



Mississippi Corn Promotion Board 2020 Progress Report

Title: One-Shot Weed Management Programs in MS Corn

PI: T. Bararpour*, G. Singh, J.A. Bond, and B. Lawrence

Department: Plant and Soil Sciences, Delta Research & Extension Center

Project Summary



For corn (*Zea mays*) production to be most profitable in the Mississippi Delta region, input costs must be reduced. A field study was conducted in 2020 at the Delta Research and Extension Center, in Stoneville, Mississippi, to evaluate one-shot herbicide application programs for glyphosate-resistant Palmer amaranth (*Amaranthus palmeri*), pitted morningglory (*Ipomoea lacunosa*), prickly sida (*Sida spinosa*), broadleaf signalgrass (*Urochloa platyphylla*), and hemp sesbania (*Sesbania herbacea*) control in Mississippi corn. Corn (Pioneer 1662 YHR) was planted on beds with 40-inch row spacing at a seeding rate of 2.5 seeds ft⁻¹ on May 6, 2020 and emerged on May 14. The study was designed as a randomized complete block with 20 herbicide treatments and four replications. The herbicide programs contain eight preemergence (PRE), six postemergence (POST) at V2-V3, and six postemergence at V3-V4 corn stage. The one-shot herbicide programs are as follows:

PRE:

- 1) Acuron (S-metolachlor + atrazine + mesotrione + bicyclopyrone) at 80 fl oz/A;
- 2) Verdict (Haloxypol) at 10 fl oz/A + Zidua SC (pyroxasulfone) at 5 fl oz/A + AAtrex (atrazine) at 48 fl oz/A;
- 3) Verdict + Zidua SC + AAtrex at 64 fl oz/A;
- 4) Dual II Magnum (S-metolachlor) at 1.3 pt/A + AAtrex at 1 qt/A + Callisto (mesotrione) at 6.5 fl oz/A;
- 5) Axiom (flufenacet + metribuzin) at 14 oz wt/A + AAtrex at 64 fl oz/A;
- 6) Axiom + Callisto;
- 7) Axiom + Zidua SC;
- 8) Axiom + Callisto + Zidua SC.

V2-V3:

- 9) Halex GT (mesotrione + S-metolachlor + glyphosate) at 3.6 pt/A + AAtrex at 1.5 qt/A + COC at 1% v/v;
- 10) Halex GT + Sencor (metribuzin) at 4 oz wt/A + COC;
- 11) Zidua SC at 3.3 fl oz/A + Sencor at 3 oz wt/A + Armezon (topramezone) at 0.75 fl oz/A + Roundup PowerMax (glyphosate) at 32 fl oz/A + COC;
- 12) Zidua SC at 3.3 fl oz/A + Armezon + Roundup PowerMax + COC;
- 13) Sencor at 3 oz wt/A + Armezon + Roundup PowerMax + COC;
- 14) ImpactZ (topramezone + atrazine) at 8 fl oz/A + AAtrex at 4 pt/A + Roundup PowerMax + MSO at 0.25% v/v.

V3-V4:

- 15) Halex GT + AAtrex at 1.5 qt/A + COC;
- 16) Halex GT + Sencor at 4 oz wt/A + COC;
- 17) Zidua SC at 3.3 fl oz/A + Sencor at 3 oz wt/A + Armezon + Roundup PowerMax + COC;
- 18) Zidua SC at 3.3 fl oz/A + Armezon + Roundup PowerMax + COC;
- 19) Sencor at 3 oz wt/A + Armezon + Roundup PowerMax + COC;
- 20) ImpactZ + AAtrex at 4 pt/A + Roundup PowerMax + MSO.

A weedy (nontreated; Trt. 21) and weed-free check (Trt. 22) were included in the study.



Project Results/Outcomes

Corn Injury level was 0% for all herbicide treatments at final evaluation.

PRE: Acuron at 80 fl oz/A applied preemergence provided 88, 100, 99, 91, and 95% control of broadleaf signalgrass, hemp sesbania, Palmer amaranth, pitted morningglory, and prickly sida by 8 weeks-after emergence (WAE). Verdict at 10 fl oz/A + Zidua at 5 fl oz/A + Atrazine at 64 fl oz/A (Trt. 3) and Axiom at 14 oz/A + AAtrex at 64 fl oz/A (Trt. 5) as one-shot preemergence treatments provided comparable results as Acuron. Therefore, these treatments can be used as alternative treatments as Acuron. Corn yield was comparable too.

POST (V2-V3): Halex GT at 3.6 pt/A + AAtrex at 1.5 qt/A + COC at 1% v/v (Trt. 9) applied (one-shot) postemergence at V2-V3 stage of corn provided 100, 100, 99, 94, and 94% control of broadleaf signalgrass, hemp sesbania, Palmer amaranth, pitted morningglory, and prickly sida by 8 WAE. ImpactZ at 8 fl oz/A + AAtrex at 4 pt/A + Roundup PowerMax at 32 fl oz/A + MSO at 0.25% v/v (Trt. 14) and Halex GT at 3.6 pt/A + Sencor at 4 oz wt/A + COC (Trt. 10) provided comparable results in terms of broadspectrum weed control and corn yield as Halex GT + AAtrex + COC treatment. Therefore, these treatments can be used as alternative treatment as standard treatment (Halex GT + AAtrex + COC).

POST (V3-V4): Halex GT at 3.6 pt/A + AAtrex at 1.5 qt/A + COC (Trt. 15) applied (one-shot) postemergence at V3-V4 stage of corn provided 100, 100, 100, 97, 95% control of broadleaf signalgrass, hemp sesbania, Palmer amaranth, pitted morningglory, and prickly sida by 8 WAE. ImpactZ + AAtrex + Roundup PowerMax + MSO (Trt. 20) and Halex GT + Sencor (Trt. 16) provided comparable results in terms of broadspectrum weed control and corn yield as standard treatment. Therefore, these treatments can be used as alternative treatment as standard treatment for herbicide program at V3-V4 stage of corn.

Weed interference reduced corn yield 79% (nontreated check with 36 bu/A) as compared to the weed-free check (170 bu/A). In conclusion, there are some one-shot herbicide programs (for preemergence and postemergence at V2-V3 or at V3-V4 stage of corn) as good as the standard treatment that could be used in weed management programs in Mississippi corn.

Project Impacts/Benefits

Project Deliverables

The detail of this research will be presented at Southern Weed Science Society or at Weed Science Society of America in 2021.



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