

THE NEW NORMAL: TARGET SPOT, BACTERIAL BLIGHT, AND ROOT-ROTTING FOVS

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Five years ago, Target Spot caused by *Corynespora cassicola* was a recently discovered disease in South Alabama and Georgia; Bacterial Blight caused by *Xanthomonas citri* pv. *malvacearum* (Xcm) had flared in Arkansas and Mississippi after a long, near-absence in the Eastern Belt, and *Fusarium oxysporum* f. sp. *vasinfectum* race 4 (FOV4) was a disturbing novelty in the San Joaquin Valley (SJV) of California. All of these diseases of Upland cotton (*Gossypium hirsutum*) are now considerably worse.

Target Spot

Target Spot is an endemic disease in the South East (SE) and can be explosive during warm, humid periods. An outbreak during a three-week period of clouds and rain in the Central Delta in 2015 caused greater levels of defoliation than had been observed in the SE. All varieties appear susceptible; some are more susceptible than others. Defoliation is increased by early disease onset and accelerated by humidity after the first lesions appear. Replicated trials suggest that moderately susceptible varieties can tolerate up to 50% defoliation of the lower canopy without yield loss, but greater leaf drop has led to documented losses of 200 lb lint/acre or greater. Fungicide treatment retards defoliation, but may not protect yields. After considerable research, the optimum timing of fungicide treatment remains unclear, in part because of frequent instances when yield responses have not been observed.

Bacterial Blight

Reports of incidence by county indicate that the prevalence of this disease is increasing. Identification of isolates from Georgia, Mississippi, and Texas indicate that the predominant Xcm race is 18. Thus the resistance gene package developed by the Universities of Oklahoma and Texas A&M remains effective. However, annual USDA-AMS estimates show that the percent of acres planted to susceptible varieties has dramatically increased. Consultants and the cooperative extension service are receiving complaints that planting seed are contaminated. Field histories and patterns of early infection suggest contaminated seed as a source in certain instances, but no rapid test of seed is available. Mississippi State University and Cotton Incorporated are developing a qPCR test. The method is currently being validated on field infected material.

Highly Virulent FOVs

The predominant race of FOV in the U.S. was race 1 (FOV1) which required the presence of the root-knot nematode (RKN) (*Meloidogyne incognita*) for infection; symptoms of wilt were often first observed near the onset of flowering. In 2001 a new race of FOV that did not require RKN was observed in the SJV and killed plants at the 4-6 leaf stage. This race was determined to be FOV4 and has since spread throughout the SJV and is a factor in the demise of the Acala cotton industry. Surveys for FOVs identified newly-found races in the Southeast U.S. and several highly-virulent, so-called biotypes that are outside the classification system. As of this summer, FOV4 was discovered in Far West Texas. We have no management for the highly-virulent FOVs in Upland cotton. The highly-virulent FOVs pose a strategic threat to the U.S. cotton industry. A well-supported host plant resistant breeding effort is urgently needed.