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FINAL REPORT (Project NC 10)  
TO  
National Peanut Board

TITLE: New options for postemergence control of common ragweed and common lambsquarters, and potential interactions of soil and postemergence-applied herbicides and in-furrow insecticides on tomato spotted wilt virus.

LEADER: John W. Wilcut

DEPARTMENT: Crop Science

*Evaluation of Cobra and Strongarm:*

Weed management studies were conducted at Lewiston-Woodville and Rocky Mount in 2004. Strongarm provided more consistent and better control of common ragweed and morningglories including entireleaf, ivyleaf, and pitted than Cobra. Control of larger common ragweed (greater than 18 inches tall) was better with Strongarm. However, Cobra provided better control of common lambsquarters (less than 5 inches tall it was a good treatment, lambsquarters taller than 5 inches were not controlled), Palmer amaranth, and tropic croton than Strongarm.

Weed-free studies were conducted at Lewiston-Woodville and Rocky Mount to assess crop tolerance and peanut yield to Cobra and Strongarm applied postemergence at different dates of application including June 1, June 15, July 1, July 15, and August 1. At all application timings Cobra burned the peanut foliage and caused more injury than Strongarm. Strongarm did cause some temporary yellowing and slight stunting of peanut vines that typically lasted about 10 days. At all application timings in weed-free environments, peanuts treated with Strongarm outyielded Cobra-treated peanuts by at least 400 lb/ac, reflecting the greater tolerance of peanuts to Strongarm postemergence compared to Cobra.

In summary, while Cobra provided some effective postemergence control of troublesome broadleaf weeds, it should be restricted to salvage treatments where no other options exist.

*Common lambsquarters weed management with new postemergence options:*

Three tests were conducted at Rocky Mount and Lewiston-Woodville to investigate potential interactions of the in-furrow insecticides Thimet and Temik with the soil-applied herbicides Sonalan, Dual Magnum, Outlook, Spartan, Strongarm, and Valor; and with the POST herbicide treatments of Gramoxone Max, Gramoxone Max plus Basagran, Cadre, and Storm. No interactions were observed for crop injury for any herbicide treatment or herbicide system. The wet early season environment may have influenced the lack of herbicide by in-furrow insecticide interaction.

*Single vs Twin Row Peanut Production with Temik, Thimet, Spartan, Strongarm, and Valor with and without POST Herbicides:*

Averaged over all herbicide systems (48 treatments in the test), Thimet peanuts in single rows yielded 111 lb/ac than Temik treated peanuts. However, in twin rows Temik-treated peanuts outyielded Thimet-treated peanuts 89 lb/ac when averaged over herbicide treatments. Averaged over in-furrow insecticide treatments and herbicide treatments, twin row peanuts at Lewiston-Woodville out yielded single row peanuts more than 500 lb/ac. Thrips damage was less in both single and twin row peanuts when treated with Thimet compared to Temik. No soil-applied or POST herbicide interaction with Thimet or Temik occurred. The extremely wet weather in the 2003 growing season, especially early season may have influenced the lack of insecticide by herbicide interaction. Weed control as expected was not influenced by insecticide treatment and only minimal differences were seen between single and twin row production systems with similar herbicide inputs.

*Strongarm postemergence evaluations:*. Field studies conducted at Lewiston-Woodville and Rocky Mount, NC evaluated weed control and peanut response to postemergence (POST) treatments of Strongarm at various rates and application timings. Strongarm controlled common ragweed and entireleaf morningglory when applied within 35 days after planting (DAP). Common ragweed 25 inches tall was controlled  $\geq 92\%$  with Strongarm at 0.008 to 0.0012 lb ai/ac and larger common ragweed (40 to 55 inches tall) were controlled  $\geq 97\%$  with 0.0024 lb/ac Strongarm. Common lambsquarters was controlled 62% or less with all Strongarm POST treatments following Dual Magnum applied preemergence (PRE), which provided 48% control. Peanut injury was less than 15% with all Strongarm POST treatments and was transitory. In separate studies, POST Strongarm treatments did not affect peanut yield in a weed-free environment. Peanut yield in weedy environments was reduced as the Strongarm application timing was delayed due to early season weed interference. A linear relationship was seen between yield and application timing with yield decreasing as application timing was delayed. This yield response documents the importance of early season weed management for maximizing peanut yield potential.