

Trend Study 1-9-01

Study site name: Southwest Rosette.

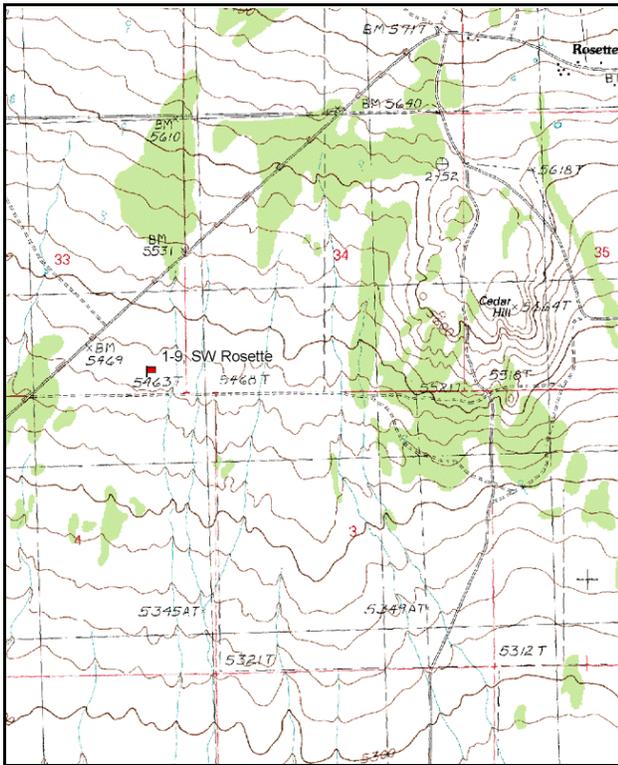
Vegetation type: Big Sagebrush-Grass.

Compass bearing: frequency baseline 146 degrees magnetic.

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

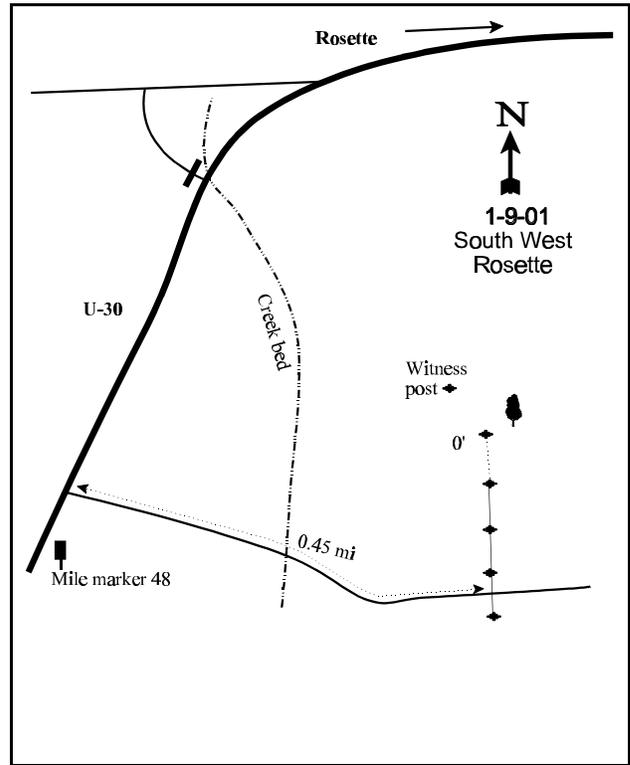
LOCATION DESCRIPTION

On U-30, proceed northeast towards Rosette. There is a dirt road just north of mile marker 48 that goes to the east. Drive 0.45 miles on this road to the 300-foot stake which is just off the road on the north side of the road. The 0-foot post of the baseline is 300 feet to the north a few paces south of a witness post and is marked by browse tag #7914.



Map Name: Rosette

Township 12N, Range 14W, Section 33



Diagrammatic Sketch

UTM 4630500 N, 296666 E

## DISCUSSION

### Trend Study No. 1-9

The Southwest Rosette study is a sagebrush-grass site which is located on nearly flat terrain at an elevation of 5,460 feet. This site represents a compromise from the original goal to sample a winter deer concentration area north or northwest of Rosette. The initial area, however, was on private land for which we were unable to obtain permission to enter. The Southwest Rosette study site is on BLM land slightly south of the optimum location at a point where the density of juniper trees begins to thin out. Range type varies from sagebrush-grass and scattered Utah juniper to swales where perennial grasses have replaced the woody plants. The area is part of the Rosette allotment which is assigned for 60 cattle to use the area from mid-October through January. However, the area also appears to be used by sheep. Pellet groups and cattle droppings were initially noted as infrequent. A pellet group transect read in conjunction with vegetative transect corroborates this initial observation estimating only 8 deer days use/acre (20 deer days use/ha).

Soil effective rooting depth (almost 13 inches) is relatively shallow compared to the average for the manage unit which is nearly 17 inches. The soil has a texture classified as a sandy clay loam with a slightly alkaline soil reaction (7.5 pH). The soil is alluvially deposited with little visible surface rock. The amount of phosphorus in the soil may be a limiting factor at only 7.3 ppm. At the time the study was established (i.e., mid-June 1984), the soil was exceptionally wet. A small irrigation canal located one-quarter mile north may be the source of excess moisture, either as a result of sub-irrigation or occasional overflow. The net result was a development of a lush growth of perennial grass and death of big sagebrush in the lower swale areas. In addition, there were also patches of dead sagebrush in the vicinity which appear to have been sprayed with herbicide.

Status of the browse population was reported as questionable in 1984. Wyoming big sagebrush, which is the dominant browse species, had been damaged by possible excess soil moisture and herbicides. With this loss, the increaser species, narrowleaf low rabbitbrush was almost twice as numerous and apparently increasing. The sagebrush population had a decadent appearance (32%) in 1984. Utilization was reported moderate to heavy with 32% of the population displaying heavy use. Utilization has been mostly light since 1996. The number of decadent plants was similar in 1990 yet 40% of the decadent shrubs were classified as dying (666 plants/acre). The proportion of decadent plants classified as dying has been steadily, but slowly decreasing since 1990. Density of the increaser, narrowleaf low rabbitbrush, has continued to decline in density since 1984, when 10,065 plants/acre were estimated. It is currently ('01) at 3,940 plants/acre.

Grass cover and composition vary widely between microsites. However, even on the drier portion of the site, grasses are an important component. On these areas, vigorous clumps of Sandberg bluegrass, bottlebrush squirreltail, bluebunch wheatgrass, and western wheatgrass provide moderately good cover (varying from 10% to 14%). Forbs are not abundant and include a number of annuals, especially on the drier parts of the site. On average, they only provide about 13-14% of the herbaceous cover. Most annual forbs are members of the mustard and borage families. The more prevalent perennials are longleaf phlox, hoods phlox, and Douglas chaenactis. None of these have appreciable forage value. Hoods phlox by itself makes up on average a little over 70% of the deficient forb cover.

### 1984 APPARENT TREND ASSESSMENT

Soil appears stable. There is very little erosion due primarily to the lack of slope. Vegetative trend is more difficult to predict. Our best assessment is that there is a stable to perhaps a slightly declining stand of Wyoming big sagebrush. Conversely, narrowleaf low rabbitbrush and perennial grasses appear to be increasing over much of the area.

## 1990 TREND ASSESSMENT

Wyoming big sagebrush is declining. Density of mature plants decreased 30% and the percentage of decadent sagebrush has increased from 32% to 53% since 1984, yet the sagebrush is only moderate to lightly hedged. The average canopy cover was estimated at 17%. Trend for the herbaceous understory is stable. Sum of nested frequency of perennial grasses is stable while frequency of perennial forbs declined slightly. There is a high percentage of bare soil, but this has decreased from 44% to 38% and basal vegetative cover increased from 2% to 14.5%. There are no obvious signs of erosion that would be a concern to management.

### TREND ASSESSMENT

soil - up slightly (4)

browse - down slightly (2)

herbaceous understory - stable (3)

## 1996 TREND ASSESSMENT

Trend for soil is up with a decrease in percent bare ground (38% to 21%) and an increase in litter cover (30% to 37%). Trend for browse is up slightly. Utilization is mostly light to moderate and percent decadency has declined from 53% to 30%. Density of mature plants nearly doubled since 1990 (1,333 plants/acre to 2,320). Another positive aspect to the browse trend is the decline in density of the increaser, narrowleaf low rabbitbrush (from 6,732 plants/acre to 5,460 plants/acre). The herbaceous trend is up slightly. Sum of nested frequency for all three perennial grass species increased since 1990 but not significantly. The grasses make up 87% of the herbaceous understory cover. Frequency of forbs declined slightly but the most numerous forb, hood phlox, increased.

### TREND ASSESSMENT

soil - up (5)

browse - up slightly (4)

herbaceous understory - up slightly (4)

## 2001 TREND ASSESSMENT

Trend for soil is considered stable with nearly the same amounts of bare soil and litter. Trend for browse is stable. Utilization is mostly light (99%) and percent decadency has remained almost the same (30% vs 31%). The sagebrush density has remained the same as 1996. Another positive aspect to the browse trend is the continuing decline in density of the increaser, narrowleaf low rabbitbrush (5,460 plants/acre down to 3,940 plants/acre). The herbaceous trend is stable, with the sum of nested frequency going down slightly for perennial grasses and up a small amount for perennial forbs. The only grass species that significantly increased was cheatgrass. The grasses on average make up 86-87% of the herbaceous understory cover.

### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable (3)

HERBACEOUS TRENDS --

Herd unit 01 , Study no: 9

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
G	Agropyron smithii	<sub>a</sub> 47	<sub>ab</sub> 55	<sub>ab</sub> 70	<sub>b</sub> 81	15	19	23	26	1.91	2.49
G	Agropyron spicatum	-	-	-	-	-	-	-	-	-	.00
G	Bromus tectorum (a)	-	-	<sub>a</sub> 45	<sub>b</sub> 193	-	-	18	73	.19	3.29
G	Poa secunda	<sub>a</sub> 167	<sub>b</sub> 223	<sub>b</sub> 252	<sub>b</sub> 242	67	79	85	82	5.60	8.42
G	Sitanion hystrix	<sub>c</sub> 186	<sub>ab</sub> 135	<sub>bc</sub> 154	<sub>a</sub> 108	77	62	65	48	2.81	2.87
Total for Annual Grasses		0	0	45	193	0	0	18	73	0.18	3.29
Total for Perennial Grasses		400	413	476	431	159	160	173	156	10.33	13.79
Total for Grasses		400	413	521	624	159	160	191	229	10.52	17.09
F	Allium spp.	1	-	-	2	1	-	-	1	-	.01
F	Arabis spp.	1	2	1	1	1	2	1	1	.00	.00
F	Astragalus beckwithii	-	2	4	-	-	1	2	-	.01	-
F	Astragalus utahensis	-	1	3	1	-	1	1	1	.03	.00
F	Balsamorhiza hookeri	-	-	-	2	-	-	-	2	-	.03
F	Castilleja chromosa	-	1	-	3	-	1	-	1	-	.00
F	Chaenactis douglasii	<sub>b</sub> 41	<sub>a</sub> -	<sub>a</sub> -	<sub>a</sub> 7	21	-	-	3	-	.01
F	Crepis acuminata	2	-	-	-	1	-	-	-	-	-
F	Cryptantha spp.	-	-	7	-	-	-	3	-	.01	-
F	Cymopterus spp.	<sub>a</sub> -	<sub>c</sub> 46	<sub>ab</sub> 7	<sub>b</sub> 24	-	22	3	12	.01	.08
F	Delphinium nuttallianum	3	-	-	4	1	-	-	2	-	.03
F	Descurainia pinnata (a)	-	-	<sub>a</sub> 6	<sub>b</sub> 21	-	-	2	12	.01	.08
F	Erigeron pumilus	-	-	2	-	-	-	1	-	.00	-
F	Gayophytum ramosissimum (a)	-	-	3	-	-	-	1	-	.00	-
F	Gilia congesta	-	5	-	2	-	3	-	2	-	.01
F	Lappula occidentalis (a)	-	-	2	2	-	-	2	2	.01	.01
F	Lygodesmia spinosa	-	-	1	-	-	-	1	-	.00	-
F	Machaeranthera canescens	-	-	1	3	-	-	1	1	.00	.00
F	Phlox hoodii	<sub>a</sub> 14	<sub>ab</sub> 31	<sub>b</sub> 67	<sub>b</sub> 69	7	17	28	29	1.28	1.77
F	Phlox longifolia	<sub>b</sub> 112	<sub>ab</sub> 85	<sub>a</sub> 59	<sub>a</sub> 65	46	35	27	28	.16	.32
F	Polygonum douglasii (a)	-	-	3	-	-	-	1	-	.00	-
F	Ranunculus testiculatus (a)	-	-	<sub>a</sub> -	<sub>b</sub> 36	-	-	-	16	-	.15
F	Trifolium gymnocarpon	18	8	15	17	7	4	8	6	.04	.13
F	Unknown forb-perennial	-	-	2	-	-	-	1	-	.00	-

T y p e	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'84	'90	'96	'01	'84	'90	'96	'01	'96	'01
	Total for Annual Forbs	0	0	14	59	0	0	6	30	0.02	0.25
	Total for Perennial Forbs	192	181	169	200	85	86	77	89	1.58	2.43
	Total for Forbs	192	181	183	259	85	86	83	119	1.61	2.68

Values with different subscript letters are significantly different at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --

Herd unit 01 , Study no: 9

T y p e	Species	Strip Frequency		Average Cover %	
		'96	'01	'96	'01
B	<i>Artemisia tridentata wyomingensis</i>	82	77	12.09	18.69
B	<i>Chrysothamnus nauseosus consimilis</i>	10	16	.38	.82
B	<i>Chrysothamnus viscidiflorus stenophyllus</i>	76	74	4.44	4.30
B	<i>Juniperus osteosperma</i>	0	0	-	.00
B	<i>Leptodactylon pungens</i>	17	13	.30	.91
B	<i>Opuntia spp.</i>	9	9	.21	.21
	Total for Browse	194	189	17.44	24.95

BASIC COVER --

Herd unit 01 , Study no: 9

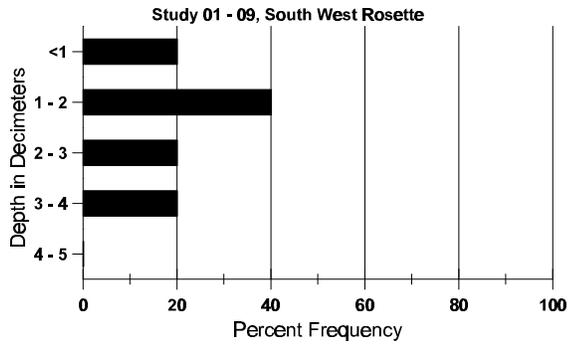
Cover Type	Nested Frequency		Average Cover %			
	'96	'01	'84	'90	'96	'01
Vegetation	351	353	2.00	14.50	27.70	45.83
Rock	161	61	.75	2.25	1.90	.37
Pavement	318	288	7.25	13.25	6.67	6.14
Litter	383	350	43.75	30.25	36.87	35.61
Cryptogams	145	74	2.25	2.00	2.69	.92
Bare Ground	266	288	44.00	37.75	20.89	22.61

SOIL ANALYSIS DATA --

Herd Unit 01, Study no: 09, South West Rosette

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%OM	PPM P	PPM K	dS/m
12.7	63.0 (11.0)	7.5	47.3	22.4	30.4	1.9	7.3	406.4	.6

### Stoniness Index



PELLET GROUP FREQUENCY --

Herd unit 01 , Study no: 9

Type	Quadrat Frequency	
	'96	'01
Sheep	11	-
Rabbit	18	1
Deer	9	2
Cattle	1	-

Pellet Transect	
Pellet Groups per Acre	Days Use per Acre (ha)
'01	'01
-	-
26	N/A
104	8 (20)
-	-

BROWSE CHARACTERISTICS --

Herd unit 01 , Study no: 9

AGE	Y	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht. Cr.		
Artemisia tridentata wyomingensis																		
S	'84	5	-	-	-	-	-	-	-	-	5	-	-	-	333		5	
	'90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	'96	9	-	-	-	-	-	-	-	-	9	-	-	-	180		9	
	'01	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
Y	'84	1	5	4	-	-	-	-	-	-	10	-	-	-	666		10	
	'90	2	-	-	-	-	-	-	-	-	2	-	-	-	133		2	
	'96	5	-	-	-	-	-	-	-	-	5	-	-	-	100		5	
	'01	10	-	-	-	-	-	-	-	-	10	-	-	-	200		10	
M	'84	3	28	9	-	-	-	-	-	-	39	-	1	-	2666	23 33	40	
	'90	6	14	-	-	-	-	-	-	-	20	-	-	-	1333	22 25	20	
	'96	71	44	1	-	-	-	-	-	-	111	-	3	2	2320	23 33	116	
	'01	106	1	-	2	-	-	-	-	-	109	-	-	-	2180	28 38	109	
D	'84	3	10	11	-	-	-	-	-	-	22	1	1	-	1600		24	
	'90	12	13	-	-	-	-	-	-	-	15	-	-	10	1666		25	
	'96	26	26	-	-	-	-	-	-	-	34	-	2	16	1040		52	
	'01	47	-	-	4	-	-	3	-	-	36	1	3	14	1080		54	
X	'84	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	'90	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	'96	-	-	-	-	-	-	-	-	-	-	-	-	-	1520		76	
	'01	-	-	-	-	-	-	-	-	-	-	-	-	-	880		44	
% Plants Showing		<u>Moderate Use</u>			<u>Heavy Use</u>			<u>Poor Vigor</u>			<u>%Change</u>							
'84		58%			32%			03%			-36%							
'90		57%			00%			21%			+ 9%							
'96		40%			.57%			13%			+ 0%							
'01		.57%			00%			10%										
Total Plants/Acre (excluding Dead & Seedlings)												'84	4932	Dec:	32%			
												'90	3132		53%			
												'96	3460		30%			
												'01	3460		31%			

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.	Total			
		1	2	3	4						
Chrysothamnus nauseosus consimilis											
S	84	-	-	-	-	-	-	-	0		0
	90	-	-	-	-	-	-	-	0		0
	96	-	-	-	-	-	-	-	0		0
	01	1	-	-	-	-	-	-	20		1
Y	84	-	-	-	-	-	-	-	0		0
	90	-	-	-	-	-	-	-	0		0
	96	3	-	-	-	-	-	-	60		3
	01	2	-	-	-	-	-	-	40		2
M	84	-	-	-	-	-	-	-	0	-	0
	90	-	-	-	-	-	-	-	0	-	0
	96	6	-	-	1	-	-	-	140	22	27
	01	16	-	-	-	-	-	-	320	21	24
D	84	-	-	-	-	-	-	-	0		0
	90	2	-	-	-	-	-	-	133		2
	96	2	-	-	-	-	-	-	40		2
	01	5	-	-	-	-	-	-	100		5
X	84	-	-	-	-	-	-	-	0		0
	90	-	-	-	-	-	-	-	0		0
	96	-	-	-	-	-	-	-	0		0
	01	-	-	-	-	-	-	-	20		1
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>			
'84		00%		00%		00%					
'90		00%		00%		50%		+45%			
'96		00%		00%		00%		+48%			
'01		00%		00%		00%					
Total Plants/Acre (excluding Dead & Seedlings)						'84	0	Dec:	0%		
						'90	133		100%		
						'96	240		17%		
						'01	460		22%		

A Y G R E	Form Class (No. of Plants)	1				2				3				Plants Per Acre	Average (inches) Ht. Cr.	Total			
		1	2	3	4	5	6	7	8	9	1	2	3				4		
<b>Chrysothamnus viscidiflorus stenophyllus</b>																			
S	84	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	66		1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0
	96	8	-	-	14	-	-	-	-	-	-	-	22	-	-	-	440		22
	01	6	-	-	-	-	-	-	-	-	-	-	6	-	-	-	120		6
Y	84	27	5	3	-	-	-	-	-	-	-	34	-	1	-	2333		35	
	90	7	-	-	1	-	-	-	-	-	-	8	-	-	-	533		8	
	96	3	-	-	1	-	-	-	-	-	-	4	-	-	-	80		4	
	01	14	-	-	-	-	-	-	-	-	-	14	-	-	-	280		14	
M	84	62	26	-	-	-	-	-	-	-	-	88	-	-	-	5866	11 14	88	
	90	40	-	-	6	-	-	-	-	-	-	46	-	-	-	3066	9 11	46	
	96	243	5	-	16	-	-	-	-	-	-	264	-	-	-	5280	10 15	264	
	01	138	-	-	9	-	-	-	-	-	-	147	-	-	-	2940	12 17	147	
D	84	15	12	1	-	-	-	-	-	-	-	26	-	2	-	1866		28	
	90	45	-	-	2	-	-	-	-	-	-	38	-	-	9	3133		47	
	96	2	3	-	-	-	-	-	-	-	-	1	-	-	4	100		5	
	01	34	-	-	2	-	-	-	-	-	-	29	-	-	7	720		36	
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	20		1	
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	80		4	
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>					
'84		28%				03%				02%				-33%					
'90		00%				00%				09%				-19%					
'96		03%				00%				01%				-28%					
'01		00%				00%				04%									
Total Plants/Acre (excluding Dead & Seedlings)												'84	10065	Dec:	19%				
												'90	6732		47%				
												'96	5460		2%				
												'01	3940		18%				
<b>Juniperus osteosperma</b>																			
S	84	1	-	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	90	1	-	-	-	-	-	-	-	-	-	1	-	-	-	66		1	
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0		0	
	01	1	-	-	-	-	-	-	-	-	-	1	-	-	-	20		1	
% Plants Showing		<u>Moderate Use</u>				<u>Heavy Use</u>				<u>Poor Vigor</u>				<u>%Change</u>					
'84		00%				00%				00%									
'90		00%				00%				00%									
'96		00%				00%				00%									
'01		00%				00%				00%									
Total Plants/Acre (excluding Dead & Seedlings)												'84	0	Dec:	-				
												'90	0		-				
												'96	0		-				
												'01	0		-				

A Y G R E	Form Class (No. of Plants)	Vigor Class				Plants Per Acre	Average (inches) Ht. Cr.		Total			
		1	2	3	4		1	2				
Leptodactylon pungens												
Y	84	3	-	-	-	-	-	-	3	-	3	
	90	-	-	-	-	-	-	-	0	-	0	
	96	2	-	-	-	-	-	-	40	-	2	
	01	-	-	-	-	-	-	-	0	-	0	
M	84	7	-	-	-	-	-	-	466	7	6	7
	90	7	-	-	1	-	-	-	533	6	8	8
	96	27	-	-	6	-	-	-	660	8	13	33
	01	14	-	-	5	-	-	2	420	10	12	21
D	84	-	-	-	-	-	-	-	0	-	-	0
	90	3	-	-	-	-	-	-	200	1	-	3
	96	-	-	-	-	-	-	-	0	-	-	0
	01	2	-	-	-	-	-	-	40	-	-	2
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>				
'84		00%		00%		00%		+ 9%				
'90		00%		00%		18%		- 5%				
'96		00%		00%		00%		-34%				
'01		00%		00%		09%						
Total Plants/Acre (excluding Dead & Seedlings)						'84	666	Dec:	0%			
						'90	733		27%			
						'96	700		0%			
						'01	460		9%			
Opuntia spp.												
Y	84	-	-	-	-	-	-	-	0	-	0	
	90	-	-	-	-	-	-	-	0	-	0	
	96	1	-	-	-	-	-	-	20	-	1	
	01	1	-	-	1	-	-	-	40	-	2	
M	84	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	-	-	-	-	-	0	-	-	0
	96	8	-	-	2	-	-	-	200	4	10	10
	01	7	-	-	-	-	-	-	140	4	6	7
% Plants Showing		<u>Moderate Use</u>		<u>Heavy Use</u>		<u>Poor Vigor</u>		<u>%Change</u>				
'84		00%		00%		00%						
'90		00%		00%		00%						
'96		00%		00%		00%		-18%				
'01		00%		00%		00%						
Total Plants/Acre (excluding Dead & Seedlings)						'84	0	Dec:	-			
						'90	0		-			
						'96	220		-			
						'01	180		-			