

**PROGRESS IN TRANSFERRING RENIFORM NEMATODE IMMUNITY
FROM *GOSSYPIUM LONGICALYX* INTO UPLAND COTTON**

A. Forest Robinson, Alois A. Bell and Alan C. Bridges

USDA

College Station, TX

Two steps were taken toward transferring immunity to the reniform nematode (*Rotylenchulus reniformis*) from *Gossypium longicalyx* into *G. hirsutum*. In the first step, pollen from various *G. hirsutum* genotypes including Auburn M-315 was used to pollinate two vegetatively propagated self-sterile triple-species hybrids that had been developed previously through a colchicine-enabled crossing sequence among *G. hirsutum*, *G. longicalyx* and *G. amourianum* or *G. herbaceum*. Seventy-one seed were obtained and when plants grown from them were simultaneously evaluated for reniform and root-knot nematode (*Meloidogyne incognita*) resistance by means of a novel split-root inoculation technique, 10 were considered immune, with 14 others resistant but not immune, 33 moderately susceptible, and 14 highly susceptible to the reniform nematode. One of the 14 plants resistant to the reniform was also resistant to the root-knot nematode. Susceptible controls were heavily infested with mature reniform nematode females whereas reniform nematode-resistant *G. longicalyx* controls had no mature nematodes. Nematode resistance assignments were confirmed by repotting plants, growing them another 4 months, and assaying soil within pots. Four plants exhibited varying degrees of self-compatibility and the remainder were self-sterile or did not flower. In the second step, 44 F2 seed were generated from the four self-compatible plants and 112 second-backcross seed were generated by crossing 33 of the remaining 67 plants with pollen from root-knot nematode-resistant *G. hirsutum* genotypes. Two additional seed were obtained from two different bolls on one immune self-sterile plant after pollinating with pollen from resistant and susceptible self-compatible plants from the first cross. Altogether, 25 seed were obtained from plants rated as reniform nematode-immune and 39 from plants considered resistant. Forty-four seed had root-knot nematode-resistant male parents and 17 were from crosses between a reniform nematode-immune female and a root-knot nematode-resistant male parent. Successful root-knot nematode-resistant male parents included Acala Nem-X, Stoneville LA 887, LA RN 1032, LA 887, Auburn 623, Auburn 634, and Auburn M-315.