

## The Ohio State University

Weed Control in No-Till Winter Malting Barley  
 Trial ID: 18NTMALT Location: Western Branch F-10 E Trial Year: 2017  
 Protocol ID: 18NTMALT Investigator: Dr. Mark M. Loux  
 Project ID: Study Director: Anthony Dobbels  
 Sponsor Contact:

**General Trial Information**

**Study Director:** Anthony Dobbels  
**Investigator:** Dr. Mark M. Loux

**Initiation Date:** Oct-2-2017

**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 °:** 39.8586 N  
**Longitude of LL Corner °:** 83.67052 W  
**Altitude of LL Corner, Unit:** 1087.00 FT

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

**Contacts**

**Study Director:** Anthony Dobbels

**Investigator:** Dr. Mark M. Loux  
**Organization:** The Ohio State University  
**Address:** 2021 Coffey Road  
**City+State/Prov:** Columbus, Ohio  
**Postal Code:** 43210  
**Country:** USA United States

**Crop Description**

**Crop 1:** HORVW Hordeum vulgare Winter barley  
**Variety:** Thoroughbred **BBCH Scale:** BCER  
**Description:** Ohio Certified Seed

**Planting Rate, Unit:** 100 LB/A  
**Depth, Unit:** 0.5 IN  
**Row Spacing, Unit:** 7.5 IN

**Soil Temperature, Unit:** 65 F  
**Soil Moisture:** DRY dry  
**Seed Bed:** MEDTRA medium/trashy

**Planting Date:** Oct-2-2017  
**Planting Method:** DRILLE drilled  
**Planting Equipment:** DD Disc Drill  
**Emergence Date:** Oct-7-2017  
**Harvest Date:** Jun-19-2018  
**Harvested Width, Unit:** 6.25 FT  
**Harvested Length, Unit:** 30 FT  
**Harvest Equipment:** Massey 8 XP  
**% Standard Moisture:** 13.5  
**Moisture Meter:** Mirrus by Harvest Master  
**Weighing Equipment:** Mirrus by Harvest Master

**Pest Description**

**Pest 1 Type:** W **Code:** ERICA Erigeron canadensis  
**Common Name:** Canada horseweed  
**Description:** Glyphosate Resistant

**Pest 2 Type:** W **Code:** LAMPU Lamium purpureum  
**Common Name:** Purple deadnettle

**Pest 3 Type:** W **Code:** STEME Stellaria media  
**Common Name:** Common chickweed

**Site and Design**

**Treated Plot Width:** 10 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 300 FT<sup>2</sup> **Treatments:** 16  
**Replications:** 3  
**Site Type:** FIELD field  
**Experimental Unit:** 1 PLOT plot  
**Tillage Type:** NOTILL no-till  
**Study Design:** RACOB L Randomized Complete Block (RCB)

**No. Previous Crop Year**  
 1. Soybean 2017

**Soil Description**

**Description Name:** F-10 East  
**% Sand:** 40 **% OM:** 3.3 **Texture:** SICL silty clay loam  
**% Silt:** 43 **pH:** 6.2 **Soil Name:** Kokomo  
**% Clay:** 17 **CEC:** 16.6 **Fert. Level:** G good  
**Soil Drainage:** G good

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## Application Description

	A	B	C
Application Date:	Oct-4-2017	Nov-9-2017	May-8-2018
Appl. Start Time:	9:30 AM	10:15 AM	10:00 AM
Appl. Stop Time:	9:40 AM	10:30 AM	10:20 AM
Interval to Prev. Appl., Unit:		36 DAYS	180 DAYS
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	FALL	POST
Application Placement:	BROFOL	BROFOL	FOLIAR
Applied By:	Dobbels	Dobbels	Dobbels
Air Temperature, Unit:	69 F	46 F	61 F
% Relative Humidity:	60	68	61
Wind Velocity, Unit:	5.5 MPH	7 MPH	2.5 MPH
Wind Direction:	SW	WSW	NW
Dew Presence (Y/N):	N no	Y yes	Y yes
Soil Temperature, Unit:	62 F	41 F	58 F
Soil Moisture:	DRY	WET	SLIWET
% Cloud Cover:	25	0	25
Next Moisture Occurred On:	Oct-5-2017	Nov-12-2017	May-10-2018
Time to Next Moisture, Unit:	1 DAY	3 DAY	2 DAY
Moisture 1 Week after Appl.:	2.01 IN	0.45 IN	0.38 IN

## Crop Stage At Each Application

	A		B		C	
Crop 1 Code, BBCH Scale:	HORVW	BCER	HORVW	BCER	HORVW	BCER
Stage Scale Used:	BBCH		BBCH		FEEKES	
Stage Majority, Percent:	21	90	21	90	10.0	100
Stage Minimum, Percent:	13	10	13	10		
Stage Maximum, Percent:	21	90	21	90		
Height, Unit:	4	IN	23.6	IN		
Height Minimum, Maximum:	4	5	21	28		

## Pest Stage At Each Application

	A		B		C	
Pest 1 Code, Type, Scale:	ERICA	W	ERICA	W	ERICA	W
Stage Majority, Percent:	69	100	69	100	69	100
Diameter, Unit:	0.5	IN	0.5	IN	0.5	IN
Height, Unit:	11	IN	11	IN	11	IN
Height Minimum, Maximum:	10	12	10	12	10	12
Density, Unit:	3	M2	3	M2	3	M2
Pest 2 Code, Type, Scale:	LAMPU	W	LAMPU	W	LAMPU	W
Stage Majority, Percent:	14	90	14	90	14	90
Stage Minimum, Percent:	14	90	14	90	14	90
Stage Maximum, Percent:	16	10	16	10	16	10
Diameter, Unit:	0.5	IN	2.5	IN	0.5	IN
Height, Unit:	0.5	IN	11	IN	0.5	IN
Height Minimum, Maximum:	0.5	0.75	5.5	14.5	0.5	0.75
Density, Unit:	50	M2	50	M2	50	M2
Pest 3 Code, Type, Scale:	STEME	W	STEME	W	STEME	W
Stage Majority, Percent:			65	100		
Diameter, Unit:			8	IN		
Height, Unit:			8	IN		
Height Minimum, Maximum:			4	13.5		

## Application Equipment

	A	B	C
Appl. Equipment:	10' AI XR	10' TTI	10' AI XR
Equipment Type:	SPRBAC	SPRBAC	SPRBAC
Operation Pressure, Unit:	46 PSI	46 PSI	42 PSI
Nozzle Type:	AI XR	AI XR	AI XR
Nozzle Size:	110015	110015	110015
Nozzle Spacing, Unit:	18 IN	18 IN	18 IN
Boom Length, Unit:	10 FT	10 FT	10 FT
Boom Height, Unit:	20 IN	20 IN	20 IN
Ground Speed, Unit:	3 MPH	3 MPH	3 MPH
Carrier:	WATER	WATER	WATER
Spray Volume, Unit:	15 GPA	15 GPA	15 GPA
Mix Size, Unit:	2 L	2 Liters	2 Liters
Propellant:	CO2	CO2	COMCO2

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Pest Type								
Pest Code								
Pest Scientific Name								
Pest Name								
Crop Code	HORVW	HORVW	HORVW	HORVW				
BBCH Scale	BCER	BCER	BCER	BCER				
Crop Scientific Name	Hordeum vulgare	Hordeum vulgare	Hordeum vulgare	Hordeum vulgare				
Crop Name	Winter barley	Winter barley	Winter barley	Winter barley				
Rating Date	Jun-19-2018	Jun-19-2018	Jun-19-2018	Jun-19-2018				
Rating Type	YIELD	MOICON	YIELD	WEITES				
Rating Unit	LB	%	BU	LBS/BU				
Sample Size, Unit	1 PLOT		1 A					
Number of Subsamples Assessed By	1	1	1	1				
Rating Timing								
Days After First/Last Applic.	258 42	258 42	258 42	258 42				
Plant-Eval Interval	260 DP-1	260 DP-1	260 DP-1	260 DP-1				
Days After Emergence	255 DE-1	255 DE-1	255 DE-1	255 DE-1				
ARM Action Codes			TY1					
Number of Decimals	1	1	1	1				
Trt Treatment	Other	Other	Appl					
No. Name	Rate	Rate	Unit	Code	12*	13*	14*	15*
1 Roundup PowerMax	31.3 oz/a		A		6.2 cd	12.9 -	31.6 bc	42.2 b-e
1 Sharpen	1.5 oz/a		A					
1 MSO	9.6 oz/a		A					
2 Roundup PowerMax	31.3 oz/a		A		7.0 abc	14.2 -	33.3 abc	42.1 cde
2 Sharpen	1.5 oz/a		A					
2 MSO	9.6 oz/a		A					
2 2,4-D Ester	1 pt/a		C					
3 Roundup PowerMax	31.3 oz/a		A		6.3 cd	13.1 -	30.4 bc	42.0 cde
3 Sharpen	1.5 oz/a		A					
3 MSO	9.6 oz/a		A					
3 Huskie	13 oz/a		C					
3 NIS	4.8 oz/a		C					
3 N PAK AMS	48 oz/a		C					
4 Roundup PowerMax	31.3 oz/a		A		6.7 bcd	13.5 -	32.8 bc	42.5 bcd
4 Sharpen	1.5 oz/a		A					
4 MSO	9.6 oz/a		A					
4 Quelex	0.75 oz/a		C					
4 MSO	0.5 % v/v		C					
5 Roundup PowerMax	31.3 oz/a		A		6.7 bcd	12.8 -	32.5 bc	43.5 a
5 Sharpen	1.5 oz/a		A					
5 MSO	9.6 oz/a		A					
5 2,4-D Ester	1 pt/a		C					
5 Harmony Extra 0.9 oz			C					
5 Harmony GT	0.6 oz/a		C					
5 Express	0.3 oz/a		C					
5 NIS	0.25 % v/v		C					
5 N PAK AMS	48 oz/a		C					
6 Clarity	4 oz/a		B		7.0 abc	13.0 -	34.2 abc	41.9 de
6 Express	0.375 oz/a		B					
6 NIS	4.8 oz/a		B					
6 N PAK AMS	48 oz/a		B					
7 Clarity	4 oz/a		B		7.9 a	12.5 -	38.1 a	43.0 ab
7 Express	0.375 oz/a		B					
7 NIS	4.8 oz/a		B					
7 N PAK AMS	48 oz/a		B					
7 2,4-D Ester	1 pt/a		C					

Means followed by same letter or symbol do not significantly differ (P=0.05, LSD)

Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.

\* Adjusted means

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Pest Code							
Pest Scientific Name							
Pest Name							
Crop Code	HORVW	HORVW	HORVW	HORVW			
BBCH Scale	BCER	BCER	BCER	BCER			
Crop Scientific Name	Hordeum vulgare	Hordeum vulgare	Hordeum vulgare	Hordeum vulgare			
Crop Name	Winter barley	Winter barley	Winter barley	Winter barley			
Rating Date	Jun-19-2018	Jun-19-2018	Jun-19-2018	Jun-19-2018			
Rating Type	YIELD	MOICON	YIELD	WEITES			
Rating Unit	LB	%	BU	LBS/BU			
Sample Size, Unit	1 PLOT		1 A				
Number of Subsamples Assessed By	1	1	1	1			
Rating Timing							
Days After First/Last Applic.	258 42	258 42	258 42	258 42			
Plant-Eval Interval	260 DP-1	260 DP-1	260 DP-1	260 DP-1			
Days After Emergence	255 DE-1	255 DE-1	255 DE-1	255 DE-1			
ARM Action Codes			TY1				
Number of Decimals	1	1	1	1			
Trt Treatment No. Name	Other Rate	Other Rate Unit	Appl Code	12*	13*	14*	15*
8 Clarity	4 oz/a	B		6.1 cd	13.4 -	29.8 c	42.0 cde
8 Express	0.375 oz/a	B					
8 NIS	4.8 oz/a	B					
8 N PAK AMS	48 oz/a	B					
8 Huskie	13 oz/a	C					
8 NIS	4.8 oz/a	C					
8 N PAK AMS	48 oz/a	C					
9 Clarity	4 oz/a	B		6.7 bcd	13.9 -	31.8 bc	41.7 de
9 Express	0.375 oz/a	B					
9 NIS	4.8 oz/a	B					
9 N PAK AMS	48 oz/a	B					
9 Quelex	0.75 oz/a	C					
9 MSO	0.5 % v/v	C					
10 Clarity	4 oz/a	B		6.9 abc	15.3 -	34.4 abc	43.7 a
10 Express	0.375 oz/a	B					
10 NIS	4.8 oz/a	B					
10 N PAK AMS	48 oz/a	B					
10 2,4-D Ester	1 pt/a	C					
10 Harmony Extra 0.9 oz		C					
10 Harmony GT	0.6 oz/a	C					
10 Express	0.3 oz/a	C					
10 NIS	4.8 oz/a	C					
10 N PAK AMS	48 oz/a	C					
11 Quelex	0.75 oz/a	B		6.2 cd	12.6 -	31.3 bc	41.6 de
11 MSO	0.5 % v/v	B					
12 2,4-D Ester	1 pt/a	C		7.5 ab	14.9 -	35.6 ab	42.9 abc
13 Huskie	13 oz/a	C		6.2 cd	13.8 -	30.4 bc	42.4 bcd
13 NIS	4.8 oz/a	C					
13 N PAK AMS	48 oz/a	C					
14 Quelex	0.75 oz/a	C		5.6 d	13.2 -	29.9 bc	42.1 cde
14 MSO	0.5 % v/v	C					
15 2,4-D Ester	1 pt/a	C		6.7 bcd	13.2 -	32.4 bc	43.4 a
15 Harmony Extra 0.9 oz		C					
15 Harmony GT	0.6 oz/a	C					
15 Express	0.3 oz/a	C					
15 NIS	4.8 oz/a	C					
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Pest Code				
Pest Scientific Name				
Pest Name				
Crop Code	HORVW	HORVW	HORVW	HORVW
BBCH Scale	BCER	BCER	BCER	BCER
Crop Scientific Name	Hordeum vulgare	Hordeum vulgare	Hordeum vulgare	Hordeum vulgare
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Rating Type	YIELD	MOICON	YIELD	WEITES
Rating Unit	LB	%	BU	LBS/BU
Sample Size, Unit	1 PLOT		1 A	
Number of Subsamples	1	1	1	1
Assessed By				
Rating Timing				
Days After First/Last Applic.	258 42	258 42	258 42	258 42
Plant-Eval Interval	260 DP-1	260 DP-1	260 DP-1	260 DP-1
Days After Emergence	255 DE-1	255 DE-1	255 DE-1	255 DE-1
ARM Action Codes	TY1			
Number of Decimals	1	1	1	1
Trt Treatment	Other	Other	Appl	
No. Name	Rate	Rate	Unit Code	
16 Untreated	6.6 bcd	14.2 -	29.7 c	41.5 e
LSD P=.05	1.12	2.19	5.11	0.84
Standard Deviation	0.67	1.30	3.07	0.51
CV	10.08	10.11	9.47	1.19
Levene's F	0.725	0.218	0.581	0.212
Levene's Prob(F)	0.742	0.999	0.868	0.999
Skewness	0.4065	-0.6791	0.3021	-0.0855
Kurtosis	-0.6324	-1.2722	-0.6792	-0.7005
Randomized Complete Block (RCB) AIC	130.891	265.8536	268.551	159.1974
Spatial AIC	SPa 113.327	SPb 177.9563	SPc 258.854	SPd 86.0997
Analyzed as	CRD+SPa	CRD+SPb	CRD+SPc	CRD+SPd
Replicate F	0.552	0.461	0.666	2.019
Replicate Prob(F)	0.5818	0.6366	0.5212	0.1505
Treatment F	2.331	3.279	2.442	7.046
Treatment Prob(F)	0.0236	0.0052	0.0174	0.0001

Crop Code

HORVW, BCER, Hordeum vulgare, Winter barley = US

Rating Type

YIELD = yield

MOICON = moisture content

WEITES = weight - test

Rating Unit

LB = pound

% = percent

BU = bushel

PLOT = total plot

A = acre

Plant-Eval Interval

260 DP-1 = 1 HORVW Oct-2-2017

ARM Action CodesTY1 =  $4.84 * [12] * (100 - [13]) / 86.5$ 

SPa = Linear spatial trend

SPb = Cubic spatial trend

SPc = Nearest column neighbor

SPd = Nearest row neighbor and column neighbor

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