

RANCHITA RANGE STUDY

ANNUAL PROGRESS REPORT - 1968

The year 1968 was a period of transition on the Ranchita Range Study. A transition from the actual demonstration of brush conversion techniques to a period of maintenance and analysis of past work.

Grazing trials to determine monetary returns from various conversion techniques were continued on all four plots. Chemical applications controlling encroaching brush were completed on areas of Plots #3 and #4. Aside from the above, most activity centered around reevaluating past efforts and conveying this information to interested ranchers and professionals.

The project was toured by the State Board of Forestry and its Range Improvement Advisory Committee, several college and high school classes, as well as individually by many business men and professionals.

The results of past work on the Ranchita was presented at the meeting of the California section of the American Society of Range Management in Berkeley and at the California Brushland Range Improvement Association in Fresno. Further dissemination of the information collected from the project resulted from printing and distribution of a short paper summarizing past work and several appendices relating to specific subjects such as the economics of crushing and disking, follow-up maintenance in grazing management (see attached.)

While most of the plans for 1968 were implemented, some work had to be postponed due to delays in the Lopez Dam project and changes in Extension Service personnel. The following is a summary of activities and conditions on the Ranchita Range Study during 1968.

WEATHER CONDITIONS

Weather conditions during the 1967-68 growing season produced good forage yields. While rainfall was substantially below normal and essentially ended during the first week of April, it was uniformly distributed during the period of November through April. As is normal, temperatures remained very cold from mid-November of 1967 through January of 1968 and produced little forage growth. Higher than normal temperatures prevailed during the remainder of the spring and in combination with favorable rainfall distribution, resulted in good forage growth until moisture was depleted in late April.

Exceptionally early, well-distributed rainfall and above-average temperatures have also resulted in excellent forage growth during the Fall and Winter of 1968. The forage yields should be well above normal during the 1968-69 growing season if this weather pattern continues.

VEGETATIVE CONDITIONS

Plot #1

In response to favorable spring growing conditions and moderate grazing, seeded perennial and annual grasses continued to increase in density on Plot #1 during the 1967-68 growing season. While the trend has been toward increasing density of seeded perennial species, it is expected with good grazing management the perennial vs. annual ratio will reach equilibrium within the next few growing seasons.

The annual plant complex still includes a high percentage of undesirable forbs and grasses. We will try through fertilization, grazing management and perhaps burning to change this situation in subsequent years.

Plot #2

As planned, Plot #2 is being allowed to revert to brush. The density of woody vegetation is increasing rapidly in most areas with complete closure of the canopy in evidence on a high percentage of the plot.

Herbaceous vegetation persists only on the better sites. Significant amounts of seeded perennial grasses can be found only in limited areas where it was drill seeded. Native and introduced annual grasses have increased in density in the lower areas where they are now dominant.

Plot #3

The Hardinggrass and Lana vetch which was seeded on Plot #3 produced high forage yields and continued to increase in density during 1968. Annual grasses which are now occupying most of the poorer sites in the lower areas, which were originally grassland, also produced well.

This plot was grazed only moderately during this season. The result was poor forage utilization and some increases in weedy species.

There is still no evidence of any Smilo which was seeded in 1965 and only a scattering of Rose clover which was also seeded. The reason for the poor results may be that the small seeded Smilo was drilled too deep and that the Rose clover received poor inoculation.

General vegetative conditions on Plot #3, however, are excellent with Hardinggrass and Lana vetch continuing to increase in density and occupying nearly all the favorable sites. It is expected that an equilibrium between Hardinggrass and the annual species will be reached within the next few years with Hardinggrass occupying about 40 per cent of the area which was seeded.

GRAZING TRIALS

Good forage yields afforded the opportunity to obtain a high beef production during 1968. However, a less than optimum utilization resulted in only moderate total production. Grazing was begun on March 1st on Plots #1, #2 and #3 and not until April 3 on Plot #4. (Grazing was delayed on all plots because of construction of the county road for the Lopez Dam project.) Cattle on all four plots were removed on May 3 with plans to graze again on Plots #3 and #4 after the legumes had set seed and perennial grasses had been allowed a period of free growth. Unfortunately, cattle were not available for early summer grazing and a tremendous amount of forage was left unutilized.

Plot #1

It was planned to graze Plot #1 heavy early in the season to utilize and reduce the density of the weedy broad leaf plants and undesirable annuals which resulted

from overgrazing and drought the year before, but the plot was not accessible until mid-spring. To utilize as much forage as possible during the green stage, the plot was stocked heavily. On March 1, twenty-five head of Hereford steers, averaging 438 pounds, were placed on the plot. They were grazed for 62 days and averaged 527 pounds when removed. Each steer gained an average of 89.2 pounds or 1.44 pounds per day. A total of 2230 pounds of beef were produced for an average of 49.6 pounds per acre.

Despite poor utilization, moderate gains were achieved. The perennial grasses responded well to reduced late season grazing pressure. The residual forage is being partially utilized during the winter of 1968. A total of 30 steers were again placed on the plot on December 12, 1968. Thus far, gains have been good and some cured forage has been taken along with the green forage produced during the Fall of 1968. The results of the 1968-69 grazing season will be shown on subsequent reports.

Plot #2

While forage production on Plot #2 is now restricted because of brush encroachment, the plot sustained 10 head of steers for 62 days. These steers averaged 450 pounds on March 1 when placed on the plot and 545 pounds when removed. Each animal gained an average of 95.0 pounds or 1.53 pounds per day. Total beef production was 950 pounds, or an average of 19 pounds per acre for the entire plot. Considering the area actually producing forage, production was good on Plot #2. Beef production on this plot is expected to stabilize somewhat below the 1968 level within the next few seasons.

Plot #3

Of the four plots, Plot #3 produced the highest gains. On March 1, 25 head of steers averaging 418 pounds were placed on the plot. When on May 3, 62 days later, they were removed, they averaged 531 pounds, for an average gain of 112.8 pounds or 1.82 pounds per day. The plot then produced a total of 2820 pounds of beef or 83.0 pounds per acre converted.*

Plans to graze the plot again later failed to materialize; therefore, there was a tremendous amount of residual forage. If the forage had been properly utilized, the plot would have produced much higher gains. Some of the residual forage produced during the 1967-68 grazing season will be utilized during the 1968-69 grazing season.

Plot #4

Again during the 1968 grazing season, the forage on Plot #4 was utilized only to a minor extent. Because of the construction project, the plot was inaccessible until April 3, at which time only 15 head of cattle were available for grazing. These steers averaged 503 pounds on April 3 and 552 pounds upon removal 30 days later,

*

There was originally 9 acres of grassland on Plot #3. Approximately 25 acres of dense brushland was converted; therefore, there is a total of 34 acres of forage-producing land on the plot. The production is figured assuming equal forage production for both converted and original grasslands, or 25/34ths of the total production.

recording an average daily gain of 1.62 pounds. The plot produced 720 pounds of beef, far below the potential. As with Plot #3, there was a tremendous amount of residual forage at the time the cattle were removed. No cattle were available for early summer grazing as planned and a great deal of high-quality forage containing a very high percentage of legume species was wasted. Some of this residual forage will be utilized during the 1968-69 grazing season, which was begun on December 6.

The results of the past two years' grazing have not been representative of the capacity of this plot to produce and also has been detrimental from the standpoint of vegetative management. It is hoped that better information on beef and forage production will be obtained in the next five years of grazing trials.

Tables #1, #2 and #3 show grazing procedures, results and monetary returns from 1962 through 1968. Returns were figured on the current grazing land rental fees on beef gain obtained by the Ranchita Cattle Company.

OPERATIONS

The only operations conducted during 1968 were the applications of herbicide on Plots #3 and #4.

The first follow-up spot spraying was carried out using a backpack mistblower during May. At this time, 25 acres were sprayed with 2,4-D esters to control residual sprouts which were not killed the previous season. A total of 15 gallons of herbicide was used to treat the area during a two-day operation.

Approximately 10 acres which was previously disked on Plot #1 was spot-sprayed for the first time during May of 1968. This area was also treated with 2,4-D esters using a backpack mistblower. Ten gallons of chemical was applied during one day of application.

The results of spot-spraying on both plots were good. The sprouts of nearly all susceptible plants have been killed, sprouts of resistant plants have either been killed or severely retarded and the seedlings of nearly all plants have been killed.

PLANS FOR 1969

Grazing trials will be continued on all plots.

Follow-up spot-spraying will be conducted on Plot #4.

Fertilization trials will be conducted on Plot #4 to determine if it is possible to sustain ryegrass which was planted on this plot.

Measurement of vegetative response will be continued and photographic records will be maintained.

Costs and returns from oak tree removal will be made.

Plans for 1969 - continued

A report on brush disking will be published.

The entire study will be remapped to determine precisely the acreage left on each plot following the construction of the county road.



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Forester I

Grazing Procedures - Table #1

<u>Year and Plot No.</u>	<u>No. Head</u>	<u>Date On</u>	<u>Date Off</u>	<u>Days Grazed</u>	<u>Average Weight On</u>	<u>Average Weight Off</u>
1962 Plot 1	17 a	March 21	April 20	30	531	630
Plot 2	13 a	March 21	April 20	30	510	593
Plot 1	17 a	Aug. 15	Oct. 1	46	667	721
Plot 2	13 a	Aug. 15	Oct. 1	46	670	710
1963 Plot 1	19 b	April 15	Aug. 5	111	572	748
Plot 2	12 b	April 15	Aug. 5	111	578	742
1964 Plot 1	18 a	Feb. 14	May 16	91	654	766
Plot 2	12 a	Feb. 14	May 16	91	617	739
1965 Plot 1	30 c	Jan. 20	March 18	57	372	449
Plot 2	30 c	March 18	June 2	75	449	560
Plot 1	30 c	June 2	July 21	49	560	604
Plot 1*	30 b	Nov. 11, 1965	Mar. 17, 1966	126	463	482
1966 Plot 2**	20 b	Feb. 3	May 15	100	286	326
1967 Plot 1	20 b	Feb. 2	Feb. 25	23	428	469
Plot 1	10 b	Feb. 25	May 2	66	450	612
Plot 1	23 b	May 2	May 19	17	606	633
Plot 2	6 b	April 10	May 19	39	566	630
Plot 3	15 b	Feb. 2	Feb. 25	23	438	503
Plot 3	25 b	Feb. 25	May 2	66	498	602
Plot 3	12 b	May 2	May 19	17	602	638
Plot 4	77 b	Nov. 20	Nov. 29	9	556	548
1968 Plot 1	25 b	March 1	May 3	62	438	527
Plot 2	10 b	March 1	May 3	62	450	545
Plot 3	25 b	March 1	May 3	62	418	531
Plot 4	30 b	April 3	May 3	30	503	552

Footnote: a = replacement heifers, b = steers and c = mixed

* Includes winter grazing from November 11 to December 31, 1965

** Weights estimated

Grazing Results - Table #2

Plot #1 (45 Converted Acres)

Year	Total Production		Production/Acre	
	Pounds Beef	A.U.M.'s	Pounds Beef	A.U.M.'s
1962	2,600	27.6	57.8	.61
1963	3,350	47.5	74.4	1.06
1964	2,020	38.2	44.9	.85
1965	3,620	51.0	80.4	1.13
1966	630	59.5	14.0	1.32
1967	3,050	21.7	67.8	.48
1968	2,230	24.9	49.6	.55
	<u>17,500</u>	<u>270.4</u>	<u>388.9</u>	<u>6.00</u>

Plot #2 (50 Converted Acres)

1962	1,600	21.2	32.0	.42
1963	1,970	28.8	39.4	.58
1964	1,470	24.6	29.4	.49
1965	3,330	38.8	66.6	.78
1966	800	20.2	16.0	.40
1967	390	4.7	7.8	.09
1968	950	10.3	19.0	.27
	<u>10,510</u>	<u>148.6</u>	<u>210.2</u>	<u>3.03</u>

Plot #3 (25 Converted Acres)*

1967	2,963	29.4	118	1.2
1968	2,820	24.6	83.0	1.0
	<u>5,783</u>	<u>54.0</u>	<u>201.0</u>	<u>2.2</u>

Plot #4 (50 Converted Acres 1967 - 35 Converted Acres 1968)

1967	- 630	12.8	-12.6	.3
1968	730	7.9	20.8	.2
	<u>100</u>	<u>20.7</u>	<u>8.2</u>	<u>.5</u>

* Calculated net gains were based on actual acreage converted. Since 9 acres of Plot #3 were grassland prior to conversion, the total effective grassland area in Plot #3 is 34 acres. Assuming equal productivity of both converted and original grassland the total gains were reduced by 9/34ths.

Investment - Returns - Table #3

	Year	Improvement Cost/Acre	Estimated Return/Acre*	Percent Recovered on Investment
Plot #1	1962	\$39.91	\$7.06	17.7
	1963	—	9.24	40.7
	1964	9.34	3.92	41.2
	1965	—	9.75	60.7
	1966	—	1.69	64.3
	1967	9.63	8.23	67.7
	1968	—	6.02	77.9
		<u>58.88</u>	<u>45.91</u>	
Plot #2	1962	31.77	3.88	12.2
	1963	—	4.78	27.2
	1964	—	2.56	35.3
	1965	—	8.07	60.8
	1966	—	1.94	66.8
	1967	—	.95	69.7
	1968	—	2.30	77.2
		<u>31.77</u>	<u>24.48</u>	
Plot #3	1967	79.79	14.83	18.6
	1968	8.05	10.38	28.3
		<u>87.84</u>	<u>25.21</u>	
Plot #4	No significant returns because of inability to conduct grazing trials properly.			

* Return = 3% production weight x average price

(\$12.50/cwt - 1962, 1963, 1965 and 1966
9.00/cwt - 1964)

Itemized Chargeable Costs on Ranchita Project
Based on Actual Expenditures for Materials, Equipment & Labor*

	Plot #1 (45 Converted Acres)		Plot #2 (50 Converted Acres)	
Brush Crushing	Feb 1960	47 acres @ 4.37=205.39	Feb 1960	48 acres @ 4.37=209.76
Fire Line Construction	Feb 1960	54 acres @ 1.48= 79.92	Feb 1960	65 acres @ 1.48= 96.20
Oak Tree Treatment		--	Feb 1960	155 each @ .0= 15.17
Oak Tree Removal (Bulldozing)		--		--
Brush Disking #1		--		--
Brush Disking #2		--		--
Burning	Oct 1960	54 acres @ 1.92=103.68	Oct 1960	65 acres @ 1.92=124.80
Drill Seeding	Nov 1960	24 acres @14.38=345.12	Nov 1960	10 acres @14.38=143.80
Manual Seeding	Nov 1960	15 acres @ 7.57=113.55	Nov 1960	19 acres @ 7.57=143.83
Herbicide Spraying	May 1961	50 acres @ 9.57=478.50	May 1961	60 acres @ 9.57=574.20
Follow-up Spraying #1	May 1962	39 acres @ 3.67=143.13	May 1962	29 acres @ 3.67=106.43
Follow-up Spraying #2	Apr 1964	32 acres @ 3.61=115.45		--
Follow-up Spraying #3	May 1967	40 acres @ 5.83=233.25		--
Legume Over-seeding	Dec 1961	40 acres @ 5.47=218.80	Dec 1961	29 acres @ 5.47=158.63
Erosion Check Dams	Dec 1961	7 each @ 9.30= 65.10	Dec 1961	1 each @ 9.30= 9.30
Cleaning Check Dams	Dec 1962	7 each @ 6.12= 42.84	Dec 1962	1 each @ 6.12= 6.12
Fertilization #1	Dec 1964	32 acres @ 9.53=304.91		--
Fertilization #2	Nov 1966 & Jan 1967	20 acres @10.00=200.00		--
TOTAL COSTS		\$2,649.64		\$1,588.24
AVERAGE COST PER ACRE		\$58.88		\$31.77

* Equipment & labor costs based on CDF reimbursement rates; AGC rates used when CDF rates could not be applied.

Itemized Chargeable Costs on Ranchita Project
Based on Actual Expenditures for Materials, Equipment & Labor *

	Plot #3 (25 Converted Acres)	Plot #4 (50 Converted Acres)
Brush Crushing	---	Jun 1966 26 acres @ 20.23 = 525.96
Fire Line Construction	Oct 1965 25 acres @ 2.52 = \$63.12	Oct 1966 50 acres @ .88 = 44.16
Oak Tree Treatment	---	---
Oak Tree Removal (Bulldozing)	---	Jun 1966 50 acres @ 16.66 = 832.77
Brush Disking (First)	May 1965 25 acres @ 20.26 = 506.40	Jun 1966 24 acres @ 24.31 = 583.35
Brush Disking (Second)	Oct 1965 25 acres @ 18.78 = 469.50	Jan 1967 24 acres @ 11.29 = 270.99
Burning	Oct 1965 25 acres @ 2.84 = 71.12	Oct 1966 50 acres @ 3.70 = 184.88
Drill Seeding	Oct 1965 25 acres @ 12.66 = 316.47	Jan 1967 24 acres @ 11.78 = 282.72
Manual Seeding	---	Nov 1966 26 acres @ 4.91 = 127.66
Herbicide Spraying	May 1967 25 acres @ 8.78 = 218.50	May 1968 10 acres @ 12.34 = 123.42
Follow-up Spraying (First)	May 1968 25 acres @ 8.05 = 201.21	---
Follow-up Spraying (Second)	---	---
Legume Over-seeding	---	---
Erosion Check Dams	---	Jul 1966 3 each @ 14.74 = 44.22
Cleaning Check Dams	---	Nov 1967 2 each @ 13.79 = 27.59
Fertilization (First)	Nov 1966 28 acres @ 12.49 = 349.63	Nov 1966 & Jan 1967 24 acres @ 17.38 = 417.20
Fertilization (Second)	---	---
TOTAL Costs	\$ 2,195.95	\$ 3,114.92
AVERAGE Cost per Acre	\$ 87.84	\$ 69.30

* Equipment & labor costs based on CDF reimbursement rates; AGC rates used when CDF rates could not be applied