2004 BELTWIDE COTTON CONFERENCES, SAN ANTONIO, TX – JANUARY 5-9

MANAGING LARGE PITTED MORNINGGLORY (*IPOMOEA LACUNOSA*) IN ROUNDUP-READY COTTON (*GOSSYPIUM HIRSUTUM*) WITH LAYBY HERBICIDES.

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Abstract

Over 90 percent of Georgia cotton was planted to Roundup Ready technology in 2003. In response to the rapid adoption of this technology, traditional herbicide programs have been replaced with herbicide systems often consisting of only glyphosate. Although glyphosate effectively controls most of the common weeds in Georgia, several weed species including morninglories have become more troublesome in part to the elimination of traditional herbicide chemistry. In addition to the change in the herbicide program itself, farmers have placed less emphasis on early-season weed control in an attempt to execute the greatest possible amount of weed control by delaying the over-the-top glyphosate application until Roundup Ready cotton is in the fifth leaf stage. Lack of timeliness plays a significant role in the unacceptable weed control often achieved by these growers. These issues in concert with the lack of residual herbicides in the Roundup Ready program have resulted in the need for some "salvage" layby herbicide applications to rescue the crop.

Field studies were conducted at Ocilla, GA in 2001and 2002 and again in Moultrie, GA during 2003 to compare layby herbicide treatments for the control of large pitted morningglory. Glyphosate (Roundup, others) was applied over-the-top of the entire trial area when cotton was at the four leaf stage of growth. Plots were three or four rows by 25 feet. Layby herbicide treatments were applied at 15 GPA and morningglory populations ranged from 5 to 8 plants per square yard.

Layby treatments were replicated four times in a randomized complete block design and included the following: 1) Roundup (26 fl oz of UltraMax or 22 fl oz of WeatherMax), 2) Roundup plus Direx (1 to 1.5 pt/A), 3) Roundup plus Harvade (6 to 8 fl oz) plus Crop Oil (1 pt/A), 4) Roundup plus Staple (0.6 to 0.8 oz/A), 5) Roundup plus Valor (1 oz/A), 6) Roundup plus Aim (0.8 to 1 fl oz/A), 7) Roundup plus MSMA (2 lb ai/A) in 2002 and 2003, 8) Caparol (1 qt/A) plus MSMA (2 lb), 9) Direx (1 qt/A) plus MSMA (2 lb), or 10) Valor (2 oz/A) plus MSMA (2 lb) in 2001 and 2002. The formulation of MSMA used in the experiment contained a pre-formulated adjuvant system. A non-treated control was also included for comparison.

In 2001, moringglory was 2- to 4-feet while cotton was 14 inches with little to no bark present on the cotton stem. At 15 or 35 days after treatment (DAT), control was less than 84% by all layby options. Roundup plus Valor or Valor plus MSMA provided 74 to 83% control and these treatments were more effective than other options. At 35 DAT, the only other treatments providing greater than 60% control were Roundup plus Staple or Harvade (63%). Cotton injury at 5 DAT, was less than 10% by all treatments except with Roundup plus Valor (16%), Valor plus MSMA (18%), and Roundup plus Aim (25%). Injury from these treatments (> 10%) was still detectable at 14 DAT.

In 2002, morningglory was 2 feet while cotton was 23 inches with a barky stem. Eighty four to 96% control was noted with Roundup plus Valor, Valor plus MSMA, Roundup plus Aim, and Roundup plus Staple at both 16 and 36 DAT. Cotton injury was only greater than 9% with Roundup plus Aim at 5 DAT. Injury was less than 9% by all treatments at 16 DAT.

In 2003, morningglory was 9 inches while cotton was 15 inches with a barky stem. All treatments except Roundup alone (76%) provided greater than 87% control at 15 DAT. By 39 DAT, Roundup plus Valor, Aim, MSMA, or Direx were more effective than Roundup alone or Caparol plus MSMA (Valor plus MSMA treatment was not applied in 2003). Greater than 10% cotton stem necrosis was noted with only Roundup plus Valor or Aim (12%) at 7 DAT. Injury from these treatments was less than 5% at 15 DAT.

Cotton injury from Harvade plus MSMA ranged from 4 to 12% at 5 to 15 DAT across locations. This injury was minor chlortic spotting in leaf tissue throughout the plant and is likely do to soil uptake following rain events. This spotting was not detectable by 28 DAT.