THE RESURGENCE OF BACTERIAL BLIGHT ON COTTON IN ARKANSAS

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<u>Abstract</u>

A bacterial blight epidemic occurred in Arkansas and neighboring states in 2011. Bacterial blight, caused by Xanthomonas axonopodis pv. 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 leaf spots and localized leaf vascular necrosis. Symptoms were generally uniformly distributed throughout a field. This is the first report of bacterial blight in Arkansas since 1983 according to 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. Seed samples were submitted by producers or consultants to the Arkansas Cooperative Extension Plant Health Clinic for seed testing. Information included the producer, county, cultivar and seed lot. A seed assay was developed which involved washing seed in sterile saline buffer for 20 minutes and saving the seed washings. Seeds were then washed in 70% ethanol for one minute followed by soaking in 2.5% NaOCl for 4 minutes to surface disinfest the seed. Seeds were rinsed in sterile deionized water three times then plated on Peptone Sucrose Agar (PSA). In addition, one milliliter samples of the saline buffer for each sample were plated on PSA to assay for the presence of the pathogen on the seed surface. The number of seeds plated per sample was between 200 and 675. Suspect colonies of X. axonopodis pv. malvacearum were tested using serology by the ELISA technique for identification to the genus Xanthomonas. Cultures that were confirmed as Xanthomonas were used in 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 was at levels sufficient to account for the epidemic in these fields. Options for producers for the 2012 cotton season including residue destruction and use of resistant cultivars are discussed.