*****Not Read*****

Trend Study 5-5-96

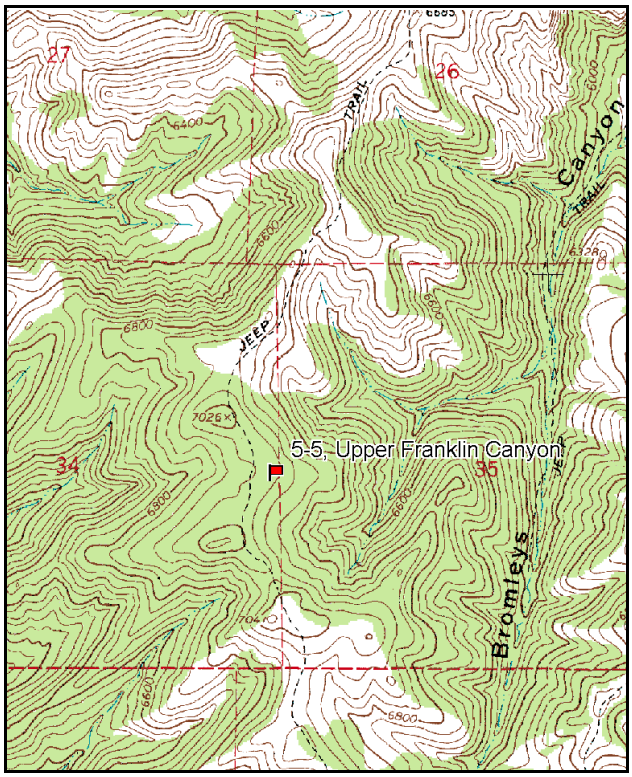
Study site name: Upper Franklin Canyon . Vegetation type: Mountain Brush .

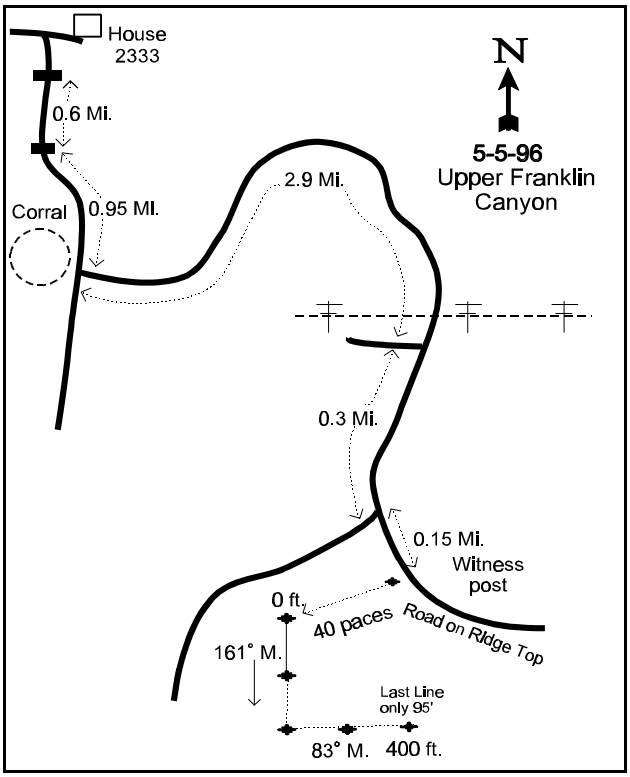
Compass bearing: frequency baseline 161 degrees magnetic.

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

LOCATION DESCRIPTION

From Main Street and south Henefer Road, proceed 2.1 miles southeast on Cemetery Road to the entrance of Franklin Canyon. A house (number 2333) is nearby. Proceed south 0.6 miles up Franklin Canyon to a cattleguard. Continue south for 0.95 miles to a large corral, and turn left onto a small dirt road. Proceed 2.9 miles (staying on main road) to a fork. Stay straight (left) and proceed 0.3 miles to another fork. Take a left and proceed on this ridge top road for 0.15 miles to a witness post on the right hand side of the road. From the witness post walk 40 paces in a south west direction to the 0-foot baseline stake. The 0-foot baseline stake is marked by browse tag #7954. The baseline doglegs at the 200-foot baseline stake and runs in a direction of 83 degrees magnetic.





Map Name: Coalville

Diagrammatic Sketch

Township 3N , Range 4E , Section 34

UTM 4533201 N 460264 E

DISCUSSION

Trend Study No. 5-5

*******This site was not read in 2001 and will be reevaluated in 2006. Access to the area only occurs through private land at the mouth of Franklin Canyon. We were denied permission to enter the area in 2001.

The Upper Franklin Canyon study samples rather high elevation (6,960 ft.) winter range near the divide between Franklin and Bromley Canyons. Slope on the site varies from 25% to 50% with a south, southwest aspect. The slope likely remains open and available to deer during all but the harshest of winters. Both deer and elk pellet groups occurred frequently in 1996. Two antler drops were observed in 1990. Livestock use includes sheep in spring and summer with no evidence of cattle in 1996. The range type is mixed mountain brush.

Soil textural analysis indicates a clay loam soil with an effective rooting depth of 14 inches. The soil is reddish colored with cobblestone throughout the profile. The soil is moderately deep, well-drained, and residually derived from a sedimentary conglomerate formation. One characteristic appears certain, runoff is rapid and the erosion hazard is correspondingly high. Game trails are abundant with bare ground found on these trails as well as within the shrub interspaces. There are no active gullies present, but soil is apparently moving downslope and accumulating on the uphill slope of shrubs, trails, and grasses. Percent bare ground has remained relatively stable since 1990 at 28% in 1996.

Three browse species are of key importance because of their preference and productivity. In order of productivity (percent cover) they include true mountain mahogany, serviceberry, and mountain snowberry. True mountain mahogany is the largest browse species with a tree like growth form. These plants are heavily utilized with noticeable high-lining. Many mature plants are tall enough to have some unavailable portions which helps maintain a satisfactory level of vigor and seed production. Estimated density for true mountain mahogany was 740 plants/acre in 1996. Decadent plants were classified in 1984 and 1990, but none were categorized as decadent in 1996. A substantial number of young mahogany suggest that this species will be able to maintain itself. Saskatoon serviceberry had an estimated density of 540 plants/acre in 1996, with 63% classified as mature and 26% classified as young. Percent decadency has declined since 1990 from 50% of the population to only 11% in 1996. Heavy utilization has declined as well. Mountain snowberry is less productive and generally not as palatable. It displays mostly light use with a density that appears stable.

Mountain big sagebrush provides additional browse forage. It was reported in 1990, that the mountain big sagebrush was very heavily utilized and excessively decadent. In 1996, the population has shifted from entirely decadent, to a population with a healthy age structure. However, it only contributes <1% of the total browse cover. Utilization has also shifted from heavy in 1984 and 1990 to light in 1996. Other browse species include stickyleaf low rabbitbrush, broom snakeweed, and slenderbush eriogonum.

Grasses are important to this site, but consist primarily as large pedestaled bunches, separated by eroded bare ground. Although, unlike much of the surrounding area, this site has a healthy stand of bluebunch wheatgrass with cheatgrass occurring in relatively low numbers. Sandberg bluegrass is also moderately abundant. Other grasses include muttongrass, Indian ricegrass, sedge, and Japanese Brome.

Many of the more abundant forbs are either annual species or biennial increasers. Stickseed and pale alyssum provide the bulk of the herbaceous cover. There was no use of either the forbs or grasses noted in 1996.

1984 APPARENT TREND ASSESSMENT

Poor soil conditions and rapid erosion result in an apparent declining soil trend and also strongly influence vegetative conditions. Vegetative trend appears to be declining due to heavy use and the inability of some species to adequately reproduce. Two of the key browse species appear to be stable. However, mountain big sagebrush seems to be disappearing.

1990 TREND ASSESSMENT

Trend for soil is down. Percent cover of bare ground has nearly doubled from 17% to 30%. Percent cover of litter has also declined substantially. Trend for browse is down slightly due to more heavy use, increased percent decadence and a decline in density of some of the key species, serviceberry, mountain big sagebrush, and true mountain mahogany. Drought conditions of the past several years are the main cause of this trend. Trend for the herbaceous understory is stable. Sum of nested frequency for perennial grasses and forbs has remained similar to 1984 estimates.

TREND ASSESSMENT
soil - down (1)
browse - down slightly (2)
herbaceous understory - stable (3)

1996 TREND ASSESSMENT

Soil trend is stable with no noticeable accelerated erosion present in 1996. Some erosion will likely always occur on this site due to the soil characteristics and steep slope. Bare ground cover has remained similar to 1990 estimates while cover of litter, rock, and pavement have declined slightly. Browse trend is up with fewer decadent plants reported in 1996 and a lower proportion of heavily utilized plants. Browse populations appear to be stable and becoming more healthy than in the past. Grass composition is more desirable than surrounding sites that are dominated by cheatgrass. Bluebunch wheatgrass provides a bulk of the herbaceous understory cover. Forbs are dominated by annual species and do not provide much forage at this time. Herbaceous understory trend appears stable.

TREND ASSESSMENT
soil - stable (3)
browse - up (5)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 05 , Study no: 5

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'84	'90	'96	'84	'90	'96	'96
G	Agropyron spicatum	266	233	249	95	89	83	11.23
G	Bromus japonicus (a)	-	-	1	-	-	1	.03
G	Bromus tectorum (a)	-	-	173	-	-	61	2.61
G	Carex spp.	-	-	3	-	-	1	.03
G	Oryzopsis hymenoides	12	11	3	5	5	2	.24
G	Poa fendleriana	a-	a-	b13	-	-	7	.13
G	Poa secunda	a104	b183	b150	48	73	59	1.87
Total for Annual Grasses		0	0	174	0	0	62	2.64
Total for Perennial Grasses		382	427	418	148	167	152	13.50
Total for Grasses		382	427	592	148	167	214	16.15
F	Achillea millefolium	-	-	2	-	-	1	.15
F	Agoseris glauca	-	-	7	-	-	3	.01
F	Alyssum alyssoides (a)	-	-	279	-	-	89	2.21
F	Arabis spp.	-	3	6	-	2	3	.01
F	Astragalus cibarius	-	-	6	-	-	3	.04
F	Aster spp.	-	-	4	-	-	2	.01
F	Caulanthus crassicaulis	-	-	3	-	-	1	.00
F	Camelina microcarpa (a)	-	-	22	-	-	12	.20
F	Chaenactis douglasii	3	9	8	3	5	4	.07
F	Cirsium spp.	b78	b79	a41	40	43	23	1.05
F	Comandra pallida	2	3	6	2	2	2	.03
F	Crepis acuminata	-	2	5	-	1	3	.04
F	Cruciferae	-	3	-	-	1	-	-
F	Cryptantha spp.	b76	a9	a5	39	4	2	.06
F	Cymopterus spp.	-	1	7	-	1	3	.04
F	Eriogonum brevicaule	b10	ab6	a-	6	4	-	-
F	Erigeron pumilus	2	3	2	1	3	1	.00
F	Erigeron strigosis	-	-	6	-	-	3	.06
F	Haplopappus acaulis	4	2	-	1	1	-	-
F	Hackelia patens	a-	b66	b80	-	35	31	2.95
F	Holosteum umbellatum (a)	-	-	11	-	-	6	.03
F	Lappula occidentalis (a)	-	-	4	-	-	2	.01
F	Lactuca serriola	a-	a4	b24	-	1	11	.08
F	Penstemon humilis	22	17	21	10	8	15	.32

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'84	'90	'96	'84	'90	'96	'96
F	Phlox hoodii	6	9	7	4	5	4	.09
F	Ranunculus testiculatus (a)	-	-	175	-	-	62	.91
F	Taraxacum officinale	-	1	-	-	1	-	-
F	Tragopogon dubius	$_{b}$16	$_{ab}$7	$_{a}$5	9	4	2	.04
F	Unknown forb-perennial	-	1	-	-	1	-	-
F	Veronica biloba (a)	-	-	68	-	-	29	.24
Total for Annual Forbs		0	0	559	0	0	200	3.61
Total for Perennial Forbs		219	225	245	115	122	117	5.10
Total for Forbs		219	225	804	115	122	317	8.72

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

BROWSE TRENDS --
Herd unit 05 , Study no: 5

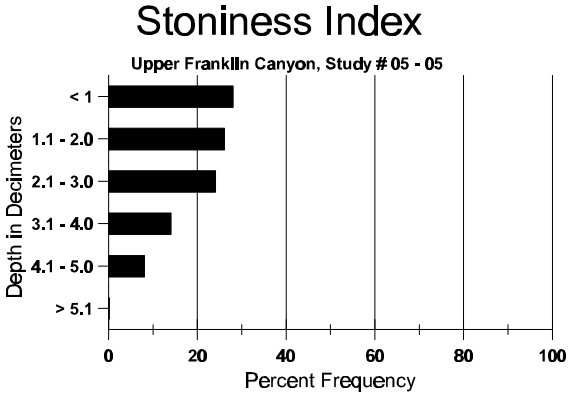
Type	Species	Strip Frequency	Average Cover %
		'96	'96
B	Amelanchier alnifolia	21	3.29
B	Artemisia tridentata vaseyana	12	.06
B	Cercocarpus montanus	30	3.50
B	Chrysothamnus viscidiflorus viscidiflorus	32	2.63
B	Eriogonum microthecum	2	.03
B	Gutierrezia sarothrae	6	.64
B	Mahonia repens	27	.77
B	Symphoricarpos oreophilus	14	2.04
Total for Browse		144	13.00

BASIC COVER --
Herd unit 05 , Study no: 5

Cover Type	Nested Frequency '96	Average Cover % '84	'90	'96
Vegetation	372	4.50	8.00	34.61
Rock	257	17.50	17.25	13.70
Pavement	184	5.50	6.25	2.02
Litter	384	54.75	38.00	34.22
Cryptogams	69	1.25	.75	1.11
Bare Ground	276	16.50	29.75	28.37

SOIL ANALYSIS DATA --
Herd Unit 05, Study no: 05, Upper Franklin Canyon

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.3	65.8 (14.3)	7.9	40.6	32.1	27.4	2.5	3.0	28.8	.6



PELLET GROUP FREQUENCY --
Herd unit 05 , Study no: 5

Type	Quadrat Frequency '96
Rabbit	1
Elk	23
Deer	12

BROWSE CHARACTERISTICS --
Herd unit 05 , Study no: 5

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	3	-	-	-	-	-	-	-	-	3	-	-	-	100			3
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	3	1	1	-	-	-	-	6	-	-	-	200			6
	96	3	1	1	2	-	-	-	-	-	7	-	-	-	140			7
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	-	6	-	-	1	-	-	-	7	-	-	-	233	33	17	7
	96	2	1	8	3	2	1	-	-	-	17	-	-	-	340	34	48	17
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	1	12	-	-	-	-	-	-	12	-	1	-	433			13
	96	-	-	2	-	-	1	-	-	-	2	-	1	-	60			3

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	08%	85%	04%	-38%
'96	15%	48%	04%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'84	0		0%
	'90	866		50%
	'96	540		11%

Artemisia tridentata vaseyana																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	1	-	-	-	-	-	1	-	-	-	20			1
Y	84	-	1	-	-	-	-	-	-	-	1	-	-	-	33			1
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	24	1	-	-	-	-	-	-	-	25	-	-	-	500			25
M	84	-	-	5	-	-	-	-	-	-	5	-	-	-	166	24	24	5
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	17	1	1	-	-	-	-	-	-	19	-	-	-	380	21	32	19
D	84	-	3	14	-	-	-	-	-	-	12	-	4	1	566			17
	90	1	1	5	-	-	-	-	-	-	6	-	1	-	233			7
	96	-	1	2	-	-	-	-	-	-	1	-	-	2	60			3
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	420			21

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	17%	83%	22%	-70%
'90	14%	71%	14%	+75%
'96	06%	06%	04%	

Total Plants/Acre (excluding Dead & Seedlings)			Dec:	
	'84	765		74%
	'90	233		100%
	'96	940		6%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Cercocarpus montanus																		
S	84	16	-	-	-	-	-	-	-	-	16	-	-	-	533			16
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	-	7	16	-	-	-	-	-	-	23	-	-	-	766			23
	90	1	-	2	-	-	-	-	-	1	4	-	-	-	133			4
	96	2	10	2	-	-	2	-	-	-	16	-	-	-	320			16
M	84	-	-	79	-	-	-	-	-	-	79	-	-	-	2633	64	27	79
	90	-	-	1	-	1	1	-	-	1	4	-	-	-	133	56	38	4
	96	1	3	13	-	1	3	-	-	-	21	-	-	-	420	32	42	21
D	84	-	-	17	-	-	-	-	-	-	17	-	-	-	566			17
	90	-	-	1	-	1	-	-	-	-	2	-	-	-	66			2
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	140			7

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	06%	94%	00%	-92%
'90	20%	70%	00%	+55%
'96	38%	54%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'84	3965	Dec:	14%
	'90	332		20%
	'96	740		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
S	84	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	90	10	-	-	-	-	-	-	-	-	10	-	-	-	333			10
	96	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	84	25	-	-	-	-	-	-	-	-	25	-	-	-	833	12	13	25
	90	25	12	7	1	-	1	-	-	-	44	-	2	-	1533	13	17	46
	96	79	6	-	2	-	-	-	-	-	87	-	-	-	1740	13	26	87
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	4	-	-	-	-	-	-	-	2	-	3	-	166			5
	96	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
X	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	+56%
'90	26%	13%	08%	- 9%
'96	07%	00%	01%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	899	Dec:		0%
'90	2032			8%
'96	1840			1%

Eriogonum microthecum																		
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	-	1	-	-	-	-	-	-	-	1	-	-	-	33	2	13	1
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40	13	18	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	100%	00%	00%	+18%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'84	0	Dec:	-
'90	33		-
'96	40		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	96	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
Y	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	5	-	-	-	-	-	-	-	-	5	-	-	-	166			5
	96	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
M	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	90	9	-	-	-	-	-	-	-	-	9	-	-	-	300	5	5	9
	96	5	-	-	-	-	-	-	-	-	5	-	-	-	100	6	12	5
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	
'90	00%	00%	00%	-68%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'84	0	Dec:		0%
'90	499			7%
'96	160			0%

Mahonia repens																		
S	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	94	-	-	-	-	-	-	-	-	94	-	-	-	3133			94
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	84	47	-	-	-	-	-	-	-	-	47	-	-	-	1566			47
	90	332	-	-	-	-	-	-	-	-	331	-	1	-	11066			332
	96	72	-	-	-	-	-	-	-	-	72	-	-	-	1440			72
M	84	111	-	-	-	-	-	-	-	-	111	-	-	-	3700	4	5	111
	90	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	96	170	-	-	6	-	-	-	-	-	176	-	-	-	3520	3	6	176
D	84	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	90	1	-	-	-	-	-	-	-	-	-	-	1	-	33			1
	96	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'84	00%	00%	00%	+53%
'90	00%	00%	.60%	-55%
'96	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'84	5266	Dec:	0%
'90	11099		0%
'96	4960		0%