FUSARIUM BLIGHT

by J. M. Vargas Jr., C. W. Laughlin and J. B. Beard

The role of nematodes in Fusarium blight development

It was determined after some initial greenhouse studies with Fusarium roseum, the organism believed to cause Fusarium blight, that other factors must be involved in the development of this disease. An extensive survey of Fusarium blighted turfs, revealed that nematodes were always associated with the disease, especially the nematode Tylenchorhynchus dubius. Studies were then set up in the greenhouse to determine the role that T. dubius and F. roseum played in the development of Fusarium blight on merion Kentucky bluegrass.

In this study F. roseum by itself could not account for the severe stunting of the top growth and root system normally associated with Fusarium blighted turfs. Only the nematode T. dubius was able to cause reduction in top growth and root length associated with Fusarium blight infected turfgrass plants. Therefore, the nematode is believed to be the dominant pathogen in the development of Fusarium blight.

Fusarium blight control

The Fusarium blight control study was conducted on a previously infected merion Kentucky bluegrass turf. The plots were 5 x 10 ft and replicated three times in a random block design. The study consisted of both fungicides and nematicides. The fungicides were applied twice, on 7/6 and 7/19, and the nematicides were applied only once on 7/6. The fungicides were applied with a Ortho jar applicator and the nematicide granulars were pre-weighed for each plot and applied with a hand shaker. All treatments were drenched into the root zone immediately after application.

The results can be seen on table 3. They show that the nematicide 1410 at 200 lbs/Acre (20 lbs AI/acre) and Tersan 1991 at the 9 oz./1000 ft^2 rate gave the most effective control of Fusarium blight, although not significantly different from Topsin 6 oz., U-32-104 8 & 4 oz., Nemacur 133 lbs./acre (20 lbs AI/acre), Scotts experimental nematicide, and Topsin 3 oz., all of which gave significant control compared to the untreated check.

Conclusion:

The control obtained with the nematicides gives further support to the hypothesis that the disease called Fusarium blight is actually an interaction between a fungus and a nematode with the nematode being the dominant pathogen. The control obtained with Tersin 1991 (benomyl), and related systemic fungicides, is explained by the fact that in addition to being fungicides, they are also nematicides (1).

Table 3 FUSARIUM BLIGHT CONTROL

1972

Chemical	Rate/1000 sq ft or per acre	% Area Infected[1]				
DuPont 1410	20 lb AI/acre	5.0	a			
Tersan 1991	8 oz	5.0	a			
Topsin-M	6 oz	16.66	a	b		
U-32-104	8 oz	16.66	a	b		
U-32-104	4 oz	16.66	a	b		
Nemacur	20 lb AI/acre	21.66	a	b		
Scotts Exp.	20 lb AI/acre	25.0	a	b	c	
Topsin-M	3 oz	26.66	a	b	c	
Niagara Exp.	8 oz	30.0	a	b	c	d
Tersan 1991	4 oz	31.66	a	b	c	d
Bay Dam 18654	8 oz	40.0		b	c	d
Bay Dam 18654	4 oz	40.0		b	c	d
Cleary's 3336	4 oz	43.33		b	c	d
Cleary's 3336	8 oz	48.33		b	c	d
Fungo	4 oz	50.0			c	d
Check		50.0			c	d
Fungo	8 oz	56.66				d

1 Treatments followed by the same letter are not significantly different at the 5% level.

2 Fungicides = oz/1000 sq ft of actual material

Nematicides = lb/acre of active ingredients

Varietal Evaluation

In a preliminary study on our M. S. U. Kentucky bluegrass varietal plots two commercially available Kentucky bluegrass varieties, Fylking and Pennstar, appeared to be more susceptible to Fusarium blight than Merion. This study is being continued and more data on other varieties is expected next year.

Literature Cited

Laughlin, C. W. and J. M. Vargas, Jr. 1973. Update of nematode associated with turfgrasses in Michigan. 43rd Annual Michigan Turfgrass Conference Proceedings. 2:13-14.