



## A Revolutionary Formulation For Turf and Ornamental Markets

Banner MAXX® is a revolutionary water-based formulation that was developed and tested specifically for turf and ornamental markets. It maximizes applicator mixing ease and tank-mixing compatibility. The active ingredient is formulated in a matrix of proprietary surfactants and water to form sub-micron sized droplets. The water-based formulation results in a miscible blend that is extremely uniform and stable when added to water in the spray tank.

### Microemulsion Concentrate

Syngenta developed and created Banner MAXX as a microemulsion concentrate (MEC) to realize several benefits. An MEC offers a number of advantages



compared to older technology such as emulsifiable concentrate (EC) formulations. The new formulation is a clear, ultra-stable liquid, which mixes completely with water.

An MEC consists

of extremely fine particles formed from the active ingredient, water, solvent, and surfactants. The MEC eliminates the use of petroleum solvents that act as a carrier in other formulations. As a result, Banner MAXX has little odor, and it will not clog filters and screens or settle to the bottom of the spray tank. Further, MEC's are very stable, maintaining their particle size for an indefinite period of time without coalescing to larger droplets.

### Particle Size

The particle size of Banner MAXX is approximately 0.1 micron. This extremely minute particle size combined with the unique properties of Banner MAXX allow Banner MAXX to stay in a water matrix literally for months. Thus, it is a more effective mixing solution than powders, EC's, and other types of formulations. Other sterol inhibitor active ingredient particle sizes can be up to 25 microns. The very fine particle size of the MEC allows for excellent product coverage on the plant surface and results in optimal biological activity.

### Benefits of Banner MAXX

- Designed and developed specifically for turf and ornamental settings: Due to the 1.3 pounds/gallon concentration, use rates are realistic, appropriate, and manageable in professional situations.
- Plant safety: Lower concentration and easy-on-plants solvent system reduce the potential for turfgrass and ornamental plant injury.
- Physical appearance and odor: Banner MAXX is a transparent liquid that is odorless and contains no hydrocarbon solvent. EC's typically have noticeable odors.
- Tank stability: Banner MAXX disperses readily in water without strong agitation. Laboratory testing has determined that there is no separation of product from water for 52 weeks. A spray technician may not complete an application due to rain or high winds. Banner MAXX will not settle out when the tank is left idle, thus allowing the job to be completed accurately when favorable weather conditions return.
- Tank residue: Banner MAXX leaves virtually no residue in the tank after application.

## Benefits of Banner MAXX

- Spray nozzle/sprayer wear: Banner MAXX forms a suspension with no abrasion to spray nozzles, or damage to pump seals and sprayer parts. Banner MAXX does not contain a petroleum solvent carrier; therefore, equipment corrosion is not a concern. EC's can be very corrosive to spray tanks, valves, and seals.
- Complete package: Banner MAXX is just one of a suite of MAXX® formulations from Syngenta that includes Subdue MAXX® and Primo MAXX®. All three offer the same low/no odor, mixability, stability, ease of use, and reliability. These and other Syngenta products come with GreenPartners™ points and the GreenCast™ technical platform and are backed by expert field, technical, and sales personnel.

- Material safety Information: The Banner MAXX flashpoint is 181° F, resulting in reduced fire hazard risk. This is 29° F higher than other propiconazole EC formulations (higher flashpoint = less hazard). Xylene and naphthalene are not utilized in the Banner MAXX formulation as in other propiconazole EC formulations.



## Banner MAXX

- Proven outstanding broad-spectrum, systemic disease control.
- Industry standard dollar spot control.
- 1.3 pound/gallon MEC microemulsion concentrate.
- Appropriate concentration and scale for turf and ornamentals.
- No solvent odor.
- Proprietary surfactant system replaces petroleum based solvent.
- Xylene removal and higher flashpoint enhances worker safety.
- Particle size only 0.1 microns, down from usual 25 microns (vs. typical SI).
- Forms microemulsion when mixed—stable for extended periods.
- Flexible use when tank mixed with other fungicides, insecticides, and PGRs.
- Clean and virtually no residue remains in the spray tank
- Available in user friendly pint, gallon, and 10 gallon LinkPak™ containers.
- Thoroughly tested in turf and ornamental markets.



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## The Premier Systemic Dollar Spot Control

Banner MAXX® has become the industry standard systemic fungicide against dollar spot. With acropetal systemic activity, Banner MAXX moves up the leaf blade to shield the turf from dollar spot plus a range of other diseases.

### Unprecedented Broad-Spectrum Protection

Banner MAXX delivers superior protection not only against dollar spot, but also against summer patch, brown patch, spring dead spot, and other diseases. It controls a total of 21 turf diseases. It also offers protection against dichondria rust.

### Systemic Activity Won't Wash Off, Giving You Up to 28 Days of Control

With systemic properties, Banner MAXX won't wash off after it has dried. This rainfast protection results in outstanding control up to 28 days (depending on label rates and spectrum).

### Longer Control Means Fewer Applications

Using Banner MAXX rather than other fungicides may help you to apply less frequently. You can depend on Banner MAXX fungicide.

### Innovative MAXX® Formulation

Banner MAXX is the first water-based, non-petroleum, liquid fungicide tested for use on turfgrass species. Once mixed in the spray tank, no further agitation is needed. And because of its unique formulation, it won't clog filters. In addition, it is virtually odor-free.



### The Ultimate Tank-Mix Partner

Banner MAXX is compatible with a wide assortment of fungicides and insecticides, including Heritage®, Daconil®, Scimitar®, and Subdue MAXX®. For snow mold control, Banner MAXX is an ideal tank-mix partner with Medallion®, Heritage, and Daconil.

### Wide Range of Rates for Greater Flexibility

Most commonly, Banner MAXX is used at the very low rate of 0.5–2 oz per 1,000 ft<sup>2</sup>. Depending on tank-mix partners, targeted diseases, and disease pressure, you may use at a rate of 0.5 up to 4 oz per 1,000 ft<sup>2</sup>. With its tank-mix compatibility, broad spectrum of control, and range of use rates, Banner MAXX offers the flexibility you need.

### The Smart Choice

With low rates, a long residual, a broad spectrum of control, and greater flexibility, Banner MAXX is a key part of a turf disease control strategy. The premier systemic defense against dollar spot, it helps keep turf in top condition.

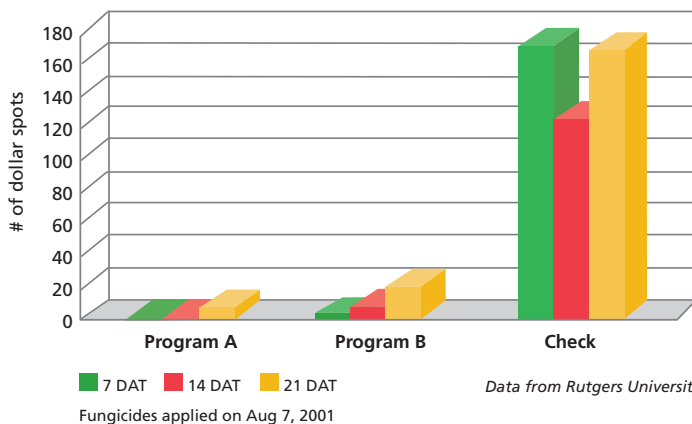
**Program A:**

- Daconil ULTREX® 3.2 oz + Primo MAXX® 0.25 oz (21D)
- Daconil ULTREX 3.2 oz + Banner MAXX 1 oz + Primo MAXX 0.25 oz (21D)
- Heritage 0.2 oz + Banner MAXX 1 oz + Primo MAXX 0.25 oz (21D)
- Heritage 0.2 oz + Daconil ULTREX 3.2 oz + Primo MAXX 0.25 oz (21D)

**Program B:**

- Daconil ULTREX 3.2 oz
- Daconil ULTREX 3.2 oz + Banner MAXX 1 oz
- Heritage 0.2 oz + Banner MAXX 1 oz
- Heritage 0.2 oz + Daconil ULTREX 3.2 oz

**Syngenta Program for Dollar Spot Control**



**Syngenta Program:**

Application 1—May 23, 2001

- Banner MAXX @ 1.0 fl oz
- Daconil ULTREX @ 3.2 oz
- Primo MAXX @ 0.25 fl oz

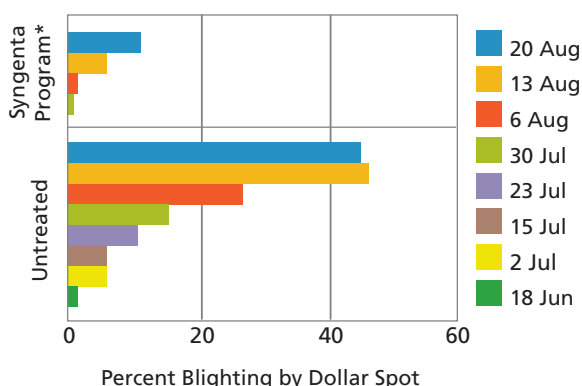
Application 2—June 11, 2001

- Banner MAXX @ 1.0 fl oz
- Heritage @ 0.2 fl oz
- Primo MAXX @ 0.25 fl oz

Application 3—July 2, 2001

- Heritage @ 0.2 fl oz
- Daconil ULTREX @ 3.2 oz

**Syngenta Program vs Untreated**



\*Note that the August 6, 13, and 20 data is 34, 41, and 48 days after the last application.

Data from Maryland University, 2001

**Premier Dollar Spot Defense**

- Controls dollar spot and summer patch
- Plus brown patch, spring dead spot, and other diseases
- Longer control, fewer applications
- Flexibility in use
- Acropetal systemic activity
- Won't wash off

**Call 1-800-395-8873 to contact your local Syngenta turf and ornamental sales representative and learn more about Banner MAXX.**



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## Take-all Patch (*Gaeumannomyces graminis* var. *avenae*)

Take-all patch is a soil-borne disease that infects the stolons, rhizomes, roots, and basal stem region of turfgrasses such as bentgrass, bluegrass, and fescue. Take-all patch is predominantly caused by *Gaeumannomyces graminis* var. *avenae*. The pathogen survives as a saprophyte on decaying plant tissue in the thatch layer. Infection occurs during cool, moist weather, usually in the spring and fall, when the pathogen penetrates underground tissues and spreads by growing along roots or stolons making plant-to-plant contact.



Symptoms associated with the infection of plant tissue include bronzed, brown, and/or bleached patches occurring in circular or ring shaped patterns (see pictures). Patch centers may eventually die out, inviting infestation by competitive turf species. Unlike fusarium patch, which recedes in late spring, take-all patch can continue to spread throughout the year. Symptoms are most noticeable during hot, dry weather when stresses to turfgrasses are at their greatest.

Soil conditions that favor the disease include low organic matter, high sand content, low fertility, pH above 6.5, and high soil moisture. Modified cultural practices that address these conditions can aid in alleviating disease occurrence and severity.

### **Beneficial Cultural Practices:**

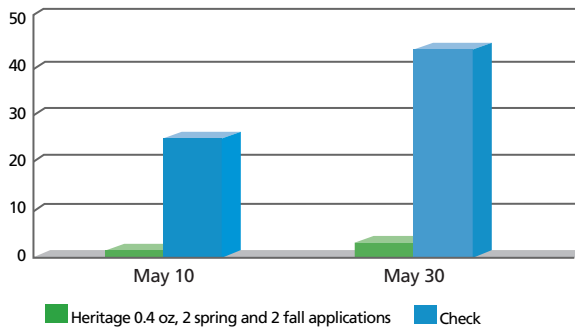
- Plant a cultivar with less sensitivity to the disease.
- Provide adequate balanced fertility but not excessive nitrogen.
- Adjust soil pH range to 5.5–6.0.
- Use core aeration to improve drainage.
- Use acidifying fertilizers to enhance recovery.

### **Chemical Control:**

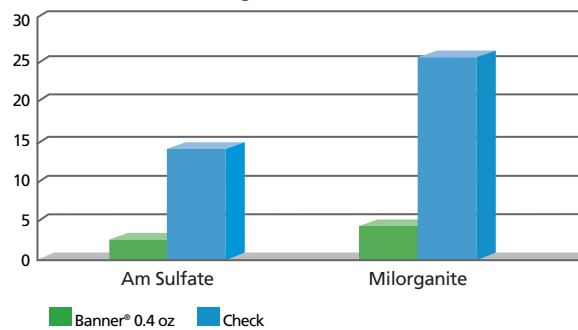
Incorporation of sound cultural practices in combination with the following preventive fungicide applications can provide exceptional control of take-all patch.

- Azoxystrobin (Heritage®)
- Propiconazole (Banner MAXX™)

**Control of Take-all Patch with Heritage Fungicide  
(Clarke, 1999–2000)**



**Control of Take-all Patch with Fungicides  
and Nitrogen Sources (Clarke, 1995)**



**An effective preventive fungicide program:**

**Application 1:** Fall application. Begin 28 days before air temperatures consistently drop below 65°F.  
Heritage (0.4 oz/1000 ft<sup>2</sup>)

**Application 2:** Second fall application\*. 28 days following Application 1.  
Heritage (0.4 oz/1000 ft<sup>2</sup>)

**Application 3:** Spring application. Spring applications should commence when soil temperatures reach the 55–60°F range.  
Heritage (0.4 oz/1000 ft<sup>2</sup>) OR Banner MAXX (4.0 fl oz/1000 ft<sup>2</sup>)

**Application 4:** Second spring application\*. 28 days after Application 3.  
Heritage (0.4 oz/1000 ft<sup>2</sup>) OR Banner MAXX (4.0 fl oz/1000 ft<sup>2</sup>)

\*Local conditions may require additional applications. If applying three or more applications, utilize Banner MAXX or Heritage in at least one of the total applications.



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The standard for dollar spot



Superintendents have made Banner MAXX® the industry standard in systemic protection against dollar spot. A brand that's made its mark as a trusted performer, Banner MAXX delivers consistent efficacy throughout the growing season. Banner MAXX has also become an important part of a course's rotational strategy, as it provides unprecedented broad-spectrum protection against diseases such as anthracnose and take-all patch.

● Proven protection against dollar spot throughout the season

Greens Height Crenshaw Creeping Bentgrass

Product	Rate/1000 ft <sup>2</sup>	Timing (days)	# Lesions Centers/Plot					
			June 13	June 23	July 1	July 13	July 21	Aug 5
Banner MAXX	0.5 fl oz	14	0.0	0.5	4.0	3.8	25.3	2.8
Banner MAXX	1.0 fl oz	14	0.0	0.0	0.0	0.0	9.8	0.5
Eagle® 1.67 EW	0.5 fl oz	14	4.3	7.0	13.3	17.5	80.3	12.5
Rubigan® 1 AS	0.75 fl oz	14	6.8	8.5	25.8	25.0	101.3	15.0
Rubigan 1 AS	1.5 fl oz	14	2.8	6.0	12.8	17.0	79.5	13.0
Untreated	—	—	15.0	16.5	47.0	43.8	119.8	49.0
Days After Application	—	14	6	2	8	8	3	3

Blue columns are light disease pressure, tan columns are moderate disease pressure, and the red column is heavy pressure.

Rutgers University 2005.

● Systemic activity provides up to 28 days control

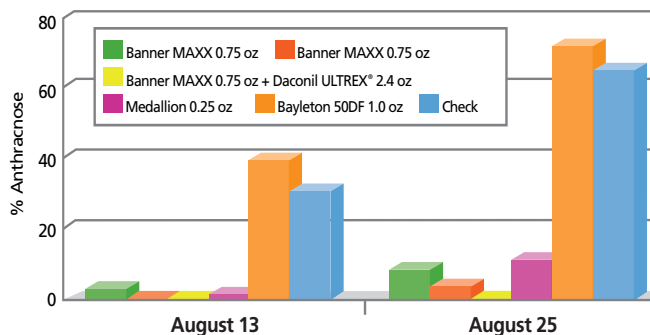
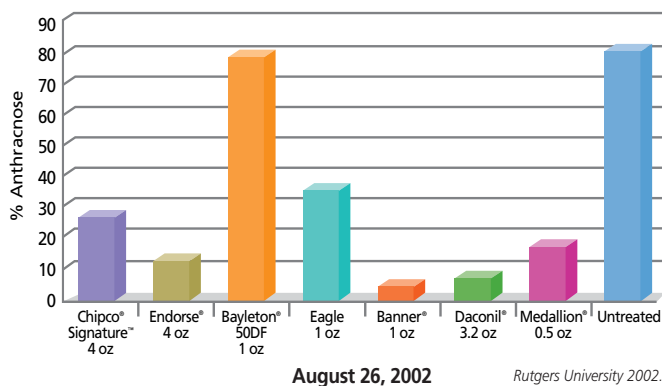
- Acropetal systemic action moves active ingredient into the plant and up the blade to protect the turf
- Banner MAXX won't wash off after it has dried
- Depending on label rates and spectrum, it controls up to 28 days

● Proven performer against broad spectrum of diseases

Anthracnose, summer patch, brown patch, take-all patch, and spring dead spot are among the 21 diseases Banner MAXX controls. Plus, because its protection lasts so long, you may be able to apply fewer applications as you achieve consistent performance time after time.



● Excellent efficacy against anthracnose



Treatments applied every 14 days from May 12 to August 18, total of 8 applications. Nitrogen applied at 3.0 lbs/1000 ft<sup>2</sup> per year.

Rutgers University 2003.

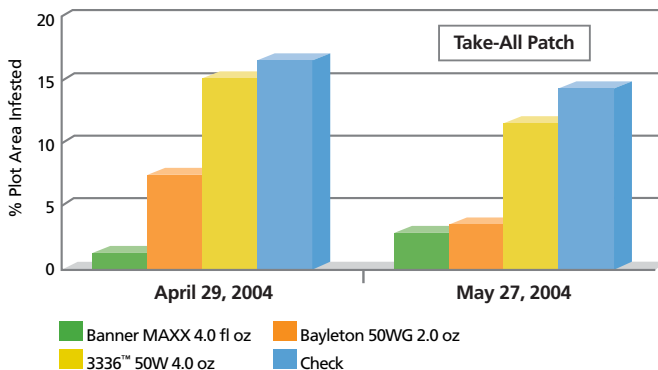
### ● Innovative MAXX® formulation

The microemulsion concentrate formulation allows for very low rates, so there is less exposure to the environment. It also allows for ease of use. Once Banner MAXX is mixed in the spray tank, no further agitation is needed, as it delivers key benefits such as less wear and tear on equipment, no clogging of filters, and virtually no odor.

### ● Key part of rotation strategy

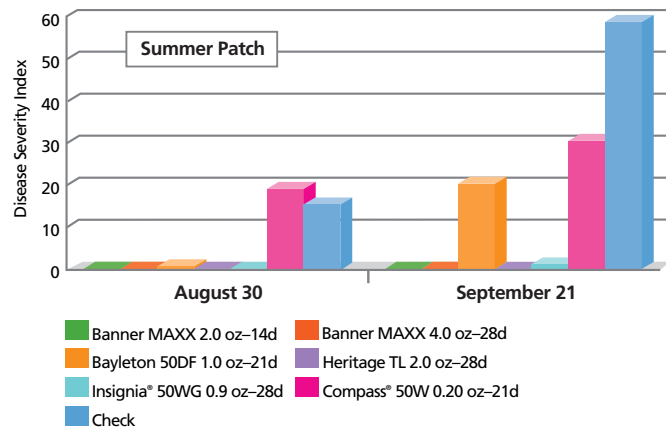
The formulation also makes it compatible with a wide assortment of other products including Heritage®, Daconil, Scimitar®, and Subdue MAXX®. For snow mold control, it is an ideal tank-mix partner with Medallion, Heritage, and Daconil. Its unique mode of action, systemically preventing fungal cell growth by inhibiting sterol biosynthesis, and its efficacy against a range of diseases including take-all patch and summer patch make it an integral part of a rotation program.

### ● Consistent broad-spectrum control



Fungicides were applied 11/03/03, 12/21/03, 4/01/04, and 5/23/04. Treatments were irrigated into the thatch with 0.50 gal water per 3 x 9 ft plot immediately following fungicide application.

Rutgers University 2003/2004.



Fungicides applied in 4.0 gal water/1000 ft<sup>2</sup>. Treatments initiated May 26, 2004.

Rutgers University 2004.

### ● An essential part of a sound program

With its broad spectrum of protection, long residual, and low rates, Banner MAXX is a key part of a course's disease control strategy. The standard systemic protection against dollar spot, it helps keep the course healthy and at the peak of playability.

#### The standard vs dollar spot

- Protects against 21 diseases
- Controls anthracnose, summer patch, and take-all patch
- Acropetal systemic activity
- Will not wash off
- Longer control, fewer applications
- Key part of rotation strategy



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