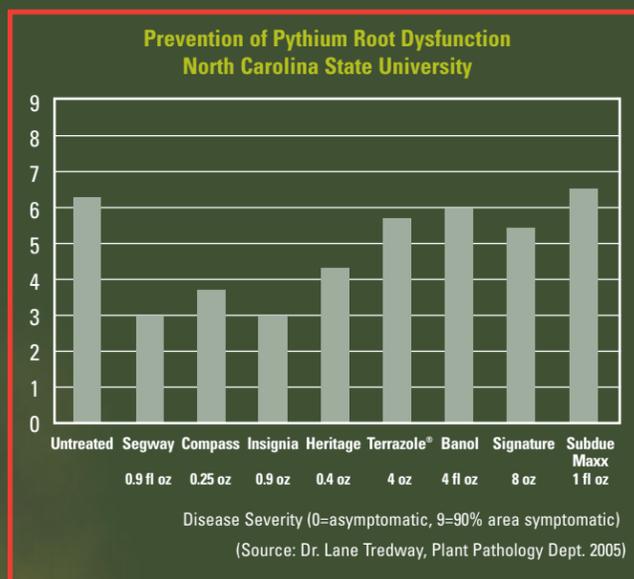


## Pythium root dysfunction

**Pythium root dysfunction:** Caused by *Pythium volutum*, Pythium root dysfunction occurs principally on bentgrass and is a problem that is typically limited to newly constructed greens and young greens (typically less than 3 years old). Beginning in the Carolinas and Virginia, Pythium root dysfunction is becoming more common on golf courses across America, and is a difficult disease to control with current fungicides. Symptoms appear in late spring and summer in circular patches ranging from 3 inches to several feet in diameter. In order to maintain season-long control, spring applications are absolutely necessary.

Field trials conducted in 2005 showed that Segway™ provides good to excellent preventive control of Pythium root dysfunction on turf. (Applied at a rate of 0.90 fl oz/1000 ft.<sup>2</sup>)

Fig. 6 (The shorter the bar, the better the performance)



North Carolina State University tests show that Segway provides excellent control of Pythium root dysfunction.

## Unique mode of action

Segway fungicide from FMC provides turf managers with a novel mode of action to help prevent turf debilitating Pythium disease and maintain lush greens, tees and fairways all season long. The active ingredient, cyazofamid, stops spores from germinating, inhibiting the spread of Pythium.

Segway prevents Pythium before it gets started, and should be the foundation of a disease management program that includes alternating with other labeled fungicides that have a different mode of action than Segway to prevent disease resistant pathogen populations from developing. University data indicates Segway is highly effective in protecting professionally managed turf areas, providing good protection against disease over a period of 7 to 28 days, depending on the level of disease pressure.

There is no known cross-resistance of Segway with existing fungicides. The biochemical mode of action of the active ingredient in Segway inhibits all stages of fungal development. This new and unique mode of action inhibits the Q<sub>i</sub> site of Cytochrome bc1 in Complex III of the fungal mitochondrial membrane.

# Segway™ Fungicide Technical Bulletin.

PYTHIUM CONTROL WITH A NEW MODE OF ACTION.



### Contact your FMC sales representative for more information

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## Physical properties

**Common name:** Cyazofamid

**Chemical class:** Cyanoimidazole

**FRAC group:** 21

**Signal word:** Caution

**Non-volatile product:** Segway™ is classified as a non-volatile compound as the active ingredient has a low vapor pressure (<1.33X10<sup>-5</sup> pascals @ 25° C).

**Systemic activity:** Segway has limited systemic activity and low translaminar movement, so it is best used as a protectant fungicide. University data in 2006 indicates some curative activity.

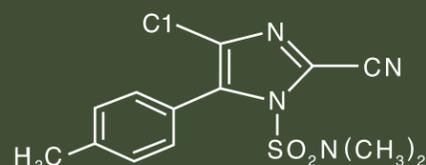
**Solubility and plant properties:** Segway has very low water solubility (0.1 ppm) but good spreading properties on the plant surface. The affinity of Segway to waxy leaf surface contributes to a more consistent contact with plant foliage, better coverage of sprayed surfaces and improved efficacy. Rainfastness forms very soon after Segway application.

**Residual activity:** Its affinity for the waxy surfaces of plants ensures superior coverage of sprayed surfaces and provides residual activity. Residual foliar activity 14 to 28 days can be anticipated depending on disease pressure and application practices.

**Half-life in soil:** With a half-life in aerobic soils of four to five days, the active ingredient of Segway has low soil persistence.

## Chemical structure

Cyazofamid Structure



**Toxicology profile:** The active ingredient in Segway, cyazofamid, has minimal to moderate acute toxicity in acute oral, dermal and inhalation tests. It is minimally irritating to the eyes and skin and is a weak dermal sensitizer. Segway poses negligible risk to human health and the environment when applied according to label directions.

## Labeled diseases and use rates

**Formulation:** Flowable suspension concentrate (SC) with 3.33 lb/gallon or 34.5% wt/wt of the active ingredient cyazofamid

Segway provides excellent protection against Pythium diseases, including:

- Pythium blight,
- Pythium damping-off
- Pythium root dysfunction

Recommended use rates				
Turf disease	Use rate		Application interval (Days)	Remarks
	Fluid ounces per 1,000 ft <sup>2</sup>	Fluid ounces per acre		
Pythium blight Pythium damping-off, Pythium root dysfunction	0.9 fluid ounces	39.2 fluid ounces	14 to 21	Refer to the label for specific use directions

**Use sites:** Professionally managed turf areas such as golf courses (including greens, tees and fairways), sod farms, seed farms, college and professional sports fields and commercial lawns. Segway can be applied to newly seeded areas immediately after seeding.

**REI:** Segway has no restricted entry interval for turf applications. The treated area may be entered as soon as sprays have dried.

**Integrated pest management:** Segway is highly effective when used as part of a fungicide program. Segway is recommended for use as part of an integrated pest management program that may include the use of disease resistant plant varieties, cultural practices, biological disease control agents, pest scouting and disease forecasting.

Segway should be rotated with fungicides using a different mode of action to promote resistance management and extend the effective life of the fungicides in your rotation by lessening the successive frequency of their use. Segway can be applied up to three times per season at the maximum use rate. Segway should be alternated with another registered fungicide with a different mode of action. Figure 1 below is an example of how Segway would fit into a fungicide rotation program.

Fig. 1

Number of applications in your rotation	Segway Rotational Program For Pythium Control				
	Application 1	Application 2	Application 3	Application 4	Application 5
1	Segway				
2	Segway	Alternate fungicide			
3	Segway	Alternate fungicide	Segway		
4	Segway	Alternate fungicide	Segway	Alternate fungicide	
5	Segway	Alternate fungicide	Segway	Alternate fungicide	Segway

## Pythium blight control

### Performance data

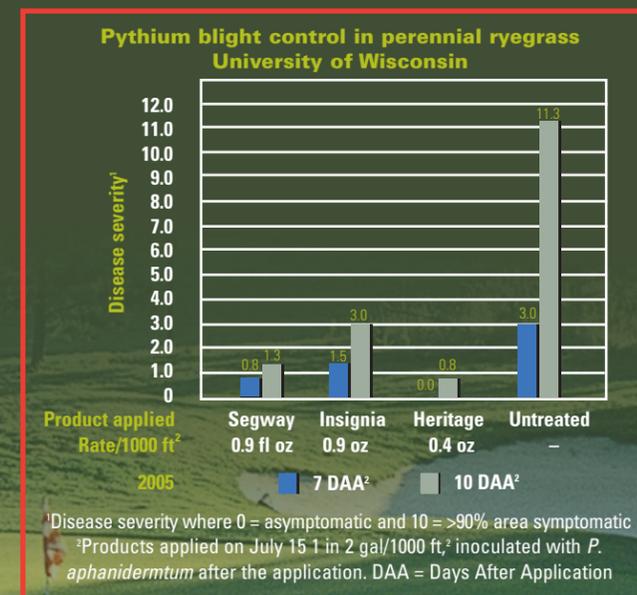
**University field trials – turf:** University trials were conducted from 2002 through 2006 at major universities in California, Michigan, Pennsylvania, South Carolina, Virginia and Wisconsin. The data in Fig. 2 is a summary of field trials comparing Segway to other registered fungicides for Pythium blight control in turf over multiple sites and multiple years. The data in Fig. 3-5 is a sampling of individual sites in 2004, 2005 and 2006. This data shows that Segway™ offers consistent control of Pythium blight in turf across varying environments and disease pressures.

Fig. 2

Pythium blight control summary			
Treatment	Rate oz/1000 ft <sup>2</sup>	Number of Trials	Average% Control
Segway	0.45 fl oz	18	73.7
Segway	0.90 fl oz	18	81.9
Banol®	2.0 fl oz	8	56.8
Banol	3.0 fl oz	3	67.5
Insignia®	0.9 oz	13	70.2
Heritage®	0.4 oz	8	81.2
Subdue Maxx®	1.0 fl oz	8	79.7
Aliette®	4.0 oz	2	62.4
Signature™	4.0 oz	6	47.2

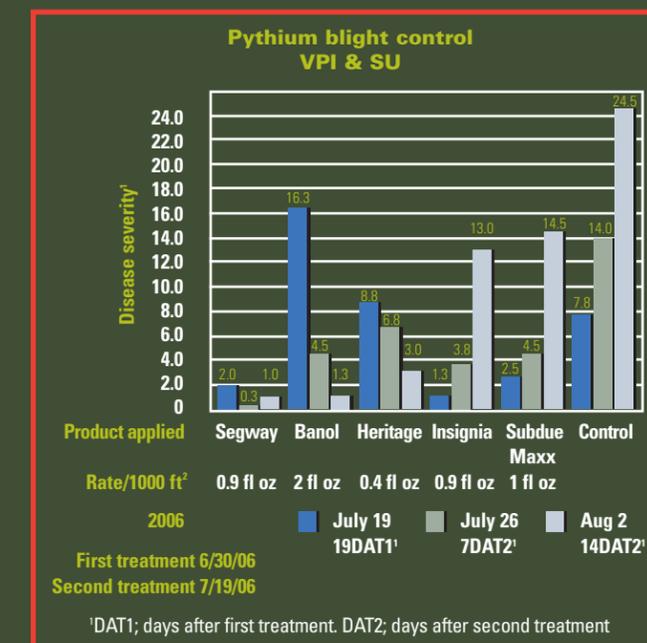
In university trials, Segway, applied at 0.9 fl oz/1,000 ft<sup>2</sup> consistently shows excellent performance year after year in a variety of Pythium environments.

Fig. 3



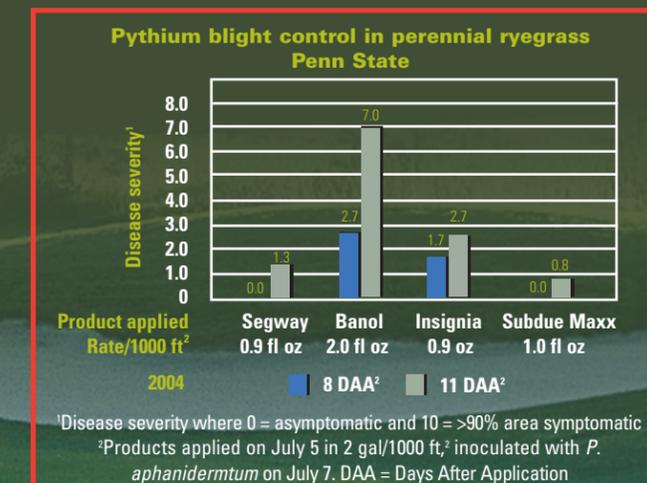
10 days after application, Segway provides excellent control of Pythium at a rate of 0.90 fl oz/1000 ft<sup>2</sup>.

Fig. 4



In this 2006 trial, Segway provided superior control of Pythium compared to other product following the second treatment.

Fig. 5



In this test, Segway provides 100% control through 8 days and is still highly effective 11 days after application, when applied at a rate of 0.90 fl oz/1000 ft<sup>2</sup>.