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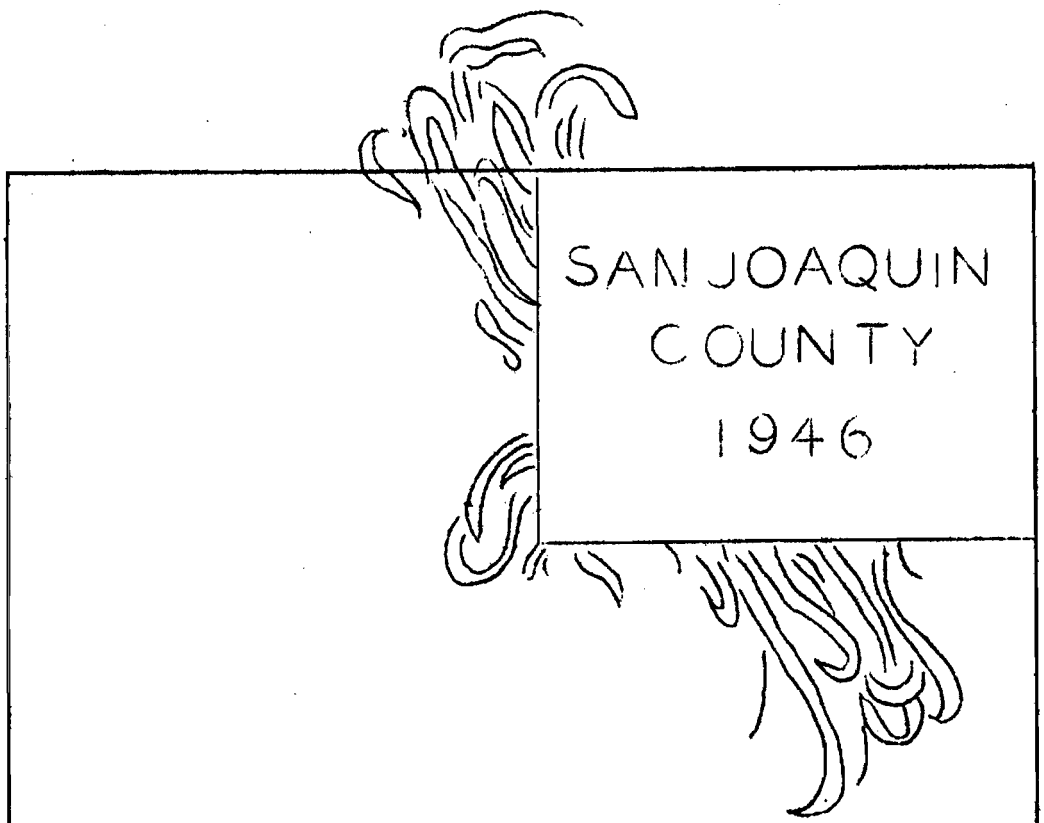

THIRD ANNUAL

PASTURE MANAGEMENT

COST STUDY

COMPILED BY

AGRICULTURAL EXTENSION SERVICE

UNIVERSITY OF CALIFORNIA

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INTRODUCTION

Irrigated pasture acreage in San Joaquin County has again showed an increase. In 1945 the acreage in the county was 30,313 acres while in 1946 this acreage had risen to 37,585 acres. This increased acreage again shows the popularity of this roughage with the livestock man. The greatest increase in acreage has occurred during the past four years when, because of other increased costs in the livestock business, it became necessary for livestock men to use this form of roughage in order to secure greater returns. Let us look at some of the reasons why irrigated pastures will aid in bringing higher returns.

(1) Less labor is involved in producing this roughage. Livestock does the harvesting.

(2) It is adapted to the poorer soils where other irrigable crops cannot be grown profitably.

(3) It is a source of high quality roughage for lamb feeding.

(4) In feeding beef it supplies palatable and nutritious roughage for economical gains.

(5) Because of its nutritive values and palatability it is invaluable in maintaining milk production.

(6) It is high in carotene which is the precursor of Vitamin A.

(7) Under favorable conditions it is the cheapest source of livestock feed produced on irrigated land.

(8) Its high nutritional advantage of high protein-low fiber requires a minimum of supplemental feeding.

The compilation of this material is part of the plan of the Agricultural Extension Service to develop more local information on the relationship between cultural practises, costs and carrying capacities of representative irrigated pastures.

This report presents a summary of the results of the 1946 study which is the third year of the study together with 1944 and 1945 averages all records.

Seven producers with a total of 270.6 acres cooperated this past year in keeping records of numbers of livestock pastured, supplemental feed used while livestock was on pasture, as well as labor and other costs involved in care and maintenance of the pasture.

All of the pastures in the 1946 study were used primarily by dairy stock heifers and calves. One cooperator pastured swine. Wide variations between individual pastures in costs and carrying capacities will be noted in Tables I and II. Some of these variations show that there is room for improvement in management practises which will lead to a more economical use of pastures which will in return bring a greater farm income.

Successful management practises involve not only good cultural care in fertilization, weed control, rotation grazing and other management practises, but also proper supplemental feeding and a balance between the available feed and the kind and number of livestock pastured.

It is one of the purposes of this study to attempt to develop the most desirable methods and practises for given sets of soil, water and use conditions. The acreage in irrigated pasture in San Joaquin County is still on the increase and this crop certainly has a definite part in the livestock industry. However, land values are still high, perhaps the peak has been reached, but nevertheless values are high. Under these circumstances, proper management practises such as fertilization, irrigation, weed control and well managed grazing are the factors that are going to tell the story between success and failure. Before buying, investigate those factors such as soil type, and water source which can spell the difference between success and failure.

MEASUREMENT OF FEED FROM PASTURE

In order to determine and compare the amount of feed obtained from pastures where different kinds of ages of livestock are fed, a unit of measurement common to all is necessary. The unit used in this study, as well as other similar county studies, is called an animal unit month (A.U.M.) which is considered to be equivalent to the total amount of feed which would be consumed per month by a mature beef animal or a dairy cow producing 300 lbs. of butterfat per year. This is considered to be equivalent to approximately 400 lbs. of total digestible nutrients (T.D.N.). All livestock utilizing the pastures are converted to this basis, depending upon their probable feed consumption. For example, dairy cows giving 400 lbs. of butterfat per year are rated at 1.33 animal units; lambs 70 to 90 lbs. at .15; and mature sheep at .20 of an animal unit.

Consideration is given to supplementary feed that was fed to livestock while they were on pasture in calculating pasture use on a full-feed basis. Ten head of dairy cows, for instance, getting one-half of their feed from other sources, would be the same as five head obtaining all of their feed from pasture, and the animal unit months figured accordingly on the basis of their average milk and butterfat production.

DISCUSSION OF TABLES

Table I presents a comparison of individual pasture costs per acre and per animal unit month, as well as feed replacement values for the 1946 season. Averages of all records this year, as well as for all records in the 1944 and 1945 studies are given on the right of the table. Records are arranged from left to right in order of increasing total costs per animal unit month, since this is the basis of comparing efficiency of production.

TABLE I

Costs per A.U.M. are determined by the relationship between the number of A.U.M. of feed obtained and the cost per acre. Higher carrying capacities do not always reflect low costs per A.U.M. and conversely lower carrying capacities do not always mean higher costs per A.U.M. In this year of the study, however, pasture #7 having the lowest cost of feed, averaged the highest total pasture use of any in the study with a total of 16.6 A.U.M. per acre. The costs per acre on this pasture were slightly under the average of all records, resulting in a total cost per A.U.M. of $2.45. Pasture #11 obtained less feed per acre than any of the other pastures but had lower costs per A.U.M. than either pastures #12 and #10 due to the lower costs per acre. Pasture #10 had the highest costs per acre as well as the highest cost per A.U.M. On the average the seven records in this year's study showed carrying capacities of 9.7 A.U.M. of feed obtained. This figure was the same as the average of 1945. This past year the average cost per acre was $33.61, compared to $35.49 in the previous year. Total cost per A.U.M., therefore, averaged slightly less than the costs of 1945.

The feed replacement value of pasture is shown in terms of total digestible nutrients obtained. This is calculated by multiplying the number of A.U.M. per acre times 400, as explained under "Measurement of Feed from Pasture." Pastures in this year's study averaged 3,880 lbs. of T.D.N. per acre, which was also the same as the 1945 study. Four thousand pounds of T.D.N. per acre would be equivalent to approximately 4 tons of alfalfa hay. The cost per hundred pounds of T.D.N. produced is obtained by dividing the total cost per acre by the total T.D.N's. This averaged 86 cents in 1946, or an equivalent of $8.60 per ton for alfalfa hay, as compared to 91 cents and $9.10 for alfalfa in 1944. The value of the feed obtained from pasture in 1946 was equivalent to barley at 68 cents per hundredweight and in 1945, 72 cents per hundredweight. Except for pastures #12 and #10 all pastures in the study showed relatively cheap feeds as compared to current prices of hay and grain.

TABLE I - SUMMARY OF COSTS PER ACRE AND PER ANIMAL UNIT MONTH & FEED REPLACEMENT VALUE - INDIVIDUAL PASTURES-1946

Serial Number	7	8	3	5	11	12	10	Aver. 1946	Aver. 1945	Aver. 1944
Age of pasture stand, yrs.	6	4	7	3	11	3	3	5	6	-
Total An. Unit Mo. feed per A.	16.6	12.5	8.1	8.3	5.9	6.3	7.1	9.7	9.7	10.1
Costs per Acre										
Fertilizing labor	$3.46	$1.10	$2.34	$ -	$ -	$4.73	$ .55	$1.35	$2.60	$ .79
Clipping and mowing	2.50	.32	-	1.08	2.03	1.82	1.17	1.00	.15	.08
Irrig. labor & ditch work	4.79	9.78	2.65	4.87	6.28	5.71	14.65	6.98	5.86	4.57
Other labor	1.79	.37	-	-	-	-	-	.29	1.23	.38
Total labor	12.54	11.57	4.99	5.95	8.31	12.27	16.37	9.62	9.84	5.82
Irrigation power or water	5.40	5.40	6.60	5.50	6.60	5.50	3.86	5.68	5.92	4.10
Fertilizer material	9.01	2.33	2.84	-	-	8.36	7.62	3.18	5.77	1.93
Miscellaneous material	-	-	-	-	-	-	-	-	.24	.29
Total material	14.41	7.73	9.44	5.50	6.60	13.86	11.48	8.87	11.93	6.32
General expense	1.35	.96	.72	.57	.74	1.31	1.39	.93	1.09	.61
County taxes	1.75	1.50	1.34	1.81	1.90	2.17	2.26	1.70	1.40	1.00
Other cash overhead	-	-	-	-	-	-	-	-	-	-
Total cash overhead	3.10	2.46	2.06	2.38	2.64	3.48	3.65	2.63	2.49	1.61
Total cash costs	30.05	21.76	16.49	13.83	17.55	29.61	31.50	21.11	24.26	13.75
Depreciation	3.42	2.41	2.00	4.39	4.72	3.10	10.86	3.90	2.99	3.63
Interest	7.16	6.92	7.24	12.63	9.62	10.95	9.18	8.59	8.24	6.60
Total cost per acre	40.63	31.09	25.73	30.85	31.89	43.66	51.54	33.61	35.49	23.98
Costs per An. Unit Month										
Total cash costs	1.81	1.74	2.03	1.66	2.99	4.73	4.47	2.17	2.50	1.37
Cash and Depreciation	2.02	1.93	2.28	2.19	3.80	1.75	6.01	2.57	2.81	1.73
Total costs per An. Unit Month	2.45	2.48	3.17	3.70	5.44	6.97	7.31	3.46	3.66	2.38
Feed replacement value- lbs. T.D.N. per acre	6640	5000	3240	3320	2360	2520	2340	3880	3880	4040
Cost per 100 lbs. T.D.N.	$ .61	$ .62	$ .79	$ .92	$1.36	$1.74	$1.83	$ .86	$ .91	$ .59
Equivalent value hay per ton	6.10	6.20	7.90	9.20	13.60	17.40	18.30	8.60	9.10	5.90
Equivalent value barley per CWT.	.48	.49	.62	.73	1.07	1.37	1.45	.68	.72	.47

TABLE II

Records are arranged in the same order in Table II as explained for Table I. This table shows the distribution of pasture use throughout the year, as well as an analysis of investment overhead costs. Although all pastures this year were used primarily by dairy cows, heifers, and calves, it will be noted that there was some variation in utilization throughout the year. On two of the pastures some feed was obtained every month of the year, whereas pastures #3, #5, #11, #12 and #10 only obtained feed during seven and eight months respectively. Approximately 90% of the total feed obtained from pasture was during the eight-month period, March through October.

The investment figures shown in this table are not intended to be indicative of the amount of capital required for going into the production of irrigated pastures. The values shown in this table are growers' estimates of normal valuations and should not be considered as representative of current prices. The average investment in pasture stand ranged from $10 per acre up to $15 per acre. Current cost of establishing a pasture stand would probably run somewhere near the higher figure (2 times $15) or about $30 per acre.

TABLE II - PASTURE USE BY MONTHS - INVESTMENT AND DEPRECIATION COSTS- INDIVIDUAL PASTURES - 1946

Serial Number	7	8	3	5	11	12	10	Aver. 1946	Aver. 1945	Aver. 1944
Principal kinds of livestock on pasture	Dairy	Dairy	Dairy	Dairy Swine	Dairy	Dairy	Dairy			
Animal Units per A.										
January	.3	.7	-	-	-	-	-	.2	.2	.2
February	-	.8	-	-	-	-	.1	.2	.2	.1
March	1.1	1.0	.3	.1	.7	.8	.1	.6	.6	.6
April	2.0	1.3	.6	1.1	.7	.4	1.3	1.1	1.1	.9
May	1.9	1.4	1.1	1.1	.9	.7	1.3	1.3	1.2	1.3
June	2.0	1.4	1.3	1.3	.9	.9	1.2	1.3	1.2	1.4
July	2.0	1.3	1.3	1.4	.8	1.4	1.2	1.3	1.2	1.4
August	1.8	1.4	1.3	1.1	.6	.8	.9	1.2	1.2	1.3
September	1.8	1.1	1.3	1.1	.6	.8	.7	1.1	1.2	1.3
October	1.9	.9	.9	1.1	.5	.5	.3	.9	.9	1.1
November	1.3	.7	-	-	.2	-	-	.3	.4	.3
December	.5	.5	-	-	-	-	-	.2	.3	.2
Total An. Unit Mo. for year	16.6	12.5	8.1	8.3	5.9	6.3	7.1	9.7	9.7	10.1
Av. An. Units per Mo. (12 mo.)	1.0	1.0	.7	.7	.5	.5	.6	.8	.8	.8
" " " " " (8 mo.)	1.5	1.6	1.0	1.0	.7	.8	.9	1.2	1.2	1.3
Average Investment per A.										
Pasture stand	$10.00	$10.00	$10.00	$12.50	$10.00	$12.00	$15.00	$10.90	$ 9.07	$ 9.49
Fences	3.93	.67	3.53	11.77	3.51	5.45	9.62	4.56	4.22	6.45
Irrigation facilities	4.07	2.67	1.00	3.25	28.86	-	59.07	12.47	8.41	7.06
Other facilities	.18	.13	.25	-	-	1.50	-	.27	.12	.52
Land	125.00	125.00	130.00	225.00	150.00	200.00	100.00	144.27	143.09	108.51
Total Av. Investment per A.	143.18	138.47	144.78	252.52	192.37	218.95	183.69	171.85	164.91	132.03
Interest at 5%	7.16	6.92	7.24	12.63	9.62	10.95	9.18	8.59	8.24	6.60
Depreciation per Acre										
Pasture stand	2.00	2.00	1.33	2.50	1.33	2.40	2.00	1.85	1.46	1.79
Fences	.54	.09	.47	1.57	.47	.55	.96	.57	.55	.85
Irrigation facilities	.81	.27	.15	.32	2.92	-	7.90	1.50	.95	.88
Other facilities	.07	.05	.05	-	-	.15	-	.06	.03	.11
Total Depreciation per Acre	3.42	2.41	2.00	4.39	4.72	3.10	10.86	3.90	2.99	3.63