

USB Cover Crop Trial

Trial ID: 15USBCOVER      Location: Western Branch G-8      Trial Year: 2015  
Protocol ID:                      Investigator: Dr. Mark M. Loux  
Project ID:                      Study Director:  
Sponsor Contact:

**General Trial Information**

**Investigator:** Dr. Mark M. Loux

**Initiation Date:** 10-9-2014

**Trial Location**

**City:** South Charleston      **Country:** USA United States  
**State/Prov.:** Ohio  
**Postal Code:** 45368      **Climate Zone:** USWARM US Warm Continental

**Latitude of LL Corner** °: 39.85787 N  
**Longitude of LL Corner** °: -83.67457 W

**Conducted Under GLP:** No  
**Conducted Under GEP:** No

**Investigator:** Dr. Mark M. Loux

**Crop Description**

**Crop 1:** GLXMA Glycine max  
**Variety:** CZ 3841LL  
**Description:** Credenze Liberty Link

Soybean

**Planting Rate, Unit:** 175000 S/A  
**Depth, Unit:** 1 IN  
**Row Spacing, Unit:** 15 IN

**Planting Date:** 5-4-2015  
**Planting Method:** PLANTD planted  
**Planting Equipment:** FE Field Equipment  
**Emergence Date:** 5-14-2015  
**Harvest Date:** 10-7-2015  
**Harvested Width, Unit:** 6.25 FT  
**Harvested Length, Unit:** 40 FT  
**Harvest Equipment:** Massey Ferguson 8 XP  
**% Standard Moisture:** 13.0  
**Moisture Meter:** Harvest Master  
**Weighing Equipment:** Harvest Master

**Soil Temperature, Unit:** 60 F  
**Soil Moisture:** NORMAL normal, adequate  
**Seed Bed:** MEDIUM medium

**Crop 2:** GLXMA Glycine max  
**Variety:** P35T97R2  
**Description:** Pioneer Roundup Ready 2

Soybean

**Planting Rate, Unit:** 175000 S/A  
**Depth, Unit:** 1 IN  
**Row Spacing, Unit:** 15 IN

**Planting Date:** 5-4-2015  
**Planting Method:** PLANTD planted  
**Planting Equipment:** FE Field Equipment  
**Emergence Date:** 5-14-2015  
**Harvest Date:** 10-7-2015  
**Harvested Width, Unit:** 6.25 FT  
**Harvested Length, Unit:** 40 FT  
**Harvest Equipment:** Massey Ferguson 8 XP  
**% Standard Moisture:** 13.0  
**Moisture Meter:** Harvest Master  
**Weighing Equipment:** Harvest Master

**Soil Temperature, Unit:** 60 F  
**Soil Moisture:** NORMAL normal, adequate  
**Seed Bed:** MEDIUM medium

**Crop 3:** AVESS Avena sp.  
**Variety:** Armor  
**Description:** Ohio Certified

Oats

**Planting Rate, Unit:** 60 LB/A  
**Depth, Unit:** 1 IN  
**Row Spacing, Unit:** 7.5 IN  
**Soil Temperature, Unit:** 50 F  
**Soil Moisture:** SLIWET slightly wet, moist  
**Seed Bed:** SMOOTH smooth

**Planting Date:** 10-9-2014  
**Planting Method:** DRILLE drilled  
**Planting Equipment:** DD Disc Drill

**Crop 4:** SECCW Secale cereale (winter)  
**Variety:** VNS  
**Description:** Walnut Creek Seed, Lot KD2013B

Winter rye

**Planting Rate, Unit:** 90 LB/A  
**Depth, Unit:** 1 IN  
**Row Spacing, Unit:** 7.5 IN

**Planting Date:** 10-9-2014  
**Planting Method:** DRILLE drilled  
**Planting Equipment:** DD Disc Drill  
**Harvested Width, Unit:** 6.25 FT  
**Harvested Length, Unit:** 40 FT  
**% Standard Moisture:** 13

**Soil Temperature, Unit:** 50 F  
**Soil Moisture:** SLIWET slightly wet, moist  
**Seed Bed:** SMOOTH smooth

**Pest Description**

- Pest 1 Type:** W **Code:** STEME *Stellaria media*  
**Common Name:** Common chickweed
- Pest 2 Type:** W **Code:** LAMPU *Lamium purpureum*  
**Common Name:** Purple deadnettel
- Pest 3 Type:** W **Code:** AMBTR *Ambrosia trifida*  
**Common Name:** Giant ragweed
- Pest 4 Type:** W **Code:** CARPE *Cardamine pensylvanica*  
**Common Name:** Pennsylvania bittercress
- Pest 5 Type:** W **Code:** SETFA *Setaria faberi*  
**Common Name:** Giant foxtail
- Pest 6 Type:** W **Code:** AMARE *Amaranthus retroflexus*  
**Common Name:** Redroot pigweed

**Site and Design**

Treated Plot Width: 10 FT  
 Treated Plot Length: 30 FT  
 Treated Plot Area: 300 FT2  
 Replications: 4

Site Type: FIELD field  
 Experimental Unit: 1 PLOT plot  
 Tillage Type: MINTIL minimum-till  
 Study Design: SPLPLO Split-Plot

Treatments: 18

**No. Previous Crop Year**

1. Soybean 2014

**Soil Description**

Description Name: G-8 East  
 % OM: 1.7  
 pH: 7  
 CEC: 15

Texture: SIC silty clay  
 Soil Name: Crosby  
 Fert. Level: M  
 Soil Drainage: F fair

**Application Description**

	A	B	C
Application Date:	4-14-2015	5-28-2015	6-18-2015
Appl. Start Time:	9:00 AM	9:30 AM	9:30 AM
Appl. Stop Time:	9:30 AM	9:45 AM	9:45 AM
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	14 EPP	POST	LPO
Application Placement:	BROFOL	BROFOL	BROFOL
Applied By:	Dobbels	Dobbel/Beth	Barclay
Air Temperature, Unit:	56 F	69 F	76 F
% Relative Humidity:	64	75	80
Wind Velocity, Unit:	6 MPH	2.5 MPH	4 MPH
Wind Direction:	NE	E	WSW
Dew Presence (Y/N):	Y yes	Y yes	Y yes
Soil Temperature, Unit:	51 F	66 F	69 F
Soil Moisture:	MOIST	DRY/MOIST	WET
% Cloud Cover:	100	60	60
Next Moisture Occurred On:	4-19-2015	5-30-2015	6-18-2015
Time to Next Moisture, Unit:	5 DAY	2 DAY	9 HR

**Crop Stage At Each Application**

	A	B	C
Crop 1 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		BBCH	BBCH
Stage Majority, Percent:		12 100	15 100
Height, Unit:		3 IN	12 IN
Height Minimum, Maximum:			10 13
Crop 2 Code, BBCH Scale:	GLXMA BSOY	GLXMA BSOY	GLXMA BSOY
Stage Scale Used:		BBCH	BBCH
Stage Majority, Percent:		12 100	15 100
Height, Unit:		3 IN	12 IN
Height Minimum, Maximum:			10 13
Crop 3 Code, BBCH Scale:	AVESS BCER	AVESS BCER	AVESS BCER
Crop 4 Code, BBCH Scale:	SECCW BCER	SECCW BCER	SECCW BCER
Stage Scale Used:		BBCH	
Stage Majority, Percent:	25 80		
Stage Minimum, Percent:	23 20		
Stage Maximum, Percent:	25 80		
Diameter, Unit:	3 IN		
Height, Unit:	7 IN		
Height Minimum, Maximum:	6 8		

**Pest Stage At Each Application**

	<b>A</b>	<b>B</b>	<b>C</b>
<b>Pest 1 Code, Type, Scale:</b>	STEME W	STEME W	STEME W
<b>Stage Majority, Percent:</b>	60 90		
<b>Stage Minimum, Percent:</b>	50 10		
<b>Stage Maximum, Percent:</b>	60 90		
<b>Diameter, Unit:</b>	4 in		
<b>Height, Unit:</b>	1 in		
<b>Height Minimum, Maximum:</b>	0.25 1		
<b>Pest 2 Code, Type, Scale:</b>	LAMPU W	LAMPU W	LAMPU W
<b>Stage Majority, Percent:</b>	65 95		
<b>Stage Minimum, Percent:</b>	50 5		
<b>Stage Maximum, Percent:</b>	65 95		
<b>Diameter, Unit:</b>	3 in		
<b>Height, Unit:</b>	3 IN		
<b>Height Minimum, Maximum:</b>	2 3		
<b>Pest 3 Code, Type, Scale:</b>	AMBTR W	AMBTR W	AMBTR W
<b>Stage Majority, Percent:</b>	10 100	12 100	16 100
<b>Stage Minimum, Percent:</b>		12 100	
<b>Stage Maximum, Percent:</b>		14 100	
<b>Diameter, Unit:</b>	1 IN		
<b>Height, Unit:</b>	0.5 IN	4 IN	5 IN
<b>Height Minimum, Maximum:</b>	0.25 0.5	1 12	1 8
<b>Pest 4 Code, Type, Scale:</b>	CARPE W	CARPE W	CARPE W
<b>Stage Majority, Percent:</b>	65 100		
<b>Diameter, Unit:</b>	2 IN		
<b>Height, Unit:</b>	2 IN		
<b>Height Minimum, Maximum:</b>	1 2		
<b>Pest 5 Code, Type, Scale:</b>	SETFA W	SETFA W	SETFA W
<b>Stage Majority, Percent:</b>		12 100	15 100
<b>Stage Minimum, Percent:</b>		12 100	
<b>Stage Maximum, Percent:</b>		14 100	
<b>Height, Unit:</b>		3 IN	7 IN
<b>Height Minimum, Maximum:</b>		1 6	4 12
<b>Pest 6 Code, Type, Scale:</b>	AMARE W	AMARE W	AMARE W
<b>Stage Majority, Percent:</b>		14 100	14 100
<b>Stage Minimum, Percent:</b>		14 100	
<b>Stage Maximum, Percent:</b>		14 100	
<b>Height, Unit:</b>		1 IN	2 IN
<b>Height Minimum, Maximum:</b>		1 2	1 4

**Application Equipment**

	<b>A</b>	<b>B</b>	<b>C</b>
<b>Appl. Equipment:</b>	10' AI XR	10' AI XR	10' AI XR
<b>Equipment Type:</b>	SPRBAC	SPRBAC	SPRBAC
<b>Operation Pressure, Unit:</b>	46 PSI	46 PSI	46 PSI
<b>Nozzle Type:</b>	AI XR	AI XR	AI XR
<b>Nozzle Size:</b>	110015	110015	110015
<b>Nozzle Spacing, Unit:</b>	18 IN	18 IN	18 IN
<b>Boom Length, Unit:</b>	10 FT	10 FT	10 FT
<b>Boom Height, Unit:</b>	20 IN	20 IN	20 IN
<b>Ground Speed, Unit:</b>	3 MPH	3 MPH	3 MPH
<b>Carrier:</b>	WATER	WATER	WATER
<b>Spray Volume, Unit:</b>	15 GPA	15 GPA	15 GPA
<b>Mix Size, Unit:</b>	2 Liters	2 Liters	2 Liters
<b>Propellant:</b>	CO2	CO2	CO2

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Pest Type				
Pest Code				
Pest Scientific Name				
Pest Name				
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA
BBCH Scale	BSOY	BSOY	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max	Glycine max	Glycine max
Crop Name	Soybean	Soybean	Soybean	Soybean
Rating Date	10-7-2015	10-7-2015	10-7-2015	10-7-2015
Rating Type	YIELD	MOICON	YIELD	WEITES
Rating Unit	LBS	%	BU	LBS
Sample Size, Unit	1 PLOT		1 A	
Collection Basis, Unit				
Number of Subsamples	1	1	1	1
Rating Timing				
Days After First/Last Applic.	176 111	176 111	176 111	176 111
Trt-Eval Interval				
Plant-Eval Interval	156 DP-1	156 DP-1	156 DP-1	156 DP-1
Days After Emergence	146 DE-1	146 DE-1	146 DE-1	146 DE-1
ARM Action Codes			TY1	
Number of Decimals	1	1	1	1

Trt No.	Treatment Name	Appl Code	Appl Description	15	16	17	18
1	Oats			21.7 ab	13.1 a	62.8 ab	53.3 a
1	Roundup Ready	A	PRE				
1	Valor	A	PRE				
1	Post 21 DapL	B	21 DAP				
2	Oats			22.9 a	12.4 a	67.1 a	52.8 a
2	Roundup Ready						
2	Valor						
2	Post 21 dapL						
2	POST 21 DAPO						
3	Oats			9.4 de	10.9 a	27.6 de	38.3 c-f
3	Roundup Ready						
3	UTC						
4	Oats			19.9 ab	13.1 a	57.9 ab	51.8 ab
4	Liberty Link	A	PRE				
4	Valor	A	PRE				
4	Post 21 DapL	B	21 DAP				
5	Oats			19.0 ab	12.8 a	55.3 ab	50.9 ab
5	Liberty Link						
5	Valor						
5	Post 21 dapL						
5	POST 21 DAPO						
6	Oats			4.6 e	8.8 a	13.6 e	27.7 ef
6	Liberty Link						
6	UTC						
7	No Cover			23.1 a	12.7 a	67.2 a	52.7 a
7	Roundup Ready	A	PRE				
7	Valor	A	PRE				
7	Post 21 DapL	B	21 DAP				

Means followed by same letter do not significantly differ (P=.05, LSD)  
 Mean separations are based on the complete error term.  
 Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

Trt No.	Treatment Name	Appl Code	Appl Description	15	16	17	18
	8 No Cover			23.2 a	12.2 a	68.1 a	53.5 a
	8 Roundup Ready						
	8 Valor						
	8 Post 21 dapL						
	8 POST 21 DAPO						
	9 No Cover			11.2 cd	11.4 a	33.0 cd	39.4 b-e
	9 Roundup Ready						
	9 UTC						
	10 No Cover			16.4 bc	13.0 a	47.6 bc	50.3 abc
	10 Liberty Link	A	PRE				
	10 Valor	A	PRE				
	10 Post 21 DapL	B	21 DAP				
	11 No Cover			22.9 a	12.7 a	66.8 a	53.5 a
	11 Liberty Link						
	11 Valor						
	11 Post 21 dapL						
	11 POST 21 DAPO						
	12 No Cover			5.7 de	9.6 a	16.7 de	33.1 def
	12 Liberty Link						
	12 UTC						
	13 Rye			16.7 bc	14.4 a	47.9 bc	47.0 abc
	13 Roundup Ready	A	PRE				
	13 Valor	A	PRE				
	13 Post 21 DapL	B	21 DAP				
	14 Rye			19.8 ab	12.4 a	57.9 ab	51.6 ab
	14 Roundup Ready						
	14 Valor						
	14 Post 21 dapL						
	14 POST 21 DAPO						
	15 Rye			4.1 e	10.0 a	12.3 e	26.0 f
	15 Roundup Ready						
	15 UTC						
	16 Rye			16.0 bc	11.2 a	46.6 bc	45.1 a-d
	16 Liberty Link	A	PRE				
	16 Valor	A	PRE				
	16 Post 21 DapL	B	21 DAP				

Pest Type				
Pest Code				
Pest Scientific Name				
Pest Name				
Crop Code	GLXMA	GLXMA	GLXMA	GLXMA
BBCH Scale	BSOY	BSOY	BSOY	BSOY
Crop Scientific Name	Glycine max	Glycine max	Glycine max	Glycine max
Crop Name	Soybean	Soybean	Soybean	Soybean
Rating Date	10-7-2015	10-7-2015	10-7-2015	10-7-2015
Rating Type	YIELD	MOICON	YIELD	WEITES
Rating Unit	LBS	%	BU	LBS
Sample Size, Unit	1 PLOT		1 A	
Collection Basis, Unit				
Number of Subsamples	1	1	1	1
Rating Timing				
Days After First/Last Applic.	176 111	176 111	176 111	176 111
Trt-Eval Interval				
Plant-Eval Interval	156 DP-1	156 DP-1	156 DP-1	156 DP-1
Days After Emergence	146 DE-1	146 DE-1	146 DE-1	146 DE-1
ARM Action Codes			TY1	
Number of Decimals	1	1	1	1
Trt Treatment	Appl	Appl		
No. Name	Code	Description	15	16
17 Rye			21.5 ab	13.0 a
17 Liberty Link				
17 Valor				
17 Post 21 dapL				
17 POST 21 DAPO				
18 Rye			5.3 de	9.9 a
18 Liberty Link				
18 UTC				
LSD P=.05			6.13	3.28
Standard Deviation			4.27	2.29
CV			27.14	19.29
Grand Mean			15.75	11.86
Bartlett's X2			21.213	61.006
P(Bartlett's X2)			0.217	0.001*
Skewness			-0.6588*	-1.08*
Kurtosis			-0.9449	4.2879*
Replicate F			2.394	3.357
Replicate Prob(F)			0.0844	0.0293
Treatment F			11.036	1.706
Treatment Prob(F)			0.0001	0.0877
				2.216
				2.283
				0.1031
				0.0956
				10.835
				4.747
				0.0001
				0.0001

Crop Code

GLXMA, BSOY, Glycine max, = US

Rating Type

YIELD = yield

MOICON = moisture content

WEITES = weight - test

Rating Unit

% = percent

BU = bushel

PLOT = total plot

A = acre

Plant-Eval Interval

156 DP-1 = 1 GLXMA 5-4-2015

ARM Action Codes

TY1 = 2.904\*[C15]\*(100-[C16])/87