

1. Title: Managing Mugwort In Field Nurseries With Cultivation And Herbicides

2. Project Leader(s):

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Warren's Nursery

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4. Abstract: A field study was established in 2012 to evaluate the effect that vigorous cultivation (rototilling) may have on improving the efficacy of currently registered herbicides. The target weed, mugwort (*Artemisia vulgaris*), has deep rhizomes which often allow it to escape complete control. If a late summer rototilling can reduce the size of the rhizomes and bring them closer to the surface, then fall-applied herbicides should be more effective in preventing the smaller rhizomes from regenerating shoots the following spring. The study was planned for two geographically separate nurseries with a similar weed problem. The site at Schichtel's Nursery in Springville, NY was successfully established in early October, 2012. The results of those treatments should be apparent by late winter/early spring 2013. The second site was established at Warren's Nursery, Water Mill, Long Island, NY. However, at the time of treatment in late

October, 2012, the nursery owner had a business-related emergency and was not able to offer the plot area for this study.

5. Background and justification:

Mugwort (*Artemisia vulgaris L.*) is a deciduous herbaceous perennial weed with deep rhizomes. This species has long been a weed problem for nurseries in parts of the Northeast. However, in the last two decades, mugwort has graduated from a marginal troublesome species to a major invasive weed that is rapidly expanding and colonizing new fields and natural areas. One of the major reasons for its expansion is the lack of effective control available for field nursery production. As part of our IPM effort to manage this weed, we urge growers and managers to scout for small plants in the field and on incoming plant material. However, because mugwort can also disperse by seed, it is not possible to rely solely on scouting as a means of preventing movement into new areas. In general, cultivation and rototilling during nursery field production is not advised because the cultivating implements break up rhizomes and spread the weed down the rows. Managing this weed with herbicides is also a limited option. In upstate New York, there are three herbicides that have effective activity against this weed: Casoron (dichlobenil), Roundup (glyphosate) and Lontrel (clopyralid). On Long Island, the most effective of these, clopyralid is not available. The question arises whether manipulation of the timing of field cultivation might have a beneficial effect on the performance of the available herbicide tools.

6. Objectives:

1. Determine if late summer rototilling will improve the ability of currently registered herbicides to control mugwort when they are applied in late fall.
2. Evaluate the effect that late summer rototilling (alone) has on the regenerative ability of this rhizomatous weed.
3. A project evaluation will be conducted in the spring 2013 to determine if there is a beneficial change in mugwort population due to these treatments.
4. If the hypothesis is correct, then altered recommendations and factsheets will be generated to extend this information to stakeholders in NY.

7. Procedures:

1. Establish nursery field sites with a significant mugwort infestation in Erie County and Suffolk County. The L.I. site was established, but not treated. The Erie County site was established and treated October 2012.
2. Treatments began in mid August 2012 with rototilling established as the main plot

effect.

3. In October 2012, split-plot treatments consisting of LUR applications of Casoron (dichlobenil-granule and spray formulations), glyphosate and clopyralid (upstate only) were applied. Where appropriate, the split plots were then rototilled.
4. In March 2013, mugwort emergence will be documented. This data collection will continue through May 2013, at which time the results will be tabulated and analyzed.

In cooperation with Brian Eshenaur and Elizabeth Lamb, we will distribute the results of this project to NY nursery managers through e-newsletters and other media. Depending on the nature on these results, the information may be incorporated into current Pest Management Guidelines for managing this weed. A factsheet on the cultivation technique will be written and distributed.

8. Results and discussion:

Due to the nature of the timing of this project, we will not have any reliable results until the first quarter of 2013. However, one mugwort emergence evaluation was conducted on December 19, 2012. The results are presented in Table 1. The main plot, which was not rototilled in early September had no new mugwort shoot emergence. However, there were significant differences in the emergence from the main plot that was rototilled in September 2012. These results suggest that the most mugwort was emerging from plots that were rototilled in September but not October. The other subplot with significant emergence was that treated with glyphosate in October. The other treated plots had little or no mugwort emergence.

Table 1				
Managing Mugwort with Cultivation and Herbicides				
Investigators: Senesac, Eshenaur				
Location: Schicktels Nurser, Smithville, NY				
Cooperator: Bob Smith				
TREATMENT				
<i>Chemical Name</i>	<i>Application Timing</i>	<i>Form</i>	<i>TRADE NAME</i>	Percent Mugwort Emergence 19-Dec-12
UNTREATED	12-Oct-12	~	~	55 c
DICHOLOBENIL	12-Oct-12	4 G	Casoron	0 a
DICHOLOBENIL	12-Oct-12	1.6ME	Casoron	2 a
GLYPHOSATE	12-Oct-12	4E	Roundup	29 b
CLOPYRALID	12-Oct-12	3E	Lontrel	1 a
ROTOTILL	12-Oct-12	~	~	2 a
Means separation Fishers Protected LSD 0.05				

If the results from the data gathered in Spring 2013 support our hypothesis, then a significant reduction in herbicide applications can be achieved. Currently, Casoron is an expensive and only partially effective tool for managing this weed. If we can improve its effectiveness, then growers will realize an overall reduction in the population of mugwort. Additionally, they should be able to reduce supplemental spot treatments of glyphosate. We plan to continue to work with the plots established as part of this project beyond the funding period in order to gather additional data on the management of mugwort. Outreach about the potential for more effective control of this weed will include scheduled presentations to commercial growers and nursery managers. Also the information will be disseminated through CCE newsletters and a factsheet, available in hard copy and on-line.

9. Project location(s):

Erie County

Suffolk County

10. Samples of resources developed: (if applicable)

N/A