

Overlapping Dual Magnum Programs for Weed Control in No-Till Pumpkin

Final Report for 2020

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Introduction

Weed control in pumpkins is challenging for many reasons, including the production practices of wide rows, no-till (which excludes use of cultivation), a long growing season and limited number of herbicide options. These practices result in a greater reliance on herbicides for weed control. Unfortunately, few herbicides labeled for postemergence weed control in pumpkin, and even fewer are available to control herbicide-resistant species such as Palmer amaranth and common waterhemp. Therefore, novel uses of soil-applied herbicides should continue to be explored. One approach to improve overall weed control is to apply a second residual herbicide over the top of the emerged crop, but before the weeds have begun to emerge. This approach is referred to as overlapping residuals.

Dual Magnum (S-metolachlor) is a common residual herbicide labeled for numerous crops, but not labeled preemergence in pumpkins (note, Dual Magnum is only labeled for between pumpkin row applications, not as a broadcast spray). Previous studies have demonstrated good crop safety when using Dual Magnum as overlapping residual treatments on pumpkin. However, the effects of this approach on weed control have been inconsistent due to a lack of weed emergence and/or a lack of weed crop interaction and warrant further investigation.

Objectives

Evaluate crop safety and weed control potential of Dual Magnum or Dual Magnum + Select Max as an overlapping residual approach for pumpkin production throughout the Mid-Atlantic Region.

Procedures

The study evaluated pumpkin ('Gladiator') response and weed control efficacy to Dual Magnum applied as a broadcast postemergence treatment. Curbit (ethalfluralin) was applied within 1 day of planting to all treatments; in addition, a single preemergence treatment of Curbit + Reflex (fomesafen) was also included (Table 1). Dual Magnum was applied at 2 or 4 weeks after planting (WAP) at a 1X (0.75 pt/A) or 2X (1.5 pt/A) rate alone or in tank mixtures with Select Max. Untreated control and weed free treatments were also included for comparison. All treatments had at least three replications. Plots treated with Curbit only were monitored weekly starting two weeks after planting to document the emergence pattern of key weeds. All plots were evaluated visually for weed control and pumpkin response. Fungicides and insecticides were applied as needed.

Table 1: Herbicide programs for pumpkins.

Trt. No.	Treatment Name	Rate	Unit	Timing*
1	Untreated			
2	Curbit	48	fl oz/A	PRE
3	Curbit Dual Magnum	48 0.75	fl oz/A pt/A	PRE 2 WAP
4	Curbit Dual Magnum	48 0.75	fl oz/A pt/A	PRE 4 WAP
5	Curbit Dual Magnum	48 1.5	fl oz/A pt/A	PRE 2 WAP
6	Curbit Dual Magnum	48 1.5	fl oz/A pt/A	PRE 4 WAP
7	Curbit Dual Magnum Select Max	48 0.75 16	fl oz/A pt/A fl oz/A	PRE 2 WAP 2 WAP
8	Curbit Dual Magnum Select Max	48 0.75 16	fl oz/A pt/A fl oz/A	PRE 4 WAP 4 WAP
9	Curbit Dual Magnum Select Max	48 1.5 16	fl oz/A pt/A fl oz/A	PRE 2 WAP 2 WAP
10	Curbit Dual Magnum Select Max	48 1.5 16	fl oz/A pt/A fl oz/A	PRE 4 WAP 4 WAP
11	Curbit Reflex	48 1.5	fl oz/A pt/A	PRE PRE
12	Weed free			

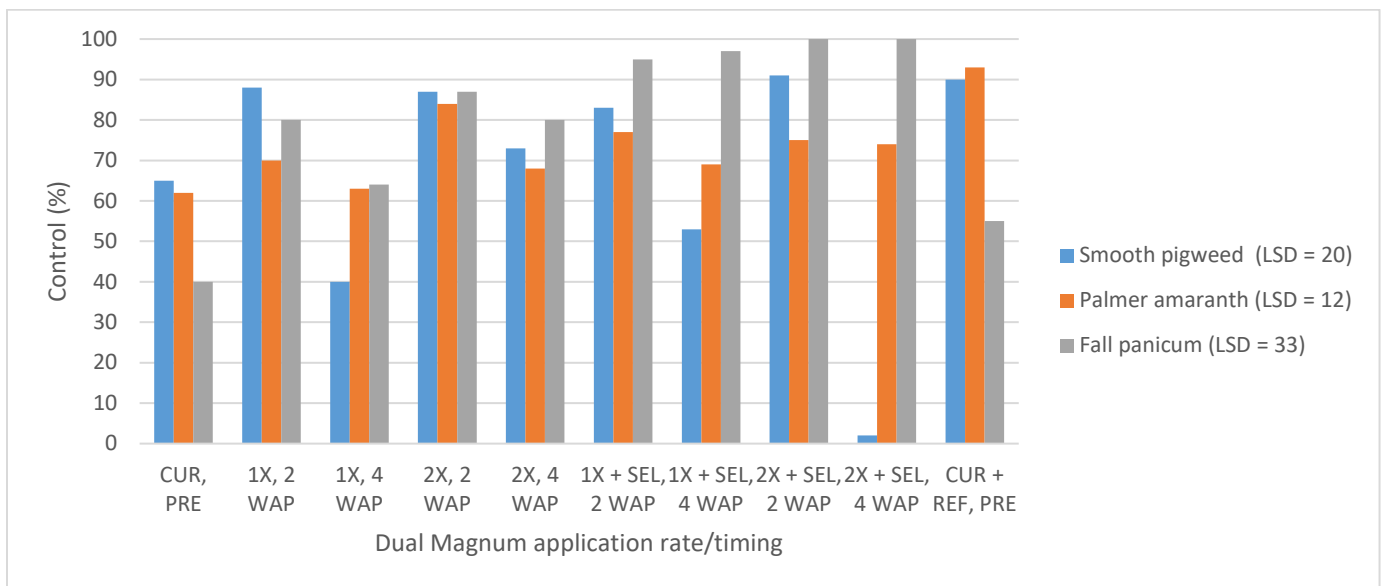
To obtain a wider range of weeds this study was conducted at the Western Maryland Research and Education Center in Keedysville, MD; the Wye Research and Education Center in Queenstown, MD; the Russel E. Lawson Agricultural Research Center in Rock Springs, PA; and the University of Delaware Carvel Research and Education Center in Georgetown, DE. This research will benefit state and regional pumpkin growers by improving knowledge on how to extend residual weeds control with effective herbicide modes-of-action and reduce the potential for herbicide resistance. Data generated by this

research will also allow the potential to petition for special local needs (24c) labels for POST broadcast applications in pumpkin.

Results

- Due to emergence issues, accurate data could not be collected at the Rock Springs, PA site.
- Pumpkins did not show injury response from broadcast applications of Dual Magnum or Dual Magnum + Select Max at any of the application rates or timings.
- There were no differences in visual weed control among treatments at the Keedysville, MD site.
- Smooth pigweed and Palmer amaranth control tended to be greater when Dual Magnum was applied 2 WAP rather than 4 WAP (Figure 1).
- POST Dual Magnum treatments controlled fall panicum greater than Curbit alone, but including Select Max improved control (Figure1)
- Yield differed by location, and consistent patterns among herbicide treatments were not apparent (Figure 2).
- Our results continue to demonstrate that Dual Magnum does not cause any adverse crop injury when applied as a broadcast treatment in pumpkin.
- While this tactic was effective in providing residual weed control later in the growing season, other tactics are still needed to control emerged weeds.
- Data from this study will be compiled with that of previous and future studies in hopes of receiving a label for this utility.

Figure 1. Smooth pigweed, Palmer amaranth, and fall panicum control 7 weeks after planting.

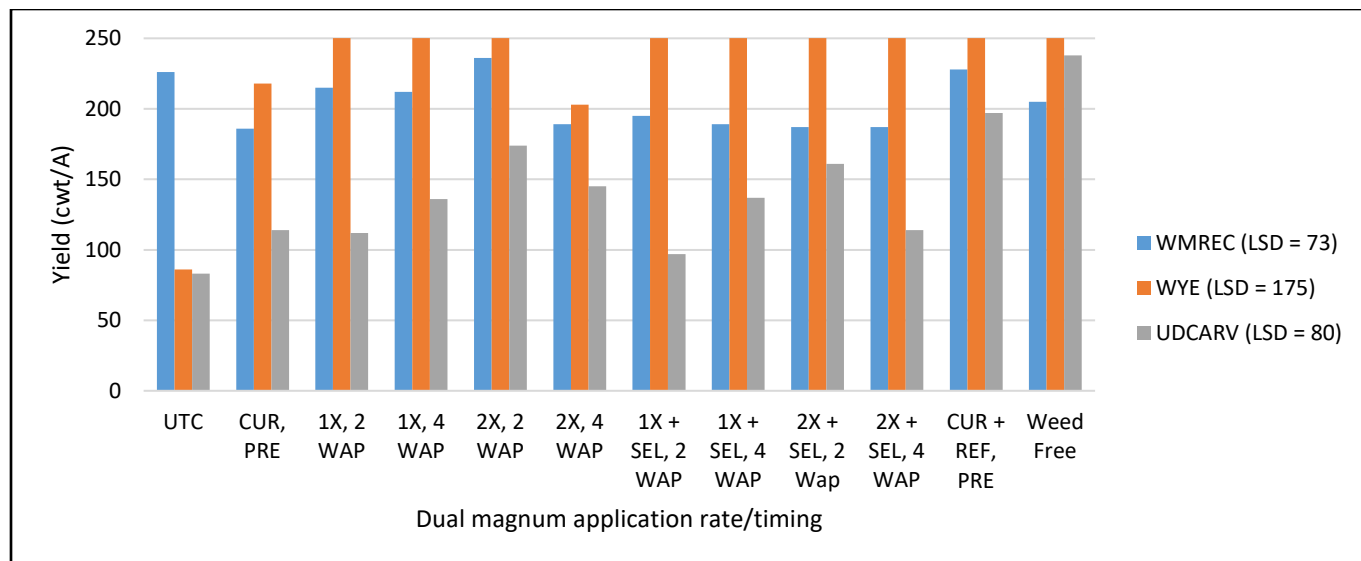


* All treatments include an application of Curbit (48 oz/A) after planting.

* Abbreviations: CUR, Curbit; REF, Reflex

* The 1X and 2X rates of Dual Magnum correspond application rates of 0.75 pt/A and 1.5 pt/A, respectively.

Figure 2. Marketable pumpkin yield in 2020.



* All treatments include an application of Curbit (48 oz/A) after planting.

* Abbreviations: CUR, Curbit; REF, Reflex, UTC, untreated check; WMREC, Western Maryland Research and Education Center; WYE, Wye Research and Education Center; UDCARV, UD Carvel Research and Education Center.

* The 1X and 2X rates of Dual Magnum correspond application rates of 0.75 pt/A and 1.5 pt/A, respectively.

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