## BREEDING FOR BACTERIAL BLIGHT RESISTANCE Peggy Thaxton Delta Research and Extension Center Stoneville, MS

## **Abstract Only**

Bacterial blight of cotton incited by Xanthomonas campestris pv malvacearum (Xcm) occurs in most cotton producing regions of the world. The disease can affect all plant parts in the form of seedling blight on seedlings, angular leaf spot on leaves, blackarm lesion on stem and petioles, and boll rot. Currently 19 races of Xcm are recognized in the USA. A shift in races of the pathogen has occured from USA races 1, 2 and 7 to the most virulent race 18. In areas where bacterial blight occurs, sanitary practices during ginning and processing, the use of acid-delinted and fungicide treated seed, disposal of residues from the previous crop, and the use of resistant cultivars have minimized the potential loss in yield and fiber quality caused by Xcm. At least 22 major genes (B) for resistance to Xcm have been reported. The majority of these genes are partially to completely dominant for resistance. Additive and digenic interactions were also reported. Single resistance genes confer resistance to a few races (vertical resistance), but are vulnerable to the other races of the pathogen. Thus, different combinations of single B genes and modifiers are important to obtain a stable source of horizontal resistance. Immunity to all USA races of the pathogen conferred by the B2B3BSm gene combination has been stable for 22 years in the USA. Selection must be made utilizing a compatible race mixture of the pathogen, including virulent races to identify gene combinations that give broad spectrum resistance to many races. Recurrent selection and the backcross methods have been used to develop horizontal resistance to all races of the pathogen. Resistant cultivars will reduce disease incidence and severity, and control bacterial blight.