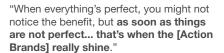


syngenta



"From a cost perspective, it is well worth it to use Action over non-Action brands to get the added benefits. Unless you are on a really tight budget, it isn't a difficult question."

- Paul Koch, Ph.D.,University of Wisconsin–Madison



Mike Harrell, Ph.D., Southeastern
 Turfgrass Research Center





"I really put an **exclamation point on the power of these two products**, not
only for the pathogens they are effective
against, but the **overall plant health properties**."

 - Jim Baird, Ph.D., University of California, Riverside "Our weather is so unpredictable. Action brands act as a form of insurance. Why wouldn't you want something that primes the plant to be prepared for stress?"

- **Jim Kerns, Ph.D.**, North Carolina State University



Meet the Portfolio



- Controls 14 turf diseases, including dollar spot, anthracnose and algae
- ASM activates plant defense mechanisms:
 - Enhances dollar spot control
 - Adds Pythium blight suppression
 - Provides bacterial wilt suppression
- Resistance management:
 Attacks pathogens at multiple sites, resulting in low risk of resistance development

Heritage Action

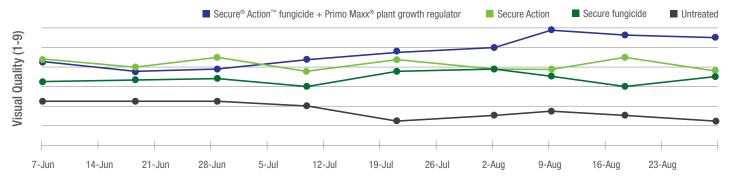
- Controls more than 25 turf diseases
- Enhanced control of anthracnose, *Pythium*, bacterial wilt suppression, brown patch, summer patch and gray leaf spot



- Enhanced dollar spot control for up to 21 days, control of brown patch, leaf spot and more, plus bacterial wilt suppression
- Resistance management:
 Attacks pathogens at multiple sites, resulting in low risk of resistance development

Shade tolerance

ASM enhances shade tolerance by activating the plant's natural defense systems to better withstand stress.



Source: Steve McDonald, Turfgrass Disease Solutions, 2019. Secure® Action™ fungicide applied at 0.5 fl. oz./1,000 ft.². Primo Maxx® plant growth regulator applied at 0.25 fl. oz./1,000 ft.². Secure fungicide applied at 0.5 fl. oz./1,000 ft.².

Drought tolerance

ASM activates proteins that help regulate the plant's stomata, or pores, to control water vapor release, leading to increased drought tolerance and recovery.

Drought recovery/re-watering



Source: Cathryn Chapman, Ph.D. and Bingru Huang, Ph.D., Rutgers University, 2018. Applied May 15, May 29, June 12, June 26 and July 10, 2018.

Heat tolerance

ASM stimulates the production of natural "heat shock proteins" that protect cells from damaging heat, while enhancing the production of enzymes used for photosynthesis.

Heat stress on creeping bentgrass



Source: Bingru Huang, Ph.D., Rutgers University, 2015.

Quicker recovery from stress/aerification

ASM jumpstarts multiple immune responses in plants to proactively protect turf and help it recover quickly from stress.



"Treatments containing either Daconil Action or Heritage Action recovered slightly quicker from aerification and had better color and were more robust."

Steve McDonald,
 Turfgrass Disease Solutions

Increased disease control

ASM activates turf's natural defenses by causing the plant to produce more proteins that help fight pathogens.

Secure Action dollar spot trial



Source: Bruce Clarke, Ph.D., Rutgers University, 2016. Applications made on a 21-day interval.

Resistance management

The combination of ASM (which has its own FRAC group) and the fungicide active ingredient in each Action brand provides the ultimate partners for resistance management.

"Resistance management is hugely important with diseases like dollar spot and anthracnose. I think the Action products play an important role in resistance management. ASM is classified by FRAC as a different mode of action, and there have been no noted cases of fungicide resistance to ASM."

Paul Koch, Ph.D.,
 University of Wisconsin–Madison





Excellent turf safety

ASM increases biotic and abiotic stress tolerance while assisting plant growth and recovery.



"We have not seen any negative response from the Action brands even at rates well above and beyond the label rates, so I am not concerned at all with phytotoxicity with the Action brands....I've talked with many other researchers that have tested two and four times the label rates with Action brands and they've never seen it. It's just not a concern."

- Paul Koch, Ph.D., University of Wisconsin-Madison

Salt stress mitigation

ASM activates defense-related proteins to boost the turf's response to abiotic stress like salinity.

"Particularly Secure Action and Daconil Action, in combination with Appear II [fungicide], have been some of the most remarkable results I have seen with fungicides in regard to salinity. The best quality was with Daconil Action and Appear II. There is very little-to-no loss of turf density compared to a competitive application that also contained a pigment."

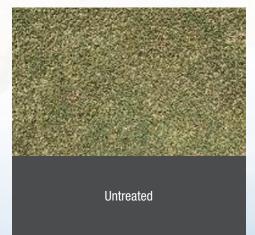




Enhanced spring turf quality

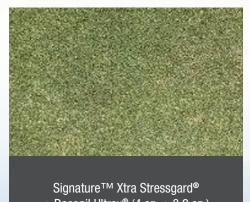
The ASM and fungicide active ingredients in each Action brand protect against multiple pathogens and abiotic stressors and promote faster, more uniform spring green-up.

Comparison of fall fungicides and tank mixes on 'TifEagle' bermudagrass









+ Daconil Ultrex® (4 oz. + 3.2 oz.)

Source: Prestwick Country Club, Myrtle Beach, South Carolina. Treatments applied Oct. 23, Nov. 1, Nov. 13, Nov. 29 and Dec. 17, 2018 and Feb. 14 and March 4, 2019.



TO LEARN MORE AND COMPARE THESE PRODUCTS SCAN THE QR CODE OR VISIT GREENCASTONLINE.COM/ACTIONBRANDS





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Product performance assumes disease presence.

Performance assessments are based upon results or analysis of public information, field observations and/or internal Syngenta evaluations. Trials reflect treatment rates and mixing partners commonly recommended in the marketplace.

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