

Wheat and Feed Grain Committee
Project Report for 2007

Project Title: Impact of crop rotation on diseases and nematode pests of corn, cotton, and peanut as well as on the economics of corn, cotton, and peanut production.

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Objective:

1. Assess the profit potential for cropping systems when corn is rotated with cotton or peanut.
2. Determine whether corn contributes to the buildup of nematodes pests of peanut and cotton.
3. Evaluate the impact of corn cropping frequency on the incidence of diseases, nematode pests, and yield of cotton and peanut.

Summary: Studies concerning the impact of rotation on disease and nematode pests of corn, cotton and peanut are in progress at the Plant Breeding Unit, Gulf Coast Research and Extension Center, and Wiregrass Research and Extension Center. Corn is an excellent bridge host for the cotton root knot nematode between cotton crops. Reproduction rates for this nematode on corn and cotton are similar. In 2 of 4 years, reduced corn yields are linked with increasing cotton root knot larvae populations. Models show a 1 to 6% reduction in corn yield for every 100 cotton root knot larvae/100 cc soil or up to 30% yield loss. Lower cotton yields were noted after cotton and to a lesser extent corn than peanut. Overall, peanut is a better rotation partner with cotton than corn. Corn and cotton are not bridge hosts for peanut root knot nematode and pod yields are higher where peanut follows either crop due reduced disease and nematode pressure. Cropping frequency has no impact on the incidence of leaf spot and blight diseases in corn.