COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
U.S. Department of Agriculture and the University of California cooperating

PROGRESS REPORT

MARIPOSA County

Name of Project Range Improvement

PROJECT NUMBER: State 4076 County 3

REPORT PREPARED BY John Anderson
Farm Advisor

DATE December 15, 1959

Are project and progress reports to continue? Yes ______ No ______.

I. PROCEDURE USED: Procedures used will be outlined according to Objectives and Goals of this project as reported in Project Addition January 11, 1958.

Objectives (1), (2), and (3) were accomplished by use of meetings where discussion was stimulated not only among rancher members but cooperating agencies such as California Division of Forestry.

Objective (4) (seek knowledge of best range plant species), has been worked on continuously by observing some six variety trials, numerous independent seedings and six hybrid grass plots.

Objective (5), (determine benefits of range fertilization), the procedure used was to observe five exploratory plots and six field trials, one of which was measured by lamb gains for two years.

Objective (6), (study chemical brush control). Some five field trials have been observed.

Goals listed under Objectives on Project Addition of Jan. 11, 1957 have all been reached and surpassed.

III. CONCLUSIONS: Objectives (1), (2), and (3): Although great progress has been made these objectives must be continuing ones and efforts constantly put forth on them.

Objective (4):

(a) there is need to take the best of perennials so far tried and do a complete job with them following every rule known which will invite success. This will include elimination of native competition, thorough seed bed preparation, planting at proper depth with thorough coverage, proper grazing practices, and use of fertilizer. So far, perennial grasses have not been proven for Mariposa County but we cannot yet say it is impossible until all the above are done.

(continued on attached sheet)

II. RESULTS: The results on Objectives (1), (2), and (3) are best described by the attached county circular. This publication shows how one Range Improvement Association, in cooperation with farm advisor and California Division of Forestry, has learned of above objectives and I believe shows solid progress.

Results on Objective (4) are: perennial grasses as handled to date have not shown to be worthwhile. Excellent stands were seen in good ash spots for one year only then rapidly declined to very few scattered plants. Smilo and Harding grass are the best. In all variety plots all species and strains planted have disappeared after three years even where protected from grazing. However, no elimination of native competition was accomplished in variety plots. Annual legumes behave rather radically growing adequately only where fertilized with gypsum or sulfur compounds and even then not consistently from year to year. Certain perennial grasses are capable of maintaining themselves when first planted where no competition exists and where ash has given fertilizer effect. Such grasses are Harding, Smilo, Orchard and various experimental hybrid orchard grasses. However, plants from original plantings are only ones which maintain themselves. There has been no natural spread from seed produced.

(continued on attached sheet)

SIGNATURE John Anderson
Farm Advisor

Make sufficient copies of this report to supply one to each signer of the project or project addition.

Project Number: State 4076 County 3

II. RESULTS: (continued)

Results on Objective (5) are: range fertilization, where measured by lamb gains, has paid off in dollars and cents. Increased growth in observation plots in all cases indicates same. Ammonium sulfate at 300 pounds per acre has been the proven material.

Results on Objective (6) are: chemical control of brush can be successful.

III. CONCLUSIONS (continued)

(b) annual legumes show promise but should be tried by each individual rancher in small area with and without fertilizer.

(c) Smilo, Orchard and Harding grass are the best of perennial grasses where tests have been made.

Objective (5):

(a) range fertilization can be successful.

(b) range fertilization should be tried first in small experimental way by individual ranchers unless soils can be identified as same where fertilization paid off.

(c) every opportunity should be taken to get ranchers to use this practice. It would appear this practice can be the factor to put marginal range operations into the successful category.

Objective (6):

(a) many brush species can be controlled by chemicals.

(b) chemical control is not economical in most cases.

(c) where there is interest in controlling brush in spite of economics the state recommendations are adequate.

WHIPPLE TEST - Mariposa County

John Anderson - Farm Advisor

This test, in which sheep are used to evaluate results, was initiated in the 1957 season. The areas selected were two adjacent fields of nearly open oak-grass woodland in the Sierra foothills some 25 miles southeast of Mariposa at an elevation of 1500 feet. The soil was a residual one formed on granite - probably of the Vista series.

Vegetation was primarily native annual grasses and clovers, though some improved annual clovers had been sown. Some years earlier excess brush had been removed by control burning.

Three hundred pounds of ammonium sulfate per acre were applied in late November, 1956, to a 30-acre field. Adjacent lands had shown striking responses to sulfur on legume growth, with no response to added phosphorus. Soils tests had shown high phosphorus status. An adjacent 36-acre field was used as control.

Fields were first stocked with ewes and lambs on December 18, 1956. Supplement was provided until there was ample green feed. Additional animals were added to the fertilized field as the feed developed. All animals entering the fields were weighed and records made of weights at time of removal for sale or at the termination of the test on July 27.

The average daily gain of lambs and ewes was substantially greater on the fertilized field. The total meat production was increased from 33 to 130 pounds per acre by treatment.

The results of this test have been evaluated on the basis of income produced from the two fields. Actual prices received for the fat lambs from each field are entered in this calculation. Feeder lambs not sold at termination date of this test were evaluated at 18 cents a pound. Ewe gains were calculated at 5 cents per pound. The summation of these figures shows that the gross income per acre was increased from $8 to $34 an acre by fertilization. After deducting the cost of supplement fed to animals in each field and the cost of fertilizer applied, there remains a profit of $16 an acre as a result of fertilization.

The results of this test point out the potential of range fertilization in this area.

Since both nitrogen and sulfur were deficient, ammonium sulfate - a material containing both nutrients - was particularly effective. Other tests in the same granitic foothil soils have shown that grasses respond spectacularly to nitrogen plus sulfur combinations, but make relatively little response from either nutrient alone. It is anticipated that increased clover growth may be expected on a soil such as this from the residual effects of the sulfur provided by the ammonium sulfate.

The second test also using sheep to evaluate results was conducted December 10, 1957 to April 19, 1958 during a very wet winter.

Using the same fields but applying only 200 pounds to the acre of Ammonium sulfate to the same field fertilized before,a much smaller profit was realized from fertilization.

However, the results did point out that evidently there was no carry-over of fertilizer and that 200 pounds is not as good as 300 pounds.

WHIPPLE TEST - Mariposa County

December 18, 1956 - July 27, 1957 - 221 Days

I. TREATMENTS

Nutrients/Acre	None	N_{62}
Materials/Acre	---	300 Am. Sulfate
Field Size	36	30

II. STOCKING AND GRAZING

Lamb days/Acre	59.6	143.0
Ewe days/Acre	91.0	194.0

III. WEIGHT GAINS

Average Daily Gain - Lambs	.46	.76
" " " - Ewes	.06	.11
Meat produced/Acre		
Lamb gains/Acre	27.4	108.8
Ewe gains/Acre	5.8	21.3
	33.2	130.0

IV. EVALUATION

Income/Acre		
Fat Lambs @ 21¢ Control	$6.46	
" " @ 22¢ Fertilized		$27.07
Feeder Lambs @ 18¢	1.36	6.00
Ewe gains @ 5¢	.29	1.09
Total	$8.11	$34.16
Less Cost of Supplement Feed	.35	.68
	$7.76	$33.48
Gain due to Fertilization		$25.72
Less Fertilizer cost		7.88
" materials application		1.75
Profit/Acre from fertilization		$16.09

WHIPPLE TEST - Mariposa County

December 10, 1957 - April 19, 1958 - 130 Days

I. TREATMENTS

Nutrients/Acre	None	N_{41}
Material/Acre	—	200 lbs. Am. Sulfate
Field Size	36 acres	30 acres

II. STOCKING AND GRAZING

Lamb days/acre	54.2	177.7
Ewe days/acre	50.6	173.3

III. WEIGHT GAINS

Average Daily Gain - Lambs	.46	.41
" " " - Ewes	.12	.22
Meat produced/acre		
Lamb gains/acre	25.00	73.47
Ewe gains/acre	5.97	38.50

IV. INCOME/ACRE

Lambs @ 20.75¢	$ 5.19	15.25
Ewe gains @ 5¢	.30	1.93
	$ 5.49	17.18
		5.49
Gain due to Fertilization		11.69
Less Fertilizer Cost		6.00
		5.69
Less cost of application		1.75
Profit/acre from Fertilization		$ 3.94