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IRRIGATED PASTURE
MANAGEMENT STUDY

1946

STANISLAUS COUNTY, CALIFORNIA

Compiled by
THE AGRICULTURAL EXTENSION SERVICE
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UC COOPERATIVE EXTENSION

IRRIGATED PASTURE MANAGEMENT STUDY
STANISLAUS COUNTY, 1946

Introduction

Results of the irrigated pasture management study conducted in Stanislaus County during the 1946 season are summarized in the table of this report. All pastures in the study were utilized in conjunction with dairy enterprises. A total of 315 acres of irrigated pasture was involved in the records kept by the five cooperative dairymen. The study was started for the purpose of developing local data on the various factors influencing efficient pasture production and utilization.

Measurement of Feed from Pasture

In order to determine and compare the amount of feed obtained from pastures where different kinds and 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 200 pounds of butterfat per year. This is considered to be equivalent to approximately 400 pounds 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 pounds of butterfat per year are rated at 1.33 animal units; lambs 70 to 90 pounds 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 TABLE

Records are arranged in the table from left to right in order in increasing total cost per animal unit month (A.U.M.). Cost per A.U.M. depends upon the relationship of costs per acre and total A.U.M's. of feed obtained per acre during the season. Feed from pastures in the study this year ranged from 11.1 A.U.M's. per acre for No. 2 down to 5.3 for No. 5, while total costs per acre varied from \$38.53 for No. 2 down to \$27.35 for No. 5. No. 2 had the highest costs per acre but also showed the most feed obtained, resulting in total cost per A.U.M. practically as low as any pasture in the study. On the other hand, No. 5 with the lowest per acre cost was the least efficient pasture in the study, due to the very low A.U.M's. of feed. All pastures in the study averaged approximately 8 A.U.M's. of feed per acre at a total cost of slightly over \$32, resulting in an average cost of about \$4 per A.U.M.

The feed replacement value of the pastures is shown at the bottom of the table in terms of total digestible nutrients (T.D.N.) obtained. This is calculated by multiplying the number of A.U.M's. per acre times 400, as explained under "Measurement of Feed from Pasture." Thus, the average feed replacement value of all pastures in the study was 7.9 times 400 or 3,160 pounds of T.D.N. per acre. This is equivalent to 3.5 tons of alfalfa hay. The range in individual pastures was from 4,440 T.D.N. per acre or an equivalent of 4.5 tons of hay down to 2,120 T.D.N. or a little over 2 tons of hay.

The cost per 100 pounds of T.D.N. produced is obtained by dividing the total cost per acre by the total T.D.N. This cost averaged \$1.03 for all pastures in the study. The equivalent value of alfalfa hay at such a cost would be \$10.30 per ton and barley would have to sell at 81¢ per cwt. to be as cheap a source of T.D.N. Thus, it is obvious that irrigated pastures can provide very low cost feed in relation to other sources. Although it cannot replace certain functions of concentrates and other types of feeds, it has an important place in profitable dairy and livestock production in the county.

The investment figures shown in the table are not intended to represent the amount of capital required for going into irrigated pasture production under present day conditions. They are set up for the purpose of calculating more or less normal costs for the use of capital in the enterprise, and except for land are based upon one-half of the original cost of such facilities. Land values are growers' estimates of the normal values of the land on which their pastures are planted.

This study indicates that irrigated pasture costs and carrying capacity vary widely between individual producers in the county. The quantity of feed produced and utilized is the most important factor affecting efficient operation. Irrigation, fertilization, and weed control practices as well as the methods of pasturing animals are the principal factors affecting total feed obtained.

Summary of Costs per Acre and per Animal Unit Month
Individual Pastures in Stanislaus County - 1946

Serial number	1	2	3	4	5	Av. all records
Total animal unit mo. of feed per A.	10.3	11.1	8.4	7.8	5.3	7.9
Irrigation labor & ditch work	9.43	6.67	2.27	9.67	6.25	5.55
Other labor - fertilize, clip, etc.	.63	5.31	1.52	2.43	1.43	2.07
Total labor cost per acre	10.06	11.98	3.79	12.10	7.68	7.62
Irrigation power or water cost	.90	1.00	.90	4.00	4.00	2.35
Fertilizer & other mat. costs	--	--	4.42	4.75	3.09	3.66
Total material costs per A.	.90	1.00	5.32	8.75	7.09	6.01
General expense	.55	.65	.46	1.04	.74	.68
County taxes	6.00	6.14	5.15	2.28	.70	3.59
Total cash overhead cost	6.55	6.79	5.61	3.32	1.44	4.27
Total cash and labor costs per A.	17.51	19.77	14.72	24.17	16.21	17.90
Depreciation on pasture stand	2.50	2.00	2.50	2.00	3.00	2.44
Depreciation on fences	.94	.46	.77	.62	.72	.69
Depreciation on irrigation system	.83	.29	.50	.13	.14	.32
Depreciation on other facilities	.08	.05	.05	.05	.05	.05
Total depreciation per acre	4.35	2.80	3.82	2.80	3.91	3.50
Investment in pasture stand	12.50	10.00	12.50	10.00	15.00	12.20
Investment in fences	6.25	4.60	5.77	4.61	3.57	4.90
Investment in irrigation system	5.00	4.35	10.00	.66	.72	5.00
Investment in other facilities	.40	.25	.20	.25	.25	.23
Investment in land	250.00	300.00	250.00	125.00	125.00	196.99
Total average investment per A.	274.15	319.20	278.47	140.51	144.54	219.32
Total interest on av. investment	13.71	15.96	13.92	7.02	7.23	10.97
Total all costs per acre	35.57	38.53	32.46	33.90	27.35	32.37
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<u>Costs per Animal Unit Month</u>						
Total labor	.98	1.08	.45	1.55	1.45	.97
Total material	.09	.09	.63	1.12	1.33	.76
Total cash overhead	.64	.62	.67	.43	.27	.54
Total depreciation	.42	.25	.45	.36	.73	.45
Total interest	1.33	1.44	1.66	.90	1.36	1.39
Total cost per an. unit mo.	3.46	3.48	3.86	4.36	5.14	4.11
Feed replacement value - lbs.						
T.D.N. per acre	4120	4440	3360	3120	2120	3160
Cost per 100 lbs. T.D.N.	\$.87	\$.87	\$.97	\$1.09	\$1.29	\$1.03
Equivalent value of hay per ton	8.70	8.70	9.70	10.90	12.90	10.30
Equivalent value of barley per cwt.	.69	.69	.77	.86	1.02	.81