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COOPERATIVE EXTENSION WORK IN AGRICULTURE AND HOME ECONOMICS
STATE OF CALIFORNIA

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PROGRESS REPORT OF 1959 RANGE FERTILIZATION TRIALS

Location of Demonstration Plots:

- A. Gorman Range - O. Hovden, D. Ralphs, C. Hartley
- B. Newhall Land and Farming Company Range
- C. Calabasas-Agoura Range

OBSERVATIONS AND RESULTS:

A. Gorman Range

Due to lack of information on the fertility level of range land in the area and the need for increased forage production, a fertilizer element exploratory plot was established for the 1957-58 season. Nitrogen, phosphorus, and sulfur were applied on D. Ralphs' range, west of the school at Gorman. With a season of near average rainfall, an excellent response was obtained from nitrogen and nitrogen plus phosphorus. Sulfur did not stimulate yields by itself or in combination with other elements. There was enough favorable evidence to warrant additional work.

In December 1958, fertilizer rate plots were established on three different ranches. The various treatments and results are shown in table 1, under low rainfall conditions, 5".

Table 1. Observation Results of Fertilizer Plots in Gorman Area - 1958-59

Location*	Fertilizer Applied	Results
Ranches 1, 3	30 lbs. N/acre	yields not quite doubled
Ranch 2	60 lbs. N/acre	yields doubled
Ranches 1, 2, 3	80 lbs. N/acre	yields increased 3 to 4 times
" 1, 2, 3	40 lbs. phosphorus/acre	no response
" 1, 2, 3	80 lbs. " "	" "
" 1, 2, 3	70 lbs. sulfur/acre	" "
" 1, 3	30 lbs. N + 40 lbs. P ₂ O ₅	no better than 30 lbs. N
" 1, 3	30 lbs. N + 80 lbs. P ₂ O ₅	" " " " " "
Ranch 2	60 lbs. N + 40 lbs. P ₂ O ₅	" " " 60 " "
" 2	60 lbs. N + 80 lbs. P ₂ O ₅	" " " " " "
Ranches 1, 2, 3	80 lbs. N + 40 lbs. P ₂ O ₅	" " " 80 " "
" 1, 2, 3**	80 lbs. N + 80 lbs. P ₂ O ₅	(small response on 1 plot** (no better than 80 lbs. N
" 1, 2, 3	80 lbs. N + 80 lbs. P ₂ O ₅ + 70 lbs. sulfur	no better than 80 lbs. N
" 1, 2, 3	40 lbs. P ₂ O ₅ + 70 lbs. sulfur	no response

*Location: Ranch 1 - D. Ralphs, 2 miles east of Gorman
Ranch 2 - O. Hovden, 6 miles east of Gorman
**Ranch 3 - C. Hartley, west of Lebec

Results: Results are reported from visual observations because of very short growth. Too much dry and old forage present would have influenced results from clipping and weighing. Forage production was not sufficient to pay for treatments, primarily due to lack of rainfall. The response from various treatments is important, however, because it shows which elements to suggest for application.

SUMMARY: Sulfur did not stimulate additional growth when applied singly or in combination with other elements.

Nitrogen applied at the rate of 30 lbs. to the acre did not quite double the growth over no treatment. Eighty pounds of nitrogen per acre produced three to four times more growth over the control, but there was not enough yield to pay for the application. Sixty pounds of nitrogen per acre produced amounts between those of the 30 and 80 pound rates.

Phosphorus alone did not give a response, and there was very slight evidence of a nitrogen plus phosphorus response in the 1958-59 season. However, a good response was obtained the previous year from nitrogen plus phosphorus. This was possibly due to more favorable moisture conditions.

From the results obtained to date, the application of from 60 to 80 lbs. of nitrogen per acre can be suggested. Additional work is necessary under near average rainfall conditions before the practice of range fertilization can be recommended in the Gorman area.

B. Newhall Land and Farming Company Range - Newhall

The results from three years of test work in this area show that beef production can be increased three times with the application of 60 lbs. of nitrogen per acre. The profits per acre, measured by beef gains per acre, due to range fertilization have averaged a little over two dollars for the past three years. The rainfall was 10", 24", and 8", respectively. During the first two years of the project, there was not enough cattle for the amount of grass produced. It was estimated that profits per acre would have averaged near five dollars if the stocking rate had been increased. The warmer weather, additional rainfall, and longer growing season can account for the good results.

The application of phosphorus and sulfur did not increase production. Also of importance, it was noted that lower rates of nitrogen, 30-40 lbs. per acre, failed to increase production substantially.

C. Calabasas-Agoura Range - (Roy Morrison Ranch)

Initial test plot work was established this season to measure the value of range fertilization in the area. A test to measure the pounds of beef produced per acre was included. The results of the grazing test are shown in table 2. The average rainfall was 9".

Table 2. Results of Grazing Test on Fertilized Range (Morrison Ranch)

Conditions	Test	Control
Number of acres	16 acres	80 acres
Number of animals	16 head	40 head
Length of grazing period	31 days	31 days
Fertilizer applied (urea - 46% N)	65 lbs.N/acre	0
Average daily gain per head	2.0 lbs.	1.66 lbs.
Total gain	992 lbs.	2058 lbs.
Gain per acre	66.1 lbs.	25.7 lbs.
Gain due to fertilization	40.4 lbs.	
Value of additional gain @ \$28.50/100 lbs.	\$11.51	
Cost of fertilizer @ \$119/ton	\$ 8.45	
Cost of application per acre	\$ 1.00	
Profit due to fertilization*	\$ 2.06	

*The amount of carryover feed indicated that forage yield was trebled due to fertilization. Twenty-one cows and calves were turned in the fertilized field and grazed for three weeks after the steers were taken out. The rental value for this period amounted to \$44.00 or \$2.75 per acre.

It has been experienced on all the plots that cattle prefer grazing on areas which have been fertilized, indicating the feed is more palatable. The observation was further substantiated on the Morrison Ranch. For Roy it proved to be a good method of getting cattle to graze the top slopes at the far end of the range.

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