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Weed suppression in sweet corn using wild radish and rye cover crops.

Trial ID: Veg1-05(corn) Study Dir.: Stanley Culpepper
Location: Ponder farm (5131) Investigator: Stanley Culpepper

Reps: 4 Plots: 6 by 25 feet
Spray vol: 14.8 gal/ac Mix size: 2 liters (min .77168)

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Grow Stg	Appl Code	Amt Product to Measure	Plot No. By Rep 1	2	3	4
1	wild radish No herbicide								103	208	311	408
2	wild radish Weed Free								101	201	310	404
3	wild radish Bicep II	5.5	F	1.8	qt/a	PRE	A	60.8 ml/mx	104	204	312	401
4	wild radish Bicep II	5.5	F	0.9	qt/a	PRE	A	30.4 ml/mx	111	203	303	403
5	rye No herbicide								112	210	304	405
6	rye Weed Free								110	212	301	412
7	rye Bicep II	5.5	F	1.8	qt/a	PRE	A	60.8 ml/mx	106	211	308	406
8	rye Bicep II	5.5	F	0.9	qt/a	PRE	A	30.4 ml/mx	105	209	302	402
9	no cover No herbicide								102	207	305	407
10	no cover Weed Free								108	206	306	411
11	no cover Bicep II	5.5	F	1.8	qt/a	PRE	A	60.8 ml/mx	107	205	307	410
12	no cover Bicep II	5.5	F	0.9	qt/a	PRE	A	30.4 ml/mx	109	202	309	409

Sort Order: Treatment

Product quantities required for listed treatments and applications in one trial:

Amount*	Unit	Treatment Name	Lot Code
342.025	ml	Bicep II 5.5 F	

* 'Per area' calculations based on spray volume= 14.8 gal/ac, mix size= 2 liters (mix size basis).
* Product amount calculations increased 25 % for overage adjustment.

Trial Comments

OBJECTIVE: Evaluate systems comparing cover crops and herbicides for season long weed control.

WEED RESPONSE:

Wild Radish:
1. Rye cover provided less than 33% suppression.
2. Wild radish cover provided excellent control of newly emerged radish until late in the season when control dropped to 76%.
3. Herbicides provided excellent control when applied to bare ground and for the most part when applied in either cover crop system.

Large crabgrass:
1. Rye cover provided less than 65% suppression throughout the crop.
2. Wild radish cover provided excellent control at 15 DAT but control was less than 77% by 27 DAT.

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3. When applied to no cover, herbicides provided excellent initial control but by late-season control was poor ranging from 75% control with the full rate of Bicep II to only 56% control with the half rate of Bicep II. When applying the full rate of the herbicide, cover crop had no impact. However, when applying the half rate of the herbicide control was greater when following either rye or wild radish as a cover crop.

Florida pusley:
1. Rye provided 79% control at 15 DAT but control was less than 25% by 27 DAT.
2. Wild radish was a more effective cover crop controlling Florida pusley at least 90% throughout the season.
3. Herbicides applied to no cover provided excellent control. Cover crop had little to no impact on control by the herbicides.

Palmer amaranth (emerged later in the season):
1. Rye provided less than 30% late-season control.
2. Wild radish provided at least 79% control late in the season.
3. Herbicides provided excellent control at 42 DAT and good control by 58 DAT. Wild radish reduced control by the herbicide when compared to the herbicide applied with no cover. Similar results were noted with rye when using the half rate of the herbicide.

SWEET CORN STAND:
1. The environment was extremely cool and wet adding some variability to stand emergence.
2. CSS0966 stand counts were not impacted by cover crop or herbicide program.

ROOT AND SHOOTS (Average of 5 or 7 plants per plot):
1. Root growth was similar among most treatments throughout the season; however, the systems that tended to have shorter roots throughout the season were those using the full herbicide rate, the half herbicide rate with the rye cover, and when no cover and no herbicide was used (weed compet.).
2. Less differences were noted with shoot growth but there was a tendency for differences to follow trends noted with root growth.
3. Root and shoot weight means were quite variable and no consistent differences could be noted.

SWEET CORN YIELD (5 row feet harvested):
1. Without herbicides, yield from using wild radish as a cover tended to be slightly higher than when using no cover or rye as a cover.
2. When herbicides were applied, yields were nearly identical regardless of cover crop.

VISUAL CORN INJURY:
1. Herbicides did not injure corn.

GENERAL COMMENTS:
1. Wild radish was a natural population. Rye (Wrens) was planted on Nov. 5, 2004.
2. On March 10, Roundup was applied overtop of the entire trial area to kill the cover crops.
2. Left row of trial was Prime Plus while right row was CSS 0966. Biomass and yield were taken on CSS 0966.

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Trt No.	Treatment Name	Rate	Rate Unit	1	2	3	4	5	6	7	8
Weed Code							RAPRA	RAPRA	RAPRA	RAPRA	DIGSA
Crop Code				sw corn	sw corn	sw corn					
Rating Data Type				injury	injury	injury	control	control	control	control	control
Rating Unit				percent	percent	percent	percent	percent	percent	percent	percent
Rating Date				Apr-19-05	May-01-05	May-16-05	Apr-19-05	May-01-06	May-16-05	Jun-01-05	Apr-19-05
Trt-Eval Interval				15 DA-A	42 DA-A	58 DA-A	15 DA-A	392 DA-A	42 DA-A	58 DA-A	15 DA-A
ARM Action Codes											
1	wild radish No herbicide			0	0	0	95	86	86	76	99
2	wild radish Weed Free			0	0	0	100	100	100	100	100
3	wild radish Bicep II	1.8	qt/a	0	0	0	99	98	96	86	100
4	wild radish Bicep II	0.9	qt/a	0	0	0	100	98	81	88	100
5	rye No herbicide			0	0	0	33	30	20	0	64
6	rye Weed Free			0	0	0	100	100	100	100	100
7	rye Bicep II	1.8	qt/a	0	0	0	100	99	100	91	100
8	rye Bicep II	0.9	qt/a	0	0	0	100	99	100	88	100
9	no cover No herbicide			0	0	0	0	0	0	0	0
10	no cover Weed Free			0	0	0	100	100	100	100	100
11	no cover Bicep II	1.8	qt/a	0	0	0	100	99	100	93	99
12	no cover Bicep II	0.9	qt/a	0	0	0	100	99	100	95	99
LSD (P=.05)				0.0	0.0	0.0	2.9	3.0	9.6	6.8	7.4
Standard Deviation				0.0	0.0	0.0	2.0	2.0	6.7	4.7	5.1
CV				0.0	0.0	0.0	2.35	2.44	8.14	6.17	5.78

Means followed by same letter do not significantly differ (P=.05, LSD)

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Weed Code				DIGSA	DIGSA	RCHSC	RCHSC	RCHSC	RCHSC	AMAPA	AMAPA
Crop Code											
Rating Data Type				control	control	control	control	control	control	control	control
Rating Unit				percent	percent	percent	percent	percent	percent	percent	percent
Rating Date				May-01-05	Jun-01-05	Apr-19-05	May-01-05	May-16-05	Jun-01-05	May-16-05	Jun-01-05
Trt-Eval Interval				27 DA-A	58 DA-A	15 DA-A	27 DA-A	42 DA-A	58 DA-A	42 DA-A	58 DA-A
ARM Action Codes											
Trt No.	Treatment Name	Rate	Rate Unit	9	10	11	12	13	14	15	16
1	wild radish No herbicide			76	58	100	92	91	90	92	79
2	wild radish Weed Free			100	100	100	100	100	100	100	100
3	wild radish Bicep II	1.8	qt/a	90	71	100	97	99	88	88	75
4	wild radish Bicep II	0.9	qt/a	95	78	100	97	99	92	96	73
5	rye No herbicide			19	13	79	15	21	0	29	20
6	rye Weed Free			100	100	100	100	100	100	100	100
7	rye Bicep II	1.8	qt/a	93	81	100	95	100	94	98	84
8	rye Bicep II	0.9	qt/a	91	75	100	94	100	88	86	59
9	no cover No herbicide			0	0	0	0	0	0	0	0
10	no cover Weed Free			100	100	100	100	100	100	100	100
11	no cover Bicep II	1.8	qt/a	90	75	100	98	100	97	96	89
12	no cover Bicep II	0.9	qt/a	83	56	100	97	100	92	93	86
LSD (P=.05)				8.5	16.3	4.3	3.4	3.8	7.7	12.3	11.4
Standard Deviation				5.9	11.3	3.0	2.3	2.7	5.4	8.5	7.9
CV				7.53	16.76	3.34	2.86	3.17	6.84	10.49	10.96

Means followed by same letter do not significantly differ (P=.05, LSD)

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Weed Code Crop Code Rating Data Type Rating Unit Rating Date Trt-Eval Interval ARM Action Codes			CSS0966 sw corn stand ct/rt #/8 ft Apr-11-05 7 DA-A	CSS0996 sw corn stand ct/rt #/8 ft Apr-14-05 10 DA-A	CSS0966 sw corn stand ct/rt #/8 ft Apr-18-05 14 DA-A	CSS0966 sw corn stand ct/rt #/8 ft Apr-20-05 16 DA-A	CSS0966 sw corn stand ct/rt #/8 ft Apr-22-05 18 DA-A	CSS0966 sw corn stand ct/rt #/8 ft Apr-25-05 21 DA-A	CSS0966 sw corn stand ct/rt #/8 ft Apr-27-05 23 DA-A	CSS0966 sw corn stand ct/rt #/8 ft May-02-05 28 DA-A	Avg5plan CSS0966 root length cm Apr-21-05 17 DA-A
Trt No.	Treatment Name	Rate Rate Unit	17	18	19	20	21	22	23	24	25
1	wild radish No herbicide		0	12	20	21	22	22	21	22	9
2	wild radish Weed Free		4	16	23	21	21	22	22	21	10
3	wild radish Bicep II	1.8 qt/a	0	15	22	23	21	22	21	20	9
4	wild radish Bicep II	0.9 qt/a	0	12	20	20	20	21	22	24	10
5	rye No herbicide		0	14	22	22	23	23	21	24	9
6	rye Weed Free		0	15	25	26	24	25	24	25	9
7	rye Bicep II	1.8 qt/a	0	7	20	21	22	22	22	22	8
8	rye Bicep II	0.9 qt/a	0	8	19	20	19	20	17	18	7
9	no cover No herbicide		0	9	20	21	20	21	20	20	8
10	no cover Weed Free		0	7	21	24	22	22	22	23	9
11	no cover Bicep II	1.8 qt/a	0	13	21	26	25	25	23	23	8
12	no cover Bicep II	0.9 qt/a	0	13	21	23	23	23	23	23	9
LSD (P=.05)			3.3	6.4	6.0	5.3	4.9	5.0	5.0	4.7	1.6
Standard Deviation			2.3	4.4	4.1	3.7	3.4	3.5	3.4	3.3	1.1
CV			654.57	38.02	19.83	16.56	15.7	15.65	15.97	14.93	12.88

Means followed by same letter do not significantly differ (P=.05, LSD)

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Weed Code Crop Code Rating Data Type Rating Unit Rating Date Trt-Eval Interval ARM Action Codes			Avg5plan CSS0966 root length cm May-06-05 32 DA-A	Avg5plan CSS0966 root length cm Jun-13-05 70 DA-A	Avg5plan CSS0966 shoot ht cm Apr-21-05 17 DA-A	Avg5plan CSS0966 shoot ht cm May-06-05 32 DA-A	Avg7plan CSS0966 shoot ht cm May-13-05 39 DA-A	Avg7plan CSS0966 shoot ht cm May-20-05 46 DA-A	total CSS0966 shoot wt mg Apr-21-05 17 DA-A	total CSS0966 shoot wt grams May-06-05 32 DA-A
Trt No.	Treatment Name	Rate Rate Unit	26	27	28	29	30	31	32	33
1	wild radish No herbicide		17	23	8	25	18	42	2153	18
2	wild radish Weed Free		20	24	8	24	19	44	2961	28
3	wild radish Bicep II	1.8 qt/a	15	19	6	21	15	36	2240	16
4	wild radish Bicep II	0.9 qt/a	17	25	9	22	15	38	2741	18
5	rye No herbicide		17	21	6	34	17	43	2239	24
6	rye Weed Free		17	24	7	21	17	46	2194	19
7	rye Bicep II	1.8 qt/a	14	20	7	20	14	33	1880	12
8	rye Bicep II	0.9 qt/a	15	19	6	20	14	40	1637	13
9	no cover No herbicide		15	18	6	20	14	38	1792	15
10	no cover Weed Free		14	27	8	21	14	37	1944	12
11	no cover Bicep II	1.8 qt/a	12	17	6	19	13	32	1611	9
12	no cover Bicep II	0.9 qt/a	16	25	7	20	14	44	2184	17
LSD (P=.05)			3.9	6.0	2.4	9.9	2.8	8.8	609.6	10.0
Standard Deviation			2.7	4.1	1.6	6.9	2.0	6.1	422.2	7.0
CV			17.09	18.91	23.97	30.8	12.83	15.5	19.81	41.5

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Weed Code Crop Code Rating Data Type Rating Unit Rating Date Trt-Eval Interval ARM Action Codes				total CSS0966 shoot wt lbs Jun-13-05 70 DA-A	total CSS0966 root wt mg Apr-21-05 17 DA-A	total CSS0966 root wt grams May-06-05 32 DA-A T2	total CSS0966 root wt lbs Jun-13-05 70 DA-A	total CSS0966 total wt mg Apr-21-05 17 DA-A T1	total CSS0966 total wt grams May-06-05 32 DA-A	total CSS0966 total wt lbs Jun-13-05 70 DA-A	CSS0996 fruit #/10plan Jun-21-05 78 DA-A
Trt No.	Treatment Name	Rate	Rate Unit	34	35	36	37	38	39	40	41
1	wild radish No herbicide			5	3612	19	1	5765	37	6	9
2	wild radish Weed Free			5	5760	25	1	8721	53	7	11
3	wild radish Bicep II	1.8	qt/a	5	5072	19	1	7312	35	6	11
4	wild radish Bicep II	0.9	qt/a	4	4964	22	1	7705	41	5	9
5	rye No herbicide			4	4892	25	1	7131	49	5	7
6	rye Weed Free			5	4576	22	1	6769	41	6	10
7	rye Bicep II	1.8	qt/a	4	3469	16	1	5349	28	5	9
8	rye Bicep II	0.9	qt/a	4	2843	20	1	4481	33	5	10
9	no cover No herbicide			3	4065	18	1	5856	33	4	8
10	no cover Weed Free			4	3607	16	1	5551	28	5	9
11	no cover Bicep II	1.8	qt/a	4	3485	16	1	5096	26	4	10
12	no cover Bicep II	0.9	qt/a	5	4504	18	1	6688	34	6	10
LSD (P=.05)				1.8	1534.8	8.2	0.6	1943.9	16.5	2.2	1.8
Standard Deviation				1.3	1062.9	5.7	0.4	1346.3	11.4	1.6	1.2
CV				30.03	25.08	29.07	42.18	21.14	31.37	30.06	13.04

Means followed by same letter do not significantly differ (P=.05, LSD)

Column 36: T2 = [C39]-[C33]
Column 38: T1 = [C32]+[C35]

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Trt No.	Treatment Name	Rate	Rate Unit	42
	Weed Code			
	Crop Code			CSS0996
	Rating Data Type			fruit
	Rating Unit			wt/lb
	Rating Date			Jun-21-05
	Trt-Eval Interval			78 DA-A
	ARM Action Codes			
1	wild radish No herbicide			3
2	wild radish Weed Free			4
3	wild radish Bicep II	1.8	qt/a	3
4	wild radish Bicep II	0.9	qt/a	3
5	rye No herbicide			2
6	rye Weed Free			3
7	rye Bicep II	1.8	qt/a	3
8	rye Bicep II	0.9	qt/a	3
9	no cover No herbicide			1
10	no cover Weed Free			2
11	no cover Bicep II	1.8	qt/a	3
12	no cover Bicep II	0.9	qt/a	3
	LSD (P=.05)			1.1
	Standard Deviation			0.7
	CV			25.98

Means followed by same letter do not significantly differ (P=.05, LSD)

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Trial ID: Veg1-05(corn) Study Dir.: Stanley Culpepper
Location: Ponder farm (5131) Investigator: Stanley Culpepper

GENERAL TRIAL INFORMATION

Study Director: Stanley Culpepper **Title:** Ext. Weed Science
Affiliation: Univ. of Georgia
Postal Code: 31794

Investigator: Stanley Culpepper **Title:** Ext. Weed Science
Affiliation: Univ. of Georgia
Postal Code: 31794

TRIAL LOCATION

City: TyTy **Trial Status:** completed
State/Prov.: GA **Trial Reliability:** good
Postal Code: 31794 **Initiation Date:** Apr-04-05
Country: USA **Planned Completion Date:** _____
E-Longitude of LL Corner °: _____ **N-Latitude of LL Corner °:** _____
Altitude of LL Corner: _____ **Unit:** _____ **Angle y-axis to North °:** _____
Directions:

COOPERATOR/LANDOWNER

Cooperator: _____ **Country:** _____
Org: _____ **Phone No:** _____
Address 1: _____ **Fax No:** _____
Address 2: _____
City: _____
State/Prov: _____
Postal Code: _____

Conducted Under GLP (Y/N): N **Conducted Under GEP (Y/N):** N
Guidelines: _____ **Guideline Description:** _____

Objective:

Conclusions:

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	RAPRA	wild radish	
2.	DIGSA	large crabgrass	
3.	RCHSC	Florida pusley	
4.	AMAPA	Palmer amaranth	

Crop 1: ZEAMS CORN, SWEET **Variety:** Prime Plus/CSS 0966
Planting Date: Apr-04-05 **Planting Method:** seeded
Rate: 2.5 per ft **Depth:** 1 in **Perennial Age:** ____ _____
Row Spacing: 36 inch **Spacing Within Row:** 4.8 in **Seed Bed:** bed
Soil Temperature: 80 F **Soil Moisture:** moist **Emergence Date:** Apr-11-05

SITE AND DESIGN

Plot Width, Unit: 6 FT **Plot Length, Unit:** 25 FT **Reps:** 4
Site Type: research station
Tillage Type: none **Study Design:** FACTORIAL

Trial Initiation Comments:

	Previous Crops	Previous Pesticides	Year
1.			

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MAINTENANCE

Field Prep./Maintenance:

No.	Date	Maintenance Treatment Name	Form Conc	Form Unit	Form Type	Rate	Rate Unit
1.							

SOIL DESCRIPTION

% Sand: 94 **% OM:** 1.3 **Texture:** sand
% Silt: 2 **pH:** 5.9 **Soil Name:** Tifton sandy loam
% Clay: 4 **CEC:** _____ **Fert. Level:** _____

ADDITIONAL MEASURED ELEMENTS

Element	Quantity	Unit

MOISTURE CONDITIONS

	Date	Time	Amount	Unit	Type	Interval	Unit
1.							

Overall Moisture Conditions: _____
Closest Weather Station: _____ **Distance:** _____ **Unit:** __

APPLICATION DESCRIPTION

	A
Application Date:	Apr-04-05
Time of Day:	11 am
Application Method:	broadcast
Application Timing:	PRE
Applic. Placement:	on soil
Air Temp., Unit:	77 F
% Relative Humidity:	54
Wind Velocity, Unit:	1 mph
Dew Presence (Y/N):	n
Water Hardness:	
Soil Temp., Unit:	80 F
Soil Moisture:	moist
% Cloud Cover:	0

CROP STAGE AT EACH APPLICATION

	A
Crop 1 Code, Stage:	ZEAMS PRE
Stage Scale:	not up
Height, Unit:	0 inch

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WEED STAGE AT EACH APPLICATION

	A
Weed 1 Code, Stage:	RAPRA PRE
Stage Scale:	not up
Density, Unit:	4 ydsq
Weed 2 Code, Stage:	DIGSA PRE
Stage Scale:	not up
Density, Unit:	6 ydsq
Weed 3 Code, Stage:	RCHSC PRE
Stage Scale:	not up
Density, Unit:	4 ydsq
Weed 4 Code, Stage:	AMAPA PRE
Stage Scale:	not up
Density, Unit:	1 ydsq

APPLICATION EQUIPMENT

	A
Appl. Equipment:	backpack
Operating Pressure:	23
Nozzle Type:	flat fan
Nozzle Size:	11002
Nozzle Spacing, Unit:	18 inch
Nozzles/Row:	2
Band Width, Unit:	
Boom Length, Unit:	4.5 feet
Boom Height, Unit:	15 inch
Ground Speed, Unit:	3 mph
Incorporation Equip.:	
Hours to Incorp.:	
Incorp. Depth, Unit:	
Carrier:	water
Spray Volume, Unit:	14.8 GPA
Spray pH:	
Propellant:	CO2
Tank Mix (Y/N):	Y

Trt No	Treatment Application Comment