Crop Response and Weed Control in Field Corn with Empyros™ and Shieldex® With/Without Counter®

E.P. Prostko, C.A. Abbott, and N.J. Shay*

University of Georgia - Dept. Crop & Soil Sciences

UNIVERSITY OF GEORGIA
College of Agricultural & Environmental Sciences
Department of Crop and Soil Sciences

INTRODUCTION

Empyros (tolpyralate + *S*-metolachlor) and Shieldex (tolpyralate) are two new herbicides recently registered for preemergence (PRE) or postemergence (POST) weed control in field corn. The current Shieldex label permits the use of Counter (terbufos) in-furrow for soil insect/nematode control but the Empyros label does not. Therefore, the objective of the research was to investigate the effects of Empyros and Shieldex, with/without Counter, on crop injury, weed control, and yield of field corn.

MATERIALS AND METHODS

An irrigated, small-plot field trial was conducted in 2022 at the UGA Ponder Research Farm. The soil type at this location was a Tifton sand (pH = 6.0, OM = 0.82%, sand = 96%, silt = 2%, clay = 2%, and CEC = 2.9). Field corn (cv. DKC-6895) was planted on March 28. Treatments were arranged in a randomized complete block design with a 2 (soil-insecticide) X 5 (POST herbicides) factorial arrangement with 4 replications. In-furrow soil insecticide treatments included Counter 20G at 6 oz/1000 row ft or none. Herbicide treatments included Roundup PowerMax3 5.88SL @ 22 oz/A + Shieldex 3.33SC @ 1.0 or 1.35 oz/A + Aatrex 4L @ 32 oz/A, Roundup PowerMax3 5.88SL @ 22 oz/A + Empyros 3.82L @ 32 or 45 oz/A + Aatrex 4L @ 32 oz/A, and a non-treated control (NTC). The corn stage of growth at application was V4 (6" tall) and all weeds were 1-3" tall. Treatments were applied with a CO_2-powered backpack sprayer calibrated to deliver 15 GPA (35 PSI, 3.5 mph, 11002AIXR nozzles). Data reported includes corn bleaching, plant height, and yield. All data were subjected to ANOVA and means separated using Fisher's Protected LSD Test (P = 0.10).

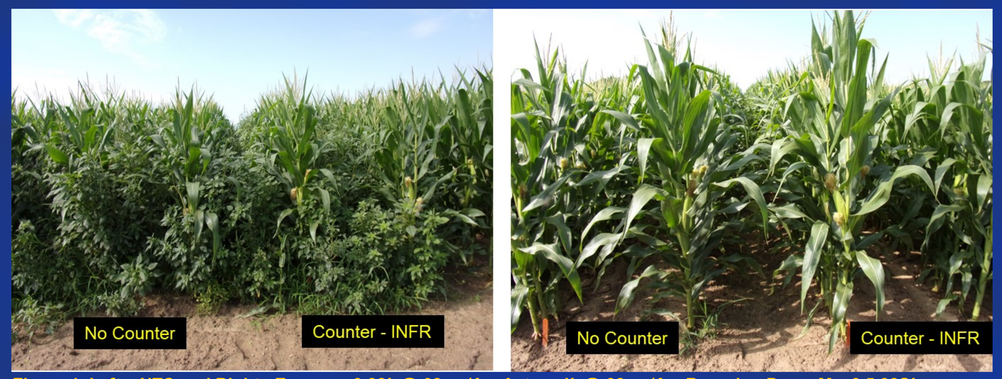


Figure 1. Left – NTC and Right - Empyros 3.82L @ 32 oz/A + Aatrex 4L @ 32 oz/A + Roundup PowerMax3 5.88SL @ 22 oz/A, With/Without Counter, Applied POST (23 DAP), Photo = 49 DAT.

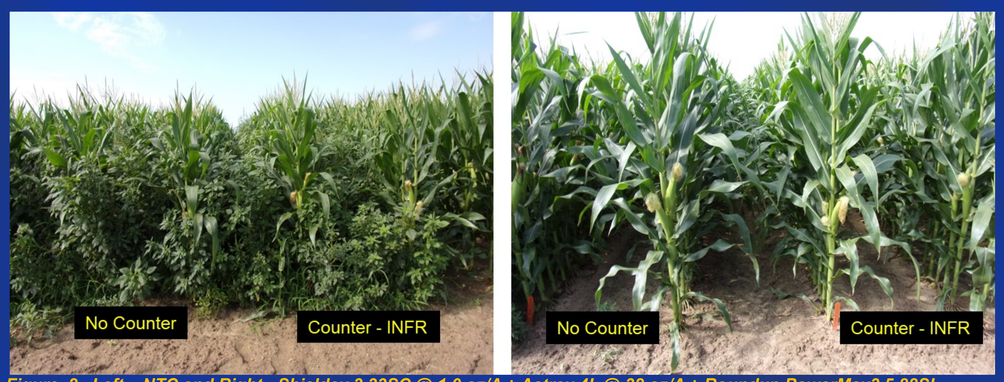
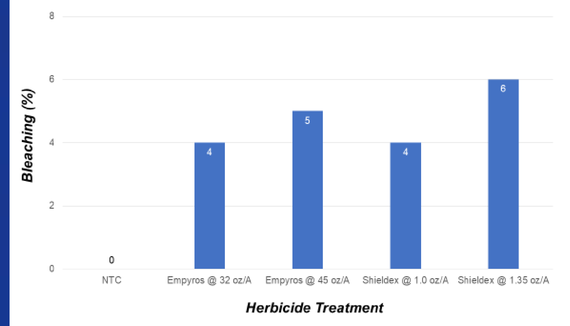


Figure 2. Left – NTC and Right - Shieldex 3.33SC @ 1.0 oz/A + Aatrex 4L @ 32 oz/A + Roundup PowerMax3 5.88SL @ 22 oz/A, With/Without Counter, Applied POST (23 DAP), Photo = 49 DAT.

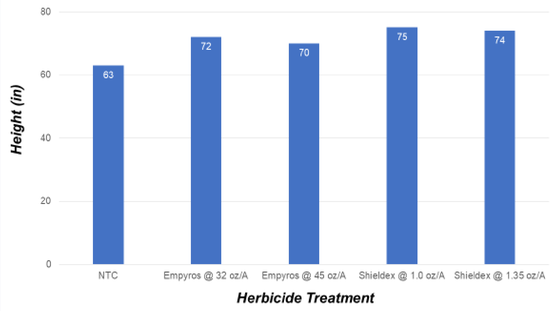
Figure 3. The effect of Empyros and Shieldex on Corn Bleaching (14 DAT) – 2022*.



LSD 0.10 = 2

*averaged over soil insecticide treatment

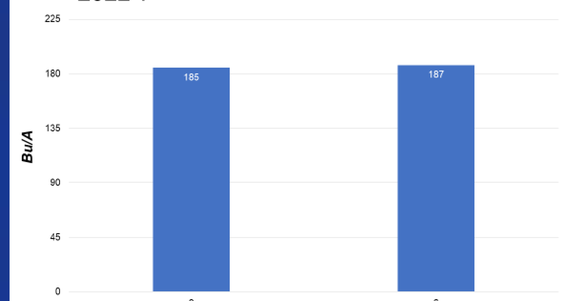
Figure 4. The effect of Empyros and Shieldex on Corn Height (43 DAT) – 2022*.



LSD 0.10 = 7

*averaged over soil insecticide treatment

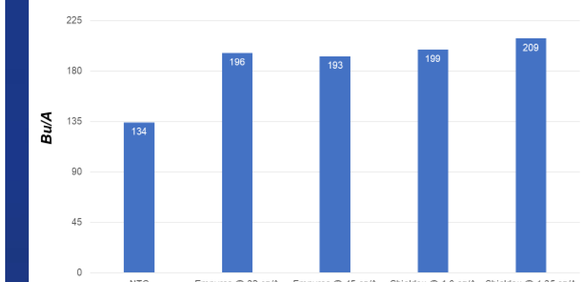
Figure 5. The effect of Counter on Corn Yield – 2022*.



P = 0.6011

*averaged over herbicide treatment

Figure 6. The effect of Empyros and Shieldex on Corn Yield – 2022*.



LSD 0.10 = 27

*averaged over soil insecticide treatment

RESULTS AND DISCUSSION

1) At 7 DAT, corn bleaching was increased when Counter was used in-furrow with Empyros at both rates and Shieldex @ 1.35 oz/A. By 14 DAT, this effect was not observed and bleaching was ≤ 6% (*Figure 3*).

2) At 43 DAT, average corn heights were not influenced by Counter (P=0.4193). Corn plant heights were greater in all herbicide treated plots in comparison to the NTC except for the higher rate (45 oz/A) of Empyros (*Figure 4*).

3) At 49 DAT, all herbicide treatments provided >99% control of Palmer amaranth. All herbicide treatments provided >90% control of annual grasses except the 1.0 oz/A rate of Shieldex (83% control). *Data not reported (Figures 1 and 2).*

4) For corn yield, there was no interaction between Counter and POST applied herbicides (P=0.4813). When averaged over herbicides, Counter had no effect on yield (P=0.6011) (*Figure 5*). When averaged over Counter rates, all herbicide treatments significantly improved yield in comparison to the NTC with no differences between herbicide treatments (*Figure 6*).

CONCLUSIONS

1) Empyros or Shieldex + Roundup + Aatrex can be used for POST weed control in corn fields treated with in-furrow applications of Counter.