the nervous system of attacking insects. The soluble properties of dinotefuran promote the movement from the vascular system into the intracellular tissue of the plant. Insects are affected both on contact and through ingestion of treated plants, resulting in the termination of feeding.

SPEED OF ACTIVITY

For applications involving systemic root absorption, insect death can occur in as little as 30 minutes (see chart B). For drench and bark banding applications, insect control may be observed faster than traditional neonicotinoid insecticides (see chart C).

EXTENDED RESIDUAL ACTIVITY

The duration of residual activity is determined by many factors including plant and pest species, application methods, stage of insect growth, and level of population. Soil drench and bark banding applications can provide season-long residual activity on select insects.

USE SITES

Use to protect listed ornamental plants in residential, commercial and industrial areas, golf course landscape areas, parks, athletic fields, and schools.

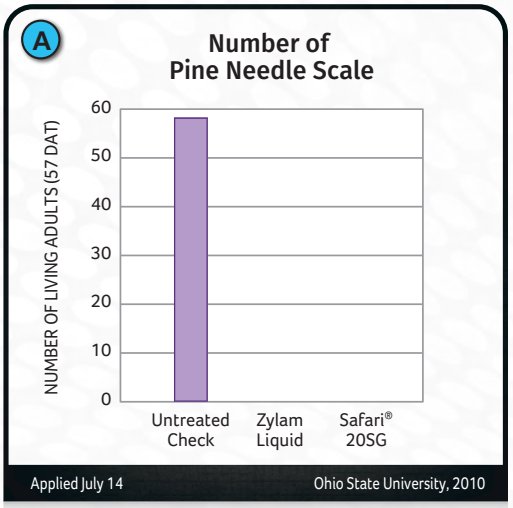
PLANT UPTAKE

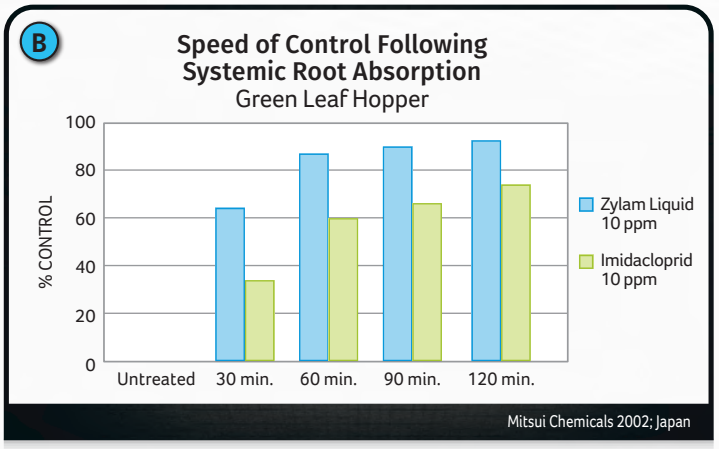
Highly systemic, it moves from the soil to the plant. It translocates within the vascular tissue (xylem) of the plant providing rapid insect control. The product is also translaminar and locally systemic. This means it can be sprayed on the upper surface of a leaf and the active ingredient will move to the underside of the leaf, leaving it fully protected.

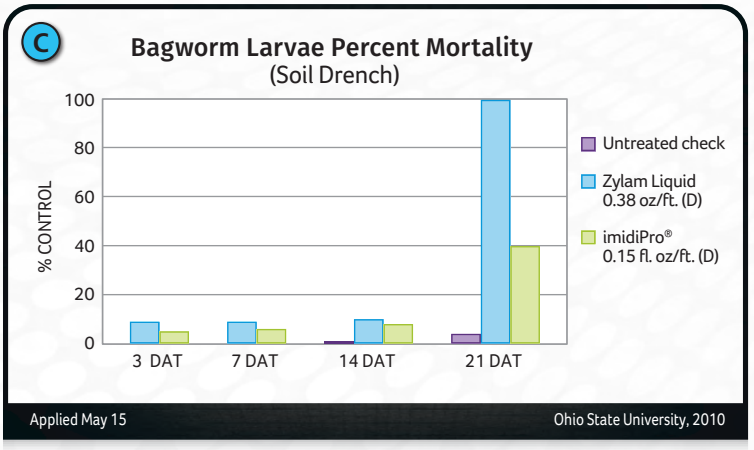
USE SEASON

- Use curatively when insect populations have reached a threshold level.
- Use preventatively for control of target insects before damage occurs.
- Please contact your state or county extension agent or certified advisor for specific timing.

Performance Data







Dinotefuran

ENVIRONMENTAL FATE/EFFECTS

Dinotefuran is stable in water at a range of pH 4 to 9 and has a half-life of 82 to 138 days. It is considered to be highly mobile (water solubility (20°C) 39,830) in various soil types (KOC - 6-45 mL/gm).

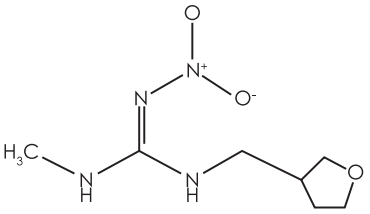
MAMMALIAN TOXICITY

Hazard Indicator	Zylam Liquid
Acute oral LD_{50}	>5000 mg/kg
Acute dermal LD_{50}	>5050 mg/kg
Acute inhalation LC_{50}	>5.25 mg/L
Eye irritation	Non-irritating
Skin irritation	Non-irritating
Skin sensitization	Not sensitizing

ENVIRONMENTAL SAFETY

Hazard Indicator	Zylam Liquid
Freshwater fish	LC_{50}: >1000 ppm/96 hr.
Freshwater invertebrate	EC_{50}: 1231ppm/48 hr.
Marine invertebrate	ErC_{50}: >103 ppm/0-72 hr.

PHYSICAL AND CHEMICAL PROPERTIES

Common name:	Dinotefuran
Chemical name:	Dinotefuran *(RS)*-1-methyl-2-nitro-3-(tetrahydro-3-furylmethyl) guanidine
Chemical formula:	
CAS number:	165252-70-0
Molecular weight:	202.21
Melting point/range:	107.5°C
pH:	7.6
Density:	31.2 - 43.7 pounds/cubic foot
Water solubility (20°C):	39,830 ppm
pK_a at 20°C:	12.6
Vapor pressure:	1.7x10-6 @ 30°C for Dinotefuran
Soil half life:	82 - 138 days
KOC – organic-carbon sorption constant (ml g^{-1}):	<46

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