COTTON AND WEED RESPONSE TO COMBINATIONS OF GLYPHOSATE AND GLUFOSINATE APPLIED WITH ACEPHATE AND RESIDUAL HERBICIDES Matt Inman David Jordan Keith Edmisten Alan York Jack Bacheler Randy Wells North Carolina State University

Raleigh, NC

Abstract

Field experiments were conducted during 2013 to determine cotton and weed response to glufosinate and glyphosate applied alone or with S-metolachlor or acetochlor. These herbicide combinations were applied alone or with acephate under weed-free conditions to determine injury potential to PHY499WRF and FM1944GLB2 cotton cultivars and in fallow areas with natural infestations of Palmer amaranth (Amaranthus palmeri S. Wats) and large crabgrass (Digitaria sanguinalis) to determine possible adverse interactions on emerged weeds. Glufosinate injured PHY499WRF more than FM1944GLB2 at one of two locations 7 days after treatment (DAT) with cotton recovering quickly and no injury apparent by 21 DAT. Thrips control by acephate was not affected by herbicides. Smetolachlor increased cotton injury more than acetochlor; however, injury was transient and not significant later in the season. Cotton injury, cotton yield, and percent open bolls from herbicide treatments were not affected by acephate. Control of emerged Palmer amaranth and large crabgrass by glufosinate and glyphosate was not affected by chloroacetamide herbicides applied alone or with acephate. Glufosinate controlled Palmer amaranth more effectively than glyphosate while large crabgrass was controlled more effectively by glyphosate. Approximately 30% of the Palmer amaranth population at this location is resistant to glyphosate. The combination of glyphosate and glufosinate controlled both weeds and was not affected by chloroacetamide herbicides or acephate. Results from these studies suggest that cotton safety, thrips control, and weed control most likely will not be compromised when glyphosate or glufosinate is applied in combination with S-metolachlor or acetochlor.