

ATTACK ANTHRACNOSE FROM ALL ANGLESSM

ANTHRACNOSE CONTROL IN ANNUAL BLUEGRASS – NEW JERSEY

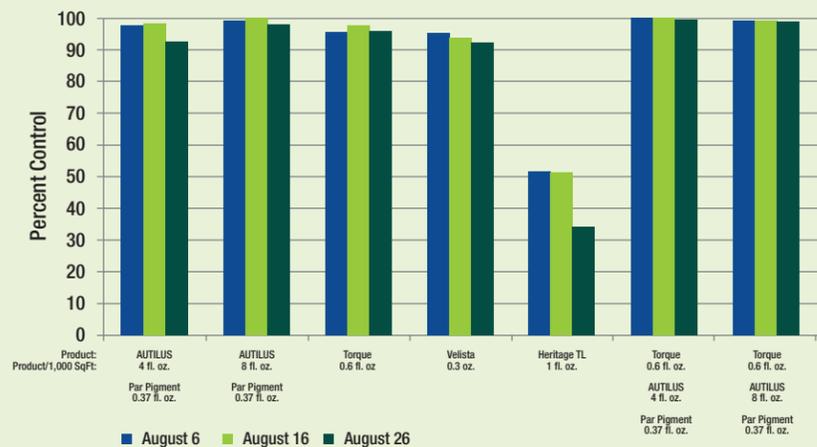


Figure 1: Field trial conducted in New Brunswick, New Jersey. Initiated May 22, 2014.

All treatments were applied on 14 day intervals. Data shown was taken on the three dates when disease pressure was greatest. Ratings were made within the application interval.

Findings: Both application rates of AUTILUS provided excellent anthracnose control. Torque and Velista provided very good control. The AUTILUS plus Torque tank-mixtures provided exceptional anthracnose control. While the trial evaluated 4 and 8 ounce rates, AUTILUS is labeled at 5 to 6 fluid ounces of product per 1,000 square feet.

ANTHRACNOSE CONTROL IN ANNUAL BLUEGRASS – 4 TRIAL SUMMARY

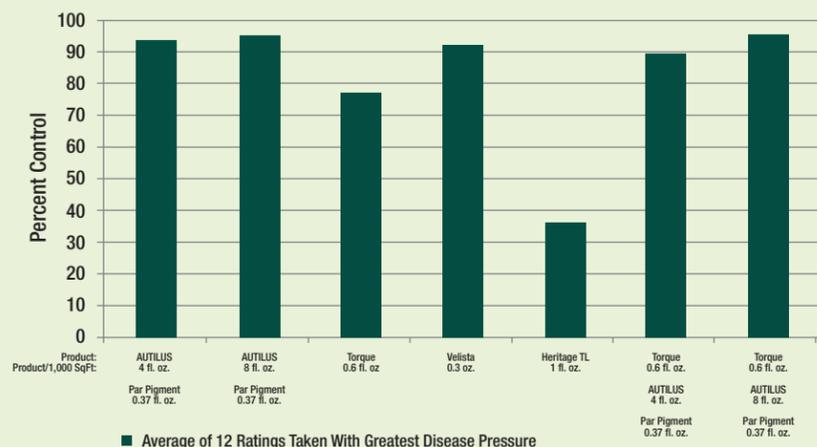
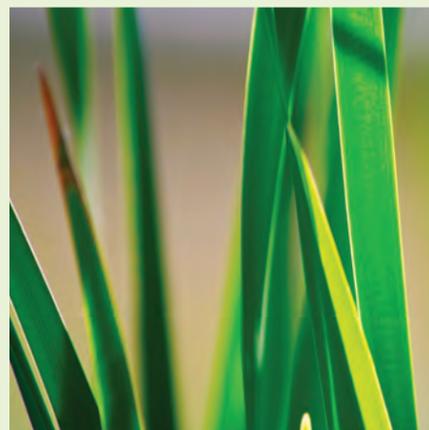


Figure 2: This graph is based on data from four recent anthracnose field trials. The results shown are averages from the three rating dates during each trial when disease pressure was the greatest and the ratings were made within (or nearly so) the 14 day application interval. These results validate concerns of DMI and Qoi resistance by anthracnose and underscore the importance of discovering additional fungicides with modes of action that are effective against this key disease of putting green turf. All of the treatments with AUTILUS provided very good control. While the trials evaluated 4 and 8 ounce rates, AUTILUS is labeled at 5 to 6 fluid ounces of product per 1,000 square feet.



AUTILUSTM TURF FUNGICIDE

The beginning and end of anthracnose control

In 2013, turf researchers at Penn State University discovered activity by PCNB on *Colletotrichum cereale*, the fungus that causes anthracnose. This finding led to the first new use of this common turf fungicide active ingredient in more than 30 years.

Introducing AUTILUSTM Turf Fungicide. The breakthrough fungicide for anthracnose control.

Subsequent field trials conducted by university and private researchers throughout the northeast in 2014 confirmed that AUTILUS provides excellent control of anthracnose on putting green turf consisting of annual bluegrass and/or creeping bentgrass.

Contact your AMVAC/AEP distributor today or AMVAC at 1-800-GO-AMVAC (1-888-462-6822) and visit www.amvac-chemical.com for more information on AUTILUS and the entire AMVAC line of products.

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AUTILUS TURF FUNGICIDE

THE AUTILUS ADVANTAGE

As part of a fungicide rotation program, AUTILUS offers exceptional control of basal rot anthracnose infections.

MULTI-SITE MODE OF ACTION

Unlike any other turf fungicide on the market, AUTILUS is a Group 14 fungicide that has contact activity and provides a multi-site mode of action.

RESISTANCE MANAGEMENT

Widespread *C. cereale* resistance to benzimidazole and strobilurin fungicides has been documented and sensitivity shifts have been reported for several triazoles. There has never been a documented case of resistance to PCNB, making AUTILUS an important component of an anthracnose resistance management program.

SEASON-LONG CONTROL

Attack anthracnose from all angles. During the growing season, it is important to employ a program that includes a sequence of active ingredients from all fungicide classes that have proven effectiveness against this important disease.

ANTHRACNOSE

Anthracnose diseases, caused by the fungus *Colletotrichum cereale*, are destructive to annual bluegrass and creeping bentgrass turf. Anthracnose may develop as a foliar blight, affecting turfgrass leaves, or a basal rot, which attacks the leaf sheaths, crowns and stolons of the plant. Basal rot is the most destructive form of the disease and it is most prevalent on putting greens.

CAUSES AND SYMPTOMS

Anthracnose appears as irregular patterns of yellow to orange patches of turf, varying from small circular spots to patches up to one foot in diameter. Symptoms of anthracnose tend to be most severe in areas of high stress due to factors such as low mowing, excessive foot or equipment traffic or inadequate irrigation or fertilization.

MANAGING ANTHRACNOSE

Because both the foliar and basal rot forms of anthracnose are induced by stresses that weaken the host plant, cultural practices and turf management techniques that reduce stress on turf are the most important components of an anthracnose management program.

CULTURAL PRACTICES

Extensive research indicates various cultural practices can greatly influence anthracnose severity. Current recommendations include proper nitrogen fertilization, increased mowing height combined with green rolling to maintain ball roll distances, plant growth regulators, irrigation, topdressing and cultivation.

Researchers at Rutgers University have developed an excellent working outline of best management practices for anthracnose control, available at <http://turf.rutgers.edu/research/bmpsanthracnose2014.pdf>

FUNGICIDES

Fungicides will always be an important component of anthracnose management programs. However, their use is complicated by the ability of *C. cereale* to develop resistance after repeated exposure to individual fungicide active ingredients. This warrants judicious use of single-site mode of action fungicides, as well as a fungicide rotation that incorporates all available fungicide modes of action into a seasonal program.



AUTILUS treatment recommendation (per 1,000 square feet)

- AUTILUS at 6 fl.oz. + Torque™ at 0.6 fl.oz. + Par® pigment at 0.37 fl.oz.

Apply to turfgrass that is well established, actively growing and not under excessive heat or moisture stress or drought stress. Use AUTILUS as part of an anthracnose control program that consists of a sequence of fungicides that have proven activity against this disease.

AUTILUS Suggested Application Windows for Anthracnose Control

- May through early-June (1 application)
- Late-August through October (1-2 applications at least 4 weeks apart)

Potential alternate fungicides for an anthracnose management program

Examples of Alternate Anthracnose Fungicides			
Product	Active Ingredient	Chemical Class	FRAC Group
AUTILUS	PCNB	Aromatic Hydrocarbon	14
Torque	tebuconazole	Triazole	3
Daconil Ultrex	chlorothalonil	Chloronitrile	M5
Chipco Signature	fosetyl-Al	Ethyl Phosphonate	33
Affirm	polyoxin D zinc salt	Polyoxin	19
Medallion	fludioxonil	Phenylpyrrole	12
Insignia	pyraclostrobin	Strobilurin	11
Velista	penthiopyrad	Pyrazole-carboxamide	7