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Part 1: A Series on Plant Pathogens – Fungicide Resistance

Fungi are tiny, multi-celled organisms that naturally break down organic matter in nature. Some fungi break down living plant tissue while other fungi prefer dead plant tissue. In the green industry, landscape and turf professionals use integrated pest management procedures to control fungi that damage desirable plants and turf. One of the components of IPM is chemical controls. Using chemicals to control fungi is often needed when environmental conditions are conducive to a fungal outbreak. Using fungicides responsibly includes applying at label rates and rotating chemicals to reduce the chances of the pathogen becoming resistant to the chemical. Just as 'superbugs' in humans are becoming immune to some antibiotics due to over-prescription and/or improper use, the same thing can and does happen to plant pathogens in nature if fungicides are improperly used. When this happens, the fungicides won't work as effectively to control outbreaks, rendering the chemical useless or causing the applicator to use higher rates of the chemical than normally needed to reach the same control. Resistance also occurs in herbicides and insecticides.

It is important to learn not just the brand name of the product, but also the active ingredient, as well as the class or family of that chemical. This is needed to ensure that different chemical modes of action (MOA) to control the pathogen are used. Even if the active ingredient is different, the mode of action may be the same. If this happens, then even though the applicator may think they are rotating chemicals, they really aren't and resistance if more likely to occur due to over exposure of only the same mode of action.

One of the easiest ways to find information on this subject is from FRAC, the Fungicide Resistance Action Committee. Here you will find most fungicides, their chemical names, mode of action and target sites, and the coordinating FRAC code. The FRAC site will also comment on the level of risk for resistance, which varies. The chemical class code that is on the label of fungicides makes it easier to know which class the pesticide is in. These codes coincide to different mode of action target sites, and should be used in a rotation based on label recommendations. The label will also recommend how often a certain chemical can be used before rotating to another chemical.

More information can be found by contacting your local UF/IFAS Extension office and by going to http://www.frac.info/.