

FACTORS AFFECTING THE DEVELOPMENT OF FUSARIUM BLIGHT

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Extensive surveys were made to determine if factors other than Fusarium roseum were involved in the development of Fusarium blight. The survey revealed that high populations of nematodes, especially the nematode Tylenchorhynchus dubius, occurred in Fusarium blighted turfs.

A greenhouse study was conducted to determine the role, if any, these nematodes were playing in the development of Fusarium blight. In this study only the nematode T. dubius was able to produce the stunted top growth and poorly developed root systems, the two characteristic symptoms normally associated with Fusarium blight infected turfgrass plants. The F. roseum treated plants had normal root and top growth and were comparable to the untreated controls. It was concluded, therefore, that the nematode was the dominant pathogen in the F. roseum - T. dubius interaction which is responsible for the disease Fusarium blight.

Control: Before we had determined nematodes were involved in the disease interaction, we had obtained control with the systemic fungicide Tersan 1991, but only where we drenched the material into the root zone. We originally thought this was related to the upward translocation in the plant of the systemic fungicide. These results were puzzling in light of the involvement of the nematodes in the development of the disease. Upon further investigation, the systemic fungicide Tersan 1991 was shown to be a nematicide in addition to being a fungicide. We now believe that if the systemic fungicide is drenched into the root zone, the grass plants roots will pick it up and prevent the nematode from feeding. The systemic fungicide, of course, can also protect the plant from infection by the F. roseum fungus.

If Fusarium blight is an interaction between a nematode and a fungus, with the nematode being the dominant pathogen, then one should be able to control the disease with nematicides. Control of Fusarium blight has been demonstrated in Michigan with the nematicides Dasanit and Oxymal. However, it appears that they must be applied early in the season before the Fusarium blight symptoms begin to appear.

Drought stress appears to be the main factor in symptom development after infection has taken place. This is logical since you have a weakened grass plant which has a poorly developed root system and as soon as drought stress is applied, it will begin to wilt and eventually die. Light, frequent watering of Fusarium blighted turfs during periods of drought stress can prevent Fusarium blight symptom development. During the periods of hot dry weather, syringing lightly about midday may also be necessary, but symptom development of the disease can be prevented following such a watering program.

Varieties: Not enough information is known to make recommendation concerning varieties which are resistant to Fusarium blight. However, there is enough evidence to show that Merion, Fylking, and Pennstar are three very susceptible Kentucky bluegrass varieties which should not be used in areas where Fusarium blight is a problem.

SUMMARY - The disease Fusarium blight appears to be an interaction between nematodes and a fungus in which the nematode is the dominant pathogen. The symptoms of the disease occur during periods of drought stress which may occur during warm or cold weather. The disease can be controlled culturally by light, frequent watering during periods of drought stress, or chemically with one of the recommended systemic fungicides and/or nematicides. One should check with the turfgrass experts in his area for specific recommendations. A word of caution: the nematicides are extremely dangerous to human health, thus, proper clothing and equipment must be worn when applying them. Once again, it is advisable to check with an expert in your area before applying them.