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Turf Grass TRENDS

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Nontarget effects of fungicide applications

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The development and use of highly effective fungicides have revolutionized turfgrass disease management. Though turfgrass managers are well aware of the selectivity of many fungicides, little attention has been paid to the unintended nontarget effects of such applications on the overall ecology of turfgrass.

It is often assumed that, because a fungicide is selective, it is not capable of causing damage to other turfgrass micro- and macro-organisms or to the grass itself.

Over the years, a number of nontarget effects have been observed following the application of fungicides. Many of the more thoroughly documented nontarget effects are from fungicides no longer used in turfgrass disease management. However, in this article, I am focusing on those turfgrass fungicides currently in commercial use.

Nontarget effects may be direct or indirect

Direct effects of fungicides on pathogen activity can result in the impairment or enhancement of fungal growth and reproduction. Fungicides can alter the abilities of fungal spores to germinate or survive. Indirect effects on pathogen activity are not as obvious and are generally accomplished through more complex mechanisms than those of direct effects. These indirect effects may result from changes in the interactions between multiple turfgrass pathogens, between pathogens and non-pathogenic microorganisms, and between pathogens and their host species.

Among the most poorly understood of the nontarget effects are those that directly affect the host plant and those that result in a basic change in turfgrass physiology. Even though much information is available from research on other agricultural crops, we know little about the nontarget effects of specific fungicide applications on turfgrass growth and physiology, particularly as they affect disease development.

How are fungicides classified?

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