Zylam® 20SG

SYSTEMIC TURF INSECTICIDE

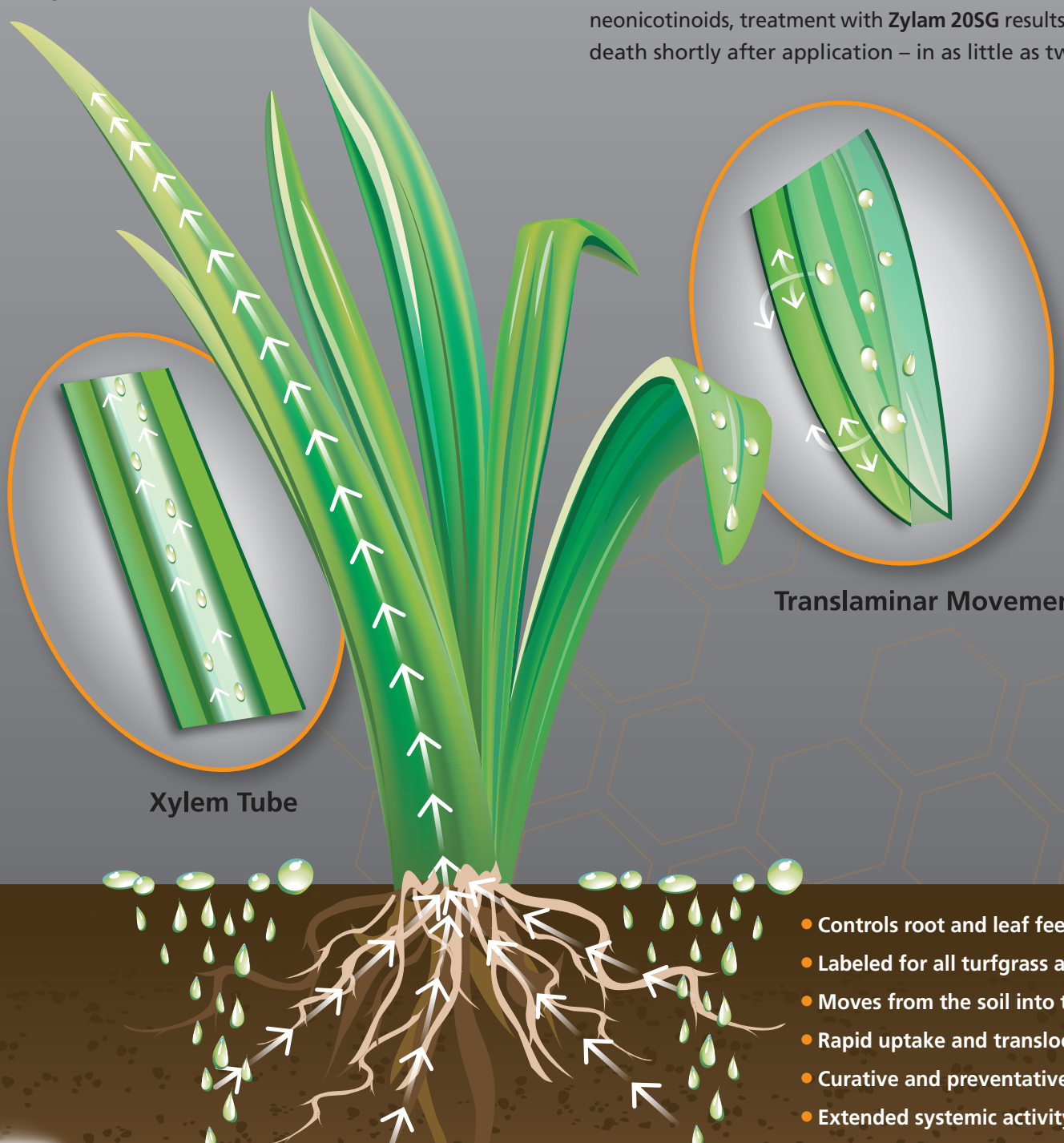
Technical Bulletin

pbigordon.com/zylam20sg

Introduction

Zylam® 20SG Systemic Turf Insecticide controls many of the damaging insect pests found in turf. It contains the active ingredient dinotefuran; a third generation neonicotinoid insecticide belonging to the chemical Group 4A. **Rapid plant uptake and translocation is a key feature of Zylam 20SG.** Enhanced translaminar movement through leaf tissue and quick root uptake and translocation through the xylem provide fast and efficient protection to turfgrasses.

Insects are affected both on contact and through ingestion of treated plants, resulting in the termination of feeding. **Zylam 20SG** targets acetylcholine receptors in the nervous system of attacking insects. It has been suggested that dinotefuran acts on a different binding site[1], than other neonicotinoids, possibly accounting for **Zylam 20SG's** capability to impact resistant chinch bugs, and other damaging turf insects, such as mole crickets, annual bluegrass weevil and crane flies. Also, unlike other neonicotinoids, treatment with **Zylam 20SG** results in insect death shortly after application – in as little as two days.



- Controls root and leaf feeding insects
- Labeled for all turfgrass areas
- Moves from the soil into the plant
- Rapid uptake and translocation
- Curative and preventative applications
- Extended systemic activity
- Designed for tough turfgrass insects
- One 2.7 lb. container treats 1-acre
- Low-odor formula

Zylam™ 20SG
SYSTEMIC TURF INSECTICIDE

Highly systemic, **Zylam 20SG** also provides residual activity. In studies, mole cricket efficacy was observed out to 70 days. **Zylam 20SG** will also provide a level of protection from heavy grub infestations.

The toxicological profile of **Zylam 20SG** is very favorable, with low toxicity to mammals, birds and aquatic organisms. Treatment impact on beneficial insect populations is also low, limiting pest resurgence from target and secondary pests.

Zylam 20SG is formulated as a water dispersible granule. These granules are dust-free and mix completely in water, providing an end-use spray solution that is colorless and extremely low odor.

Extensively tested at universities across the United States, **Zylam 20SG** brings a reliable solution to turf managers battling damaging surface and subsurface feeding turf insect pests.

[1] Wakita Takeo, et al "Development Of A Novel Insecticide, Dinotefuran" J. Pestic. Sci, 30(2) 122-123 (2005)

MODE OF ACTION

Zylam 20SG moves from the soil to the plant. It translocates quickly within the vascular tissue (xylem) of turfgrass providing rapid insect control. The product is also translaminar, allowing it to be sprayed on the upper surfaces of a turfgrass blade and moving to the underside.

USE SITES

For use on all turfgrass areas including residential, commercial and recreational such as golf courses (including) greens, home lawns, apartment and condo complexes, parks, athletic fields, office complexes, hotels and sod farms.

USE SEASON

Zylam 20SG can be used curatively whenever insect population has reached a threshold level deemed necessary to control target insects. Use it preventatively for control of target insects before damage occurs. Please contact your state or count extension agent or certified advisor for specific timing.


Mole Cricket

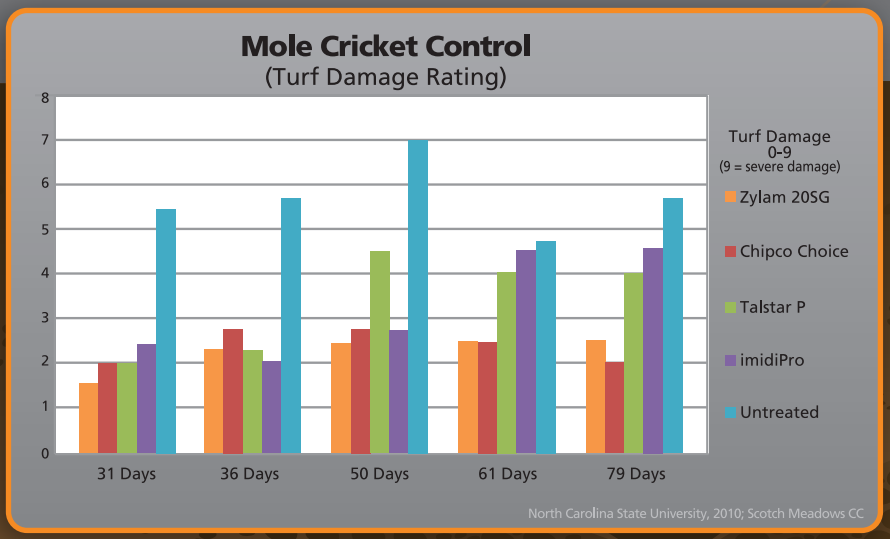
Annual Bluegrass Weevil

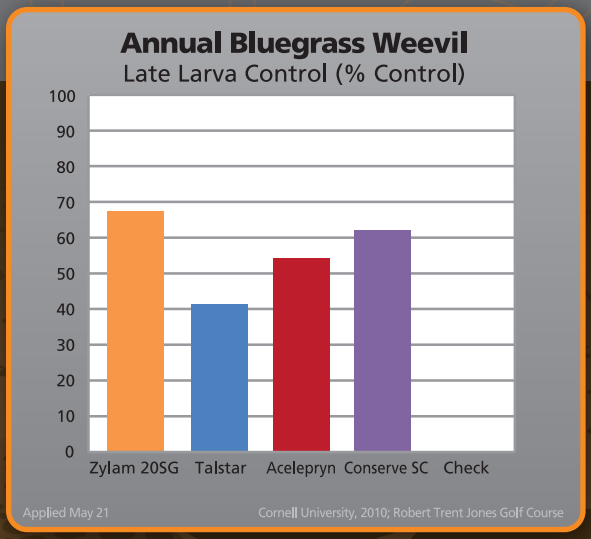

Chinch Bug

Crane Fly


Cutworm

Efficacy Data

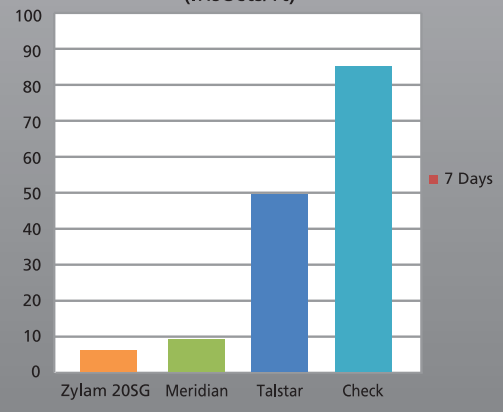




Insects Controlled

Crop	Pest	Product Rate	Remarks
Turfgrasses Residential Recreational Commercial	**Annual Bluegrass Weevil** **Billbug**	2.7 lb. per acre or 1 oz. per 1000 sq. ft.	For optimum control of annual bluegrass weevil and billbugs, make application prior to or during egg hatch of the target pest or apply at first appearance of young larvae.
	Chinch Bug	2.7 lb. per acre or 1 oz. per 1000 sq. ft.	Make application prior to hatching of the first sign of instar nymphs or when turf damage first appears.
	Crane Fly, European	2.7 lb. per acre or 1 oz. per 1000 sq. ft.	Spring applications as a curative control when larvae are mature, but prior to pupation, generally in March and April. For Fall applications, apply soon after egg hatch.
	Cutworms **Sod Webworm**	2.7 lb. per acre or 1 oz. per 1000 sq. ft.	Apply at first appearance while pests are small.
	Mole Cricket Southern mole cricket Tawny mole cricket	2.7 lb. per acre or 1 oz. per 1000 sq. ft.	Make application prior to or during the peak egg hatch period. When adults or large nymphs are present and actively tunneling, tank mixing with a curative insecticide may be necessary.
	Grub Larvae [suppression] such as: Asiatic garden beetle Black Turfgrass ataenius European chafer Green June beetle Japanese beetle May/June beetle Northern masked chafer Oriental beetle Southern masked chafer	2.7 lb. per acre or 1 oz. per 1000 sq. ft.	For optimum activity on grubs: make application prior to or during egg hatch of the target pest.

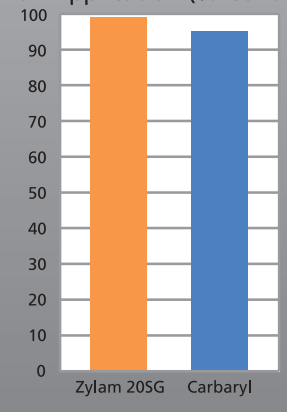
Pyrethroid Resistant Chinch Bug
(Insects/ft)



Applied August 30

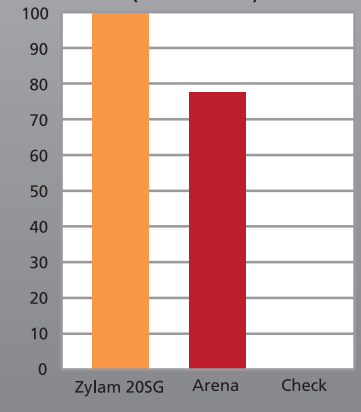
W.C. Mixson & Associates Inc., 2010, Apopka, FL

Crane Fly Larva
Fall Application (% Control)



Cornell University, 2008; Niagra County Golf Course

Cutworm/Sod Webworm
(% Control)



Ohio State University, 2010

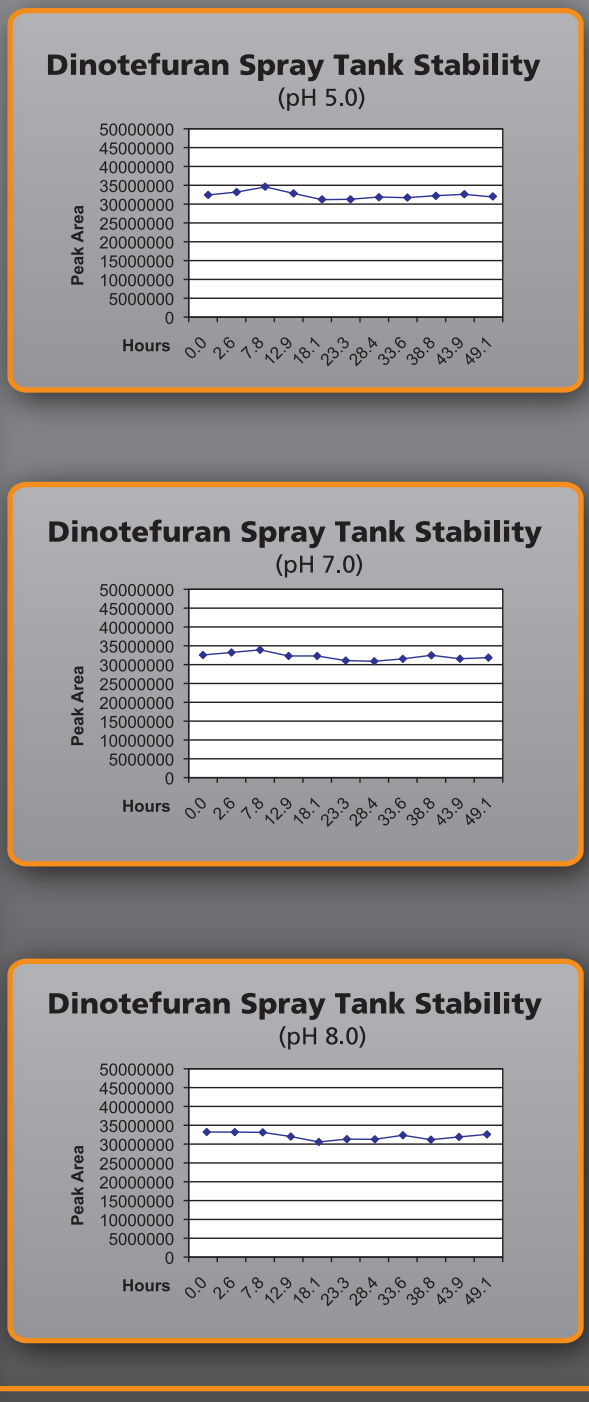
Dinotefuran

ENVIRONMENTAL FATE/EFFECTS

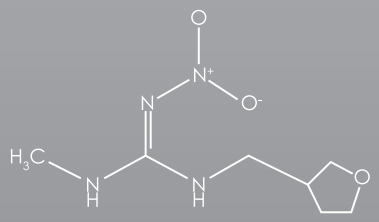
Dinotefuran is stable in water at a range of pH 4 to 9 and has a half-life of 82 to 138 days. It is considered to be highly mobile (water solubility (20°C) 39,830) in various soil types (KOC - 6-45 mL/gm).

STABILITY

No chemical stability issues when used in a typical spray tank at pH ranges 5.0 - 8.0.



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

MAMMALIAN TOXICITY

Hazard Indicator	Dinotefuran Technical
Acute oral LD^{50}	>2000 mg/kg
Acute dermal LD^{50}	>2000 mg/kg
Acute inhalation LC^{50}	>2.943 mg/L
Eye irritation	Mild irritant
Skin irritation	Mild irritant
Skin sensitization	Not sensitizing

ENVIRONMENTAL SAFETY

Hazard Indicator	Dinotefuran Technical
Freshwater fish	LC_{50}: >100 ppm/96 hr
Freshwater invertebrate	EC_{50}: 199 ppm/48 hr
Marine invertebrate	ErC_{50}: >100 ppm/0-72 hr

pbi / GORDON CORPORATION

An Employee-Owned Company

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