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Insecticidal Properties

Product information,
Integrated Pest Management Programme
& Test Data

Dollar Spot IPM Outline

1. CIVITAS Overview

- What is CIVITAS
- Product Information
- Where to Use
- How to Use
- Compatibility

2. CIVITAS IPM Outline

3. APPENDIX

- Test Data
- CIVITAS Efficacy and Trial Photos



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What is CIVITAS?

CIVITAS is the first commercially available fungicide for the golf industry that has been developed utilizing a unique mode of action called **Induced Systemic Resistance (ISR)**. It is a 'plant defense activator' that turns on the natural defenses of the plant to fight off fungus and reduces the need for traditional, toxic chemicals.

For more information, visit www.civitasturf.com



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General Product Information

- **Chemical class:** synthetic isoparaffins
- **Mode of Action:** ISR (Induced systemic resistance). Induce plant natural defense system against diseases
- **Mobility:** systemic, topical
- **Risk of resistance:** low
- **Signal word:** Caution
- **FRAC group:** not listed
- **REI:** When spray has dried.
- **PPE:** long sleeved shirt and long pants/chemical-resistant gloves/shoes plus socks
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- **EPA Reg. No:** 69526-13



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Where to use CIVITAS

Grass Types	Diseases	Insects
Ryegrass	Dollar spot	Sod webworm
Bentgrass	Brown patch	Annual bluegrass weevils
Poa	Anthracnose	Banks grass mites
Bluegrass	Spring leaf spot	Mealybugs
	Grey leaf spot	Mites
	Fusarium patch	Cutworm
	Powdery mildew	Fall armyworm
	Grey snow mold	
	Pink snow mold	



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How to use CIVITAS

1. CIVITAS can be used alone or with other Fungicides in your current IPM program to enhance turf quality.

- See the APPENDIX for data demonstrating various application frequency and volume combinations

2. Use CIVITAS for Preventative and Curative Purposes

- **Preventative** applications for **low** to moderate disease pressure (early and late season)
 - Typical Rate: Apply CIVITAS alone at 14.5 oz/1000 sq.ft* in 1 to 2 gallons of water/1000 sq.ft
 - **Curative** application at **high** disease pressure by tank mixing with half rate of fungicides:
 - For Example:
 - Typical Rate: 14.5 oz/1000 sq.ft* Civitas + 0.5oz/1000 sq.ft propiconazole in 1 to 2 gallons of water/1000 sq.ft for the control of Dollar Spots
 - Typical Rate: 8 oz/1000 sq.ft* Civitas + 2 oz/1000 sq. ft of thiophanate methyl with 1 to 1 gallons of water/1000 sq. ft for the congrol of Grey Leaf Spots
- *NB. CIVITAS application rates do not include Harmonizer. This is added at a 16:1 ratio (Civitas:Harmonizer).

3. CIVITAS application rate, frequency and nomenclature












- FULL application of CIVITAS is 14.5oz/1000sq ft
- HALF application of CIVITAS is 8 oz/1000sq ft
- IPM frequencies tested are: 7, 14, 21 and 28 days*. (d=days)
- Frequency dependent on disease pressure and tank mix partner
- **Do not exceed maximum Chlorothalonil amounts indicated in IPM Program
- Patent Pending Tank Mix



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Tested CIVITAS Compatibility Bentgrass, POA and Ryegrass

<u>Active Ingredient</u>	<u>Compatible</u> (Bentgrass, Poa)	<u>Incompatible</u> (Ryegrass)	
Strobilurin, Fluoxastobin			
Thiophanate methyl			
Phosphite			
Chlorothalonil		X*	* On Ryegrass, the tank mix of CIVITAS and Chlorothalonil produced phytotoxicity during periods of high temperature.
Iprodione			
Boscalid			
Propiconazole			
Quintozene/PCNB		X	
Bacillus licheniformis			
Polyoxin D zinc salt (1:1)			
<u>Fertilizer Foliar</u>			
<u>Growth Regulator</u> TRINEXAPAC-ETHYL			



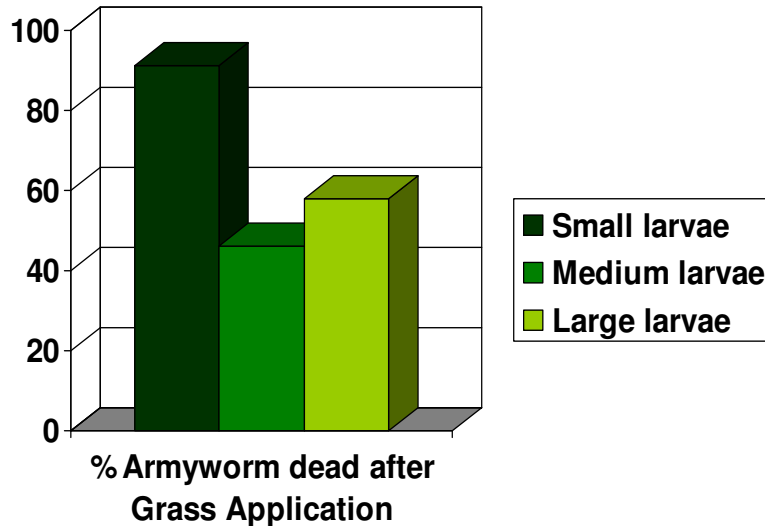
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Bermuda Grass* & Fall Armyworms

CIVITAS significantly decreases Armyworm pressure
on Bermuda Grass

*After just one application of CIVITAS, 94% of small
larvae were knocked down***



Why is this important?

1. CIVITAS helps plants fight off insects in addition to disease control.
2. This data provides peace of mind for golf course superintendents and golf course users that CIVITAS works to help promote turf health.

Notes:

Test conducted at the University of Florida by Dr. Ron Cherry, 2007 & 2009

CIVITAS was applied at 17oz/1000 sq ft.

* CIVITAS is recommended for cool grass application. Warm grass and transition zone trials are underway. Bermuda efficacy shown for illustration purposes only.

** Tested by Dr. Ron Cherry at the University of Florida in 2007.



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Insecticidal Properties – Bluegrass Weevil

- Bluegrass weevil are Beneficial in small numbers, but in large numbers, they kill the grass
- Ideal situation is to have a product that knocks down the weevil population to acceptable levels

BLUEGRASS WEEVIL	% Reduction
Civitas Alone (10 gal/A)	35
Tank Mix with Merit (0.01 ai/A)	88

Note:

Test conducted at Rutgers University by Dr. Albrecht Koppenhöfer

Insecticidal Properties – Cutworm

CIVITAS controls cutworms after only two applications

CUTWORM	2 Applications of 10 gal/acre
% Mortality	~ 90

Note:

Test conducted at the University of Florida by Dr Ron Cherry



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