

Bacterial Blight on Cotton in Arkansas, an Unexpected Resurgence

C. S. Rothrock, Dept. of Plant Pathology, University of Arkansas

An epidemic of bacterial blight occurred in Arkansas in 2011. Bacterial blight, caused by *Xanthomonas citri* subsp. *malvacearum*, was observed on cotton the week of 11 July 2011 in Northeast Arkansas. Disease was associated with severe thunderstorms having high winds prior to disease reports. Symptoms included the angular leafspot symptom and localized leaf vascular necrosis. Symptoms were generally uniformly distributed throughout a field. This is the first report of bacterial blight causing disease losses in Arkansas since 1983, based on the National Cotton Council Disease Database. Bacterial blight affected about 40,000 acres in Mississippi and Craighead counties and approximately 60,000 acres statewide. Four cultivars were associated with the occurrence of bacterial blight DP 0912 B2RF, AM 1550 B2RF, PHY 367 WRF, and ST 5458 B2RF. As a result of the absence of the disease for over 20 years, the source of the inoculum was investigated. Producers or consultants submitted seed samples to the Arkansas Cooperative Extension Plant Health Clinic for testing. Submissions included the producer, county, cultivar and seed lot. A seed assay was developed based on previously published methodologies which involved washing seed in sterile saline buffer for 20 minutes. Seed for a sample was disinfested in 70% ethanol for one minute followed by soaking in 2.5% NaOCl for 4 minutes. Seed were rinsed in sterile deionized water three times before the seed, between 200 and 675 seed, were plated on Peptone Sucrose Agar (PSA). In addition, one milliliter samples of the saline buffer wash for each sample were plated on PSA to assay for the presence of the pathogen on the seed surface. Suspect colonies of *X. citri* subsp. *malvacearum* were identified using serology, ELISA, for the genus *Xanthomonas* and pathogenicity assays on cotton seedlings. Based on these techniques, 14 of 34 seed lots were found to contain the pathogen within the seed. The pathogen also was detected in seed washings from 3 of 34 seed lots. The pathogen was detected in seed lots for each of the four cultivars that the disease was commonly observed on in fields in Northeast Arkansas. The presence of the pathogen in seed were at levels sufficient to account for the epidemic in these fields. Options for producers include crop rotation, residue incorporation, and resistant cultivars. The importance of the seedborne nature of this disease is heightened because of the pathogen's limited ability to survive in the absence of the host and its limited dissemination. This epidemic emphasizes that the most important strategy for controlling this disease is not using fields with bacterial blight for seed production. Other less efficient options are to assay seed to verify seedlots are pathogen free or treat seed to reduce seed infection. The recent resurgence of specific seedborne pathogens emphasizes the need for good stewardship of planting seed to optimize yields and avoid additional inputs for producers.