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FINAL REPORT
To
NORTH CAROLINA PEANUT GROWERS ASSOCIATION

TITLE: Management of Palmer amaranth and other problematic weed species in North Carolina peanut.

LEADER: John W. Wilcut

DEPARTMENT: CROP SCIENCE

REPORT: Studies were conducted at Rocky Mount and Lewiston in 2006 to evaluate peanut response and weed control with various herbicide weed management systems. Palmer amaranth control including ALS-resistant (resistant to Cadre and Pursuit) was also evaluated at Rocky Mount.

Main Effects of Soil-Applied Herbicide Control of ALS-Resistant and Nonresistant Palmer Amaranth.

Averaged over postemergence herbicide treatment options, the highest levels of ALS-resistant and nonresistant Palmer amaranth control were obtained with Prowl + Dual Magnum, Prowl + Dual Magnum + Valor, and Prowl + Dual Magnum + Strongarm PRE herbicide treatments. The highest yielding PRE herbicide treatments included Prowl or Dual Magnum + Strongarm and Prowl + Dual Magnum plus Valor or Strongarm PRE. The highest yielding systems resulted from good to excellent broad-spectrum control of annual grasses including goosegrass, large crabgrass, and Texas panicum; and control of broadleaf weeds including common lambsquarters, common ragweed, morningglories, and resistant and nonresistant Palmer amaranth.

<u>PRE Herbicides:</u>	<u>% Palmer control</u>	<u>Peanut yield (lb/ac)</u>
Prowl	77 c	1,020 d
Dual Magnum	71 cd	1,610 d
Prowl + Dual Magnum	90 a	2,150 c
Prowl + Valor	74 c	2,690 c
Dual Magnum + Valor	82 b	3,240 b
Prowl + Dual Magnum + Valor	87 ab	4,050 a
Prowl + Strongarm	66 d	4,170 a
Dual + Strongarm	67 d	4,190 a
Prowl + Dual Magnum + Strongarm	92 a	4,480 a

EPOST Herbicide Main Effects on ALS and Nonresistant Palmer Amaranth:

Averaged over soil-applied and postemergence herbicides, peanuts treated with Prowl + Dual Magnum PRE and no early postemergence herbicide controlled both resistant and

nonresistant Palmer amaranth 96% and yielded 3,870 lb/ac. Equivalent control was obtained with peanuts treated with Prowl + Dual Magnum PRE followed by Dual Magnum + Gramoxone Max + Basagran EPOST (98% control), however this system yielded 3,720 lb/ac, which is 150 lb/ac less than the aforementioned system. We attribute these lower yields to the greater injury obtained with paraquat tankmixed with Dual Magnum. The Dual Magnum likely heated up the paraquat-induced injury on peanut.

Postemergence Control of ALS-Resistant and nonresistant Palmer amaranth:

Control of Palmer amaranth (counting both biotypes) was best with Storm plus 2,4-DB (89%) compared to control with Cadre (81%), when averaged over soil-applied PRE and EPOST treatments. While Cadre will control nonresistant Palmer amaranth, it will not control ALS-resistant Palmer amaranth. Storm will control both Palmer amaranths, although application timing is critical (Palmer should be less than 4 inches tall).

Impact Statement: This research shows that PRE soil-applied herbicide treatments should include Prowl + Dual Magnum + Strongarm or Valor for control of nonresistant and ALS resistant Palmer amaranth, broad spectrum control of annual grasses and broadleaf weeds, and high peanut yields. The best POST herbicide option for control of ALS-resistant Palmer amaranth is Storm + 2,4-DB. Gramoxone and Gramoxone Max + Basagran are effective EPOST herbicides for resistant and nonresistant Palmer amaranth but Dual Magnum should not be used with Gramoxone EPOST in peanuts. It is estimated that over 80% of the Palmer amaranth in Georgia and South Carolina is ALS-resistant with close to 50% being ALS-resistant in North Carolina.