

Daconil Action™ Fungicide

Technical Bulletin

Diseases Controlled

Daconil Action is a new fungicide containing the most utilized active ingredient in turf: chlorothalonil. The “Action” portion of the product is the active ingredient Acibenzolar-S-methyl. Acibenzolar-S-methyl is a Turf Protein Booster. Unlike traditional methods of disease control, this active ingredient is not a fungicide—it has no direct effect against pathogenic fungi and bacteria. It is instead much like a vaccination. When applied, Acibenzolar-S-methyl triggers the natural defense response or the Systemic Acquired Resistance (SAR) of the turfgrass by activating production of pathogenesis-related proteins (PR proteins). The PR protein boost awakens the turf’s resistance to biotic and abiotic stresses like drought. This internal response within the plant enhances its own defense system against certain fungal and bacterial disease attacks. Thus, Acibenzolar-S-methyl bridges the gap between genetic resistance and conventional disease control by activating the plant’s own natural defenses.

While the chlorothalonil provides excellent protection as a multi-site fungicide on the plant surface, Acibenzolar-S-methyl achieves broad plant coverage. Its highly systemic properties result in uniform distribution throughout the plant. Additionally, its superior systemic translocation also ensures that new growth’s natural defense is activated.

Daconil Action is not currently registered for sale or use in all states. Please check with your local extension service before buying or using this product.

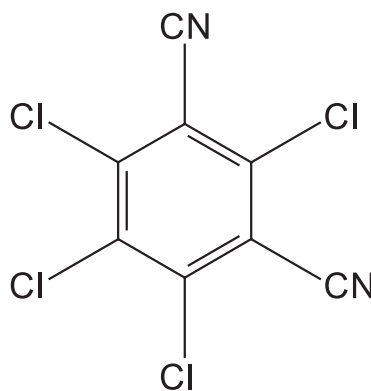
Chemical Properties

Daconil® Fungicide:

Chemical Class: Chlorinated Benzonitrile Fungicide

Common Name: Chlorothalonil

Structural Formula:

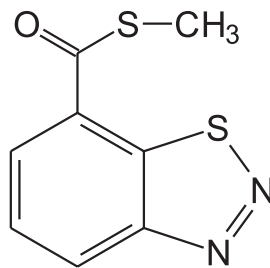


Acibenzolar-S-methyl:

Chemical Class: Benzothiadiazole Fungicide

Common Name: Acibenzolar-S-methyl (ISO draft)

Structural Formula:



 **Daconil Action™**
Fungicide

syngenta®

Formulation

Daconil Action is formulated with 6.1 lbs chlorothalonil per gallon (720 grams per liter) and 0.012 lbs Acibenzolar-S-methyl per gallon (2.34 grams per liter).

Mode of Action

Chlorothalonil (the active ingredient contained in Daconil fungicide)

Daconil contact fungicide exhibits a multi-site mode of action, which can delay or prevent the development of resistance to single-site fungicides by attacking the disease-causing pathogen at several biochemical sites.

The built-in surfactant system in Daconil provides excellent spreading and sticking power for extended coverage on the crown and sheath of grass blades or ornamental plants for unsurpassed protection, even after heavy rains or watering. The surfactant provides residual control for 14 to 21 days when used at recommended rates.

Acibenzolar-S-methyl (the active ingredient making up the “Action” in Daconil Action)

According to the Fungicide Resistance Committee (FRAC), Acibenzolar-S-methyl belongs to the product category called Host Plant Defense Induction (HPDI) in Group P. This category, which bridges the gap between genetic resistance and conventional disease control, activates the plant’s own defense genes via PR proteins to mimic the natural systemic activated resistance (SAR) response found in most plant species.

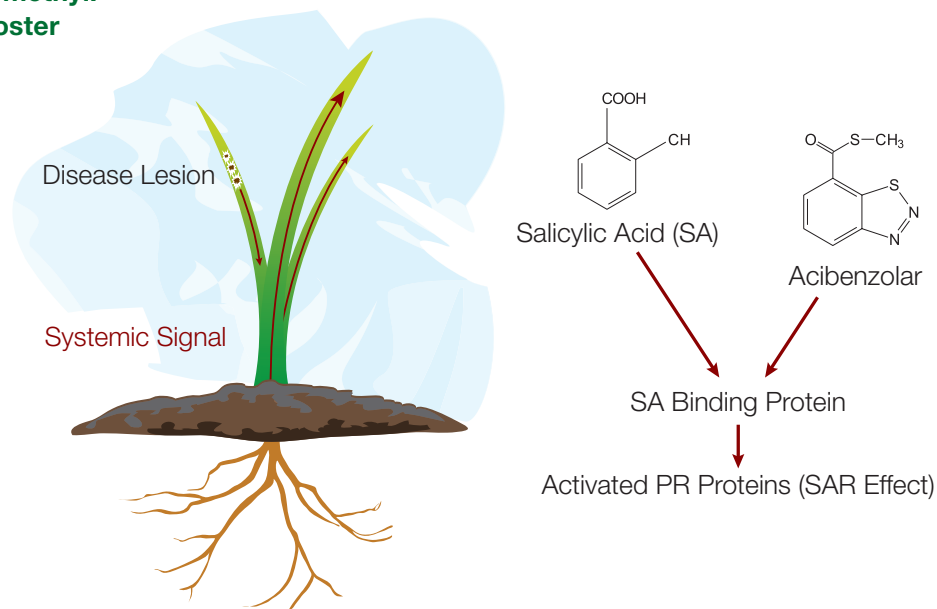
Low levels of infestation of some plant diseases trigger an internal response within the plant, helping it mount a defense against the disease attacks. The plant will produce proteins to inhibit the pests. This naturally occurring phenomenon cannot be relied on for commercial use because it may not happen in a timely matter or be uniform over an entire field.

Acibenzolar-S-methyl is the only active ingredient in the HPDI category, recognized by FRAC code P and the only one registered in turf. Because it is not a fungicide, Acibenzolar-S-methyl itself does not have any direct activity on a pest. Rather, it makes the plant boost its production of the PR proteins. Used at the right time, it activates the plant’s natural defenses against fungal, bacterial and viral disease.

To qualify as a true Host Plant Defense Induction, a compound must satisfy the following criteria:

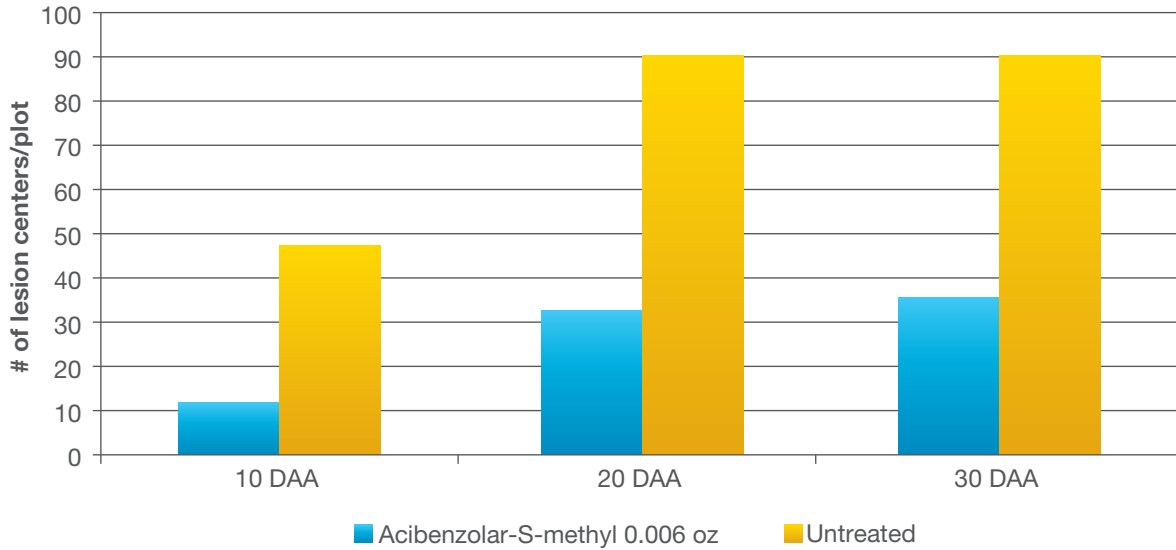
- Chemically treated plants must provide the same resistance expression as biologically induced plants.
- The product must not show any direct activity on the pest.
- Biochemical processes induced by the compound should be the same as those induced by challenge inoculation with the pathogen.

Acibenzolar-S-methyl: PR Protein Booster



Dollar Spot Control: Effects of Acibenzolar-S-methyl Alone

2006 Dollar Spot Trial – Conducted by Dr. Bruce Clarke, Rutgers University
 Crenshaw Creeping Bentgrass Greens Height (0.125 in)
 Fungicides Applied in an Equivalent of 1.89 gal/1,000 ft²



Application dates: 5/23, 6/13, 7/15 and 7/25/2006

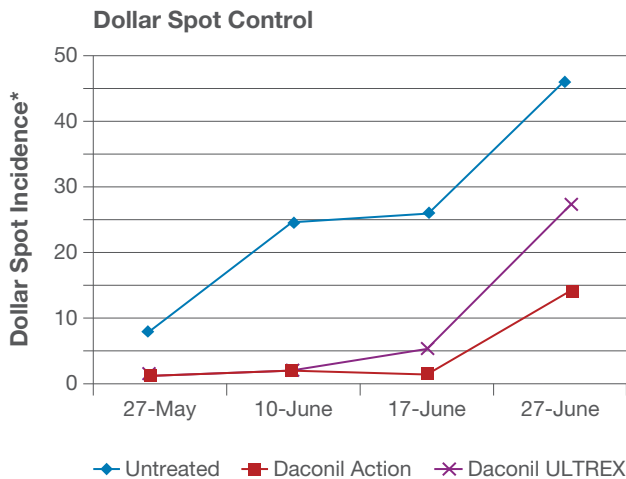
Longer Residual Control of Dollar Spot with Daconil Action

Dollar Spot Demo Trial

- Treatments applied on May 12 and 27, 2011
 - Princeville Creeping Bentgrass – Philadelphia, PA
 - Mr. Steve McDonald
 - 0.45-in mowing height

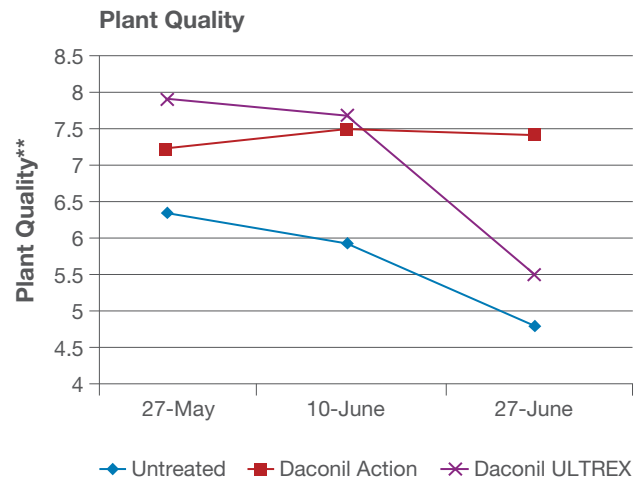
- Treatments (rate/1,000 ft²):
 - Daconil Action @ 2.0 fl oz
 - Daconil ULTREX® @ 1.8 fl oz

Dollar Spot Control Trials



*Number of infection centers per plot area
 Applications made on May 12 and 27

Trial conducted by Steve McDonald, Turfgrass Disease Solutions – 2011



**Plant Quality is rated on a scale of 0 to 10 where 0 = dead turf and 10 = best quality
 Applications made on May 12 and 27

Trial conducted by Steve McDonald, Turfgrass Disease Solutions – 2011

Diseases Labeled	Pre-infection Rates (fl oz/1,000 ft ²)	Application Interval (days)
Algae	2.0–3.5	7 to 14
Anthracnose	3.0–5.0 ¹	7 to 14
Brown Patch	2.0–3.5	7 to 14
Copper Spot	4.0–5.4 ¹	14
Dollar Spot	1.0 ² –3.5	7 to 21
Gray Leaf Spot	2.0–3.5	7 to 14
Gray Snow Mold	5.4 ¹	30
Leaf Spot	2.0–3.5	7 to 21
Melting Out	2.0–3.5	7 to 21
Microdochium Patch	5.4 ¹	21 to 28
Rhizoctonia Leaf and Sheath Spot	2.0–3.5	7 to 14
Red Thread	2.0–5.4 ¹	7 to 14
Stem Rust	4.0–5.4 ¹	14
Yellow Patch	2.0–3.5	7 to 14
Zoysia Patch	2.0–3.5	7 to 14
Diseases Suppressed 2(ee) ³	Pre-infection Rates	Application Interval (days)
Bacterial Wilt	2.0–3.5	7 to 14
<i>Pythium</i> Blight	2.0–3.5	7 to 14

¹ Limit of one application per season at rates greater than 3.5 fl oz on fairways, and two applications on tees and greens.

² Low rate is not effective on intensively mowed turfgrasses such as golf course tees and greens.

³ Syngenta supports FIFRA Section 2(ee) recommendations for use of Daconil Action™ for suppression of *Pythium* and Bacterial Wilt on both Group A and Group B Turf as listed on the federal label. Please see the Section 2(ee) recommendations to confirm that the recommendations are applicable in your state.



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