EVALUATION OF VALOR COMBINATIONS IN COTTON

J. Tredaway Ducar and C. Shane Bray
University of Florida
Gainesville, FL
J.V. Altom
Valent USA Corporation
Gainesville, FL

Valent USA Corporation is exploring the use of Valor (Flumioxazin), a PPO inhibiting herbicide, as a layby cotton herbicide. Valor is currently labeled for use in peanut, soybean, and sugarcane. It provides preemergence control of broadleaf weeds in peanut (*Arachis hypogaea*), soybean (*Glycine max*) and sugarcane (*Saccharum officiarum*). Valor provides a rapid kill in addition to four to six weeks of residual control. Valor's low use rates and rapid soil dissipation makes it a possible option for layby weed control (Hatiozs 1998). Cotton height must be 12 inches or greater with the spray applied no higher than the bark layer on the plants. Treatments containing Valor applied to green cotton stems can result in severe cotton injury or death. Research results indicated Valor + MSMA applied layby controls Florida pusley (*Richardia scabra*), eclipta (*Eclipta prostrata*), sicklepod (*Senna obtusifolia*), and *Ipomoea* spp. complex greater than 88%, with injury < 7.5% and no seed cotton yield reductions (Main et. al 2000). The objectives of this research were to evaluate Valor in combination with other postemergence (POST) materials in cotton and to determine the utility of Valor with different adjuvants and timings of application

Experiments were conducted in Gainesville, FL and Quincy, FL in 1999, Marianna, FL and Quincy, FL in 2000, and Marianna, FL in 2001 to evaluate Valor for layby control in cotton. Conventionally tilled 'DPL 458 Bt/RR' cotton was planted in May 1999, 2000 and 2001. A randomized complete block design with either three or four replications was utilized. Plots consisted of four rows 6.1 m long. Treatments were applied using a CO2 pressurized tractor-mounted layby sprayer delivering 94 L/ha of water carrier. Valor (0.071 kg ai/ha) plus MSMA (0.91 kg ai/ha) was applied with different adjuvants and different cotton heights to determine adjuvant use and optimum application timing. Adjuvants evaluated included Induce, Activate Plus, Agridex, and an experimental adjuvant Impressive DB. Treatments (kg ai/ha) for comparison included Valor at (0.071 and 0.105), Valor (0.035, 0.071 and 0.105) + MSMA (2.24), Valor (0.071 and 0.105) + glyphosate (1.12), V-10080 (1.19), Cobra (lactofen) (0.22) + MSMA (2.24), Bladex (cyanazine) (0.84) + MSMA (2.24), Valor (0.071) + Dual Magnum (S-metolachlor) (1.68), GX-681 (0.75) + MSMA (2.24). Treatments were applied to cotton at heights ranging from 15 to 38 cm in height. In 2001, different layby combinations were used with Roundup UltraMax (glyphosate) alone, Roundup UltraMax plus Cotton-Pro (fluometuron) or Prowl (pendimethalin) plus Cotoran (fluometuron) PRE. Visual evaluations were recorded 7, 14, and 28 days after treatment (DAT). All treatments included crop oil concentrate at 1% v/v. Evaluations were recorded at 2 and 4 weeks after treatment (WAT). Visual evaluations were based on a scale of 0 -100% with 0 = no cotton injury or weed control and 100 = cotton death or complete weed control. Data collected included cotton injury and weed control for *Ipomoea* spp., Florida pusley, eclipta, sicklepod, and purple nutsedge (*Cyperus rotundus*).

Injury did not occur with any treatment at Marianna or Quincy in 2001 or 2000. However, injury was seen with all treatments in Gainesville (1999) except Valor + Dual Magnum. Injury did not occur at Quincy in 1999. Coarse soil and decreased organic matter content may have attributed to differences in cotton injury at Gainesville. In Marianna and Quincy Valor + MSMA with all adjuvants and timings controlled pitted morningglory (IPOLA) >75%. Either MSMA or Valor + glyphosate was needed in 2001 to achieve >80% IPOLA control. Purple nutsedge was controlled >70% by all adjuvant combinations and timings. In 2001, treatments containing MSMA, Valor + glyphosate, or V-10080 controlled yellow nutsedge > 80%. At Quincy Valor + glyphosate applied at all rates controlled pitted morningglory and eclipta >90% 4 weeks WAT. Valor (0.105) + glyphosate (1.12) controlled sicklepod 95%. All treatments except Bladex + MSMA controlled pitted >83 %, and cotton morningglory >86% 4 WAT. Eclipta control was >89% for all treatments except Cobra + MSMA and Valor + Dual Magnum. Yields were reduced in 2001 with treatments containing Valor at (0.071) or when Valor was used with an NIS. Yields at Marianna in 2000 displayed no differences for adjuvant used or timing of application. No differences in yield were observed at Gainesville in 1999. Cotton yield at Quincy in 1999 was decreased with Valor (0.071) + Dual Magnum from other treatments.

Weed control and yield data indicate Valor has potential for broad spectrum weed control when applied layby in cotton. Cotton displayed tolerance to applications containing Valor with any adjuvant and any timing however, using Valor at 0.071 may decrease yields significantly. This may be attributed to any Valor that may have come in contact with the cotton foliage. Previous research has shown that cotton should be at least 12 inches in height with 4 inches of bark at the base of the stem for greatest safety when making Valor applications (Wilcut et. al 2000). Any applications of Valor contacting green tissue will cause significant crop damage (Altom et. al 2000).

Literature Cited

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