Kansas State University

Comparison of Fall- and Spring-Applied Burndown Herbicides for Corn

Trial ID: WA Fall&Spring **Study Dir.:**
Location: Parker South #1 **Investigator: David L Regehr**

CROP AND WEED DESCRIPTION

Weed	Code	Common Name	Scientific Name
1.	LAMAM	HENBIT	LAMIUM AMPLEXICAULE L.
2.	BROTE	BROME, DOWNY	BROMUS TECTORUM L.

SITE AND DESIGN

Plot Width, Unit: 6.67 FT Plot Length, Unit: 25 FT Reps: 4
Site Type: cropland
Tillage Type: long-term no-till Study Design: FACTORIAL

	Previous Crops	Previous Pesticides	Year
1.	soybean	various	2002

SOIL DESCRIPTION

% Sand: 21 % OM: 3.0 Texture: silt loam
% Silt: 58 pH: 6.4 Soil Name: Kahola
% Clay: 21 CEC: 17.4 Fert. Level: good

APPLICATION DESCRIPTION

	A	B
Application Date:	16/Dec/2002	10/Apr/2003
Time of Day:	4 PM	4 PM
Application Method:	spray	spray
Application Timing:	fall	spring
Applic. Placement:	leaf/soil	leaf/soil
Air Temp., Unit:	46 F	75 F
% Relative Humidity:	60	20
Wind Velocity, Unit:	2 NW	7 S
Dew Presence (Y/N):	N	N
Water Hardness:	city	city
Soil Temp., Unit:	39 F	60 F
Soil Moisture:	good	good
% Cloud Cover:	10	0

WEED STAGE AT EACH APPLICATION

	A	B
Weed 1 Code, Stage:	LAMAM	LAMAM
Stage Scale:	2 inch	4" flower
Density, Unit:	70% cover	85% cover
Weed 2 Code, Stage:	BROTE	BROTE
Stage Scale:	tillered	4-5"
Density, Unit:	spot	spot

APPLICATION EQUIPMENT

	A	B
Appl. Equipment:	CO2 bkpk	CO2 bkpk
Operating Pressure:	26 psi	26 psi
Nozzle Type:	turbo tee	turbo tee
Nozzle Size:	11002	11002
Nozzle Spacing, Unit:	20 inch	20 inch
Boom Length, Unit:	80 inch	80 inch
Boom Height, Unit:	15 inch	20 inch
Carrier:	water	water
Spray Volume, Unit:	20 gpa	20 gpa
Propellant:	CO2	CO2

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Trial Comments

This experiment had 32 treatments in a fall vs. spring factorial design, plus four comparison treatments (#33-36) applied only in fall. Only henbit (LAMAM) and downy brome (BROTE) were uniform enough to rate. Comments are included for several other weed species.

Most treatments in the factorial contained a base of 2,4-D LV4 at 1 pt/A and Clarity at 2 fl oz/A. Henbit control from this base was 87% and 83% from fall and spring applications, respectively. 2,4-D and Clarity at these rates, when fall-applied, usually control other winter annual broadleaf weeds such as mustards, horseweed, prickly lettuce, mouseear chickweed, and evening primrose.

Atrazine plus crop oil concentrate performed well on both henbit and downy brome, when applied in fall. The 2 lb/A rate was significantly better on brome than 1 lb/A, and control from fall applications was better than from spring applications. Atrazine, without 2,4-D and dicamba, usually does not provide good control of common dandelion, and may miss some prickly lettuce.

Substituting Sencor for atrazine (tmt #11 & 27) gave excellent henbit control, but did not control downy brome. Addition of Gramoxone Max at 1.33 pt/A (tmt #12 & 28) greatly increased downy brome control.

Touchdown IQ at 1 pt/A (tmt #7 & 23) gave erratic henbit control. Addition of the 2,4-D plus dicamba base gave excellent control.

Fall-applied Basis at 0.5 oz/A (tmt #33) gave good henbit control, and with the 2,4-D plus dicamba base (tmt #13), control of henbit was excellent, but not of downy brome.

Python, Aim, and Valor (tmt # 34-36) applied in fall had mediocre activity on henbit and no activity on downy brome. When applied with the 2,4-D plus dicamba base, activity was about the same as that of the base alone.

The factorial analysis shows significant herbicide X time-of-application interactions. Application in fall is nearly always more effective. This holds for both residual and non-residual herbicides. One would expect the greatest differences between fall and spring application to occur where herbicide rates are marginal. This is illustrated by downy brome control with atrazine at 1 lb/A (89 vs. 23%). At the more adequate 2 lb rate, fall application is still more effective, but the differences are much smaller.

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Trial ID: WA Fall&Spring **Study Dir.:**
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Weed Code				LAMAM	LAMAM	BROTE	BROTE
Rating Date				1/Apr/2003	28/Apr/2003	1/Apr/2003	28/Apr/2003
Trt-Eval Interval				106 DA-A	133 DA-A	106 DA-A	133 DA-A
Trt No.	Treatment Name	Product Rate	Product Rate Unit	1	3	2	4
1	Fall-Applied			95 a	99 a	97 a	99 a
	AAtrex	1.11	lb/a				
	Gramoxone Max	1.33	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
2	Fall-Applied			92 a	98 a	53 b	89 ab
	AAtrex	1.11	lb/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
3	Fall-Applied			99 a	99 a	98 a	96 a
	AAtrex	2.22	lb/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
4	Fall-Applied			87 a	96 ab	13 c	14 fg
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
5	Fall-Applied			89 a	96 ab	55 b	67 bcd
	AAtrex	1.11	lb/a				
	Crop Oil Conc	1	qt/a				
6	Fall-Applied			96 a	99 a	73 ab	91 ab
	AAtrex	2.22	lb/a				
	Crop Oil Conc	1	qt/a				
7	Fall-Applied			84 a	85 abc	99 a	92 ab
	Touchdown IQ	1	pt/a				
	Am Sulfate	8	lb/100 gal				
8	Fall-Applied			94 a	98 a	98 a	91 ab
	Touchdown IQ	1	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Am Sulfate	8	lb/100 gal				
9	Fall-Applied			96 a	94 ab	99 a	97 a
	Touchdown IQ	2	pt/a				
	Am Sulfate	8	lb/100 gal				
10	Fall-Applied			94 a	97 a	99 a	90 ab
	Touchdown IQ	2	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Am Sulfate	8	lb/100 gal				
11	Fall-Applied			88 a	97 a	26 c	30 ef
	Sencor	5.33	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
12	Fall-Applied			95 a	97 a	93 a	93 ab
	Sencor	5.33	oz/a				
	Gramoxone Max	1.33	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
13	Fall-Applied			94 a	97 a	93 a	60 cd
	Basis	0.5	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Nonionic Surfactant	0.417	% v/v				
14	Fall-Applied			88 a	94 ab	15 c	20 fg
	Python	1	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Nonionic Surfactant	0.417	% v/v				

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Trt No.	Treatment Name	Product Rate	Product Rate Unit	LAMAM 1/Apr/2003 106 DA-A 1	LAMAM 28/Apr/2003 133 DA-A 3	BROTE 1/Apr/2003 106 DA-A 2	BROTE 28/Apr/2003 133 DA-A 4
15	Fall-Applied			90 a	90 ab	11 c	11 fg
	Aim EW	0.263	fl oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
16	Fall-Applied			90 a	93 ab	15 c	32 ef
	Valor	1.96	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
17	Spring-Applied				99 a		98 a
	AAtrex	1.11	lb/a				
	Gramoxone Max	1.33	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
18	Spring-Applied				99 a		23 fg
	AAtrex	1.11	lb/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
19	Spring-Applied				99 a		75 abc
	AAtrex	2.22	lb/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
20	Spring-Applied				83 abc		5 fg
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
21	Spring-Applied				98 a		60 cd
	AAtrex	1.11	lb/a				
	Crop Oil Conc	1	qt/a				
22	Spring-Applied				98 a		75 abc
	AAtrex	2.22	lb/a				
	Crop Oil Conc	1	qt/a				
23	Spring-Applied				73 c		97 a
	Touchdown IQ	1	pt/a				
	Am Sulfate	8	lb/100 gal				
24	Spring-Applied				86 abc		91 ab
	Touchdown IQ	1	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Am Sulfate	8	lb/100 gal				
25	Spring-Applied				79 bc		97 a
	Touchdown IQ	2	pt/a				
	Am Sulfate	8	lb/100 gal				
26	Spring-Applied				87 abc		96 a
	Touchdown IQ	2	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Am Sulfate	8	lb/100 gal				
27	Spring-Applied				97 a		20 fg
	Sencor	5.33	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
28	Spring-Applied				99 a		90 ab
	Sencor	5.33	oz/a				
	Gramoxone Max	1.33	pt/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
29	Spring-Applied				94 ab		50 de
	Basis	0.5	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Nonionic Surfactant	0.417	% v/v				

Weed Code
Rating Date
Trt-Eval Interval

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Weed Code Rating Date Trt-Eval Interval				LAMAM 1/Apr/2003 106 DA-A	LAMAM 28/Apr/2003 133 DA-A	BROTE 1/Apr/2003 106 DA-A	BROTE 28/Apr/2003 133 DA-A
Trt No.	Treatment Name	Product Rate	Product Rate Unit	1	3	2	4
30	Spring-Applied				92 ab		18 fg
	Python	1	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Nonionic Surfactant	0.417	% v/v				
31	Spring-Applied				81 abc		15 fg
	Aim EW	0.263	fl oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
32	Spring-Applied				98 a		5 fg
	Valor	1.96	oz/a				
	2,4-D LV4	1	pt/a				
	Clarity	2	fl oz/a				
	Crop Oil Conc	1	qt/a				
33	Basis	0.5	oz/a	88 a	87 abc		
	Nonionic Surfactant	0.417	% v/v				
34	Python	1	oz/a	33 b	23 e	0 c	0 g
	Nonionic Surfactant	0.417	% v/v				
35	Aim EW	0.263	fl oz/a	43 b	47 d	10 c	0 g
	Crop Oil Conc	1	qt/a				
36	Valor	1.96	oz/a	43 b	49 d	15 c	10 fg
	Crop Oil Conc	1	qt/a				
LSD (P=.05)				9.9	9.8	17.6	16.8
CV				8.33	7.93	21.75	20.87

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.