INTRODUCTION: Alternaria leaf spot of cotton is also known as Alternaria leaf blight. The disease was first identified in cotton in the US in 1918 and is now distributed worldwide. Alternaria leaf spot has been considered a minor disease in the cotton growing areas of Arizona. The disease is frequently associated with senescing tissue of cotton under physiological stress (heavy boll load) or nutritional stress (potassium deficiency) late in the growing season. On rare occasion it can also affect seedlings. In recent years, several disease outbreaks that led to severe defoliation in late-season cotton were reported from Graham County. The disease can severely affect susceptible Pima cotton varieties and also attack upland cotton varieties. Susceptible varieties have had nearly 100% of leaves infected in years when weather conditions are conducive for disease infection and development. The impact on yield in Arizona was estimated to be 10% to 15% in highly susceptible cotton varieties.

PATHOGEN: Alternaria macrospora, Alternaria alternata (fungus: Ascomycetes)

HOST RANGE: Alternaria in general has a wide host range, causing leaf spots and blights on many plant species. The fungus is saprophytic and commonly found colonizing many kinds of dead or dying plant materials.

DISEASE CYCLE: The fungus overwinters in infected crop residues and other alternate host plants. The conidia are produced on fallen dead leaves under high humidity. These asexual spores of the fungus are thick-walled (resistant to adverse conditions), multicellular, and pigmented. The fungus are spread long distance by contaminated seeds or airborne conidia spores or short distance by water splash of fungal spores. Temperatures of 68-83°F and free surface water (rainfall or dew) are required for infection.

SYMPTOMS AND DIAGNOSIS: Symptomology can be observed on cotyledons, leaves, stems, flower buds and bolls. Initial symptoms are small, circular, brown necrotic lesions and also attack upland cotton varieties. Susceptible varieties have nearly 100% of leaves infected in years when weather conditions are conducive for disease infection and development. The impact on yield in Arizona was estimated to be 10% to 15% in highly susceptible cotton varieties. PATHOGEN: Alternaria macrospora, Alternaria alternata (fungus: Ascomycetes)

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SYMPTOMS: Necrotic lesions surrounded by purple halo margin

DIAGNOSIS: Necrotic lesions on bolls and bracts
Shot-hole appearance after center of lesion is detached

lesions of Alternaria (red arrow) and Southwest cotton rust (white arrow, yellow halo)

Necrotic lesions on the lower leaf surface

Severely infected cotton in the late season
Areas of field with higher disease severity

Fields planted with susceptible and tolerant hybrids with obvious differences in the extent of blighted leaf area

Lesions of southwest cotton rust (red arrow) and Alternaria leaf spot (white arrow)

Rust pustules on lower leaf surface (Yellow orange)
MANAGEMENT: Intervention is rarely needed unless the disease starts in early- or mid-season cotton and favorable weather conditions are predicted. In general, Alternaria leaf spot disease can be mitigated by: 1) plant resistant cultivars in fields with a history of the disease; 2) remove and destroy the infected crop residues; 3) till to bury and break down infected crop residues; 4) reduce plant stress and maintain good soil fertility; and 5) preventative fungicide spray in severe defoliation case: systemic strobilurins (Headline and Quadris), triazole fungicides (tebuconazole and difenoconazole) as well as protectant fungicides (mancozeb) are effective.

REFERENCES: