

UW – Madison Weed Science Renz Lab

HE21USAZBC – Rezilon grass tolerance on Timothy

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Objective:

Determine crop tolerance of established Timothy (*Phleum pratense*) to applications of Rezilon (indaziflam).

Summary:

Applications of Rezilon did not result in increased injury of Timothy compared to non-treated controls. Biomass yields of Timothy at both the first hay harvest in June and the second harvest in July also did not differ between any treatments.

Results suggest that Rezilon applications do not injure Timothy nor suppress biomass yields, whether in single or split applications.



Notes

Timothy in field harvested on 6/16/2021.
Plot 408 (treatment 9) was accidentally double sprayed.

Herbicide Treatments

Treatment Number	Treatment	Rate
Application A		
1	Untreated Control (UTC)	-
2	Rezilon	1.5 fluid ounces per acre (fl oz/A)
3	Rezilon	2 fl oz/A
4	Rezilon	3 fl oz/A
5	Rezilon	1.5 fl oz/A
6	Rezilon	2 fl oz/A
7	Rezilon	3 fl oz/A
8	Prowl H2O	4 qt/A
9	Prowl H2O	2 qt/A
Application B		
5	Rezilon	1.5 fl oz/A
6	Rezilon	2 fl oz/A
7	Rezilon	3 fl oz/A
9	Prowl H2O	2 qt/A

Herbicide Application

Application Timing	A	B
Date	April 5 th , 2021, 10:35am-11:15am	June 17 th , 2021, 9:30am – 9:55am
Regulator PSI	39	40
Equipment	CO ₂ pressurized 10-foot boom sprayer (20 GPA)	
Nozzles & spacing	Eight Teejet 11002 VS nozzles with 15-inch spacing	



Weather Data

Weather Station	KWIARLIN2	
Application Timing	A	B
Temperature	63.4°F – 64°F	71.8°F – 73.7°F
Wind Speed and Direction	5.1 mph SW – 3.7 mph SW	5.8 mph S – 7 mph SSW
Relative Humidity	70% - 68%	50% - 49%
Cloud Cover	95%	50%
When ≥ 0.25 inches of precipitation occurred after treatment	April 10 th , 2021, 11:55pm – 0.37 inches	June 18 th , 2021, 3:15am – 1.44 inches

Research Plot Information

Plot Dimensions	10 feet by 25 feet
Design	Randomized Complete Block, 4 blocks
Soil Type	Plano Silt Loam
Soil Characteristics	32.9% clay, 0.9% organic matter, 7.1 pH, 4% slope

Plants Present at Application – Developmental Stage

Species	Average Height (in)	Phenological Stage
Timothy (<i>Phleum pratense</i>)	3.8	vegetative



Timothy phenology at A timing application – April 5th, 202

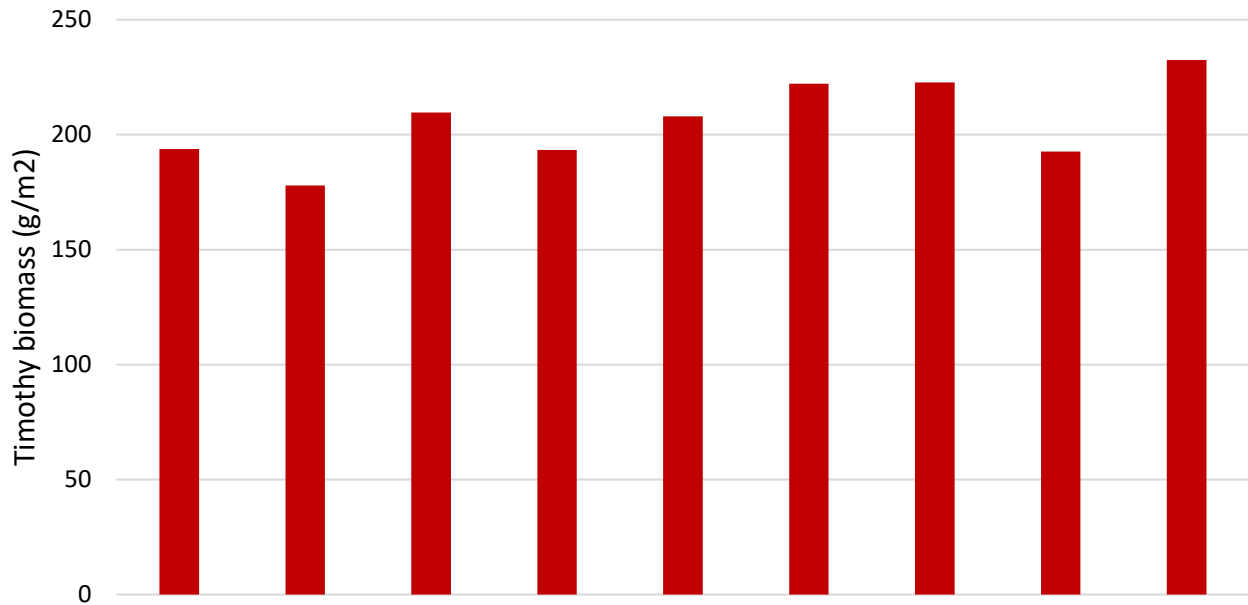
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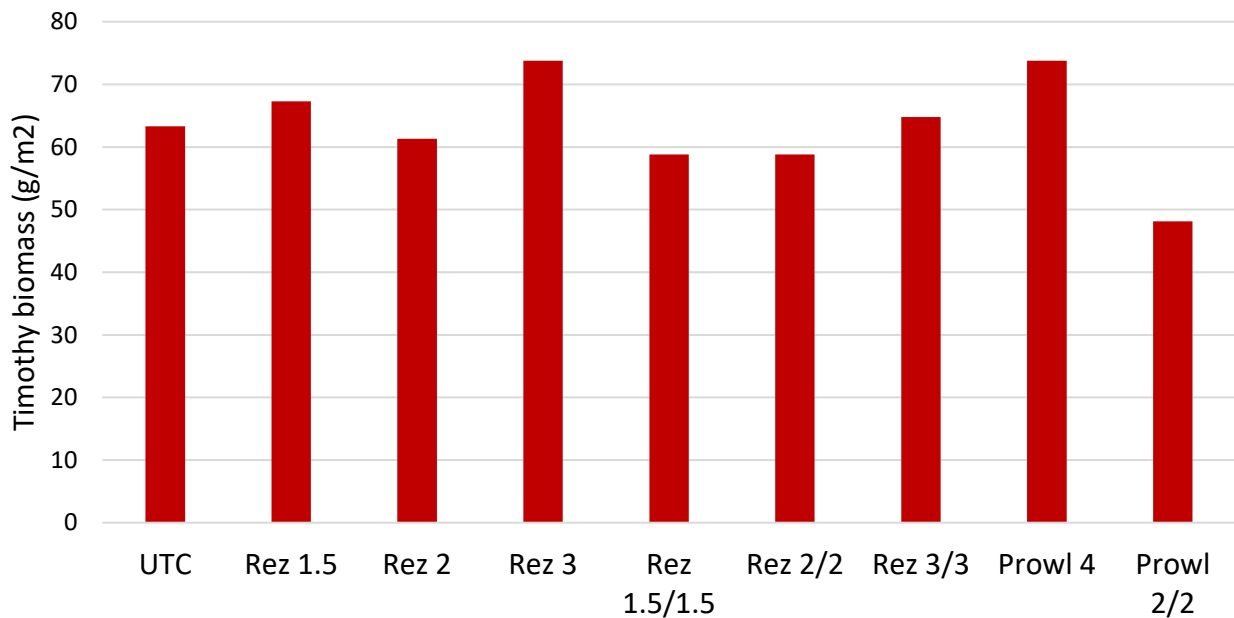
Results:

First Harvest (June) Biomass



No significant differences between treatments ($P=0.05$, LSD).

Second Harvest (July) Biomass



No significant differences between treatments ($P=0.05$, LSD).



0 Days After Treatment (DAT) – April 5 th , 2021				
Trt. No.	Treatment	Rate	Timothy Cover (%)	Bareground/Litter Cover (%)
1	UTC	-	15 -	85 -
2	Rezilon	1.5 fl oz/A	14 -	86 -
3	Rezilon	2 fl oz/A	16 -	84 -
4	Rezilon	3 fl oz/A	23 -	78 -
5	Rezilon	1.5 fl oz/A	24 -	76 -
6	Rezilon	2 fl oz/A	19 -	81 -
7	Rezilon	3 fl oz/A	20 -	80 -
8	Prowl H2O	4 qt/A	19 -	81 -
9	Prowl H2O	2 qt/A	24 -	76 -
Statistics ¹				
Least Significant Difference (LSD) P=.05			11.84	11.84
Standard Deviation			8.11	8.11
Coefficient of Variation (CV)			42.32	10.04
Treatment Prob(F)			0.5842	0.5842

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

¹ All statistical analyses were conducted in ARM software and assumptions of ANOVA were not evaluated.



17 DAT – April 22nd, 2021

Trt. No.	Treatment	Rate	Timothy Injury (%)	Timothy Cover (%)	Broadleaf Weed Cover (%)	Grass Weed Cover (%)	Bareground/ Litter Cover (%)
1	UTC	-	0 -	40 -	1 -	0 -	60 -
2	Rezilon	1.5 fl oz/A	0 -	36 -	0 -	0 -	64 -
3	Rezilon	2 fl oz/A	0 -	39 -	0 -	0 -	61 -
4	Rezilon	3 fl oz/A	0 -	40 -	1 -	0 -	60 -
5	Rezilon	1.5 fl oz/A	0 -	35 -	1 -	0 -	65 -
6	Rezilon	2 fl oz/A	0 -	39 -	0.3 -	0 -	61 -
7	Rezilon	3 fl oz/A	0 -	40 -	0 -	0 -	60 -
8	Prowl H2O	4 qt/A	0 -	41 -	0.3 -	0 -	59 -
9	Prowl H2O	2 qt/A	0 -	43 -	0 -	1 -	57 -
Statistics							
LSD P=.05			.	8.38	0.79	0.73	8.65
Standard Deviation			0	5.74	0.54	0.5	5.93
CV			0	14.66	242.06	600	9.79
Treatment Prob(F)			1	0.7181	0.653	0.4613	0.7053

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



28 DAT – May 3 rd , 2021				
Trt. No.	Treatment	Rate	Timothy Injury (%)	Broadleaf Weed Cover (%)
1	UTC	-	0.3 -	1 -
2	Rezilon	1.5 fl oz/A	1 -	0.3 -
3	Rezilon	2 fl oz/A	0.3 -	0.3 -
4	Rezilon	3 fl oz/A	1 -	1 -
5	Rezilon	1.5 fl oz/A	1 -	1 -
6	Rezilon	2 fl oz/A	1 -	0.3 -
7	Rezilon	3 fl oz/A	0 -	1 -
8	Prowl H2O	4 qt/A	0.3 -	1 -
9	Prowl H2O	2 qt/A	1 -	0.3 -
Statistics ²				
Least Significant Difference (LSD) P=.05			0.82	0.82
Standard Deviation			0.56	0.57
Coefficient of Variation (CV)			112.63	145.34
Treatment Prob(F)			0.255	0.9844

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

² All statistical analyses were conducted in ARM software and assumptions of ANOVA were not evaluated.



49 DAT – May 24th, 2021

Trt. No.	Treatment	Rate	Timothy Injury (%)	Timothy Cover (%)	Annual Broadleaf Weed Cover (%)	Annual Grass Weed Cover (%)	Perennial Broadleaf Cover (%)	Bareground/ Litter Cover (%)
1	UTC	-	1 -	55 -	0 -	0 -	1 -	44 -
2	Rezilon	1.5 fl oz/A	0.3 -	53 -	0 -	0 -	1 -	46 -
3	Rezilon	2 fl oz/A	1 -	55 -	0 -	0 -	1 -	44 -
4	Rezilon	3 fl oz/A	1 -	53 -	0 -	0 -	2 -	45 -
5	Rezilon	1.5 fl oz/A	1 -	52 -	0 -	0 -	2 -	45 -
6	Rezilon	2 fl oz/A	1 -	54 -	0 -	0 -	0.3 -	45 -
7	Rezilon	3 fl oz/A	0.3 -	56 -	0 -	0 -	1 -	44 -
8	Prowl H2O	4 qt/A	1 -	55 -	0 -	0 -	0.3 -	44 -
9	Prowl H2O	2 qt/A	1 -	59 -	0 -	0 -	0.3 -	40 -
Statistics								
LSD P=.05			1	4.43	.	.	1.54	4.24
Standard Deviation			0.68	3.04	0	0	1.05	2.91
CV			79.21	5.58	0	0	164.82	6.6
Treatment Prob(F)			0.2641	0.196	1	1	0.5261	0.2316

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



70 DAT – June 14th, 2021			
Trt. No.	Treatment	Rate	Biomass (g/m²)
1	UTC	-	194 -
2	Rezilon	1.5 fl oz/A	178 -
3	Rezilon	2 fl oz/A	210 -
4	Rezilon	3 fl oz/A	193 -
5	Rezilon	1.5 fl oz/A	208 -
6	Rezilon	2 fl oz/A	222 -
7	Rezilon	3 fl oz/A	223 -
8	Prowl H2O	4 qt/A	193 -
9	Prowl H2O	2 qt/A	232 -
Statistics			
LSD P=.05			70.921
Standard Deviation			48.484
CV			23.61
Treatment Prob(F)			0.8268

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



88, 15 DAT – July 2nd, 2021

Trt. No.	Treatment	Rate	Timothy Injury (%)	Annual Broadleaf Weed Cover (%)	Annual Grass Weed Cover (%)	Perennial Broadleaf Weed Cover (%)	Perennial Grass Weed Cover (%)
1	UTC	-	1 -	0 -	0 -	0.3 -	0 -
2	Rezilon	1.5 fl oz/A	1 -	1 -	0.3 -	1 -	0 -
3	Rezilon	2 fl oz/A	1 -	0 -	0 -	1 -	0 -
4	Rezilon	3 fl oz/A	1 -	1 -	0 -	1 -	0 -
5	Rezilon	1.5 fl oz/A	1 -	0 -	0 -	1 -	0 -
6	Rezilon	2 fl oz/A	1 -	0 -	0 -	0 -	0 -
7	Rezilon	3 fl oz/A	1 -	0 -	0 -	0.3 -	0 -
8	Prowl H2O	4 qt/A	1 -	0.3 -	0 -	1 -	0 -
9	Prowl H2O	2 qt/A	1 -	0.3 -	0 -	1 -	0 -
Statistics							
LSD P=.05			0.75	0.72	0.25	1.37	.
Standard Deviation			0.51	0.49	0.17	0.94	0
CV			66.15	246.04	591.21	142.62	0
Treatment Prob(F)			0.4094	0.3131	0.4827	0.5796	1

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



101, 28 DAT – July 15th, 2021

Trt. No.	Treatment	Rate	Timothy Injury (%)	Annual Broadleaf Weed Cover (%)	Annual Grass Weed Cover (%)
1	UTC	-	2 -	0 -	0 -
2	Rezilon	1.5 fl oz/A	2 -	1 -	0 -
3	Rezilon	2 fl oz/A	3 -	0.3 -	0 -
4	Rezilon	3 fl oz/A	3 -	1 -	0 -
5	Rezilon	1.5 fl oz/A	2 -	1 -	0 -
6	Rezilon	2 fl oz/A	2 -	0 -	0 -
7	Rezilon	3 fl oz/A	2 -	0 -	0 -
8	Prowl H2O	4 qt/A	3 -	0.3 -	0 -
9	Prowl H2O	2 qt/A	3 -	1 -	0 -
Statistics					
LSD P=.05			1.59	1.07	.
Standard Deviation			1.09	0.73	0
CV			50.2	182.11	0
Treatment Prob(F)			0.8398	0.3247	1

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



105, 32 DAT – July 19th, 2021

Trt. No.	Treatment	Rate	Biomass (g/m ²)	Total Biomass Yield (June + July) (g/ m ²)
1	UTC	-	63 -	256 -
2	Rezilon	1.5 fl oz/A	67 -	245 -
3	Rezilon	2 fl oz/A	61 -	271 -
4	Rezilon	3 fl oz/A	74 -	267 -
5	Rezilon	1.5 fl oz/A	59 -	265 -
6	Rezilon	2 fl oz/A	59 -	281 -
7	Rezilon	3 fl oz/A	65 -	284 -
8	Prowl H2O	4 qt/A	74 -	266 -
9	Prowl H2O	2 qt/A	48 -	280 -
Statistics				
LSD P=.05			28.596	79.609
Standard Deviation			19.549	54.424
CV			30.66	20.31
Treatment Prob(F)			0.773	0.9873

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



116, 43 DAT – July 30th, 2021

Trt. No.	Treatment	Rate	Timothy Injury (%)	Broadleaf Weed Cover (%)	Annual Grass Weed Cover (%)
1	UTC	-	4 -	1 -	0 -
2	Rezilon	1.5 fl oz/A	4 -	1 -	0 -
3	Rezilon	2 fl oz/A	3 -	1 -	0 -
4	Rezilon	3 fl oz/A	3 -	1 -	0 -
5	Rezilon	1.5 fl oz/A	4 -	1 -	0 -
6	Rezilon	2 fl oz/A	3 -	1 -	0 -
7	Rezilon	3 fl oz/A	3 -	1 -	0 -
8	Prowl H2O	4 qt/A	3 -	1 -	0 -
9	Prowl H2O	2 qt/A	2 -	1 -	0 -
Statistics					
LSD P=.05			1.92	1.03	.
Standard Deviation			1.31	0.71	0
CV			41.7	95.11	0
Treatment Prob(F)			0.456	0.8396	1

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



128, 55 DAT – August 11th, 2021

Trt. No.	Treatment	Rate	Timothy Injury (%)	Timothy Cover (%)	Annual Broadleaf Weed Cover (%)	Annual Grass Weed Cover (%)	Perennial Broadleaf Weed Cover (%)	Bareground /Litter Cover (%)
1	UTC	-	1 -	62 -	1 -	0 -	1 -	36 -
2	Rezilon	1.5 fl oz/A	1 -	58 -	1 -	0 -	1 -	40 -
3	Rezilon	2 fl oz/A	1 -	61 -	1 -	0 -	1 -	38 -
4	Rezilon	3 fl oz/A	1 -	60 -	2 -	0 -	1 -	38 -
5	Rezilon	1.5 fl oz/A	1 -	59 -	2 -	0 -	1 -	39 -
6	Rezilon	2 fl oz/A	1 -	58 -	0.3 -	0 -	1 -	41 -
7	Rezilon	3 fl oz/A	1 -	61 -	0 -	0 -	1 -	39 -
8	Prowl H2O	4 qt/A	1 -	65 -	1 -	0 -	1 -	34 -
9	Prowl H2O	2 qt/A	1 -	62 -	1 -	0 -	1 -	37 -
Statistics								
LSD P=.05			0.52	6.27	1.2	.	1.16	6.11
Standard Deviation			0.36	4.28	0.82	0	0.79	4.18
CV			32.74	7.09	106.7	0	83.93	11.03
Treatment Prob(F)			0.4744	0.4305	0.1289	1	0.9223	0.3973

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).



157, 84 DAT – September 9th, 2021

Trt. No.	Treatment	Rate	Timothy Injury (%)	Annual Grass Weed Cover (%)
1	UTC	-	1 -	1 -
2	Rezilon	1.5 fl oz/A	2 -	1 -
3	Rezilon	2 fl oz/A	2 -	0 -
4	Rezilon	3 fl oz/A	2 -	0.3 -
5	Rezilon	1.5 fl oz/A	2 -	1 -
6	Rezilon	2 fl oz/A	2 -	0 -
7	Rezilon	3 fl oz/A	3 -	0 -
8	Prowl H2O	4 qt/A	3 -	0.3 -
9	Prowl H2O	2 qt/A	2 -	0 -
Statistics				
LSD P=.05			1.18	0.93
Standard Deviation			0.81	0.63
CV			43.48	185.06
Treatment Prob(F)			0.3069	0.1231

Note: Means followed by same letter or symbol do not significantly differ (P=.05, LSD).