

BROOM SNAKEWEED AND ASSOCIATED HERBAGE RESPONSE TO SEASONAL BURNING IN NEW MEXICO

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A study was initiated in March of 1990 to compare spring and summer burning for the control of broom snakeweed and to compare the effects on herbaceous production. Two study sites were established on the New Mexico State University Range and Livestock Research Center located near Corona, N.M. in Lincoln and Torrance counties. This area is characterized by an average of 430 mm annual rainfall primarily occurring in July and August, elevation of about 1800 m, and vegetation dominated by blue grama (*Bouteloua gracilis*), broom snakeweed (*Gutierrezia sarothrae*), and other grasses common to the shortgrass prairie ecotype. A total of 76 20 by 26.5 m plots were burned during spring (March-April) and summer (June-July) 1990 and 1991. A computerized thermocouple system was used to monitor fire characteristics and computerized weather stations monitored environmental conditions. Fuel sampling was conducted prior to and following burning events. Spring burning was characterized by fast-moving, cooler burning fires when compared to summer and resulted in 8% complete snakeweed canopy destruction, 30% resprouting, and an average of 70% mortality. Herbaceous grass production did not differ from untreated areas following burning. In comparison, summer burning was characterized by slower, hotter, and overall more intensive fires and resulted in 66% complete snakeweed canopy destruction, 1% regrowth, and an average of 88% mortality. Herbaceous grass production was reduced below untreated areas the first season following burning but increased after herbicide spraying.

Grass and broom snakeweed yield after burning and chemical treatments on the NMSU Corona Ranch.

Site	Treatment	Trt Year	Grass Yield			Broom Snakeweed Yield		
			1990	1991	1992	1990	1991	1992
South	Control	1990	410 ^b	968 ^b	656 ^{cd}	509 ^a	767 ^a	451 ^a
House	Herbicide	1990	538 ^a	1183 ^a	1139 ^a	0 ^b	0 ^b	0 ^b
	Spr Burn	1990	320 ^c	983 ^b	880 ^b	1 ^b	62 ^b	96 ^b
	Sum Burn	1990	299 ^c	998 ^b	669 ^c	43 ^b	74 ^b	81 ^b
	Herbicide	1991	-	989 ^b	879 ^b	-	102 ^b	72 ^b
	Spr Burn	1991	-	1010 ^b	763 ^{bc}	-	24 ^b	7 ^b
	Sum Burn	1991	-	792 ^c	531 ^d	-	0 ^b	56 ^b
	Oilwell	Control	1990	407 ^c	913 ^d	612 ^c	347 ^a	507 ^a
Herbicide	1990	755 ^a	1213 ^a	1183 ^a	0 ^b	0 ^b	0 ^c	
Spr Burn	1990	501 ^b	1026 ^c	674 ^e	10 ^b	76 ^b	137 ^{bc}	
Sum Burn	1990	369 ^c	926 ^d	844 ^{bc}	0 ^b	35 ^b	37 ^c	
Herbicide	1991	-	1065 ^b	928 ^b	-	54 ^b	96 ^c	
Spr Burn	1991	-	915 ^d	651 ^{dc}	-	429 ^a	405 ^{ab}	
Sum Burn	1991	-	955 ^d	780 ^{cd}	-	177 ^b	111 ^c	