



THE Thinking Super's SOLUTION

- BASF Fungicides

 **BASF**

The Chemical Company

A Better Standard For Dollar Spot Control

CADENCE® fungicide works differently than anything else you've seen used to control dollar spot; it is a different class of fungicide for dollar spot control. **CADENCE** can effectively control dollar spot that has developed resistance to other fungicides.



When used as directed, **CADENCE**:

- Provides unprecedented dollar spot control when used preventatively (CADENCE First™).
- Reduces Active Ingredient Load
 - Only 2.24 - 2.8 g a.i. / 100 m² for IPM
- Provides strong residual control.
 - Controls dollar spot for 14-21 days with a single application
- Gives superintendents a true resistance-management tool.

Where To Use CADENCE

Research shows that **CADENCE** provides excellent dollar spot control in most major turf species, including:

- Creeping Bentgrass
- Kentucky Bluegrass
- Annual Bluegrass
- Rough Bluegrass
- Annual Ryegrass
- Perennial Ryegrass
- Tall Fescue

“CADENCE First, CADENCE Last” ... For Results That Last:

- Apply as early preventative in the spring after the 2nd or 3rd true fairway grass mowing.
- Apply as late fall clean-up in September through mid-October.
- Shorten spray intervals during peak disease periods.

Preventative dollar spot control with CADENCE is far better than curative control:

- Less fungicide is needed to provide preventative control than curative control.
- A preventative application will provide better residual control than curative applications.
- Early spring applications, two weeks before dollar spot initiates, results in fewer problems during spring.
- Late fall applications provide a clean turf going into winter (reducing inoculum that over-winters) and delays spring dollar spot problems.



Technical Brief

Description: CADENCE® is a unique chemistry for control of dollar spot in golf course turfgrass.

Keys to Success:

- Preventative applications are most effective to achieve greatest benefits of residual control.
- Alternate INSIGNIA fungicide + CADENCE or PREMIS 200F fungicide + CADENCE for extended broad-spectrum disease control in dollar spot-susceptible turfgrass.

Rates: 3.2 - 4.0 g/100 sq. m. in 5-15 L water per 100 sq. m (500-1500 L per hectare)

- Low active ingredient rate for IPM:
- 2.24 - 2.8 g of AI /100m² **Mode of Action:** Inhibits respiration within the fungal cell. Is at a different site than the strobilurin fungicide chemistries.

Behavior in Plants: Upward systemic and limited translaminar movement.

Control Symptoms: Provides rapid cessation of mycelial growth. Blocks further development of fungal growth at all stages. Healing of turfgrass lesions can be seen within 3+ days.

Formulation: 70% WG (Water Dispersible Granule)

Packaging: 3 x .162 kg package

- Convenient packaging for ease of use. No measuring, no jugs to store or dispose of.
- 1 envelope treats 1 acre.
- 1 case contains 3 envelopes.

Active Ingredient: Boscalid

Chemical Family: Anilide (Carboxamide)

Signal Word: WARNING

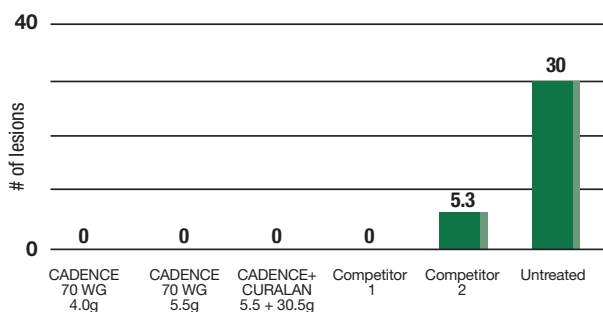
REI: When spray has dried.

PPE: Long-sleeved shirt and long pants / Protective eyewear / Chemical-resistant gloves / Shoes and socks

Research Brief

Partial data shown.

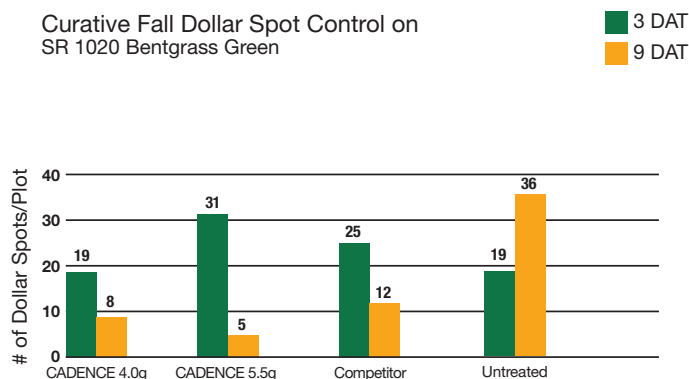
Dollar Spot Control on Creeping Bentgrass Fairway



Bruce Clarke, Rutgers University, 2004. Variety: Crenshaw. Application interval; 14, 21 & 28 days. Application dates: June 1 (all), June 15 (14-day), June 22 (21-day), June 29 (14 & 28-day), July 13 (14 & 21-day), July 27 (14 & 28-day), August 3 (21-day), August 10 (14-day), August 24 (14, 21 & 28-day), September 7 (14-day), Spray volume per 100m2 is 8.2 liters

U.S. trials conducted using EMERALD fungicide.

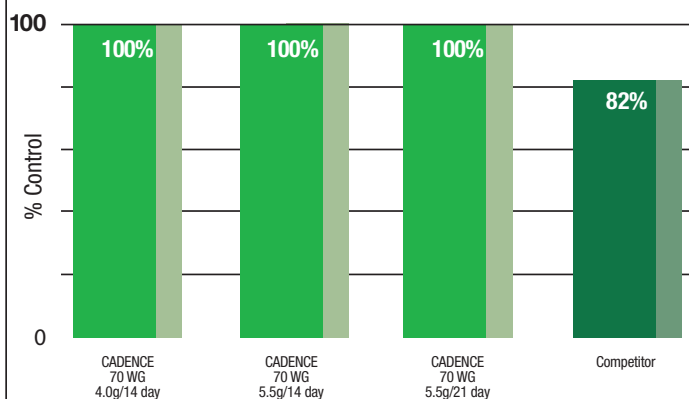
Curative Fall Dollar Spot Control on SR 1020 Bentgrass Green



Cooperator: Dr. Nathan Walker, Oklahoma State University, Stillwater. Applications: Initiated Fall 2005 with average 16-29 spots per plot; 14-day curative interval. Data shown greatest pressure in one-month period.

U.S. trials conducted using EMERALD fungicide.

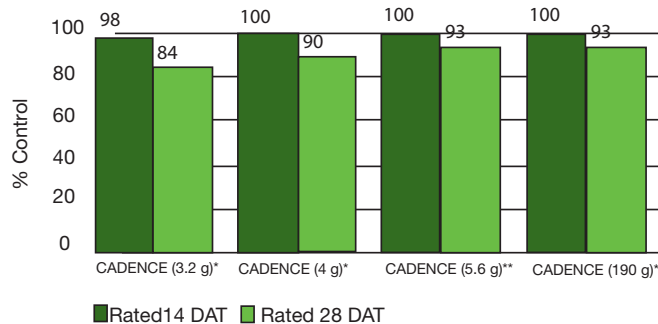
Dollar Spot Control on a Creeping Bentgrass Green



Dr. Bruce Clarke, Rutgers University, 2004. Variety: Crenshaw. Application interval: 14 & 21 days. Application dates: Initiated June 1. Spray volume .

U.S. trials conducted using EMERALD fungicide.

Dollar Spot Control (BASF Ontario 2002)



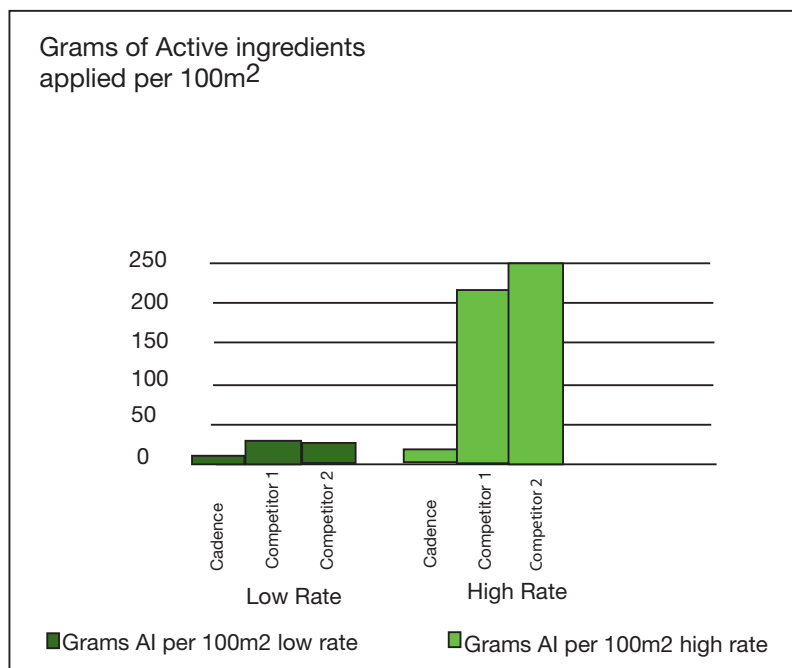
Precautions:

- Nine meter buffer to water.
- Do not apply more than 2 sequential Applications.
- No cross-resistance to other fungicides.

Partial data shown.

Always read and follow label directions.

Application Brief



Low rates of Active Ingredient

CADENCE fungicide delivers very effective, long lasting control of dollar spot, while using low rates of active ingredient. A perfect fit for an Integrated Pest Management (IPM) program or for anyone whose aim is to be as efficient as possible with total pesticide use.

The Best DMI in Town

PREMIS®200F fungicide delivers exceptional value for controlling a broad spectrum of diseases, even during the summer stress period. Plus, it's the ideal tank-mix or rotation partner for **INSIGNIA® fungicide** to control your most troublesome turf problems.



When used as directed, PREMIS:

- Controls a broad spectrum of diseases including anthracnose, brown patch and dollar spot.
- Can be used whenever you need it, even during summer stress periods that limit other DMI fungicides.
- Allows your turf to grow, improving overall turf quality.

Diseases Controlled

PREMIS offers excellent control of key diseases including:

- Anthracnose
- Fusarium Patch
- Pink Snow Mould
- Brown Patch
- Gray Snow Mould
- Dollar Spot

Where to Use PREMIS

PREMIS is recommended for the following turfgrass species:

- Bentgrass
- Poa Annua
- Kentucky Bluegrass
- Fine Fescue
- Tall Fescue
- Perennial Ryegrass



PREMIS provides excellent control of dollar spot on a bentgrass fairway. PREMIS at 16 mL/100m² on a 14-day interval vs. untreated check (on right).

Always read and follow label directions.

<http://betterturf.basf.us/reference/library/turf-product-portfolio/fungicides-section.pdf>

Technical Brief

Description: PREMIS fungicide is a DMI fungicide that can be used throughout the year, including the summer months, offering broad-spectrum control of the most prevalent turfgrass diseases.

Keys to Success: Apply preventively or early curative for most effective control.

Rates: 16-32 ml per 100 m² in 2L of water

Behavior in Plants: Absorbed by leaf, crown and roots; acropetal penetrant; provides both contact and upwardly systemic activity.

Mode of Action: Disrupts cell membrane function in the sterol biosynthesis pathway (DMI or SI).

Control Symptoms: PREMIS is highly rainfast and is quickly absorbed by leaves, crown and roots of treated turfgrass. Fungal activity ceases within one to two days when applied as a curative application.

Tank-Mixes: For improved control on certain diseases, tank-mix with **INSIGNIA** or **CADENCE**[®] fungicide.

Formulation: 200 grams per litre Suspension Concentrate

Packaging: 2 x 3.2 litres

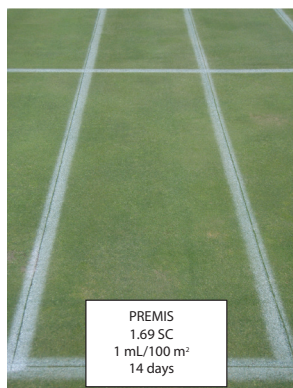
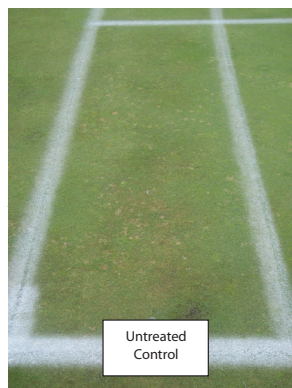
Active Ingredient: Triticonazole

Chemical Family: Triazole (also known as a DMI demethylation-inhibiting / SI sterol-inhibiting fungicide)

Signal Word: CAUTION

REI: When sprays have dried.

PPE: Long-sleeved shirt and long pants / Chemical-resistant gloves of a waterproof material / Shoes and socks



PREMIS is highly effective on anthracnose as seen in the pictures to the left. Applications were made on a 14-day interval to a *Poa annua* putting green at a rate of 16 ml/100 sq.m.

Technical Brief

How To Get The Most Out Of Your Application

In order to maximize disease control during the summer, when turf can be stressed from heat, drought or excessive moisture, the following is recommended:

- On turf that is primarily *Poa annua*, use a maximum of 16 ml/100m². This includes soil-based greens, tees and fairways.
- Bentgrass turf (greens, tees and fairways) and sand-based greens (bentgrass or *Poa annua*) have shown excellent tolerance to **PREMIS** applications.
- Applications made to *Poa annua* treated with a growth regulator (i.e. Primo[®]) may result in overregulation, discoloration and possible thinning, when high rates of the growth regulator are being used.
 - Reducing growth regulator rates or eliminating an application is suggested when **PREMIS** is being used.
- Tank-mixing of **PREMIS** with a growth regulator is not suggested on *Poa annua* turf. For best results, separate these applications.
- Allow 28 days between **PREMIS** applications on *Poa annua*.

Application Brief

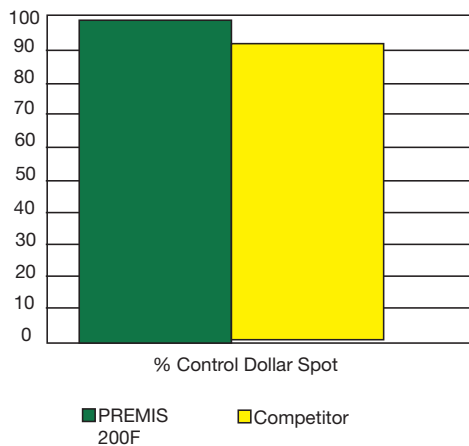
Preventative, Rotational and Tank-Mix Applications

In the spring of the year, diseases like anthracnose, summer patch and take-all patch need to receive preventative applications to keep them from causing problems during the stressful summer months. **PREMIS** has been found to be highly effective on anthracnose and can provide solid brown patch control when applied prior to the onset of disease. **PREMIS** can also be used as a rotational product for the control of dollar spot and, as part of a tank mix, can provide top-notch control of snow mould when applied in the fall.

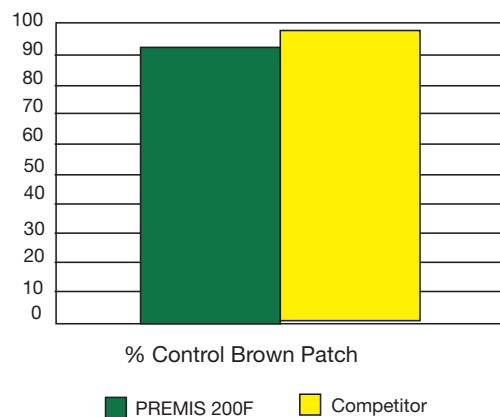
- **Anthracnose:** Should be applied in late spring prior to the onset of hot, humid weather as a preventative for this disease. Additional summer applications can be made as required, even as an early curative treatment. An application rate of 32 ml/100 m². has been found to be very effective.
- **Brown Patch:** Apply prior to the onset of conditions favorable for disease at 16 ml/100 sq.m. Rotate with other effective brown patch products.
- **Dollar Spot:** Apply in spring at 16 ml/100m². and rotate with other mode-of-action products.
- **Snow Mould:** Apply **PREMIS** at 16 ml/100m². as a tank mix in the fall with **INSIGNIA** (28 g/100 m²). Apply in October or early-November immediately before permanent snow cover.

Research Brief

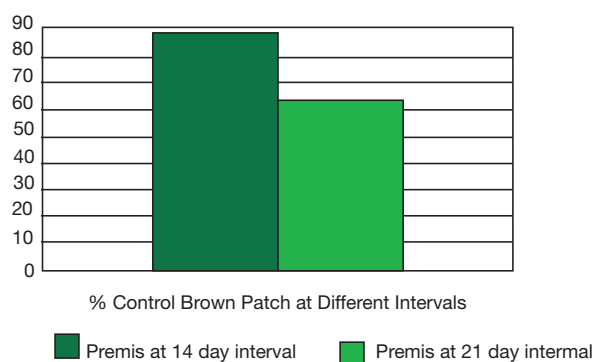
Dollar Spot
BASF and independent research (n=6)



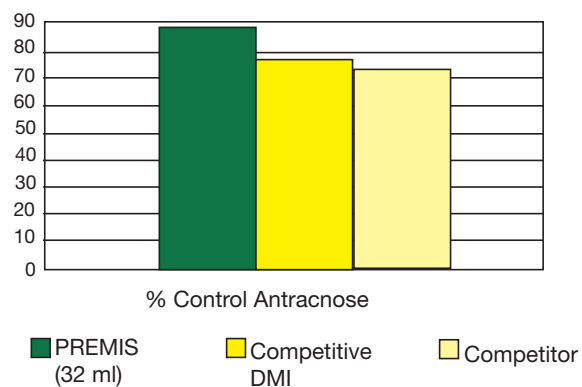
Brown Patch
BASF and independent research (n=6)



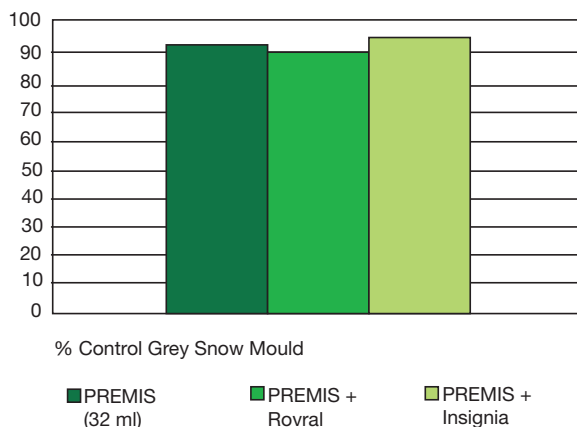
Brown Patch
BASF and independent research (n=3)



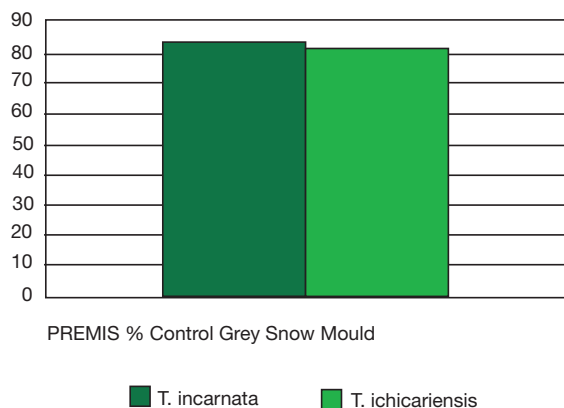
Anthrachnose
BASF and independent research (n=3)



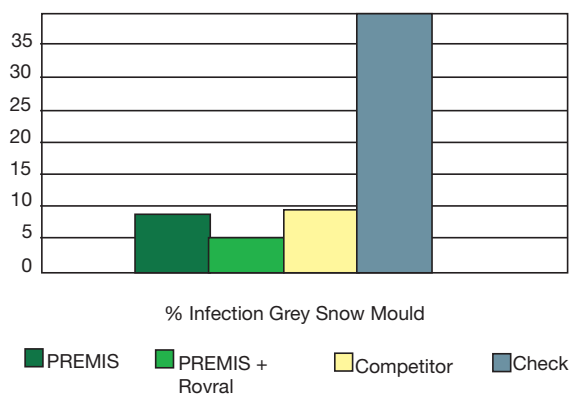
Grey Snow Mould
Vaughan research, Cambridge ON (2007)



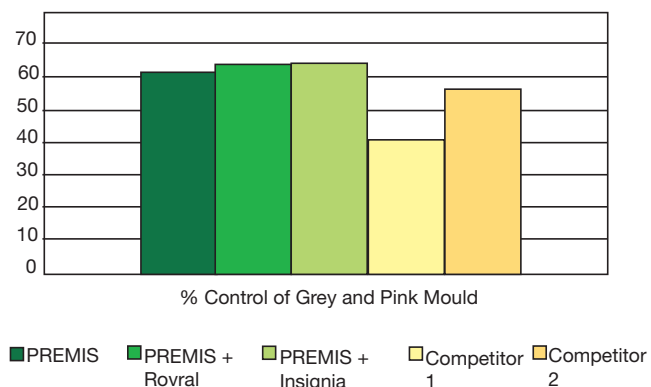
Grey Snow Mould
Guelph Turfgrass Institute ON (2007)



Grey Snow Mould
BASF and independent research (n=5)



Pink and Grey Snow Mould
Olds College AB (2007)



A **Better** Foundation For **Reliable** Disease Control

INSIGNIA® fungicide controls an exceptionally broad spectrum of turf diseases, with long-term results. In fact, **INSIGNIA** has shown excellent residual control on many turf diseases, reducing your labor and materials costs and enhancing your peace of mind.



When used as directed, **INSIGNIA**:

- Controls key turf diseases for up to 28 days
- Reduces active ingredient load
 - Low active ingredient rate per 100m²
- Is rainfast within one hour.

Diseases Controlled

INSIGNIA controls key diseases up to 28 days, reducing labor and materials costs. The broad spectrum of turf diseases **INSIGNIA** controls includes:

- Anthracnose
- Dollar Spot
- Pythium Blight
- Brown Patch
- Fusarium Patch (Microdochium Patch)
- Gray Leaf Spot
- Rust
- Gray Snow Mold
- Leaf Spot
- Take-All Patch
- Pink Snow Mold

Research Brief

Description: INSIGNIA[®] fungicide is a broad-spectrum fungicide for control of many diseases on golf course turfgrasses.

Keys to Success:

- Preventative or early applications. Sufficient coverage of 40-120 L / 1000 m² (400-1200L/hectare) spray volume recommended.
- Follow proposed resistance management guidelines for no more than two consecutive **Insignia** applications to diseases such as pythium blight and gray leaf spot; then rotate to a nonstrobilurin-based fungicide.
- Do not exceed (6) six applications per season.
- Then alternate to an effective non-strobilurin fungicide with a different mode of action for at least two (2) applications.
- Do not make more than three (3) consecutive applications of INSIGNIA EG FUNGICIDE for all other diseases.

Formulation: 20% WG (Water Dispersible Granule)

Packaging: 4 x 1.08 kg

Active Ingredient: Pyraclostrobin

Chemical Family: Strobilurin

Mode of Action: Affects the Q_oI site in fungal cell mitochondria, inhibiting electron transport and respiration, resulting in cessation of fungal growth.

Rates: 8.5 to 28 g / 100m²

Control Symptoms: Primarily a protectant fungicide with locally systemic activity in the plant. Insignia penetrates the leaf tissue within minutes and prevents spore germination, germ tube elongation, and mycelium growth is stopped.

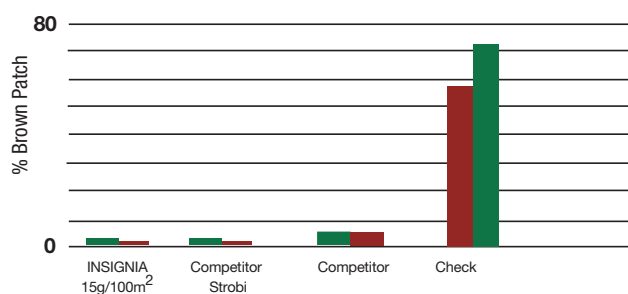
Signal Word: CAUTION

REI: When spray has dried.

PPE: Long-sleeved shirt and long pants / Chemical-resistant gloves of a waterproof material / Shoes and socks

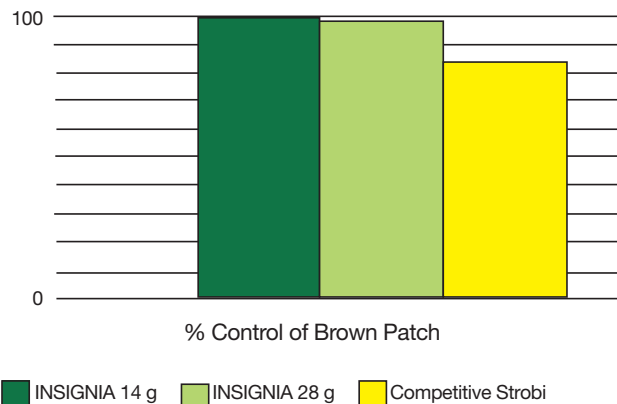
Research Brief

Control of Brown Patch on a Colonial
Bentgrass Putting Green

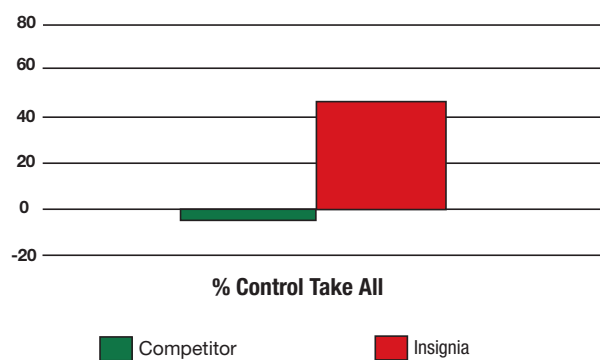


Dr. Bruce Clarke, Rutgers, 2007
All treatments were applied on a 14-day interval beginning on June 5 and ending on August 14.
Ratings taken on June 30 (green) and August 3 (red)

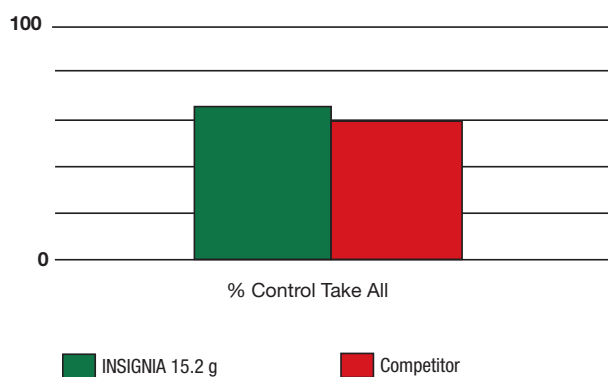
Brown Patch
BASF and Independent Research (n=8)



Take All
BASF and Independent Research (n=5)

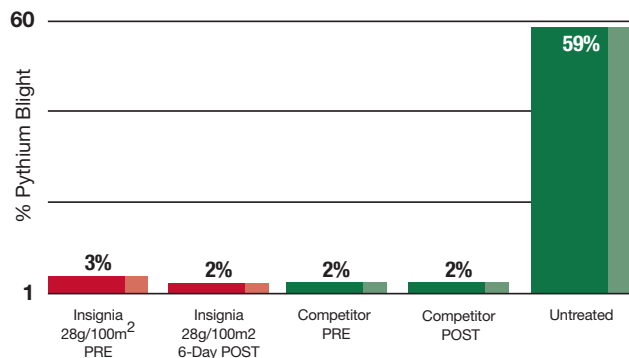


Take All
BASF and Independent Research (n=5)



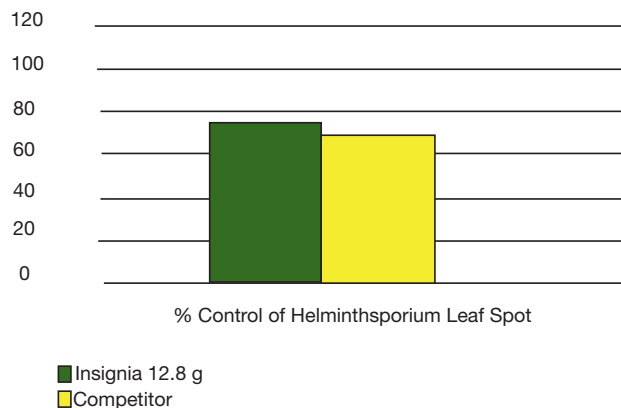
Research Brief

Pre- and Post-Infection Control of Pythium Blight on Tall Fescue

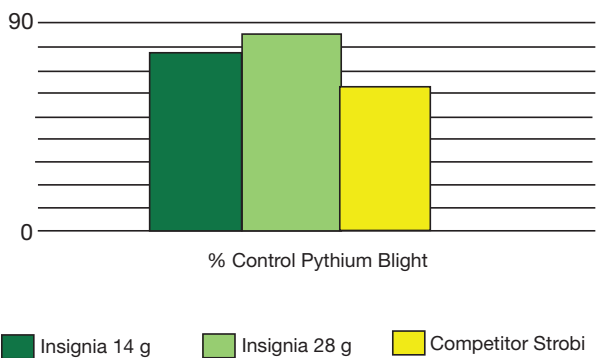


Cooperator: Dr. Lee Burpee, University of Georgia, Griffin.
Applications: Initiated 2004; Three applications 14-day interval.

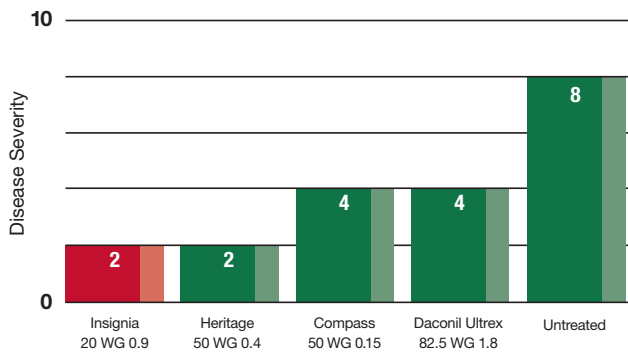
Leaf Spot



Pythium Blight BASF and Independent Research (n=6)



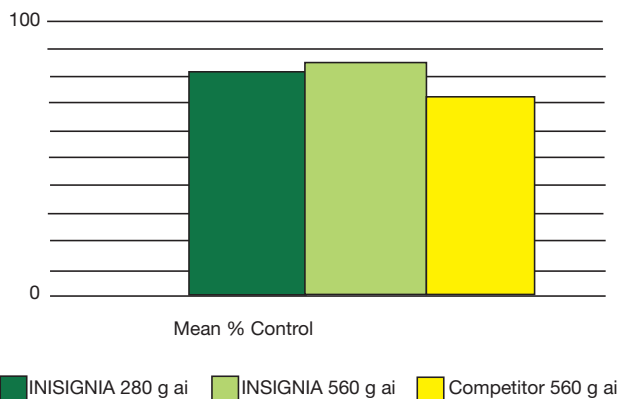
Control of Leaf Spot/Melting Out on Kentucky Bluegrass Disease Severity Scale 1-10 (10=plant death)



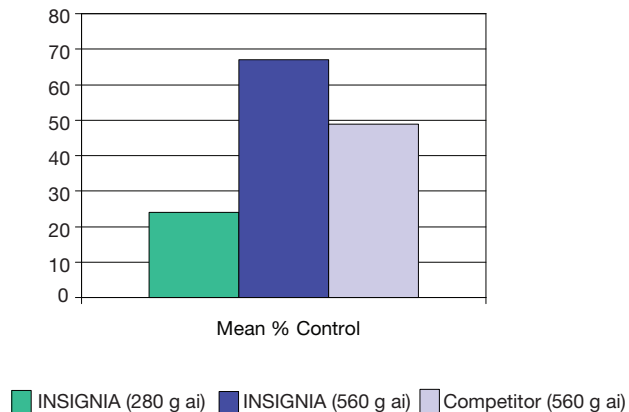
Dr. Wakar Uddin, Pennsylvania State University. Kentucky bluegrass plots at the Valentine Turfgrass Center. All treatments on 21-day interval except Daconil, 14-day interval. Trial initiated April 2004 and applied at 2 gallons per 1,000 sq ft.

Research Brief

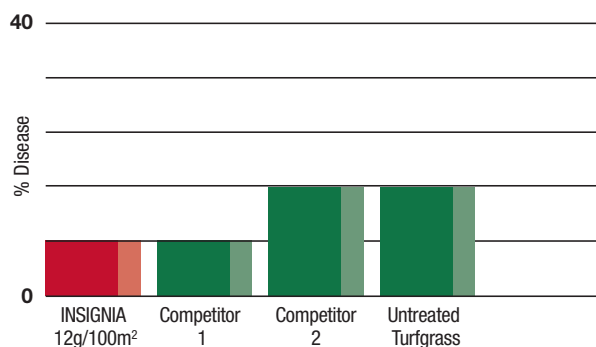
Gray Snow Mould Control
BASF independent research (n=18)



Pink Snow Mould Control
BASF independent research (n=8)



Control of Phytium Root Dysfunction on Bentgrass



Pythium volutum Sage GC, SC Dr. Bruce Martin on practice green. Insignia and Competitor 2, average of treatments with rate + fertilizers. All other treatments with fertilizers except Segway and Competitor 1 irrigated May 27, 21-day intervals for 3 applications. Rated August 26, 2005.



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www.BetterTurf.ca

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