The Ohio State University

Malting Barley Late Planting Study

Trial ID: 16MALT2 Location: Western Branch f-6 Trial Year: 2016
Protocol ID: 16MALT2 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

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 °: 39.85594 N
Longitude of LL Corner °: 83.67091 W
Altitude of LL Corner, Unit: 1089.00 FT

Conducted Under GLP: No
Conducted Under GEP: No

Contacts

Study Director: Anthony Dobbels

Investigator: Dr. Mark M. Loux

Crop Description

Crop 1: HORVS Hordeum vulgare (spring) Spring barley
Variety: Quest
Description: 2 Row Spring Malting Barley

Planting Rate, Unit: 96 LB/A
Depth, Unit: 1 IN
Row Spacing, Unit: 7.5 IN

Soil Temperature, Unit: 52 F
Soil Moisture: NORMAL normal, adequate
Seed Bed: MEDIUM medium

Planting Date: 4-19-2016
Planting Method: DRILLE drilled
Planting Equipment: DD Disc Drill
Emergence Date: 4-25-2016
Harvest Date: 7-12-2016
Harvested Width, Unit: 6.25 FT
Harvested Length, Unit: 30 FT
Harvest Equipment: Massey Ferguson 8 XP
% Standard Moisture: 14.5
Moisture Meter: Harvest Master
Weighing Equipment: Harvest Master HM 800

Pest Description

Pest 1 Type: W **Code:** SETFA Setaria faberi
Common Name: Giant foxtail

Pest 2 Type: W **Code:** AMBTR Ambrosia trifida
Common Name: Giant ragweed

Pest 3 Type: W **Code:** CHEAL Chenopodium album
Common Name: Common lambsquarters

Site and Design

Treated Plot Width: 10 FT
Treated Plot Length: 30 FT
Treated Plot Area: 300 FT2 **Treatments:** 8
Replications: 3 **Study Design:** RACOBL Randomized Complete Block (RCB)

Soil Description

Description Name: F-6
% OM: 2 **Texture:** SIC silty clay
pH: 6.2 **Soil Name:** Crosby
CEC: 14.5 **Fert. Level:** G good
Soil Drainage: G good

Additional Measured Elements

Date	Element	Quantity	Unit
3-21-2016	Urea	55	lb/a
5-16-2016	28% UAN	15	gal/a

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Application Description

	A	B
Application Date:	4-20-2016	5-19-2016
Appl. Start Time:	9:00 AM	9:30 AM
Appl. Stop Time:	9:10 AM	10:00 AM
Application Method:	SPRAY	SPRAY
Application Timing:	PRE	POEMSE
Application Placement:	BROSOI	FOLIAR
Applied By:	Dobbels	Loux
Air Temperature, Unit:	55 F	59 F
% Relative Humidity:	42	43
Wind Velocity, Unit:	8 MPH	7.5 MPH
Wind Direction:	E	NNE
Dew Presence (Y/N):	N no	N no
Soil Temperature, Unit:	52 F	52 F
Soil Moisture:	NORMAL	NORMAL
% Cloud Cover:	30	0
Next Moisture Occurred On:	4-21-2016	5-20-2016
Time to Next Moisture, Unit:	1 DAY	1 DAY

Crop Stage At Each Application

	A	B
Crop 1 Code, BBCH Scale:	HORVS BCER	HORVS BCER

Pest Stage At Each Application

	A	B
Pest 1 Code, Type, Scale:	SETFA W	SETFA W
Stage Majority, Percent:		12 100
Height, Unit:		2 IN
Height Minimum, Maximum:		1 3
Pest 2 Code, Type, Scale:	AMBTR W	AMBTR W
Stage Majority, Percent:		14 60
Stage Minimum, Percent:		12 40
Stage Maximum, Percent:		14 60
Height, Unit:		4 IN
Height Minimum, Maximum:		3 5
Pest 3 Code, Type, Scale:	CHEAL W	CHEAL W
Stage Majority, Percent:		14 100
Height, Unit:		2 IN
Height Minimum, Maximum:		1 2

Application Equipment

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

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Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	1*	2*	3*	4*	5*
	Pest Type								W Weed	W Weed	W Weed	W Weed	W Weed
	Pest Code								SETFA	AMBTR	CHEAL	ABUTH	AMBTR
	Pest Name								Giant foxtail	Giant ragweed	Common lambsqu>	velvetleaf	Giant ragweed
	Crop Code												
	Crop Name												
	Rating Date								5-16-2016	5-16-2016	5-16-2016	5-16-2016	6-1-2016
	Rating Type								CONTRO	CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit								%	%	%	%	%
	Number of Subsamples								1	1	1	1	1
	Assessed By												
	Days After First/Last Applic.								26 26	26 26	26 26	26 26	42 13
	Trt-Eval Interval								26 DA-A	26 DA-A	26 DA-A	26 DA-A	13 DA-B
	Days After Emergence								21 DE-1	21 DE-1	21 DE-1	21 DE-1	37 DE-1
	ARM Action Codes												
	Number of Decimals								0	0	0	0	0
1	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	0 -	53 a	100 a	100 a	27 b
2	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	0 -	60 a	100 a	100 a	100 a
	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B					
3	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	0 -	57 a	100 a	100 a	40 b
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B					
4	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	0 -	50 a	100 a	100 a	100 a
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B					
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B					
5	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B	0 -	0 b	0 b	0 b	100 a
6	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	0 -	0 b	0 b	0 b	100 a
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B					
7	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	0 -	0 b	0 b	0 b	77 a
	HUSKIE	100	%	0.85	lb ai/a	13	oz/a	B					
	NIS	100	%	0.25	% v/v	4.8	oz/a	B					
	N PAK AMS	100	%	2.5	% v/v	48	oz/a	B					
8	UNTREATED								0 -	0 b	0 b	0 b	27 b
LSD P=.05									.	15.6	.	.	28.4
Standard Deviation									0.0	8.9	0.0	0.0	16.2
CV									0.0	32.35	0.0	0.0	22.74
Bartlett's X2									0.0	4.089	0.0	0.0	8.799
P(Bartlett's X2)									.	0.252	.	.	0.032*
Skewness									.	0.2242	0.0	0.0	-0.4708
Kurtosis									.	-1.7681	-2.1905*	-2.1905*	-1.8163
Replicate F									0.000	0.158	0.000	0.000	0.619
Replicate Prob(F)									1.0000	0.8554	1.0000	1.0000	0.5526
Treatment F									0.000	33.053	0.000	0.000	13.531
Treatment Prob(F)									1.0000	0.0001	1.0000	1.0000	0.0001

Means followed by same letter or symbol do not significantly differ (P=.05, LSD)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.
* Adjusted means
Could not calculate LSD (% mean diff) for columns 1,3,4 because error mean square = 0.

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Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	6*	7*	8*	9*
	Pest Type								W Weed	W Weed	W Weed	W Weed
	Pest Code								SETFA	CHEAL	AMBTR	SETFA
	Pest Name								Giant foxtail	Common lambsqu>	Giant ragweed	Giant foxtail
	Crop Code											
	Crop Name											
	Rating Date								6-1-2016	6-1-2016	6-14-2016	6-14-2016
	Rating Type								CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit								%	%	%	%
	Number of Subsamples								1	1	1	1
	Assessed By										LAMB	LAMB
	Days After First/Last Applic.								42 13	42 13	55 26	55 26
	Trt-Eval Interval								13 DA-B	13 DA-B	26 DA-B	26 DA-B
	Days After Emergence								37 DE-1	37 DE-1	50 DE-1	50 DE-1
	ARM Action Codes											
	Number of Decimals								0	0	0	0
1	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	0 b	100 -	30 b	43 b
2	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	63 a	100 -	100 a	97 a
	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B				
3	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	70 a	83 -	47 b	97 a
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B				
4	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	70 a	97 -	100 a	100 a
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B				
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B				
5	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B	70 a	67 -	100 a	100 a
6	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	70 a	88 -	100 a	100 a
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B				
7	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	47 a	87 -	100 a	100 a
	HUSKIE	100	%	0.85	lb ai/a	13	oz/a	B				
	NIS	100	%	0.25	% v/v	4.8	oz/a	B				
	N PAK AMS	100	%	2.5	% v/v	48	oz/a	B				
8	UNTREATED								0 b	90 -	30 b	43 b
LSD P=.05									25.0	25.2	17.9	21.8
Standard Deviation									14.3	14.4	10.2	12.4
CV									29.31	16.2	13.46	14.64
Bartlett's X2									2.475	5.595	0.0	5.593
P(Bartlett's X2)									0.116	0.348	.	0.133
Skewness									-0.9332	-1.4233*	-0.714	-1.5681*
Kurtosis									-1.19	1.2424	-1.5904	0.8348
Replicate F									1.653	0.667	1.000	0.323
Replicate Prob(F)									0.2267	0.5286	0.3927	0.7292
Treatment F									14.224	1.731	32.800	12.862
Treatment Prob(F)									0.0001	0.1809	0.0001	0.0001

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Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	10*	11*	12*	13*
	Pest Type								W Weed	W Weed	W Weed	W Weed
	Pest Code								CHEAL	SETFA	AMBTR	CHEAL
	Pest Name								Common lambsqu>	Giant foxtail	Giant ragweed	Common lambsqu>
	Crop Code											
	Crop Name											
	Rating Date								6-14-2016	7-11-2016	7-11-2016	7-11-2016
	Rating Type								CONTRO	CONTRO	CONTRO	CONTRO
	Rating Unit								%	%	%	%
	Number of Subsamples								1	1	1	1
	Assessed By								LAMB	Loux	Loux	Loux
	Days After First/Last Applic.								55 26	82 53	82 53	82 53
	Trt-Eval Interval								26 DA-B			
	Days After Emergence								50 DE-1	77 DE-1	77 DE-1	77 DE-1
	ARM Action Codes											
	Number of Decimals								0			
1	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	95 -	36.7 c	26.7 b	100.0 -
2	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	95 -	99.3 a	100.0 a	100.0 -
	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B				
3	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	92 -	99.3 a	26.7 b	100.0 -
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B				
4	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	100 -	100.0 a	100.0 a	100.0 -
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B				
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B				
5	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B	78 -	100.0 a	100.0 a	93.3 -
6	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	97 -	86.7 b	100.0 a	100.0 -
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B				
7	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	100 -	97.7 ab	100.0 a	100.0 -
	HUSKIE	100	%	0.85	lb ai/a	13	oz/a	B				
	NIS	100	%	0.25	% v/v	4.8	oz/a	B				
	N PAK AMS	100	%	2.5	% v/v	48	oz/a	B				
8	UNTREATED								90 -	23.3 d	10.0 c	100.0 -
LSD P=.05									15.6	11.58	11.46	7.15
Standard Deviation									8.9	6.61	6.55	4.08
CV									9.52	8.22	9.3	4.12
Bartlett's X2									2.979	14.152	3.222	0.0
P(Bartlett's X2)									0.703	0.015*	0.20	.
Skewness									-1.2776*	-1.2224*	-0.6782	-4.899*
Kurtosis									0.6124	-0.3051	-1.4641	24.0*
Replicate F									0.547	0.072	1.556	1.000
Replicate Prob(F)									0.5904	0.9313	0.2454	0.3927
Treatment F									1.866	68.576	118.542	1.000
Treatment Prob(F)									0.1518	0.0001	0.0001	0.4706

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Trt No.	Treatment Name	Form Conc	Form Unit	Rate	Rate Unit	Other Rate	Other Rate Unit	Appl Code	14*	15*	16*	17*
	Pest Type											
	Pest Code											
	Pest Name								Weight	Moisture	Weight	TestWeight
	Crop Code								HORVS	HORVS	HORVS	HORVS
	Crop Name								Spring barley	Spring barley	Spring barley	Spring barley
	Rating Date								7-12-2016	7-12-2016	7-12-2016	7-12-2016
	Rating Type								Weight	MOICON	YIELD	WEITES
	Rating Unit								LBS	%	BU	LB/BU
	Number of Subsamples								1	1	1	1
	Assessed By											
	Days After First/Last Applic.								83 54	83 54	83 54	83 54
	Trt-Eval Interval											
	Days After Emergence								78 DE-1	78 DE-1	78 DE-1	78 DE-1
	ARM Action Codes										TY1	
	Number of Decimals								1	1	1	1
1	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	19.5 -	9.8 -	99.6 -	52.7 -
2	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	20.2 -	9.3 -	103.9 -	49.9 -
	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B				
3	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	19.4 -	11.0 -	97.9 -	51.8 -
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B				
4	Sharpen	2.85	LBA/GAL	0.0445	lb ai/a	2	oz/a	A	21.4 -	10.1 -	108.9 -	52.7 -
	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B				
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B				
5	AXIAL STAR	100	%	1.07	lb ai/a	16.4	oz/a	B	21.3 -	9.2 -	109.5 -	51.5 -
6	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	21.9 -	9.7 -	112.0 -	52.9 -
	MCPA-Amine	4	LBA/GAL	0.375	lb ai/a	0.75	pt/a	B				
7	AXIAL XL	100	%	1.07	lb ai/a	16.4	oz/a	B	21.5 -	9.9 -	109.7 -	51.1 -
	HUSKIE	100	%	0.85	lb ai/a	13	oz/a	B				
	NIS	100	%	0.25	% v/v	4.8	oz/a	B				
	N PAK AMS	100	%	2.5	% v/v	48	oz/a	B				
8	UNTREATED								19.5 -	11.4 -	97.8 -	53.4 -
LSD P=.05									2.47	1.59	12.79	3.71
Standard Deviation									1.41	0.91	7.30	2.12
CV									6.83	9.04	6.96	4.07
Bartlett's X2									2.503	1.95	3.064	13.615
P(Bartlett's X2)									0.927	0.963	0.879	0.058
Skewness									0.0819	-0.0531	0.1523	-1.5398*
Kurtosis									-0.0078	-1.0432	-0.0697	1.8677*
Replicate F									4.232	2.982	3.715	2.162
Replicate Prob(F)									0.0365	0.0834	0.0508	0.1520
Treatment F									1.611	2.275	1.917	0.895
Treatment Prob(F)									0.2119	0.0903	0.1421	0.5362

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Pest Type
W, Weed, G-BYRW7, G-WedStg = Weed or volunteer crop
Pest Code
SETFA, Setaria faberi, = US
AMBTR, Ambrosia trifida, = US
CHEAL, Chenopodium album, = US
ABUTH, Abutilon theophrasti, = US
Crop Code
HORVS, BCER, Hordeum vulgare (spring), = HORVS, BCER, Hordeum vulgare (spring),
Rating Type
CONTRO = control / burndown or knockdown
Weight = weight
MOICON = moisture content
YIELD = yield
WEITES = weight - test
Rating Unit
% = percent
BU = bushel
ARM Action Codes
TY1 = 4.84*[C14]*(100-[C15])/85.5