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VENTURA

LIVESTOCK FARMING
VERSUS
ANNUAL FIELD CROPS
ON DRY LAND IN
VENTURA COUNTY

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The Ventura County Economic Conference held in 1945 in cooperation with the Agricultural Extension Service passed a resolution that a study be made of the "best use of land" that is now farmed to annual dry land crops on the rolling hills and steep slopes of Ventura County.

For many years this land has been farmed to beans and grain. As a result of this, serious soil erosion is taking place and yields are declining in many places almost to the vanishing point. Much of the land is rented from year to year. For several years the Extension Service and the Soil Conservation Service have been working on a program looking toward utilization of this land for grazing rather than for annual cultivated crops. Many tests have been made and certain mixtures of legumes and grasses have been found adaptable to this purpose. Some stockmen have seeded considerable acreage with success.

Is it feasible to seed this land to legume and grass mixtures and utilize it as pasture in the production of livestock? Will it be more profitable in the long run? Following is a preliminary discussion of some of the factors to be considered, which, however, is not to be looked upon as conclusive.

Yield and Income from Annual Crops

Yield and income records were obtained from one large landowner and are typical of this area. In 1942 and 1943 approximately 500 acres were seeded to mixtures of legumes and grasses and for the past three years have been utilized in feeding beef cattle. Table 1 presents the yields and returns from beans and hay on this land prior to seeding to permanent pasture. This table, together with field observations, indicates that the yield from beans probably would average about 5 sacks (100 pounds) per acre, barley for grain 7 sacks, barley and oat hay about 1½ tons (table 2). The landowner might expect a rental income from \$5.00 to \$12.00 per acre, out of which he would have to pay taxes and upkeep.

ANNUAL DRY LAND CROPS vs LIVESTOCK STUDY 1945

TABLE 1. YIELD AND INCOME ANNUAL DRY LAND CROPS
VENTURA COUNTY 1939-42'

Kind of Crops	No. Records	Years Reported	Total Acres	Av. Yield Per Acre Pounds	Av. Price Per Cwt	Total Inc. Per A.	Rental Rate %	Share Rent Lbs.	Rent Inc. per Acre
Blackeye Beans	8	39-42	699	650	\$3.12	\$20.80	20	132	\$ 4.31
Bean Straw				470			35	283	.45
						21.97			4.76
Lg. Lima Beans	2	40-41	166	745	7.17	54.04	20	152	10.87
				1106	.34	33 1/3	283	.45	
						57.85			11.32
Barley Hay	6	39-42	351	1900	.91	17.31	25	736	5.41
Oat Hay	3	39,42	114	2960	.87	25.92	25	741	6.41

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TABLE 2

ESTIMATED YIELDS ANNUAL DRY LAND CROPS
VENTURA COUNTY 1945

Crop	Yield per Acre	
	Range	Average
Blackeye Beans	4 - 10 sacks	6 sacks
Large Lima	4 - 10 sacks	6 sacks
Barley Grain	4 - 10 sacks	7 sacks
Barley Hay	1 - 2 tons	1 $\frac{1}{2}$ tons
Oat Hay	1 - 2 tons	1 $\frac{1}{2}$ tons

Production and Income from Pasture

Tables 3-7 present a statistical summary of six annual pasture records covering a total of 1,492 acres. Three of these records are for three consecutive years on the same land shown in table 3. These records show an average utilization of 3.08 animal unit months of pasture per acre. The animal unit months of pasture per acre shown does not necessarily mean that the total yield was fully utilized. Under better management a greater number of animal unit months of pasture may have been obtained. An animal unit month of pasture is estimated to be the equivalent of 400 pounds of digestible nutrients. This means that 3.08 animal unit months are equivalent to the digestible nutrients in 2,464 pounds of alfalfa hay and 1,579 pounds of barley per acre. Table 4 shows the gross returns per acre at various prices for the equivalent of these feeds.

If we assume that the market value of the pasture is equivalent to that of barley and alfalfa, with barley at \$2.00 per cwt., we would have a gross income of \$31.58 per acre at a total cost of \$8.92, making a net profit of \$22.66 per acre. With alfalfa hay at \$20.00 per ton, we would have a gross income of \$24.64 less cost of \$8.92 or a profit of \$15.72. Comparing this with table 1, it would appear that pasture fully utilized would be far ahead of annual crops in the economy of digestible nutrient production.

Pasture Marketed Through Livestock

Pasture is marketed through livestock. To make full utilization of the feed produced, livestock must be available at the proper time. Feed produced in pasture cannot be packaged and processed and moved to other places to be used. On the other hand, field crops can be packaged and transported to the market place. Therefore, a pasture program necessitates a livestock enterprise to provide a market for the feed produced by the pasture. The owner may rent the pasture for cash or for a share of the pounds of beef produced while stock are on pasture, purchase feeder cattle at time feed is ready for utilization, or keep breeding cows and raise calves and sell them as stockers and feeders. The first two proposals involve considerable uncertainties and are not well adapted to a long time program.

TABLE 3 PASTURE UTILIZATION PER A. U. M. PER ACRE

Serial No.	1943	1944	1945	1945	1945	1945	Average
	1	1	1	2	3	4	
Months	A.U.M.	A.U.M.	A.U.M.	A.U.M.	A.U.M.	A.U.M.	Records
Jan.	.00	.00	.00	.14	.00	.00	.00
Feb.	.00	.19	.00	.26	.00	.00	.07
Mar.	.00	.38	.00	.34	.00	.00	.13
Apr.	.30	.38	.37	.34	.00	.00	.34
May	.31	.38	.56	.34	.00	.87	.42
June	.31	.46	.55	.34	2.13	.87	.45
July	.61	.46	.05	.30	.00	.21	.36
Aug.	.61	.66	.08	.37	1.75	.00	.45
Sept.	.02	.65	.13	.38	.26	.21	.35
Oct.	.28	.33	.08	.37	.00	.00	.23
Nov.	.55	.18	.08	.38	.00	.00	.27
Dec.	.23	.00	.02	.15	.00	.00	.09
Hay*						.30	
Total							
A.U.M. per							
Acres	3.22	4.05	1.92	3.71	4.14	2.48	3.08

* All hay produced is estimated as the equivalent of 2½ animal unit months of pasture per ton.

Statistical Summary

Tables 3 to 7 present a statistical summary of yields, (utilization) and costs per acre and per animal unit month of dryland (seeded) pasture in Ventura County. Table 2 shows the digestible nutrients utilized per acre, assuming one animal unit month of pasture equivalent to 400 pounds of digestible nutrients. This table also shows the equivalent in pounds of average alfalfa, hay and barley and the value at various prices. The animal unit months of pasture per acre shown does not mean necessarily that the total yield was fully utilized. Under different management a greater number of animal unit months of pasture may have been obtained. An animal unit month in this study is, one 1,000 pound animal or the equivalent, grazing for 30 days, maintaining body weight in good condition with no supplemental feed. Note that record No. 1 covers the years 1943-44-45. The other three records are for the year 1945. These data are compiled and calculated from records reported by the cooperators.

TABLE 4 DIGESTIBLE NUTRIENTS PER ACRE AND EQUIVALENT YIELDS AND RETURNS IN ALFALFA & BARLEY

Serial No.	A.U.M. per A.	Dig. Nut. per A.	Equivalent in Alfalfa			Equivalent in Barley					
			# per A.	@ \$10.00	@ \$20.00	@ \$30.00	# per A.	@ \$1.00	@ \$1.50	@ \$2.00	@ \$2.50
1 (43)	3.22	1288	2576	12.88	25.76	38.64	1651	16.51	24.77	33.02	41.28
1 (44)	4.05	1620	3240	16.20	32.40	48.60	2077	20.77	31.16	41.54	51.93
1 (45)	1.92	767	1534	7.67	15.34	23.01	983	9.83	14.74	19.66	24.58
2	3.71	1484	2968	14.84	29.68	44.52	1903	19.03	28.54	38.06	47.57
3	4.14	1656	3312	16.56	33.12	49.68	2123	21.23	31.84	42.46	53.07
4	2.49	996	1992	9.96	19.92	29.88	1277	12.77	19.15	25.54	31.92
Av.											
All	3.08	1232	2464	12.32	24.64	36.96	1579	15.79	23.68	31.58	39.47

TABLE 5 COSTS PER ACRE DRY LAND SEEDED PASTURE

Serial No.	Total No. Acres	Date Planted	Total Labor Costs	Total Material Costs	Cash Overhead Costs	Depre-iation Costs	Int. on Invest. Costs	Total All Costs	COSTS PER ANIMAL UNIT MONTH			
									A.U.M. per Acre Costs	Cash Costs	Int. & Deprec. Costs	Total Costs
1. (43)	475	12-42	.00	.00	2.00	2.86	3.42	8.28	3.22	.62	1.95	2.57
1. (44)	475	12-42	.00	.00	2.00	2.86	3.42	8.28	4.05	.49	1.55	2.04
1. (45)	457	12-42	.92	.00	2.97	2.86	3.42	9.25	1.92	1.06	3.25	4.80
2	40	1-43	1.50	.00	1.19	6.25	4.68	13.62	3.71	.32	2.94	3.66
3	5	1-44	1.15	.00	1.96	4.35	5.71	13.17	4.14	.76	2.43	3.19
4	40.5	12-44	2.50	.59	1.76	2.28	8.08	15.04	2.49	1.94	4.17	6.06
Av. All	1492.5	Dec & Jan	.41	---	1.99	2.94	3.58	8.92	3.08	.77	2.12	2.89

Total cash costs (not including interest and depreciation) averaged \$2.40 per acre, or 77 cents per animal unit month. Adding the charge for interest and depreciation on investment, the total cost averaged \$8.92 per acre and \$2.89 per animal unit month.

TABLE 7 CAPITAL INVESTMENT, OVERHEAD AND OTHER COSTS PER ACRE

Serial No.	Capital Investment per Acre					Int. Chg. per A.	Depre Chg. per A.	Taxes	Gen. Exp.	Mow- ing	Other Cultural
	Land	Pasture	Fences	Other	Total						
1 (43)	50.00	6.00	4.34	7.96	68.30	3.42	2.86	2.00	.00	.00	.00
1 (44)	50.00	6.00	4.34	7.96	68.30	3.42	2.86	2.00	.00	.00	.00
1 (45)	50.00	6.00	4.34	7.96	68.30	3.42	2.86	2.00	.05	.81	.09
2	75.00	12.50	6.25	.00	93.75	4.68	6.25	1.11	.08	1.50	.00
3	100.00	7.50	6.75	.00	114.25	5.71	4.35	1.90	.06	.00	1.15
4	150.00	6.17	4.94	.31	161.42	8.08	2.28	1.59	.16	2.33	.18
Av. All	53.55	6.18	4.41	7.75	71.66	3.58	2.94	1.96	.06	---	---

The capital investment in land is reported at what may be considered as the market price. Other items are listed at one-half the original cost. Interest charge is calculated at 5% and the depreciation charge is calculated by dividing the number of years of useful life into the original cost.

Beef Cattle Production and Production Costs

What could be expected from a beef cattle enterprise of proper size and under good management? A 100-cow unit is considered about the right size for efficient management and to provide an adequate income for a farm family. Tables 8 and 9 present an analysis of what may be expected in production, inputs, and costs for 100-cow beef enterprise. These calculations show that 69,940 pounds of beef could be produced annually for market. Gross income would depend on market price--at 7½ cents per pound \$5,245, at 10 cents \$6,994, and at 15 cents \$10,491.

TABLE 8 ANNUAL PRODUCTION AND DISTRIBUTION FOR BEEF CATTLE ENTERPRISES OF 100 BREEDING COWS CALVES MARKETED AT 18 MO. WEIGHT 800 POUNDS AV.

	Av. No. Animals During Year	Av. No. An. Units During Year	No. Added	No. Transferred	No. Died	No. Animal for Sale	Pounds Beef Available for Sale
Breeding Cows and Pred Heifers	100.0	100.0		20.0	3.0	17.0	18,700
Bulls	4.0	4.0	1.0		.1	.8	1,200
Calves Born			87.0		2.6		
Calves up 12 Mo.	85.7	42.8			.6		
Yearlings 12-18 Mo	42.7	32.0		84.4	.6	63.8	51,400
Heifers 18-24 Mo	10.0	10.0					
Total & Average	242.4	188.8	88.0	104.4	6.61	81.6	70,940
						Less Bull Pur.	1,000
						Net Sales	69,940

TABLE 9 INPUTS OF FEED, LABOR AND CASH COSTS PER COW, A.U. AND CWT BEEF PRODUCED

	Quantities of Feed Months or Pounds			Charges per Unit	Costs--Dollars		
	Per Cow	Per A. U.	Per Cwt		Per Cow	Per A.U.	Per Cwt
Pasture 80%	18.1	9.6	2.5	1.00	18.12	9.60	2.60
Hay 10%	1812	960	259	.75	13.59	7.20	1.94
Concentrates 10%	1132	600	162	1.50	16.98	9.00	2.43
Total Feed					48.69	25.80	6.97
Labor	12 hrs.	6.7	1.7	.75	9.00	5.02	1.27
Total & Feed					57.69	30.82	8.24
Gen. Exp.					2.88	1.54	.41
Taxes & Misc.					2.19	1.23	.31
Total Cash Costs					62.76	33.59	8.96

Costs and Inputs of Feed, Labor, and Capital

How much land would be necessary to produce the feed requirements? Assuming that 30 per cent of the feed required is supplied with pasture, 10 per cent with hay, and 10 per cent by grains, table 9 presents the probable requirements of feed, labor, and other cash costs. This table shows that 1,812 animal unit months of pasture, 90 tons of hay, and 112,800 pounds of grain would be needed to approximate the feed requirements. Table 10 illustrates how this information may be applied to a given tract of land to determine the acreage

necessary for a 100-cow enterprise. This particular example shows that a track of 1,113 acres, with 300 acres seeded to permanent pasture, 612 acres of native pasture, 60 acres of grain hay, and 141 acres of barley for grain would meet the feed requirements.

TABLE 10 DETERMINATION OF ACREAGE REQUIRED TO PRODUCE FEED FOR 100 COW BEEF ENTERPRISE

Land Acres	Utilization	Yield	Feed Produced
300	Seeded to Legumes & Grasses	4 A.U.M. per A.	1200 A. U. M.
612	Native pasture	1 " " " " "	612 A. U. M.
	Total Pasture		1812 A. U. M.
60	Grain Hay	1½ Tons per A.	90 Tons
141	Barley for Grain	8 Sacks " "	1128 Sacks
1113	Total Acres Necessary to Produce Feed.		

Labor Requirements

Beef cattle enterprise studies indicate that about 12.4 man hours of labor are required per cow per year or 1,240 man hours for the 100 cows. This would indicate that probably two full time men, owner and one hired man or grown son, with some contract work, would be required to care for the stock and do the farming operations.

Capital Investment

Table 11 presents a method of calculating the capital investment and capital costs. It appears that the total capital investment in a 100-cow beef enterprise, including land, improvements, equipment, and livestock, would range from \$35,000 to \$60,000.

TABLE 11 ESTIMATED CAPITAL INVESTMENT AND CAPITAL COSTS IN LAND, IMPROVEMENTS AND LIVESTOCK NECESSARY FOR A 100 COW BEEF ENTERPRISE

	Approximate Investment	Int. on Investment	Depreciation Charges
Livestock 188.8 A.U. @ 75.00	\$14,000.00	\$560.00	
Bldg. & Improve. ½ Orig. Cost	3,500.00	140.00	\$350.00
Equipment " " "	2,500.00	100.00	500.00
Pasture Stand " " "	1,500.00	60.00	300.00
Land, 1113 Acres	27,800.00	1112.00	
Total	\$49,300.00	\$1,972.00	\$1,150.00

Leasing Arrangements

Capital investment appears to be the greatest obstacle in instituting a livestock enterprise. Present land owners free from debt who desire to manage their own operations would not find it too difficult to finance a change. Other owners who are now renting the land for annual crops could enter into long term leasing arrangements with persons who have knowledge of the livestock business. Returning veterans with experience in the livestock business might be interested in such an arrangement. Sharing of the income could be based on the inputs of the landowner and the tenant, each sharing in proportion to his contributions to the total costs. Table 12 is an example of the method to be used in determining what each party to the lease (owner and tenant) is entitled to receive as his share of the income, giving due consideration to the contributions of each toward producing that income, in order that each party may be compensated in accordance with his relative contribution.

TABLE 12

EMPIRICAL METHOD FOR DETERMINING THE DIVISION OF FARM INCOME
(FARM LEASES)

Contributions From Tenant		Contributions from Land Owner	
Capital Investment		Capital Investment	
Equipment $\frac{1}{2}$ orig. cost	\$ 2,500.00	Land 1113 Acres	\$27,800.00
Livestock 138.8 A.U.	14,000.00	Improvements $\frac{1}{2}$ Orig. Cost	3,500.00
Operating Capital	1,000.00	Pasture Stand	1,500.00
Total	\$17,500.00	Total	\$32,800.00
Outlay or Costs		Outlay or Costs	
Labor--2 men	3,000.00	Depreciation on	
Contract work	500.00	Improvements	350.00
Taxes	259.00	Pasture Stand	300.00
Tractor & Truck	500.00	Taxes	525.00
Miscellaneous	320.00	Insurance	50.00
Depreciation	500.00	Interest on Investment	1,640.00
Interest on Investment	875.00	Total	\$ 2,865.00
Total	\$ 5,954.00		
Total Outlay or Costs of Both Parties		Division of Income: (Cash or Product)	
	\$ 8,819.00	To Tenant	67.5%
		To Land Owner	32.5%

The above table is an example (abbreviated) of the method to be used in determining what each party to the lease (owner and tenant) is entitled to receive as his share of the income, giving due consideration to the contributions of each toward producing the income, in order that each party may be compensated in accordance with his relative contribution.

The above figures are used for illustrative purposes only. This test will function properly only when accurate values are assigned to each contribution from the tenant and landowner. It should be adjusted from year to year as more accurate values are determined.

If the enterprise does not produce enough income to meet the combined interest of both parties, then each will share in the deficit according to his respective contributions, just as each would have shared in the surplus had it occurred.