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Leafy spurge

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Live shoot regrowth evaluation

Evaluations of original treatments, retreatments and combinations, revealed leafy spurge regrowth in all original treatment areas three years after the experiment was established. All retreatments have maintained or improved on the initial top growth control provided by original treatments.

Original treatments in three Wyoming locations have been evaluated, one year after application. As an average of all locations, Banvel at 6.0 and 8.0 lb/A provided 82 and 90% control, respectively. Tordon at 1.0 and 2.0 lb/A provided 97 and 99% control, respectively. Spring versus fall applications were compared in Fremont County. When applied in the fall, Banvel 5G was more effective than Banvel 4L. Tordon 22K was more effective as a spring treatment than Banvel 4L.

Root evaluation

Root control evaluations were continued in 1981 with selected original treatments, retreatments and combinations being monitored. The root system was found to be greater in the top 8 inches of soil and decreased with depth. All treatments and combinations reduced root weight in all soil depths.

Forage production evaluation

Forage production was measured in original treatment areas established in 1978. An average of production for the past three years shows that the areas treated with Tordon at 2.0 lb/A produced the most air dry forage per acre. All treatments have annually produced more forage than the check. Average production in treatment areas was 290 to 892 pounds per acre more than the check.

UNIVERSITY OF WYOMING
WEED SCIENCE

CROP OR WEED Leafy spurge (Euphorbia esula L.)
EXPERIMENT Live shoot regrowth evaluations
LOCATION Driskill ranch - Crook County

APPLICATION METHOD mechanical, hand VOL/A 29 GAL FULL COVERAGE
PLOT SIZE 21.5 x 258 ft REPLICATIONS 1 BAND _____ INCHES
DESIGN complete random
EQUIPMENT truck sprayer, fert. spreader NOZZLE TeeJet HSS 8004 PSI 40
PREPLANT DATE _____ HOUR _____
SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
SURFACE SOIL CONDITION - CLOUDS _____ SURFACE PLANT MATERIAL _____
POSTEMERGENCE DATE May 15, 1980 HOUR 9:00 - 11:00 a.m. MDT
SURFACE SOIL MOISTURE dry to 1 IN SUBSOIL MOISTURE intermediate IN
CROP STAGE/HEIGHT _____ CROP CONDITION _____
WEEDS STAGE/HEIGHT bud to full flower/4-14 in.

INCORPORATION DATE _____ IMPLEMENT _____
HOURS AFTER HERBICIDE APPLICATION _____ DEPTH _____ IN
WEATHER AIR TEMP. 67 F RELATIVE HUMIDITY 42 % WIND N MPH 0-2
SKY partly cloudy SOIL TEMP.: SURFACE 65 F 1" 62 F 2" 55 F 4" 52 F
SOIL TEXTURE sandy loam SAND 55.4 % SILT 32.2 % CLAY 12.4 % O.M. 0.6 % PH 7.8
CROP PLANTING DATE _____ VARIETY _____ ROW WIDTH _____ IN
SEED DEPTH _____ IN SOIL MOISTURE FOR SEED _____ TILTH/CLOD SIZE _____ IN
SEEDBED PREPARATION _____ STUBBLE OR TRASH _____
POST-PLANTING TILLAGE _____
IRRIGATION _____
PREVIOUS CROP rangeland PREVIOUS PESTICIDES none
EVALUATIONS DATE/DATA May 19, 1981: shoot counts
HARVEST DATE/DATA _____
FACTORS AFFECTING THE EXPERIMENT _____

Experimental site located on first alluvial bench of the Belle Fourche River. 6.09 inches of precipitation from time of application until September 23, 1980.

CROP RESPONSE

No apparent damage to grass; however, more prostrate and green later in treatment areas than in check area.

WEED CONTROL

Banvel at 8.0 lb/A and Tordon at 1.0 and 2.0 lb/A provided 94 to 100% control after one year. Banvel at 6.0 lb/A controlled top growth at 74 and 80%. Banvel at 6.0 lb/A was less effective than the 8.0 lb/A rate. Banvel 4L was less effective at both rates than Banvel 5G. See Table 48.

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WEED SCIENCE

CROP OR WEED Leafy spurge (Euphorbia esula L.)
 EXPERIMENT Live shoot regrowth evaluations
 LOCATION Hallam ranch - Fremont County

APPLICATION METHOD mechanical, hand VOL/A 25 GAL FULL COVERAGE
 PLOT SIZE 21.5 X 258 ft REPLICATIONS 2 BAND _____ INCHES
 DESIGN split block
 EQUIPMENT truck sprayer, fert. spreader NOZZLE TeeJet HSS 8004 PSI 40

PRE EMERGENCE DATE _____ HOUR _____
 SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
 SURFACE SOIL CONDITION - CLOUDS _____ SURFACE PLANT MATERIAL _____

WEATHER AIR TEMP. _____ F RELATIVE HUMIDITY _____ % WIND _____ MPH
 SKY _____ SOIL TEMP.: SURFACE _____ F 1" _____ F 2" _____ F 4" _____ F

POSTEMERGENCE DATE May 23, 1980 HOUR 5:00 - 6:30 p.m. MDT
 SURFACE SOIL MOISTURE dry IN SUBSOIL MOISTURE wet IN
 CROP STAGE/HEIGHT grass green CROP CONDITION _____
 WEEDS STAGE/HEIGHT bud to full flower/4-18 in.

WEATHER AIR TEMP. 63 F RELATIVE HUMIDITY 79 % WIND NW MPH 4-6
 SKY partly cloudy SOIL TEMP.: SURFACE 62 F 1" 63 F 2" 64 F 4" 65 F

POSTEMERGENCE DATE September 14, 1980 HOUR 8:30 - 9:30 a.m. MDT
 SURFACE SOIL MOISTURE dry IN SUBSOIL MOISTURE dry IN
 CROP STAGE/HEIGHT grass green/6-8 in. CROP CONDITION moderate
 WEEDS STAGE/HEIGHT mature/14-16 in.

WEATHER AIR TEMP. 64 F RELATIVE HUMIDITY 50 % WIND E MPH 1-3
 SKY clear SOIL TEMP.: SURFACE 62 F 1" 64 F 2" 60 F 4" 60 F

SOIL TEXTURE sandy loam SAND 72.4% SILT 15.2% CLAY 12.4% O.M. 1.3% PH 7.6
 CROP PLANTING DATE _____ VARIETY _____ ROW WIDTH _____ IN
 SEED DEPTH _____ IN SOIL MOISTURE FOR SEED _____ TILTH/CLOD SIZE _____ IN
 SEEDBED PREPARATION _____ STUBBLE OR TRASH _____
 POST-PLANTING TILLAGE _____
 IRRIGATION _____
 PREVIOUS CROP grass hay PREVIOUS PESTICIDES none
 EVALUATIONS DATE/DATA Sept. 14, 1981: shoot counts
 HARVEST DATE/DATA _____

FACTORS AFFECTING THE EXPERIMENT

Experimental site located on shallow soil over sandstone ridge. Very dry in 1980, only 0.80 inch of precipitation from June 20 to September 14. Heavy dew at time of fall application.

CROP RESPONSE

Little apparent grass cover noted May, 1980, when plots were established. By September, 1981, grass. was 20 to 24 inches, high and still green in treatment areas.

WEED CONTROL

Banvel 4L was more effective as a spring application than a fall application. Banvel 5G was only slightly more effective as a spring treatment than a fall treatment. Tordon 22K applied in the spring provided similar control to fall application. Tordon 2K was slightly better as a fall treatment than a spring treatment. Banvel at 6.0 and 8.0 lb/A provided good control; Tordon at 1.0 and 2.0 lb/A provided good to excellent control. See Table 49.

Table 48. Evaluation of original treatment effect on leafy spurge live shoot regrowth. Driskill Ranch, Crook County. 1981.

Treatment ¹	Rate lb ai/A	Percent Control ²
Banvel 4L	6.0	74
Banvel 4L	8.0	94
Banvel 5G	6.0	80
Banvel 5G	8.0	99
Tordon 22K	1.0	99
Tordon 22K	2.0	100
Tordon 2K	1.0	99
Tordon 2K	2.0	100
Check	--	20 shoots/sq ft

¹Treatments made May 15, 1980.

²Evaluated May 19, 1981.

Table 49. Evaluation of spring vs. fall applied original treatments as affecting leafy spurge live shoot regrowth. Hallam Ranch, Fremont County. 1981.

Treatment ¹	Rate lb ai/A	Percent Control ²	
		Spring	Fall
Banvel 4L	6.0	92	70
Banvel 4L	8.0	95	83
Banvel 5G	6.0	92	89
Banvel 5G	8.0	95	93
Tordon 22K	1.0	96	95
Tordon 22K	2.0	99	99
Tordon 2K	1.0	93	99
Tordon 2K	2.0	95	99
Check	--	19.8 shoots/sq ft	19.4 shoots/sq ft

¹Spring treatments made May 23, 1980; fall treatments made September 14, 1980.

²Evaluated May 27, 1981.

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WEED SCIENCE

CROP OR WEED Leafy spurge (Euphorbia esula L.)
EXPERIMENT Live shoot regrowth evaluations
LOCATION Copps ranch - Johnson County

APPLICATION METHOD hand VOL/A _____ GAL FULL COVERAGE
PLOT SIZE 80 X 100 ft REPLICATIONS 1 BAND _____ INCHES
DESIGN block
EQUIPMENT fertilizer spreader NOZZLE _____ PSI _____
PREPLANT DATE _____ HOUR _____
SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
SURFACE SOIL CONDITION - CLODS _____ SURFACE PLANT MATERIAL _____
POSTEMERGENCE DATE May 29, 1980 HOUR 1:00 - 3:00 p.m. MDT
SURFACE SOIL MOISTURE damp IN SUBSOIL MOISTURE intermediate IN
CROP STAGE/HEIGHT _____ CROP CONDITION _____
WEEDS STAGE/HEIGHT pre-bud to full flower/4-24 in.

INCORPORATION DATE _____ IMPLEMENT _____
HOURS AFTER HERBICIDE APPLICATION _____ DEPTH _____ IN
WEATHER AIR TEMP. 57 F RELATIVE HUMIDITY 100 % WIND N MPH 0-4
SKY cloudy SOIL TEMP.: SURFACE 64 F 1" 63 F 2" 63 F 4" 61 F
SOIL TEXTURE silty loam SAND 31.4 % SILT 62.2 % CLAY 6.4 % O.M. 2.8 % PH 7.6
PREVIOUS CROP rangeland PREVIOUS PESTICIDES none
EVALUATIONS DATE/DATA June 2, 1981: shoot counts
HARVEST DATE/DATA _____
FACTORS AFFECTING THE EXPERIMENT _____

Light rain during application. 4.80 inches precipitation from time of application to September 20, 1980. Experimental site located in basin of a draw on deep soil.

CROP RESPONSE

No grass damage observed.

WEED CONTROL

Banvel 5G provided moderate control at 70 to 76%. Tordon 2K at 1.0 and 2.0 lb ai/A provided excellent control at 99%.

Table 50. Evaluation of original treatment effect on leafy spurge live shoot regrowth. Copps Ranch. Johnson County. 1981.

Treatment ¹	Rate lb ai/A	Percent Control ²
Banvel 5G	6.0	76
Banvel 5G	8.0	70
Tordon 2K	1.0	99
Tordon 2K	2.0	99
Check		10.9 shoots/sq ft

¹Treatments made May 29, 1980.
²Evaluated June 2, 1981.

UNIVERSITY OF WYOMING
WEED SCIENCE

CROP OR WEED Leafy spurge (Euphorbia esula L.)
EXPERIMENT Live shoot regrowth evaluations
LOCATION Driskill ranch - Crook County

APPLICATION METHOD mechanical VOL/A 40 GAL FULL COVERAGE
PLOT SIZE 11 x 22 ft REPLICATIONS 2 BAND _____ INCHES
DESIGN split block
EQUIPMENT truck mounted sprayer; 13-nozzle boom NOZZLE TeeJet HSS 8004 PSI 40
PREPLANT DATE _____ HOUR _____
SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
SURFACE SOIL CONDITION - CLODS _____ SURFACE PLANT MATERIAL _____
POSTEMERGENCE DATE May 13, 1980 HOUR _____
SURFACE SOIL MOISTURE dry IN SUBSOIL MOISTURE intermediate IN
CROP STAGE/HEIGHT green grass, 6-8 in. CROP CONDITION good
WEEDS STAGE/HEIGHT bud to full flower/8-12 in.

INCORPORATION DATE _____ IMPLEMENT _____
HOURS AFTER HERBICIDE APPLICATION _____ DEPTH _____ IN
WEATHER AIR TEMP. _____ F RELATIVE HUMIDITY _____ % WIND 0 MPH
SKY partly cloudy SOIL TEMP.: SURFACE _____ F 1" _____ F 2" _____ F 4" _____ F
SOIL TEXTURE sandy loam SAND 65.4% SILT 23.2% CLAY 11.4% O.M. 1.5% PH 7.7
CROP PLANTING DATE _____ VARIETY _____ ROW WIDTH _____ IN
SEED DEPTH _____ IN SOIL MOISTURE FOR SEED _____ TILTH/CLOD SIZE _____ IN
SEEDBED PREPARATION _____ STUBBLE OR TRASH _____
POST-PLANTING TILLAGE _____
IRRIGATION _____
PREVIOUS CROP rangeland PREVIOUS PESTICIDES none
EVALUATIONS DATE/DATA May 20, 1981: shoot counts
HARVEST DATE/DATA _____
FACTORS AFFECTING THE EXPERIMENT _____

Original treatments made May 25, 1978; retreated June 21, 1979 and May 13, 1980. Leafy spurge in bud to flower stage, actively growing.

CROP RESPONSE

No damage to grass observed.

WEED CONTROL

Percent control is based on reduction of live shoots per square foot as compared to the check. Leafy spurge regrew in all original treatment areas, three years after first treated. Control is 83% to 90% from 2.0 lb/A of Tordon. Tordon 22K at 1.0 lb/A and Banvel 4L at 8.0 lb/A maintained 84% and 77% control, respectively. Retreatments improved top growth control for all original treatments. Two retreatments of Tordon 22K at 0.5 and 1.0 lb/A achieved 96% to 100% control. Control from other retreatments varies depending on regrowth allowed by original treatments.

Table 51. Effect of original treatments, retreatments and combinations as evaluated by live shoot regrowth of le afy spurge. Driskill Ranch. Crook County. 1981 .

Original ¹ lb ai/A	Percent Shoot Control ¹					
	Retreatment lb ai/A					
	2,4-D amine 2.0	Tordon 22K 0.5	Banvel 4L 2.0	Check	Tordon 22K 1.0	Banvel 4L 1.0 2,4-D amine 2.0
Tordon 22K 2.0	93	100	96	90	100	95
Tordon 22K 1.0	84	99	90	84	100	89
Tordon 22K 0.5	80	99	79	29	100	77
Tordon 2K 2.0	90	99	98	83	100	87
Tordon 2K 1.0	92	99	82	68	99	82
Tordon 2K 0.5	76	100	77	36	100	78
Tordon 212 ² 2.0 + 4.0	90	99	95	87	100	89
Tordon 212 1.0 + 2.0	76	98	89	31	100	64
Tordon 212 0.5 + 1.0	66	96	65	0	100	73
Banvel 4L 8.0	82	96	87	77	98	94
Banvel 4L 4.0	69	97	84	24	100	83
Check	58	99	85	20 shoots/ sq ft	100	63

¹Original treatments May 25, 1978; retreatment June 21, 1979, and May 13, 1980; evaluated May 20, 1981.

²Tordon 212 (Dow's mixture of 1.0 lb picolinic acid + 2.0 lb 2,4-D/gal).

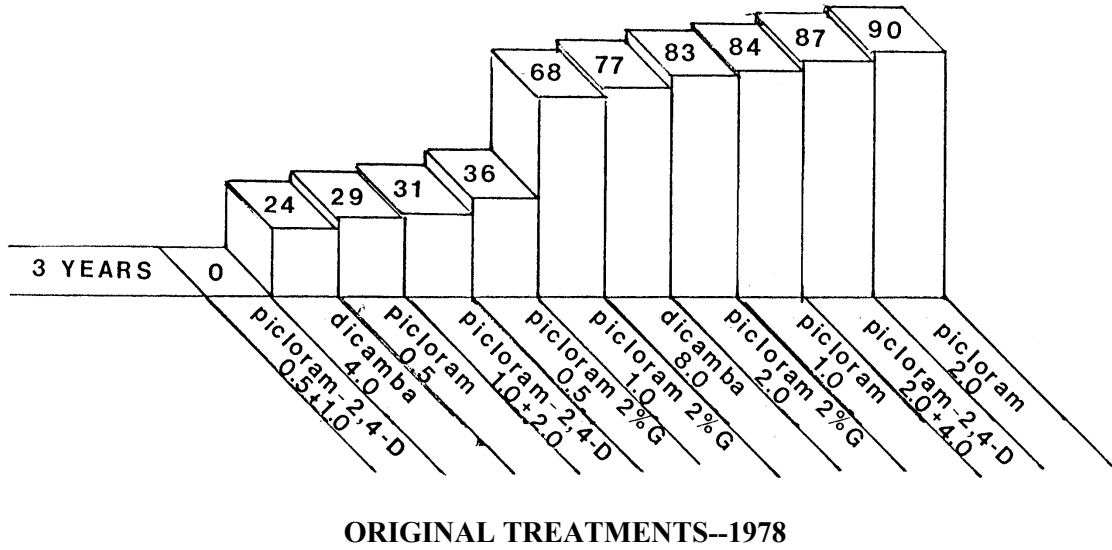


Figure 1. Percentage leafy spurge shoot control thru years following original treatments.

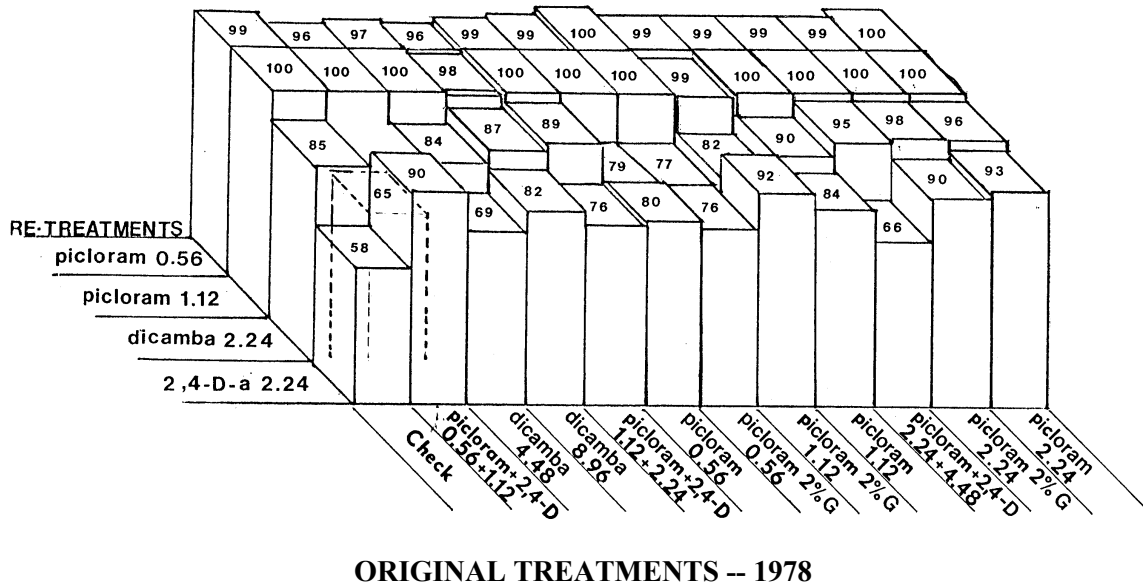


Figure 2. Percentage leafy spurge shoot control resulting from original plus two retreatments with picloram at 0.56 and 1.12 kg/ha, dicamba at 2.25 kg/ha and 2,4-D amine at 2.24 kg/ha.

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WEED SCIENCE

CROP OR WEED Leafy Spurge (Euphorbia esula L.)
EXPERIMENT Shoot and root control evaluations
LOCATION Driskill ranch - Crook County

APPLICATION METHOD mechanical VOL/A 40 GAL FULL COVERAGE
PLOT SIZE 11 x 22 ft REPLICATIONS _____ BAND _____ INCHES
DESIGN split block
EQUIPMENT truck mounted sprayer - 13 nozzle boom NOZZLE TeeJet HSS 8004 PSI 40
PREPLANT DATE _____ HOUR _____
SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
SURFACE SOIL CONDITION - CLODS _____ SURFACE PLANT MATERIAL _____
POSTEMERGENCE DATE May 13, 1980 HOUR _____
SURFACE SOIL MOISTURE dry IN SUBSOIL MOISTURE intermediate IN
CROP STAGE/HEIGHT green grass: 6-8 in. CROP CONDITION good
WEEDS STAGE/HEIGHT bud to full flower: 8-12 in.

INCORPORATION DATE _____ IMPLEMENT _____
HOURS AFTER HERBICIDE APPLICATION _____ DEPTH _____ IN
WEATHER AIR TEMP. _____ F RELATIVE HUMIDITY _____ % WIND _____ MPH
SKY partly cloudy SOIL TEMP.: SURFACE _____ F 1" _____ F 2" _____ F 4" _____ F
SOIL TEXTURE sandy loam SAND 65.4% SILT 23.2% CLAY 11.4% O.M. 1.5% PH 7.7
CROP PLANTING DATE _____ VARIETY _____ ROW WIDTH _____ IN
SEED DEPTH _____ IN SOIL MOISTURE FOR SEED _____ TILTH/CLOD SIZE _____ IN
SEEDBED PREPARATION _____ STUBBLE OR TRASH _____
POST-PLANTING TILLAGE _____
IRRIGATION _____
PREVIOUS CROP rangeland PREVIOUS PESTICIDES none
EVALUATIONS DATE/DATA May 20, 1981: shoot counts; July 22, 1981: root samples
HARVEST DATE/DATA _____
FACTORS AFFECTING THE EXPERIMENT _____

Original treatments made May 25, 1978; retreated June 21, 1979. Leafy spurge in bud to flower stage, actively growing.

CROP RESPONSE

No damage to grass observed.

WEED CONTROL

Dry root weight was highest in the top 8 inches of soil and decreased with depth. All treatments reduced the root system in all soil depth levels. The combination of Tordon 2K at 2.0 lb/A and Tordon 22K at 1.0 lb/A was most effective in reducing the root weight. The original Banvel at 8.0 lb/A treatment and the retreatment of Banvel at 2.0 lb/A were more effective than the Banvel at 8.0 lb/A plus 2.0 lb/A combination. Retreatment of Tordon at 1.0 lb/A, without prior original treatment, was more effective than the original Tordon at 1.0 lb/A treatment, although each area received the same rate of application.

Table 52. Effect of original treatments, retreatments and combinations on leafy spurge live shoot regrowth and root weight. Driskill Ranch. Crook County. 1981.

Original ¹	lb ai/A	% Control ²		Root Dry Wt. (g/0.12 cu. ft.)			
				Soil Depth (inches)			
Retreatment ¹		Shoot	Root	0-8	8-16	16-24	TOTAL
Tordon 2K	2.0						
Tordon 22K	1.0	100	60	5.370	2.415	1.12-51	9.036
Banvel 4L	8.0						
None	--	77	55	6.588	2.369	1.374	10.331
None							
Tordon 22K	1.0	100	53	6.572	2.234	1.956	10.762
Tordon 2K	2.0						
None	--	83	51	6.946	2.468	1.701	11.115
None	--						
Banvel 4L	2.0	85	49	7.233	2.461	1.392	11.599
Banvel 4L	8.0						
Banvel 4L	2.0	87	47	7.728	2.683	1.688	12.099
None	--						
Tordon 22K	0.5	99	42	8.405	2.922	1.425	13.222
Tordon 2K	1.0						
None	--	68	36	9.567	2.777	1.908	14.673
None							
None		0	0	14.630	4.823	3.369	22.822

¹Original treatments made May 25, 1978; retreated June 21, 1979 and May 13, 1980.

²Shoot counts May 20, 1981; root samples July 22, 1981.

UNIVERSITY OF WYOMING
WEED SCIENCE

CROP OR WEED Leafy spurge (Euphorbia esula L.)
EXPERIMENT Forage production measurements
LOCATION Driskill ranch - Crook County

APPLICATION METHOD mechanical, hand VOL/A 128 GAL FULL COVERAGE
PLOT SIZE 11 x 22 ft REPLICATIONS 2 BAND _____ INCHES
DESIGN split block
EQUIPMENT J. D. Tractor sprayer, fert. spreader NOZZLE TeeJet HSS 8004 PSI 40
PREPLANT DATE _____ HOUR _____
SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
SURFACE SOIL CONDITION - CLODS _____ SURFACE PLANT MATERIAL _____
POSTEMERGENCE DATE May 25, 1978 HOUR _____
SURFACE SOIL MOISTURE intermediate IN SUBSOIL MOISTURE intermediate IN
CROP STAGE/HEIGHT green grass CROP CONDITION _____
WEEDS STAGE/HEIGHT bud to full flower

INCORPORATION DATE _____ IMPLEMENT _____
HOURS AFTER HERBICIDE APPLICATION _____ DEPTH _____ IN
WEATHER AIR TEMP. _____ F RELATIVE HUMIDITY _____ % WIND _____ MPH
SKY _____ SOIL TEMP.: SURFACE _____ F 1" _____ F 2" _____ F 4" _____ F
SOIL TEXTURE sandy loam SAND 65.4% SILT 23.2% CLAY 11.4% O.M. 1.5% PH 7.7
CROP PLANTING DATE _____ VARIETY _____ ROW WIDTH _____ IN
SEED DEPTH _____ IN SOIL MOISTURE FOR SEED _____ TILTH/CLOD SIZE _____ IN
SEEDBED PREPARATION _____ STUBBLE OR TRASH _____
POST-PLANTING TILLAGE _____
IRRIGATION _____
PREVIOUS CROP rangeland PREVIOUS PESTICIDES none
EVALUATIONS DATE/DATA June 30, 1979, July 29, 1980 and July 24, 1981: clipped
HARVEST DATE/DATA _____
FACTORS AFFECTING THE EXPERIMENT _____

Moisture conditions limiting in 1979, favorable in 1980 and 1981.

CROP RESPONSE

Total forage production is greater in treatment areas as compared to the untreated check. High rates of Tordon and Banvel suppressed production for two years after treatment. Prostrate growth was noted in these areas during this time Average production is highest in these areas, three years after treatment. Measurements indicate a decrease in forage production as leafy spurge regrowth increases. See Table 53.

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WEED SCIENCE

CROP OR WEED Leafy spurge (Euphorbia esula L.)
 EXPERIMENT Measurement of forage produced and grazed
 LOCATION Copps ranch - Johnson County

APPLICATION METHOD hand VOL/A _____ GAL FULL COVERAGE
 PLOT SIZE 80 x 100 ft REPLICATIONS 1 BAND _____ INCHES
 DESIGN block
 EQUIPMENT fertilizer spreader NOZZLE _____ PSI _____
 PREPLANT DATE _____ HOUR _____
 SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
 SURFACE SOIL CONDITION - CLOUDS _____ SURFACE PLANT MATERIAL _____
 POSTEMERGENCE DATE May 29, 1980 HOUR 1:00 - 3:00 p.m. MDT
 SURFACE SOIL MOISTURE damp IN SUBSOIL MOISTURE intermediate IN
 CROP STAGE/HEIGHT _____ CROP CONDITION _____
 WEEDS STAGE/HEIGHT pre-bud to full flower/4-24 in.

INCORPORATION DATE _____ IMPLEMENT _____
 HOURS AFTER HERBICIDE APPLICATION _____ DEPTH _____ IN
 WEATHER AIR TEMP. 57 F RELATIVE HUMIDITY 100 % WIND N MPH 0-4
 SKY cloudy SOIL TEMP.: SURFACE 64 F 1" 63 F 2" 63 F 4" 61 F
 SOIL TEXTURE silty loam SAND 31.4 % SILT 62.2 % CLAY 6.4 % O.M. 2.8 % PH 7.6
 CROP PLANTING DATE _____ VARIETY _____ ROW WIDTH _____ IN
 SEED DEPTH _____ IN SOIL MOISTURE FOR SEED _____ TILTH/CLOD SIZE _____ IN
 SEEDBED PREPARATION _____ STUBBLE OR TRASH _____
 POST-PLANTING TILLAGE _____
 IRRIGATION _____
 PREVIOUS CROP rangeland PREVIOUS PESTICIDES none
 EVALUATIONS DATE/DATA _____
 HARVEST DATE/DATA May 21, 1981: clipped
 FACTORS AFFECTING THE EXPERIMENT _____

Light rain during application. 4.80 inches precipitation from time of application to September 30, 1980. Experimental site located in basin of a draw on deep soil.

CROP RESPONSE

Areas treated with Banvel at 6.0 lb/A and Tordon at 1.0 lb/A had an increase in forage production of 550 and 903 pounds/A, respectively. Banvel at 8.0 lb/A and Tordon at 2.0 lb/A reduced forage production by 143 and 660 pounds, respectively. Livestock grazed 413 pounds/A more forage from the area treated with 6.0 lb/A Banvel than the 8.0 lb/A treated area. 1,455 pounds/A more forage was grazed from the Tordon at 1.0 lb/A area than the 2.0 lb/A area. There were similar amounts of forage left ungrazed in all areas. See Table 54.

Table 53. Forage production measured from plots treated with Tordon 22K, Tordon 2K, Tordon 212 and Banvel 4L as compared to the untreated check. Driskill Ranch. Crook County. 1981.

Treatments ¹	Rate lb ai/A	Air Dry Forage (Pounds/A) ²			
		1979	1980	1981	Average
Tordon 22K	2.0	1,098	1,010	1,832	1,313
Tordon 2K	2.0	992	601	2,278	1,290
Tordon 212 ³	2.0 + 4.0	1,054	520	1,776	1,117
Tordon 2K	1.0	981	786	1,552	1,106
Tordon 212	1.0 + 2.0	1,240	1,160	850	1,083
Tordon 22K	0.5	11111	947	818	959
Tordon 22K	1.0	896	558	1,337	930
Banvel 4L	4.0	1,137	665	708	837
Banvel 4L	8.0	917	471	862	750
Tordon 2K	0.5	1,005	621	620	749
Tordon 212	0.5 + 1.0	930	616	676	741
Check	---	535	416	402	451

¹Treatments made May 25, 1978.

²Harvested July 30, 1979, July 29, 1980 and July 24, 1981.

³Tordon 212 (Dow's mixture of 1.0 lb picolinic acid + 2.0 lb 2,4-D/gal).

Table 54. Measurements of forage produced and grazed in a leafy spurge infestation and adjacent treatment areas. Copps Ranch. Johnson County. 1981.

Treatment ¹	Rate lb ai/A	Air Dry Grazed	Forage Remaining	(Pounds/A) ²
				Total Production
Banvel 5G	6.0	1,312	1,082	2,394
Banvel 5G	8.0	899	802	1,701
Tordon 2K	1.0	1,886	861	2,747
Tordon 2K	2.0	431	753	1,184
Check		874	970	1,844

¹Treatments made May 29, 1980.

²Harvested May 21, 1981.

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WEED SCIENCE

CROP OR WEED Leafy spurge (Euphorbia esula L.)
EXPERIMENT Measurement of forage produced and grazed
LOCATION Driskill ranch - Crook County

APPLICATION METHOD aerial VOL/A _____ GAL FULL COVERAGE
PLOT SIZE 11.5 sq ft REPLICATIONS 5 BAND _____ INCHES
DESIGN complete random
EQUIPMENT Pawnee airplane NOZZLE _____ PSI _____
PREPLANT DATE _____ HOUR _____
SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
SURFACE SOIL CONDITION - CLOUDS _____ SURFACE PLANT MATERIAL _____
POSTEMERGENCE DATE September 1979 HOUR _____
SURFACE SOIL MOISTURE _____ IN SUBSOIL MOISTURE _____ IN
CROP STAGE/HEIGHT _____ CROP CONDITION _____
WEEDS STAGE/HEIGHT _____

INCORPORATION DATE _____ IMPLEMENT _____
HOURS AFTER HERBICIDE APPLICATION _____ DEPTH _____ IN
WEATHER AIR TEMP. _____ F RELATIVE HUMIDITY _____ % WIND _____ MPH
SKY _____ SOIL TEMP.: SURFACE _____ F 1" _____ F 2" _____ F 4" _____ F
SOIL TEXTURE _____ SAND _____ % SILT _____ % CLAY _____ % O.M. _____ % PH _____
PREVIOUS CROP rangeland PREVIOUS PESTICIDES none
EVALUATIONS DATE/DATA _____
HARVEST DATE/DATA June 3, 1981: clipped
FACTORS AFFECTING THE EXPERIMENT _____

Moisture conditions were favorable in 1980 and 1981. Five range exclosures were put in each area. Forage was clipped inside and adjacent to each exclosure.

CROP RESPONSE

The area treated with Tordon 2K yielded 246 pounds more forage per acre than the area infested with leafy spurge. Cattle grazed 438 pounds of forage per acre in the treated area as compared to 173 pounds in the infested area. Essentially the same amount of forage was left ungrazed in this area.

Table 55. Measurements of forage produced and grazed in a leafy spurge infestation and adjacent treatment area. Driskill Ranch. Crook County. 1981.

Treatment ¹	Rate lb ai/A	Air Dry Forage (Pounds/A) ²		Total Production
		Grazed	Remaining	
Tordon 2K	2.0	438	220	658
Check	--	173	239	412

¹Treatment made September 1979.

²Harvested June 3, 1981.