Zucchini No-Till Weed Management Study.

02-AltoPass-Zuc

OBJECTIVE: Evaluate crop response and weed control with herbicides with and without a winter rye covercrop in no-till zucchini.

SUMMARY: Excessive injury and stunting of zucchini was observed from Sandea, Strategy plus Sandea, and Strategy plus Frontier. Injury from these treatments tended to be greater when no winter rye cover crop was used. Strategy plus Raptor also caused some minor but acceptable levels of injury and stunting to zucchini plants.

Most herbicide treatments provided excellent control of redroot pigweed and smooth crabgrass at 28 days after planting (DAP) regardless of the presence or absence of winter ryegrass. However, smooth crabgrass control was poor from Sandea alone by 56 DAP. Tillage with the standard preemergence application of Strategy generally provided the best overall weed control.

The use of winter rye appeared to decrease zucchini yields, as the handweeded treatments with winter rye tended to have lower yields compared to the handweeded treatments without winter rye. Zucchini yield was reduced in plots treated with Sandea or Sandea plus another herbicide, most likely due to the significant amounts of zucchini injury and stunting caused by Sandea. Zucchini yield was reduced in Strategy plus Frontier treated plots when no cover crop was used but not when winter rye was used. When tillage was used, the Strategy treatments provided high yields regardless of the presence of absence of a winter rye cover crop; however, under no-tillage conditions, the Strategy treatments provided high yields without winter rye and low yields with winter rye. Strategy plus Raptor was among the highest yielding treatments in no-tillage and provided consistent results regardless of whether a winter rye cover crop was used or not.

HERBICIDES/TILLAGES/COVER CROP	WEEDS	CROP
FRONTIER 6.0 6 EC	crabgrass, smooth	squash,zucchini
RAPTOR 1 AS	pigweed, redroot	
SANDEA 75 WG		
STRATEGY 2.1 EC		
NO-TILL		
TILLAGE PRIOR TO SPRAY		
NO COVER CROP		
WHEELER WINTER RYE COVER CROP		

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Zucchini No-Till Weed Management Study.

Project Code: 02-AltoPass-Zuc Location: Alto Pass, IL

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Alto Pass IL 62905 USA
Trial Status: Final **Updated:** 11-6-02

Objective:
Evaluate crop response and weed control with herbicides with and without a Wheeler winter rye covercrop in no-till zucchini.

Weed Code	Common Name	Scientific Name
1.	AMARE pigweed, redroot	Amaranthus retroflexus L.
2.	DIGIS crabgrass, smooth	Digitaria ischaemum (Schreb. ex Schweig)

Crop 1: CUUPG squash,zucchini **Variety:** Independence II
Planting Method: Transplant **Planting Date:** 5-3-02
Rate: 0.5 P/ROW-FT
Row Spacing: 36 IN

Plot Width, Unit: 9 FT **Plot Length, Unit:** 10 FT **Reps:** 4
Tillage Type: No-Till **Study Design:** Split-plot
Previous Crop, Year: CUUPG, 2001

Field Prep./Maintenance: N 75 LB/A, P2O5 40 LB/A, K2O 40 LB/A

APPLICATION DESCRIPTION

	A
Application Date:	4-29-02
Time of Day:	14:00
Application Method:	Spray
Application Timing:	PRE
Applic. Placement:	BROSOI
Air Temp., Unit:	68 F
% Relative Humidity:	50
Wind Velocity, Unit:	3-5 MPH
Dew Presence (Y/N):	N
Soil Temp., Unit:	71 F
Soil Moisture:	NORMAL
% Cloud Cover:	20

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	CUUPG 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:	8003
Boom Length, Unit:	7.5 FT
Spray Volume, Unit:	20 GPA

NOTES:
Target PRE application for May 2, transplant May 3.
Harvested Jun-6-02 to Jul-2-02.

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Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	CUUPG Fruit No./A	CUUPG Fruit Lb/A	CUUPG Injury 5-17-02 14 DAP	CUUPG Injury 5-31-02 28 DAP	CUUPG Injury 6-28-02 56 DAP	CUUPG Stunt 5-17-02 14 DAP	CUUPG Stunt 5-31-02 28 DAP	CUUPG Stunt 6-28-02 56 DAP	AMARE Control 5-31-02 28 DAP	AMARE Control 6-28-02 56 DAP	DIGIS Control 5-31-02 28 DAP	DIGIS Control 6-28-02 56 DAP
	Weed Code																	AMARE	AMARE	DIGIS	DIGIS
	Crop Code									CUUPG	CUUPG	CUUPG	CUUPG	CUUPG	CUUPG	CUUPG	CUUPG				
	Rating Data Type									Fruit	Fruit	Injury	Injury	Injury	Stunt	Stunt	Stunt	Control	Control	Control	Control
	Rating Unit									No./A	Lb/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
	Rating Date											5-17-02	5-31-02	6-28-02	5-17-02	5-31-02	6-28-02	5-31-02	6-28-02	5-31-02	6-28-02
	Trt-Eval Interval											14 DAP	28 DAP	56 DAP	14 DAP	28 DAP	56 DAP	28 DAP	56 DAP	28 DAP	56 DAP
1	WHEELER WINTER RYE CC									37571	15518	0	0	0	0	0	0	99	88	99	95
1	TILLAGE PRIOR TO SPRAY																				
1	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
2	WHEELER WINTER RYE CC									30674	12451	0	3	0	0	3	0	99	75	99	80
2	NO-TILL																				
2	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
3	WHEELER WINTER RYE CC									17606	6244	0	48	26	0	48	26	98	71	85	45
3	NO-TILL																				
3	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A												
4	WHEELER WINTER RYE CC									22506	9474	0	50	19	0	49	19	99	80	96	79
4	NO-TILL																				
4	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
4	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A												
5	WHEELER WINTER RYE CC									44105	18114	0	16	0	0	16	0	98	79	98	69
5	NO-TILL																				
5	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
5	RAPTOR	1	AS	0.036	LB A/A	4.6	OZ/A	PRE	A												
6	WHEELER WINTER RYE CC									35211	14502	0	19	0	0	19	0	98	59	99	78
6	NO-TILL																				
6	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
6	FRONTIER 6.0	6	EC	2.0	LB A/A	1.33	QT/A	PRE	A												
7	WHEELER WINTER RYE CC									30674	11162	0	0	0	0	0	0	0	0	0	0
7	NO-TILL																				
7	NONTREATED																				
8	WHEELER WINTER RYE CC									39204	15863	0	0	0	0	0	0	0	99	0	99
8	NO-TILL																				
8	HANDWEED																				
9	NO COVER CROP									45920	17442	0	6	0	0	6	0	99	96	99	95
9	TILLAGE PRIOR TO SPRAY																				
9	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
10	NO COVER CROP									54995	23504	0	0	0	0	0	0	99	91	99	92
10	NO-TILL																				
10	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	CUUPG Fruit No./A	CUUPG Fruit Lb/A	CUUPG Injury Percent 5-17-02 14 DAP	CUUPG Injury Percent 5-31-02 28 DAP	CUUPG Injury Percent 6-28-02 56 DAP	CUUPG Stunt Percent 5-17-02 14 DAP	CUUPG Stunt Percent 5-31-02 28 DAP	CUUPG Stunt Percent 6-28-02 56 DAP	AMARE Control Percent 5-31-02 28 DAP	AMARE Control Percent 6-28-02 56 DAP	DIGIS Control Percent 5-31-02 28 DAP	DIGIS Control Percent 6-28-02 56 DAP
11	NO COVER CROP									14339	5790	0	56	18	0	53	18	99	90	90	50
11	NO-TILL																				
11	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A												
12	NO COVER CROP									19965	7514	0	60	20	0	54	20	99	92	99	89
12	NO-TILL																				
12	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
12	SANDEA	75	WG	0.031	LB A/A	0.66	OZ/A	PRE	A												
13	NO COVER CROP									46464	18495	0	10	0	0	10	0	99	96	99	86
13	NO-TILL																				
13	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
13	RAPTOR	1	AS	0.036	LB A/A	4.6	OZ/A	PRE	A												
14	NO COVER CROP									27044	11289	0	45	15	0	43	15	99	89	99	90
14	NO-TILL																				
14	STRATEGY	2.1	EC	1.313	LB A/A	2.5	QT/A	PRE	A												
14	FRONTIER 6.0	6	EC	2.0	LB A/A	1.33	QT/A	PRE	A												
15	NO COVER CROP									46646	19983	0	0	0	0	0	0	0	0	0	0
15	NO-TILL																				
15	NONTREATED																				
16	NO COVER CROP									51728	20401	0	0	0	0	0	0	0	99	0	99
16	NO-TILL																				
16	HANDWEED																				
LSD (P=.05)										11656.8	4937.8	0.0	11.8	4.1	0.0	11.2	4.1	0.8	12.5	6.5	13.4
Replicate F										14.026	16.516	0.000	2.169	1.569	0.000	1.655	1.569	1.879	0.414	1.522	0.181
Replicate Prob(F)										0.0001	0.0001	1.0000	0.1048	0.2100	1.0000	0.1902	0.2100	0.1470	0.7435	0.2217	0.9088
Treatment F										9.555	9.585	0.000	31.962	44.272	0.000	31.297	44.272	23180.973	51.136	361.281	46.646
Treatment Prob(F)										0.0001	0.0001	1.0000	0.0001	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. All plots mowed and sprayed (glyphosate 2.0 %) on April 8.
3. Fruit = marketable harvested squash. DAP = days after planting. 14, 28, and 56 DAP was also 18, 32, and 60 days after PRE application.
4. Regarding weed control ratings, weed populations were sporadic and non-uniform, especially AMARE.
5. Cover crop residue was somewhat dispersed by heavy rainfall, was generally sparse, and did not contribute to weed control.
6. Handweeded plots were handweeded after the 28 DAP ratings.