

RANGE GRASS ADAPTATION ON FOUR SITES
IN THE SAN BERNARDINO MOUNTAINS

for Jim Street

The adaptation tests were established in 1956 on three areas that had burned during that summer and on one area that burned in 1955. The areas were described as regards location, elevation, vegetation type and species before the burn and other general information in the 1957 report, pages 78 to 88.

Considerable precipitation was obtained during the winter and spring of 1958. In general favorable growing conditions prevailed on all of the areas. Snow cover on the West Heaps Peak area was heavier and later than normal. This area normally receives about 40 inches of precipitation from the beginning of the fall rainy season to the end of the spring rains. In the wet season 1957-1958, over 70 inches of precipitation fell on the West Heaps Peak area as determined by measurements made by the District Ranger at the Sky Forest Ranger Station.

A rating of species and strains of grasses for the West Heaps Peak and Mid Flats areas is presented in Table 24. Intermediate wheatgrass was the best species for this area as shown by the highest ratings in Table 24 and by the production of forage as given in Table 25. Pubescent wheatgrass also proved to be well adapted. Strain number A-12496 and amar ranked highest for intermediate wheatgrass and A-1488 was highest for pubescent wheatgrass. These strains were developed in Arizona from foreign plant introductions. Annual ryegrass grew well at the West Heaps Peak site, and reproduced an excellent stand for the second growing season. Harding, Sunol, and Kolea grass did not survive at this elevation.

Orchard grass, intermediate wheatgrass, pubescent wheatgrass, tall fescue, Harding grass, and annual ryegrass were well adapted to the Mud Flats area which is intermediate in elevation, about 3,500 feet above sea level. Smooth bromegrass did very poorly at this location.

A complete set of species and strains was not included at the Del Rosa location on the Sterling Burn. The elevation was 2,000 feet above sea level and presents a much drier, hotter environment than the other locations. Smilo, Harding, and annual ryegrass gave the highest production for the Del Rosa plots, Table 25. Intermediate wheatgrass was so poorly adapted that only a trace occurred and was not enough to be included in the production weights. Pubescent wheatgrass produced a low yield and tall fescue was fairly thrifty but these two grasses produced less than Harding and smilo.

Annual ryegrass gave the highest production on the Mud Flats plots with 4,410 pounds per acre. Intermediate wheatgrass and Harding grass yields were fairly good. Tall fescue was fairly good at all three elevations but did not produce among the three highest at any of the three locations.

Intermediate wheatgrass and pubescent wheatgrass were superior grasses on the Deer Burn area, Table 26. Crested wheatgrass and tall wheatgrass gave fairly good stands but would have yielded somewhat less than the intermediate or pubescent wheatgrass. Blando brome reproduced an extremely dense stand of very short plants and was producing seed stalks when examined April 23. The production of forage would have been very low in comparison to the four perennial grasses already described for this area. Nodding needlegrass, a

native at lower elevations was 50 percent dead, apparently from winter injury. Hard fescue failed to establish an acceptable stand and very low growth occurred.

Table 24.--Range Grass species and strains test sown in November 1956 on McKinley Burn, San Bernardino National Forest with data taken on stand characteristics and relative ratings July 28 and 29, 1958

Species symbol	Description	West Heaps Peak Area		Mud Flats Area	
		Stand : rating#; vigor : rating#; cover	Height : rating#; cover	Stand : rating#; vigor : rating#; cover	Height : rating#; cover
		Inches	Percent	Inches	Percent
Ag cr	Commercial				
Ag cr	A-1770	18	6.2	1	14
Ag cr	Nebr. 3576	27	5.8	0	0
Ag cr	Turkish	22	4.0	1	15
Ag de	Commercial	26	4.0	0	0
Ag de	Kordian	31	3.2	1	23
Ag de	Nebr. 10	29	3.5	4	24
Ag de	Utah Ag-1	28	3.2	4	24
Ag de	Summit	30	5.8	4	26
Ag de	Mandan 2359	28	3.2	0	0
Ag el	Nebr.	23	2.0	1	22
Ag el	Utah	53	4.0	0	0
Ag el	S-64	40	20.8	5	60
Ag el	A-13044	37	2.5	-	47
Ag int	Nebr. 50	53	10.0	5	47
Ag int	Amar	49	5.8	5	41
Ag int	A-12496	52	17.0	5	49
Ag int	Greenar	58	7.0	5	42
Ag int	Ree	37	4.0	4	35
Ag int	Idaho #3	47	5.2	4	37
Ag tri	A-1488	35	5.0	3	27
Ag tri	Topar	45	10.8	4	37
Ag tri	Utah 109	33	2.8	5	34
Ag tri	Mandan 759	37	8.2	5	39
Ag in	Whitmar	32	4.5	5	27
Ag si	P-27	16	-	0	0
		23	5.0	1	16
					Tr.

Table 24. Continued.

Species symbol	Description	West Keeps Peak Area			Mid Flats Area		
		Stand : rating*	Vigor : rating*	Height : cover*	Stand : rating*	Vigor : rating*	Height : cover*
		Inches Percent			Inches Percent		
AG ri	Sodar	5	5	20	1.5	0	0
Br in	Achenbach	7	7	40	10.8	35	Tr.
Br in	Lancaster	2	4	22	3.8	0	0
Br in	Southland	5	5	33	4.0	0	0
Br in	Wisc. 63	-	-	Not planted	-	22	Tr.
Br in	Wisc. 55	1	1	31	Tr.	0	0
Br in	Saratoga	1	1	26	Tr.	0	0
Br in	Minn. Syn. B	3	2	26	1.2	0	0
Da gl	Commercial	4	4	24	3.8	0	0
Da gl	P-2453	1	1	15	Tr.	45	10.0
Da gl	Akaroe	3	3	19	1.2	34	Tr.
Da gl	Iowa #1	1	1	26	Tr.	39	7.5
Da gl	Iowa #6	4	4	30	2.5	42	5.0
Da gl	Trogdon	3	3	19	3.8	34	6.2
Da gl	Pa. early	4	4	27	5.8	26	3.8
Da gl	Pa. Med.	1	3	28	1.2	42	4.5
Da gl	Pa. late	1	1	20	Tr.	42	3.8
Da gl	Aurora	1	1	21	Tr.	34	5.0
Da gl	Grasslands N.Z.	1	1	19	Tr.	25	2.5
Fe ar	Alta	5	5	32	4.2	22	5.0
Fe ar	Ky. 31	8	7	39	11.2	44	3.8
Fe ar	Coars	5	7	37	8.8	43	2.5
Fe ar	Ore. 4-36	2	5	39	Tr.	37	3.8
Fe ar	Ky. 597 1-32	7	6	28	2.8	39	3.8
Fe ar	New Zealand	5	6	36	3.8	32	2.5
Lo mu	Commercial	9	9	27	13.2	34	15.0
Lo pe	Commercial	3	4	16	2.0	26	5.0
Lo mu	Fla. Rust Res.	9	9	25	23.8	27	18.8

Table 24. Continued.

Species symbol	Description	West Keesps Peak Area			Mad Flats Area				
		Stand : rating*:	Vigor : rating*:	Height : rating*:	Stand : rating*:	Vigor : rating*:	Height : rating*:		
		Inches		Percent		Inches		Percent	
Lo nu	Tifton #1	9	9	25	10.8	8	8	26	15.0
Lo nu	La. Esten.	9	9	20	20.0	8	8	34	13.8
Lo nu	Beeumont	9	9	21	10.0	8	8	31	20.0
Fh co	Sumol	0	-	-	-	3	3	40	Tr.
Fh tu st	Harding	0	-	-	-	8	9	48	8.8
Fh tu hi	Koles	0	-	-	-	5	7	67	5.6

* Relative rating: 10 = excellent; 7-8 = good; 5 = medium; 3 = poor; 1 = very poor; 0 = failure.

Table 25.--Production by 6 range grasses at 3 different elevations on the San Bernardino National Forest, sown in November 1956 on burned over brushland and harvested July 28 and 29, 1958

Location and elevation	Dry weight per acre					
	Intermediate: wheatgrass	Pubescent: wheatgrass	Tall: fescue	Annual: ryegrass	Smilo: grass	Harding
----- Pounds -----						
Del Rosa 2,000 feet	Trace	402	468	2,028	4,056	2,298
Mid Flats 3,500 feet	1,032	264	450	4,410	-	702
West Heaps Peak 6,000 feet	4,524	1,578	726	1,908	-	Trace

Table 26.--Relative rating on stand development for species sown in
November on Deer Burn, San Bernardino National
Forest; data taken April 23, 1958

Species symbol	Stand rating*	Vigor rating*	Height <u>Inches</u>	Basal cover <u>Percent</u>
Ag int	9	8	4**	10
Ag tri	10	10	6	15
Ag @r	9	9	5	10
Ag el	9	9	7	10
Br mo	9	9	4	60
St ce	Winterkilled 50% and weakened.			
Fe or du	3	4	2	1

* Relative rating: 10 = excellent; 7-8 = good; 5 = medium; 3 = poor;
 1 = very poor; 0 = failure.

** Intermediate wheatgrass was eaten down by rabbits and deer considerably more than the other grasses. No yield determinations were made but it was estimated that intermediate wheatgrass ungrazed would have been the highest producing grass in the test.