Northern NY Agricultural Development Program
2023 Final Report

Evaluation of Corn Herbicide Programs With and Without Atrazine

Project Leader:

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Cooperating Producer(s):

- Noah Reiff Farm, Franklin County, North Bangor, NY
- Reed Haven Farm, Jefferson County, Adams Center, NY

Background:

Atrazine is a widely-used herbicide in field corn because it is economical, has a flexible use pattern, long residual herbicidal activity, is effective against a broad spectrum of weeds, and is an important tool in the management of herbicide resistant weeds. No till and reduced tillage cropping systems rely heavily on herbicides for early season weed control. The use of atrazine has been a foundational herbicide used in preemergence field corn weed control programs in Northern New York (NNY).

The Environmental Protection Agency (EPA) has proposed mitigation measures to reduce the runoff risks to aquatic plant communities from the use of atrazine, including limiting when and how atrazine can be applied and reducing the maximum use rates in field corn. While atrazine has been proven to be effective for broad spectrum weed control, corn growers have relied on atrazine use rates higher than those outlined in the EPA's proposed label changes that will be implemented in the near future. This research

developed a trial to address growers' uncertainty of whether reduced rates or no atrazine entirely can provide acceptable weed control in field corn without additional costs or reduced weed control.

Methods:

A replicated corn herbicide trial was conducted on two farms in northern New York. Each trial location included one untreated control and 16 different herbicide programs consisting of preemergence (PRE) corn herbicide used with and without atrazine. The herbicide rates were adjusted at each location based on soil texture and organic matter.

The corn trial in Franklin County was planted on May 13, 2023. The PRE herbicide treatments were applied on May 16, 2023 and visual weed control ratings were done 35 days after application (DAA). The corn trial in Jefferson County was planted on May 16, 2023. The PRE herbicide treatments were applied on May 18, 2023 and visual weed control ratings were done 35 DAA.

Results:

Corn weed control ratings were taken 35 days after application of the PRE treatments applied. Common lambsquater was the predominant weed species present at both locations and the only weed included in the control ratings. Both locations received sufficient rainfall to activate the soil-applied preemergence herbicides used in the trial. At both locations, all herbicide treatments provided greater than 93% control of common lambsquarter, with a range of 93.75% to 100% control, see APPENDIX Table 1 and Table 2.

Conclusion:

The results of this trial demonstrated that excellent corn weed control was achievable regardless of the atrazine rates used and/or the inclusion of atrazine in the herbicide treatment. We must acknowledge that confidence in the trial results would increase with additional years and field locations in which these herbicide treatments are tested.

Outreach:

The results from this on-farm research have been disseminated to crop growers, crop consultants, agribusinesses in Northern New York, and other areas across the state through newsletters and local crop grower meetings hosted by Cornell Cooperative Extension and agribusinesses.

For More Information:

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APPENDIX

Table 1. Rating of preemergence herbicides applied for weed control in corn, 2023 trial, Franklin County, NY, NNYADP-funded Evaluation of Corn Herbicide Programs With and Without Atrazine, 2023.

Herbicide	Rate Amt/A	Application Timing	Common Lambsquarter % Control[1] 35 DAA[2]
Acuron Flexi	2.25 qt	PRE	97.5a
Acuron Flexi Aatrex 4L	2.25 qt .625 qt	PRE	99.75a
Acuron Flexi Aatrex 4L	2.25 qt 1.0 qt	PRE	99a
Acuron Flexi Aatrex 4L	2.25 qt 1.375 qt	PRE	99.75a
Harness MAX	64 oz	PRE	100a
Harness MAX Aatrex 4L	64 oz .625 qt	PRE	100a
Harness MAX Aatrex 4L	64 oz 1.0 qt	PRE	99.25a
Harness MAX Aatrex 4L	64 oz 1.375 qt	PRE	99.5a
Resicore XL	2.5 qt	PRE	99.75a
Resicore XL Aatrex 4L	2.5 qt .625 qt	PRE	99.75a
Resicore XL Aatrex 4L	2.5 qt 1.0 qt	PRE	99.75a
Resicore XL Aatrex 4L	2.5 qt 1.375 qt	PRE	100a
Verdict Outlook	12 oz 2.6 oz	PRE	99.25a
Verdict Outlook Aatrex 4L	12 oz 2.6 oz .625 qt	PRE	99.5a
Verdict Outlook Aatrex 4L	12 oz 2.6 oz 1.0 qt	PRE	99.25a
Verdict Outlook Aatrex 4L	12 oz 2.6 oz 1.375 qt	PRE	99.25a

[1]Visual control rating, means followed by the same letter are not significantly different

[2]Days After Application treatment evaluation

Table 2. Rating of preemergence herbicides applied for weed control in corn, 2023 trial, Jefferson County, NY, NNYADP-funded Evaluation of Corn Herbicide Programs With and Without Atrazine, 2023.

Herbicide	Rate Amt/A	Application Timing	Common Lambsquarter % Control[1] 35 DAA[2]
Acuron Flexi	2.25 qt	PRE	97a
Acuron Flexi Aatrex 4L	2.25 qt .625 qt	PRE	99a
Acuron Flexi Aatrex 4L	2.25 qt 1.0 qt	PRE	96.5a
Acuron Flexi Aatrex 4L	2.25 qt 1.375 qt	PRE	93.75a
Harness MAX	75 oz	PRE	97.25a
Harness MAX Aatrex 4L	75 oz .625 qt	PRE	98.25a
Harness MAX Aatrex 4L	75 oz 1.0 qt	PRE	98.5a
Harness MAX Aatrex 4L	75 oz 1.375 qt	PRE	97.25a
Resicore XL	3.0 qt	PRE	97.75a
Resicore XL	3.0 qt .625 qt	PRE	96.5a
Resicore XL Aatrex 4L	3.0 qt 1.0 qt	PRE	97.5a
Resicore XL Aatrex 4L	3.0 qt 1.375 qt	PRE	98.75a
Verdict Outlook	16 oz 4.6 oz	PRE	93.75a
Verdict Outlook Aatrex 4L	16 oz 4.6 oz .625 qt	PRE	96.5a
Verdict Outlook Aatrex 4L	16 oz 4.6 oz 1.0 qt	PRE	99a
Verdict Outlook Aatrex 4L	16 oz 4.6 oz 1.375 qt	PRE	98.5a

[1]Visual control rating, means followed by the same letter are not significantly different
[2]Days After Application treatment evaluation