RACE TO REPLACE CYANAZINE (BLADEX, CY-PRO)

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Abstract

In 1999, cyanazine was applied to at least 24% of the cotton acreage in Arkansas, Georgia, Louisiana, Mississippi, and North Carolina. Wide spread use of cyanazine applied alone or mixed with MSMA was due to broad spectrum weed control with minimal concern of crop injury when applied precisely. Cyanazine also offered several weeks of residual weed control with minimal rotational restrictions. However, production of cyanazine was ceased on December 31, 1999, and the product may not be used after 2002. Since a large quantity of acres is treated with cyanazine, finding effective and economical alternatives for cotton producers is crucial. Thus, two experiments were conducted, each at multiple locations during 1999 and 2000, to compare cyanazine to alternatives for postemergence weed control, crop injury, and residual weed control in cotton.

Cyanazine (1 lb ai/A) plus MSMA (2 lb ai/A) was compared to the following treatments for cotton injury and postemergence control of Asiatic dayflower (2-4 inches), cutleaf groundcherry (2-4 inches), redweed (3-4 inches), smallflower morningglory (5-7 inches), and tropic croton (3-5 inches): dimethipin (0.3 lb ai/A) plus MSMA plus crop oil concentrate (1 pt/A), diuron (1 lb ai/A) plus MSMA, diuron (0.75 lb/A) plus lactofen (0.09 lb ai/A), flumioxazin (0.063 lb ai/A) plus MSMA, fluometuron (1 lb ai/A) plus MSMA, glyphosate (0.75 lb/ ai/A), lactofen (0.15 lb/A) plus MSMA, linuron (0.75 lb ai/A) plus MSMA, and prometryn (1 lb ai/A) plus MSMA. A nonionic surfactant was included with all treatments except dimethipin plus MSMA plus crop oil concentrate. All treatments were precision-directed to cotton 12 to 14 inches tall.

Cotton was injured less than 13% by all treatments. Injury by flumioxazin was greater than that by lactofen, cyanazine, or dimethipin, which was greater than injury by all other treatments. Cyanazine plus MSMA controlled Asiatic dayflower, cutleaf groundcherry, redweed, smallflower morningglory, and tropic croton 81 to 98% at 4 wk after treatment. Diuron, flumioxazin, lactofen, or prometryn mixed with MSMA controlled all weeds as effectively or more effectively than cyanazine mixed with MSMA. Diuron plus lactofen was similarly effective except for controlling Asiatic dayflower only 37%. Compared to cyanazine plus MSMA, glyphosate was less effective in controlling Asiatic dayflower and smallflower morningglory; linuron plus MSMA was less effective in controlling Asiatic dayflower, smallflower morningglory, and tropic croton; and dimethipin plus MSMA was less effective in controlling all weed species.

Applying cyanazine (1 lb/A), dimethipin (0.3 lb/A), diuron (1 lb/A), flumioxazin (0.63 lb/A), fluometuron (1 lb/A), linuron (0.75 lb/A), and prometryn (1 lb/A) preemergence to weeds allowed comparison of residual weed control. Weed species evaluated 4 wk after treatment included Florida pusley, Palmer amaranth, Texas panicum, and tropic croton. Cyanazine controlled these weeds 90, 90, 75, and 97%, respectively. Fluometuron and flumioxazin controlled Palmer amaranth, Florida pusley, and tropic croton similarly to cyanazine and controlled Texas panicum more effectively (84-88%). Compared to cyanazine, diuron and prometryn controlled Palmer amaranth and tropic croton as effectively and controlled Texas panicum 17 to 20% more effectively. However, both diuron and prometryn were less effective (67-74%) than cyanazine in controlling Florida pusley. Dimethipin controlled weeds 28 to 59%, and control was less than that of cyanazine.

According to the results of these studies, flumioxazin, diuron, or prometryn were the best substitutes for cyanazine when analyzed for postemergence weed control, crop injury, and residual weed control.

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