

Corn and Grain Sorghum Promotion Board
Annual Report - December 2001

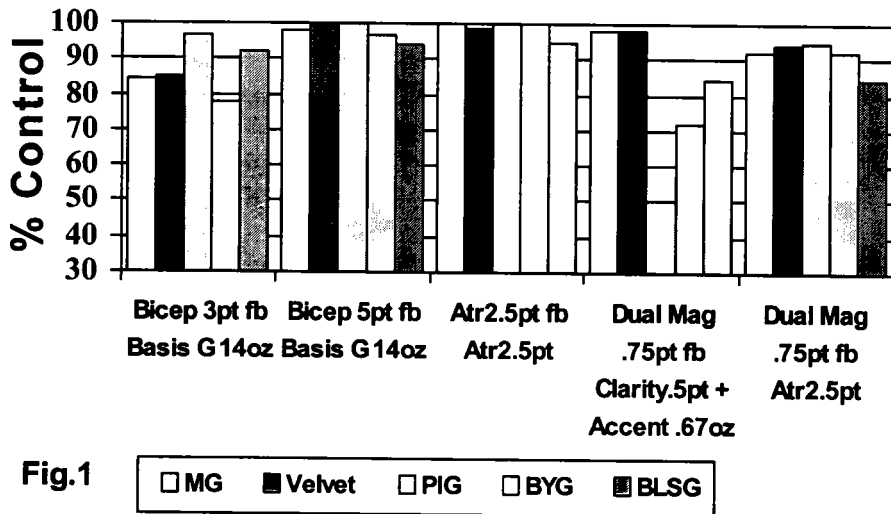
Project Title: Evaluation of Systems for Difficult to Control Weeds in Corn
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Corn

There are more than 130 different herbicide brand names listed in the 2000 Crop Protection Reference for use in corn. Even with this large arsenal of products, Arkansas corn farmers continue to experience difficulty in controlling late season morningglories and grasses. Also, atrazine is a major component of many of the current corn herbicides available on the market and has traditionally been the product of choice for morningglory control in corn. The close environmental scrutiny to which atrazine has been subjected over the past few years has caused many to look for alternative products. Studies were established at the Southeast Research Station in Rohwer to evaluate late season weed control in programs with and without atrazine. Studies were located in areas with natural infestations of morningglory and barnyardgrass and were overseeded with morningglory, barnyardgrass, broadleaf signalgrass, velvetleaf and pigweed. All plots were furrow irrigated as needed.

Some highlights of the studies are presented in the charts below.

Corn Weed Control 99 Days After Trt



Corn Weed Control 90 Days After Trt

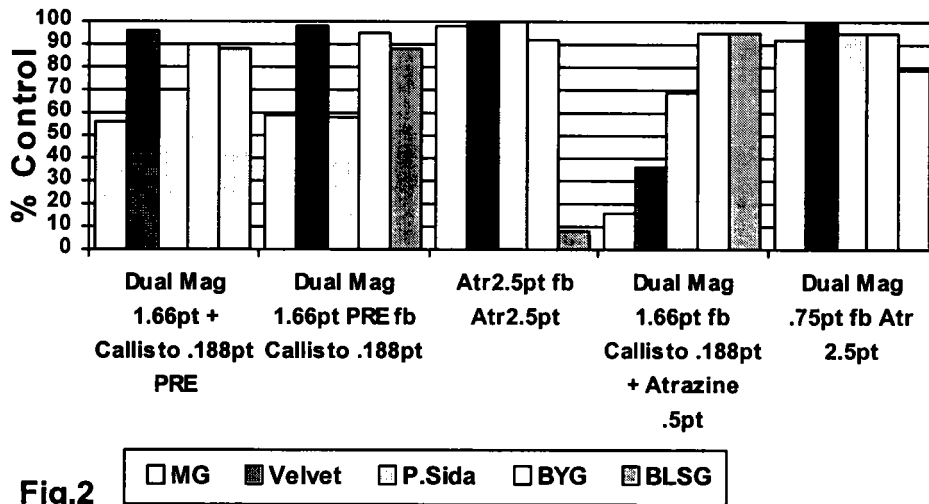


Fig.2

Fig. 1 highlights comparisons of sequential applications of atrazine to reduced or no atrazine treatments. Morningglory, velvetleaf, prickly sida, barnyardgrass, and broadleaf signalgrass were the weeds present. The Bicep @ 3 pints PRE followed by Basis Gold @ 14 oz and the Dual II Magnum @.75 pint followed by Clarity @ .5 pint + Accent at .67 oz provided good weed control in early evaluations (data not shown), but broke before late season. When the rate of Bicep was increased to 5 pints in fb Basis Gold, control of all species remained high throughout the season. However, the total amount of atrazine in this treatment (2.4 lbs ai) was similar to the treatment with sequential atrazine treatments (2.5 lbs ai). The Dual II Mag @ .75 pints PRE followed by atrazine @ 2.5 pints contained only 1.25 lbs ai atrazine. Late season control of all species was slightly lower than that achieved with the higher atrazine treatments, but control was greater than 90% on all species with the exception of broadleaf signalgrass.

Fig. 2 represents late season control of common weeds utilizing Callisto (mesotrione) as an atrazine replacement. There was little difference between Dual II Mag + Callisto applied PRE Dual PRE followed by Callisto postemergence. Neither provided acceptable control of morningglory and prickly sida in late season evaluations. In treatments where Dual II Magnum was applied at 1.66 pints, late season grass control was approximately 90%. However in the sequential atrazine treatment and the low rate of Dual II Magnum followed by 2.5 pints of atrazine, broadleaf signalgrass control was reduced. Broadleaf weed control was greater in treatments with full rates of atrazine than in treatments containing Callisto and no atrazine.

Sorghum

Weed control in grain sorghum has received very little attention over the past few years in Arkansas. It is often treated as a secondary crop with reduced inputs. The acreage of grain sorghum is expected to increase dramatically over the next few years due to the economic conditions associated with other crops and due to the excellent nematode management characteristics associated with grain sorghum. The basic weed control program has been sequential applications of atrazine (atrazine PRE fb atrazine + COC at 2 leaf stage). This program has traditionally been an effective weed control tool, but crop injury is often quite high. As more emphasis is placed on grain sorghum as a cash crop with high yield expectations, acceptance of crop injury is reduced.

Fig. 3 depicts data from a herbicide screening study established to evaluate crop injury and weed control. A late May hail storm destroyed the study and made late season evaluations impossible, however, early season crop injury ratings are representative of the various herbicides in a cool, but dry spring. Greater injury would be expected in a cool, wet season.

Grain Sorghum Crop Injury

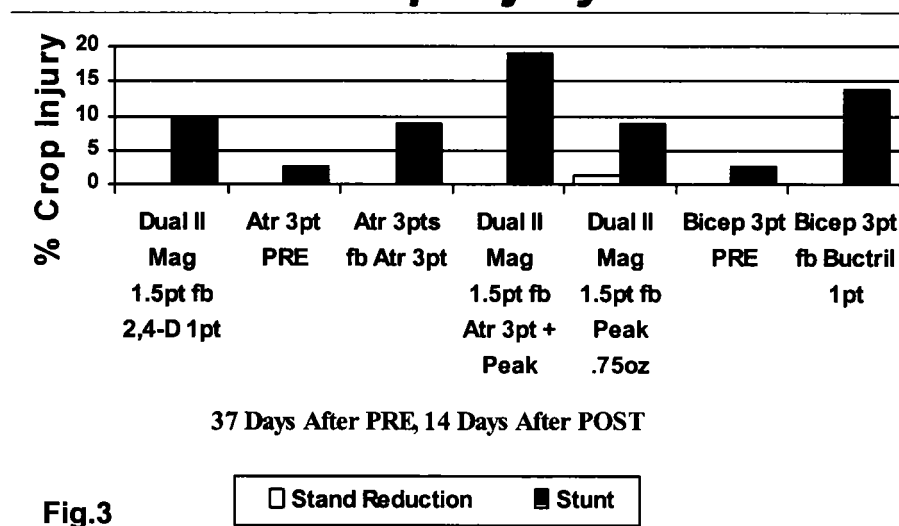


Fig.3

The PRE applications caused some stunt, but when followed by a POST application, injury increased. Dual II Magnum followed by Peak was less injurious than when atrazine was mixed with the Peak following Dual II Magnum. Dual II Magnum followed by 2,4-D produced similar injury as Dual II Magnum fb Peak.

Further work must be conducted to identify programs that permit weed control with less crop injury.