

August weather fuels crop disease

As a Boy Scout too many years ago, I was taught that fire requires three elements: oxygen, fuel and heat. Remove any one and you snuff a fire. In a similar way, crop diseases require three, and sometimes four, conditions to “ignite” and spread.

The first three components essential to disease spread are: 1) the presence



From the Turnrow

By BOB KEMERAÏT

of the pathogen that causes the disease — for example, *Rhizoctonia solani*; 2)

the presence of a susceptible host such as a non-resistant variety; and 3) an environment suitable for infection and disease spread — often warm and humid. In the case of viruses that are spread, or vectored, by insects, the presence of a suitable insect, such as thrips carrying tomato spotted wilt virus, becomes the fourth component. These components

collectively are referred to as the “disease triangle” or “disease pyramid.”

The foundation of effective disease management for any crop begins by taking the necessary steps to eliminate one or more parts of the disease pyramid. Sound management strategies include planting resistant varieties and effectively using fungicides to protect the crop before infection occurs.

August is a month when fungal diseases become all too obvious in peanut, soybean, late-planted corn and even cotton fields.

Some diseases, such as spotted wilt and *Cylindrocladium* black rot on peanuts, *Stemphylium* leaf spot on cotton, and nematode damage on many crops, may simply appear to occur in August but really have been developing slowly since earlier in the season. Spotted wilt, CBR and nematodes all cause extensive damage to plant roots. A combination of severe root damage, soaring temperatures during the dog days of August, possible drought, and the additional stress from flowering and reproductive growth is a perfect recipe for rapid and extensive collapse in a field. *Stemphylium* leaf spot may appear to engulf a field in a matter of weeks; however, the underlying cause is the inadequate level of a nutrient such as potassium over some period of time that weakens the structural resistance in the cotton leaf. None of these problems can be managed once symptoms begin to appear.

Disease triangle holds key

In August, temperatures are often quite favorable for pathogen growth. Temperature, coupled with afternoon thunderstorms and an occasional hurricane, provide perfect conditions for disease. Also, many crops have a dense leaf canopy that traps humidity and creates greenhouse-like conditions, encouraging the spread of disease. As a heavy fruit load develops, the additional stress may increase the plants’ susceptibility to infection. Finally, disease inoculum, spores of various fungal pathogens, have been increasing since early in the season. Plenty of leaf spot, rust and other spores are in the environment, capable of overwhelming plant defenses. This combination of environment, stress and abundant pathogens makes August a difficult month for growers.

How do growers survive August and protect their crop until harvest? The key is to ensure adequate protection throughout the season leading up to the critical month. Growers who use the appropriate fungicides and nematicides at the right time enjoy limited disease problems in August and a good harvest. Growers who wait until August to address disease problems have set themselves up for a no-win situation.

I must admit, my buddies and I did not always pay attention to safety when around fire. I still sport a burn scar or two, as well as sheepish memories.

Growers can’t afford the “burn” from forgetting the lessons of the disease triangle.

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