Pumpkin Winter Rye Weed Management Study.

02-17-W50

OBJECTIVE: Evaluate crop response and weed control from herbicides with and without tillage and with or without a Wheeler winter rye covercrop in 'Appalachian' pumpkin.

SUMMARY: None of the treatments provided any observable injury symptoms to pumpkins 21 days after planting (DAP). The no-tillage production system significantly reduced redroot pigweed and common waterhemp populations compared to tillage regardless of the presence of a winter rye cover crop or the herbicide treatments evaluated. In general, weed control was poor from all herbicide treatments with no significant difference between treatments. Limited rainfall after herbicide application likely reduced weed control from the preemergence herbicides.

The no herbicide plots in the tilled system had excessively low yields due to excessive weed pressure; however, the no herbicide plots in the no-tillage production systems produced somewhat acceptable yields. The use of winter rye under a no-tillage production system proved to be the best production system evaluated with respect to pumpkin yields and weed control. By providing superior weed control, this production system resulted in the most consistent large pumpkin weights throughout the herbicide treatments evaluated.

This test indicated that the use of a high residue winter rye cover crop in no-tillage pumpkin production provided superior redroot pigweed and common waterhemp control regardless of the preemergence herbicide treatment which directly resulted in increased yields.

HERBICIDES/TILLAGES/COVER CROP	WEEDS	CROP
RAPTOR 1 AS	pigweed, redroot	pumpkin
SANDEA 75 WG	waterhemp, common	
STRATEGY 2.1 EC		
NO-TILL		
TILLAGE AT PLANTING		
NO COVER CROP		
WHEELER WINTER RYE COVER CROP		

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Pumpkin Winter Rye Weed Management Study.

Project Code: 02-17-W50 Location: Belleville, IL

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
Trial Status: Final **Updated:** 11-6-02

Objective:
Evaluate crop response and weed control with herbicides with and without tillage and with and without a Wheeler winter rye covercrop in pumpkin.

Weed Code	Common Name	Scientific Name
1.	AMARE pigweed, redroot	Amaranthus retroflexus L.
2.	AMATA waterhemp, common	Amaranthus rudis Sauer

Crop 1: CUUPE pumpkin **Variety:** Applachian
Planting Method: Seeded **Planting Date:** 6-18-02
Rate: 0.25 S/ROW-FT
Row Spacing: 48 IN

Plot Width, Unit: 4 FT **Plot Length, Unit:** 20 FT **Reps:** 3
Tillage Type: See note **Study Design:** Split-plot
Previous Crop, Year: CUUPE, 2001

Field Prep./Maintenance: N 100 LB/A, P2O5 50 LB/A, K2O 150 LB/A
Split application of N as 50 lb N/A prior to planting and 4 weeks after planting.

Soil Name: Ebbert **% OM:** 1.6 **pH:** 6.1 **CEC:** 13
Texture: Silt loam **Fert. Level:** P1: 53 LB/A, K: 259 LB/A

APPLICATION DESCRIPTION

	A
Application Date:	6-19-02
Time of Day:	11:00
Application Method:	Spray
Application Timing:	PRE
Applic. Placement:	BROSOI
Air Temp., Unit:	88 F
% Relative Humidity:	40
Wind Velocity, Unit:	3 MPH
Soil Moisture:	NORMAL

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	CUUPE NA
Height, Unit:	NA NA

WEED STAGE AT EACH APPLICATION

	A
Weed 1 Code:	NA

APPLICATION EQUIPMENT

	A
Appl. Equipment:	CO2 sprayer
Operating Pressure:	40 PSI
Nozzle Type:	Flat fan
Nozzle Size:	8002
Boom Length, Unit:	5 FT
Spray Volume, Unit:	20 GPA

NOTES:
Harvested Sep-11-02.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	CUUPE Fruit no./A 9-11-02	CUUPE Fruit lb/A 9-11-02	CUUPE Fruit lb/fruit 9-11-02	CUUPE Injury Percent 7-9-02 21 DAP	AMARE Control Percent 7-9-02 21 DAP	AMARE Control Percent 8-13-02 56 DAP	AMARE Control Percent 9-10-02 84 DAP	AMATA Control Percent 7-9-02 21 DAP	AMATA Control Percent 8-13-02 56 DAP	AMATA Control Percent 9-10-02 84 DAP
1	TILLAGE AT PLANTING									1634	17297	9.5	0	33	0	0	33	0	0
1	WHEELER WINTER RYE CC																		
1	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
2	TILLAGE AT PLANTING									1997	17733	8.5	0	33	0	0	33	0	0
2	WHEELER WINTER RYE CC																		
2	STRATEGY	2.1	EC	1.575	LB A/A	3	QT/A	PRE	A										
3	TILLAGE AT PLANTING									2904	26463	9.3	0	30	0	0	30	0	0
3	WHEELER WINTER RYE CC																		
3	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
3	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A										
4	TILLAGE AT PLANTING									2723	24158	9.0	0	27	0	0	27	0	0
4	WHEELER WINTER RYE CC																		
4	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
4	RAPTOR	1	AS	0.036	LB A/A	4.6	OZ/A	PRE	A										
5	TILLAGE AT PLANTING									4175	42580	10.2	0	99	99	99	99	99	99
5	WHEELER WINTER RYE CC																		
5	HANDWEED																		
6	TILLAGE AT PLANTING									182	980	5.4	0	0	0	0	0	0	0
6	WHEELER WINTER RYE CC																		
6	NONTREATED																		
7	TILLAGE AT PLANTING									2178	20382	9.8	0	68	0	0	70	0	0
7	NO COVER CROP																		
7	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
8	TILLAGE AT PLANTING									1452	12905	9.2	0	66	0	0	66	0	0
8	NO COVER CROP																		
8	STRATEGY	2.1	EC	1.575	LB A/A	3	QT/A	PRE	A										
9	TILLAGE AT PLANTING									3267	36137	11.3	0	73	43	43	73	43	43
9	NO COVER CROP																		
9	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
9	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A										
10	TILLAGE AT PLANTING									3086	29403	10.2	0	63	27	27	60	27	27
10	NO COVER CROP																		
10	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
10	RAPTOR	1	AS	0.036	LB A/A	4.6	OZ/A	PRE	A										

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	CUUPE Fruit no./A 9-11-02	CUUPE Fruit lb/A 9-11-02	CUUPE Fruit lb/fruit 9-11-02	CUUPE Injury Percent 7-9-02 21 DAP	AMARE Control Percent 7-9-02 21 DAP	AMARE Control Percent 8-13-02 56 DAP	AMARE Control Percent 9-10-02 84 DAP	AMATA Control Percent 7-9-02 21 DAP	AMATA Control Percent 8-13-02 56 DAP	AMATA Control Percent 9-10-02 84 DAP
11	TILLAGE AT PLANTING									2723	35901	13.5	0	99	99	99	99	99	99
11	NO COVER CROP																		
11	HANDWEED																		
12	TILLAGE AT PLANTING									726	5463	7.6	0	0	0	0	0	0	0
12	NO COVER CROP																		
12	NONTREATED																		
13	NO-TILL									4175	46936	10.4	0	99	96	96	99	96	96
13	WHEELER WINTER RYE CC																		
13	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
14	NO-TILL									4356	52798	12.3	0	99	96	96	98	95	95
14	WHEELER WINTER RYE CC																		
14	STRATEGY	2.1	EC	1.575	LB A/A	3	QT/A	PRE	A										
15	NO-TILL									5264	66574	12.4	0	99	93	93	99	93	93
15	WHEELER WINTER RYE CC																		
15	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
15	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A										
16	NO-TILL									3086	36627	11.7	0	96	93	93	96	93	93
16	WHEELER WINTER RYE CC																		
16	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
16	RAPTOR	1	AS	0.036	LB A/A	4.6	OZ/A	PRE	A										
17	NO-TILL									4719	62509	13.6	0	99	99	99	99	99	99
17	WHEELER WINTER RYE CC																		
17	HANDWEED																		
18	NO-TILL									4901	55866	10.7	0	99	27	27	99	27	27
18	WHEELER WINTER RYE CC																		
18	NONTREATED																		
19	NO-TILL									908	10618	11.1	0	99	99	99	99	99	99
19	NO COVER CROP																		
19	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
20	NO-TILL									2360	30365	12.5	0	99	91	91	99	91	91
20	NO COVER CROP																		
20	STRATEGY	2.1	EC	1.575	LB A/A	3	QT/A	PRE	A										
21	NO-TILL									1997	29457	15.6	0	99	93	93	99	93	93
21	NO COVER CROP																		
21	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
21	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A										

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	CUUPE Fruit no./A	CUUPE Fruit lb/A	CUUPE Fruit lb/fruit	CUUPE Injury	AMARE Control	AMARE Control	AMARE Control	AMATA Control	AMATA Control	AMATA Control
	Weed Code													AMARE	AMARE	AMARE	AMATA	AMATA	AMATA
	Crop Code									CUUPE	CUUPE	CUUPE	CUUPE						
	Rating Data Type									Fruit	Fruit	Fruit	Injury	Control	Control	Control	Control	Control	Control
	Rating Unit									no./A	lb/A	lb/fruit	Percent	Percent	Percent	Percent	Percent	Percent	Percent
	Rating Date									9-11-02	9-11-02	9-11-02	7-9-02	7-9-02	8-13-02	9-10-02	7-9-02	8-13-02	9-10-02
	Trt-Eval Interval												21 DAP	21 DAP	56 DAP	84 DAP	21 DAP	56 DAP	84 DAP
22	NO-TILL									1815	23250	13.1	0	99	94	94	99	94	94
22	NO COVER CROP																		
22	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A										
22	RAPTOR	1	AS	0.036	LB A/A	4.6	OZ/A	PRE	A										
23	NO-TILL									1997	26372	13.3	0	99	99	99	99	99	99
23	NO COVER CROP																		
23	HANDWEED																		
24	NO-TILL									2904	35774	12.3	0	99	27	27	99	27	27
24	NO COVER CROP																		
24	NONTREATED																		
LSD (P=.05)										2229.2	27091.2	3.35	0.0	11.5	26.1	26.1	11.6	26.1	26.1
Replicate F										1.640	4.185	3.099	0.000	1.151	4.510	4.510	0.758	4.386	4.386
Replicate Prob(F)										0.2050	0.0214	0.0558	1.0000	0.3253	0.0163	0.0163	0.4744	0.0181	0.0181
Treatment F										3.007	3.277	3.696	0.000	73.697	24.457	24.457	71.660	24.312	24.312
Treatment Prob(F)										0.0007	0.0003	0.0001	1.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Trial Comments

1. Protocol: SIU (SAW).
2. Spray all plots (glyphosate 2.0 %) on June 1, roll June on 12, and Till (disc+culti-mulcher) on June 15.
3. DAP = days after planting.
4. Weed control in nontreated no-till plots is effect of covercrop and/or lack of disruption of soil.