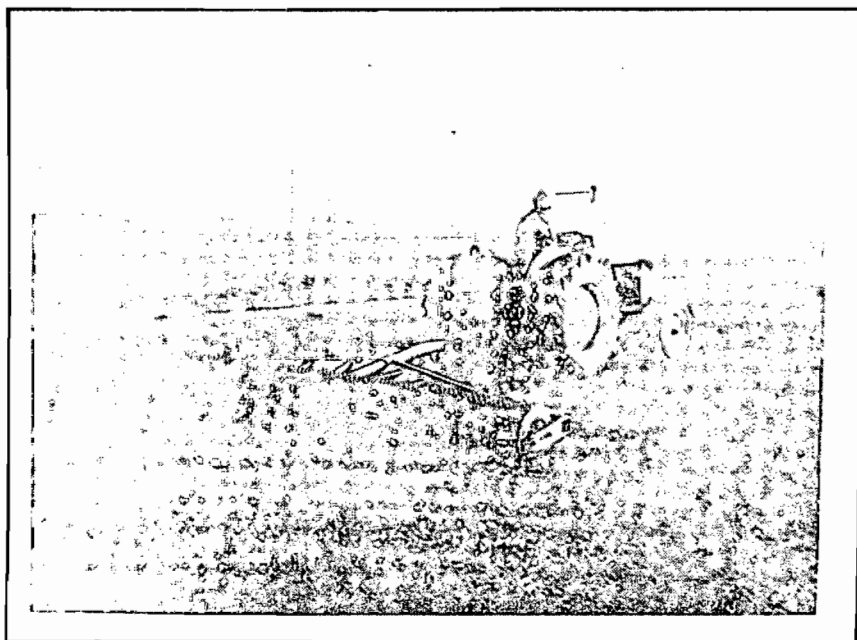


alfalfa hay



ECONOMICS AND PRODUCTION



IN
FRESNO COUNTY

Bob Sheesley and E. A. Yeary*

Alfalfa hay was grown on 150,000 acres in Fresno County during 1970. Yields for alfalfa hay in this area have averaged 6.8 tons per acre. Yields exceeding 10 tons are possible on deep loam soils under skilled management.

The alfalfa marketing outlook is good for the near future due to an increasing number of dairy animals in the San Joaquin Valley. An expanding market for alfalfa that has been cubed rather than baled is beginning to influence the harvesting practices in Fresno County. Approximately 8,000 acres in this area were cubed during 1970. In addition to the field cubing machine, one stationary cuber is currently operating on commercial scale in Fresno County.

About 70% of California's alfalfa is sold on the open market, with the remainder fed to livestock and dairy animals owned by the hay producers. Prices received by growers for baled hay, road side, ranged in 1970 from a high of \$36.00 per ton in the late winter to a mid-summer low of \$28.50

There are no acreage or production control programs that apply directly to alfalfa growing or marketing. The most recent market and price information may be obtained from the Fresno office of the Federal-State Market News Service. This office is located at 2550 Mariposa Street, Fresno, California 93721. The telephone number is 488-5022.

ALFALFA HAY

Recent California Acreage, Production and Farm Price**

<u>Year</u>	<u>Acreage Harvested</u>	<u>California Production In Tons</u>	<u>Farm Price for Baled Hay in Dollars Per Ton</u>	
			<u>State Average</u>	<u>Fresno-Kerman Madera Area</u>
1971	1,187,000 (estimate)	-----	-----	-----
1970	1,152,000	6,451,000	30.50	31.43
1969	1,129,000	6,210,000	28.50	27.67
1968	1,152,000	6,566,000	25.90	26.67
1967	1,164,000	6,169,000	29.40	30.04
1966	1,141,000	6,390,000	28.20	26.66
1965	1,176,000	6,292,000	24.00	23.34
1964	1,176,000	6,527,000	24.80	25.68
1963	1,131,000	6,334,000	28.50	30.31
1962	1,120,000	5,824,000	23.40	20.37
1961	1,204,000	6,140,000	20.80	19.99

* Bob Sheesley, Farm Advisor, Fresno Co. & E. A. Yeary, Farm Advisor, Statewide.

** Season average prices received by farmers for baled hay. SOURCE: U. S. Government Publications and others and Agricultural Extension Service, University of California.

These worksheets show an operating schedule of the most generally accepted farm practices, together with Depreciation and Interest Costs. Perhaps their most important use is in comparing an actual or proposed budget or farming program with these sample costs. No one farm may require all of the inputs in a given year, however, or have exactly the same equipment as indicated. This emphasizes the value as a worksheet, as well as a cost guide.

If the grower owns all of the business assets outright, then interest charges that are indicated would return to him as income, or reduce the cash requirements for production accordingly.

One cost schedule cannot illustrate each farm situation. It can serve as a guide of recommended practices and sample costs, against which any actual or proposed schedule can be tested for completeness and unit cost of production.

ESTABLISHING A STAND OF ALFALFA
IN FRESNO COUNTY

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Cost Analysis Work Sheet - 1971

This work sheet was developed to show sample costs for establishing a good stand of alfalfa hay. It includes all costs involved from land preparation through seeding. Included also is the cost of fertilization for the first year's production. It does not include any other production figures.

In order to obtain high yields of good quality hay, certain factors should be considered before seeding. Some of these factors are outlined below.

Alfalfa gives maximum yields on deep loam soils. It can be grown on most soil types. Alfalfa does poorly on land that contains hardpan or an impervious layer closer to the surface than four feet. It is moderately tolerant to alkali and does poorly on high water table areas.

Subsoiling - Soil compacted by equipment in growing previous crops, especially cotton, develops compacted layers which restrict root growth and increase the incidence of phytophthora root rot. Subsoiling or ripping is needed for good production on compacted soils.

Land Grading - Most alfalfa fields require a 0.2 slope per 100 feet, of run for border irrigation. Newly leveled land should be pre-irrigated so that low and high areas can be eliminated before planting. Water should not run in the checks over eight hours. Bed planting may be advisable to establish alfalfa in heavy clay and clay loam soils by sub-irrigation.

Fertilization - Most soils in Fresno County require the addition of phosphorus for optimum alfalfa hay production. A three year supply can be applied and lightly disced into the soil during seedbed preparation, or annual applications can be made. Some local soils also require additional sulfur for alfalfa production.

Time of Seeding - October and February are usually the best months to seed alfalfa. Fall plantings usually produce a higher yield the first year. If weeds are a serious problem, irrigating to germinate weed seed and a light discing along with a spring seeding may be beneficial.

Method of Seeding - Alfalfa should be uniformly covered (no deeper than $\frac{1}{2}$ inch). After seeding, the field should be rolled or cultipacked to prevent moisture loss and provide protection against low temperatures. Drilled or broadcast seedings should be rolled or cultipacked. Seeding of small grain companion crops with alfalfa is not recommended unless required for protection from high winds in very sandy soils.

Rate of Seeding - Twenty pounds of seed per acre is recommended for normal seeding on well prepared seedbeds.

Varieties - Non-dormant varieties make up the largest acreage of alfalfa hay in Fresno County. There are many new private and public varieties on the market today which look promising. University developed data on the dormancy classification of many of these varieties is available at the Farm and Home Advisors Office.

Weed Control - Effective pre-emergence and post-emergence herbicides are available for use in alfalfa hay fields. Before using herbicides, contact the Farm and Home Advisors Office. Clipping for weed control after emergence should not be done until the crown of the alfalfa plant is well established.

ESTABLISHING A STAND OF ALFALFA FOR HAY
IN FRESNO COUNTY

Cost Analysis Work Sheet - 1971

Conditions of this example are as follows: Man labor \$1.90 per hour total and equipment operator \$2.20, which includes employers Social Security and Workman's Compensation payments. Tractors available are 80 h.p., crawler 75 h.p. wheel diesel and 50 h.p. wheel diesel. Cash costs, depreciation and interest costs per hour for each tractor are: 80 h.p. crawler \$3.80, \$2.00, and \$1.20. 75 h.p. wheel tractor \$2.20, \$1.10, and 60¢. 50 h.p. wheel tractor \$1.20, \$1.00, and 55¢.

Annual investment costs and real estate taxes are charged to the hay production schedule, so are omitted from the development costs.

NOTE: Alkaline soils will require the addition of sulfur or gypsum to improve water penetration. These costs are not included in this example.

Cash Costs	Sample Costs Per Acre	My Costs Per Acre
Shred previous crop residue		
1/2 hr. man and 75 h.p. wheel tractor	\$ 2.20	\$
Disc 2 X: total 1/2 hr. man and crawler tractor	3.00	
Chisel: 1 hr. man and crawler tractor	6.00	
Landplane 1 X: 1/6 hr. man and crawler tractor	1.00	
Border preparation: 1/2 hr. man & 75 h.p. wheel tractor	2.20	
Landplane between borders: 1/6 hr. man & crawler tractor	1.00	
Fertilize: *44 lbs. of "actual" phosphorous in phosphate form	12.00	
Application: custom bulk spreading	2.00	
Pre-irrigate: power for 1 ft. of water	6.50	
Labor: 1 hr. per acre	1.90	
Disc or springtooth for seedbed preparation		
1/4 hr. per acre man & 50 h.p. wheel tractor	.85	
Re-shape borders: 1/12 hr. man & 75 h.p. wheel tractor	.37	
Weed control: custom applied	10.00	
Plant: seed, 20 lbs. at 65¢	13.00	
Plant by airplane	1.50	
Cover seed: 1/8 hr. man & 75 h.p. wheel tractor	.55	
Repairs to equipment except tractors	5.00	
Office and business expenses: 6% of cash costs	4.14	
TOTAL CASH COSTS	\$73.21	
<u>Depreciation</u>		
Tractors: crawler	3.74	
75 h.p. wheel tractor	1.33	
50 h.p. wheel tractor	.25	
Equipment except tractors	2.20	
TOTAL DEPRECIATION	\$ 7.52	
<u>Interest on Investment at 7%</u>		
Tractors: crawler	2.20	
75 h.p. wheel tractor	.73	
50 h.p. wheel tractor	.14	
Equipment except tractors	.80	
Total Interest on Investment	\$ 3.87	
TOTAL COST TO ESTABLISH ALFALFA	\$84.60	

ALFALFA HAY PRODUCTION
Cost Analysis Work Sheet - 1971

Sample costs to produce alfalfa hay in Fresno County. Man labor \$1.90 per hour total and equipment operator \$2.20, which includes employer's Social Security and Workman's Compensation insurance payments. 50 h.p. wheel diesel tractor per hour cash costs \$1.20, depreciation \$1.00 and interest 55¢.

Costs are based on a yield of 8 1/2 tons per acre average, with a three year stand life.

	Sample Costs		My Costs	
	Per Acre	Per Ton	Per Acre	Per Ton
<u>Pre-Harvest Cash Costs</u>				
Irrigate 13 times: labor 8 hours	\$ 15.20	\$	\$	\$
power for 4 1/2 ac. ft. water @ \$6.50	29.25			
*Fertilize: *44 lbs. of "actual" phosphorus in phosphate form	12.00			
Bulk spreading of fertilizer	2.00			
Weed Control: including application	10.00			
Insect Control: total	5.00			
Taxes	20.00			
Repairs to irrigation system and equipment except tractor	3.50			
Misc. labor, materials, 1 hr. man and tractor	4.50			
Business expense, office, car, etc.: 6% of pre-harvest and harvest costs	9.97			
TOTAL PRE-HARVEST CASH COSTS	\$111.42	\$13.11		
<u>Harvesting Costs</u>				
Mach 7 X: contract \$2.25 per time	15.75			
Turn: contract, 3 X at 50¢	1.50			
Bale: contract, \$4.00 per ton	34.00			
Roadside: contract \$1.75 per ton	14.88			
TOTAL HARVESTING COSTS	\$ 66.13	\$ 7.78		
TOTAL CASH COSTS	\$177.55	\$20.89		
<u>Depreciation</u>				
Irrigation system and equipment \$200 - 12 yr. life	16.67			
Tractor: 1 hr.	1.00			
Stand: cost \$84.60 - 3 yrs.	28.20			
TOTAL DEPRECIATION	\$ 45.87	\$ 5.40		
<u>Interest on Investment at 7%</u>				
Irrigation system and equipment: 1/2 cost \$100	7.00			
Tractor 1 hr.	.55			
Stand: 1/2 cost \$42.30	2.96			
Land: \$800 per acre	56.00			
TOTAL INTEREST ON INVESTMENT	\$ 66.51	\$ 7.82		
TOTAL COST OF PRODUCTION	\$289.93	\$34.11		

allowance has been included for the cost of management.

No income from sheep grazing has been indicated, although this is sometimes earned by hay growers.

*P x 2.29 = P₂O₅ (or 500 lbs. of single super phosphate per acre)

ALFALFA HAY PRODUCTION

Sample Costs of Production at Varying Yields - 1971

Yield Tons Per Acre	Average				Exceptional	
	7	8	9	10	11	12
Cash Costs Per Ton	\$24.13	\$21.83	\$20.05	\$18.62	\$17.45	\$16.47
Total Costs Per Ton	\$40.19	\$35.88	\$32.53	\$29.86	\$27.66	\$25.84

Sample costs of production at indicated yields per acre with varying water costs.

Yield tons per acre	Total cost* of alfalfa hay per ton at the indicated water cost per acre foot				
	\$ 4.00	\$ 6.00	\$ 8.00	\$10.00	\$12.00
7	\$38.14	\$39.43	\$40.72	\$42.00	\$43.29
8	\$34.35	\$35.47	\$36.60	\$37.72	\$38.85
9	\$31.40	\$32.40	\$33.40	\$34.40	\$35.40
10	\$29.04	\$29.94	\$30.84	\$31.74	\$32.64
11	\$27.10	\$27.92	\$28.74	\$29.56	\$30.38
12	\$25.49	\$26.24	\$26.99	\$27.74	\$28.49

* Investment per acre in the irrigation system was assumed to be constant in this table.

Sample expense flow sheet for an average year of a field with a three year operating life.
One-third of the cost of stand establishment is included in the annual depreciation schedule.

Activity	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
Irrigate		3.42	3.42	6.84	6.84	6.84	6.84	6.84	3.41				44.45
Fertilize											14.00		14.00
Weed Control		10.00											10.00
Insect Control								5.00					5.00
Taxes				10.00								10.00	20.00
Repairs	1.75						1.75						3.50
Misc. labor materials, etc.	2.25						2.25						4.50
Business Expenses	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.84	9.97
Harvest			9.45	9.45	9.45	9.45	9.45	9.44	9.44				66.13
Other													
Subtotal													
Cash Costs	4.83	14.25	13.70	27.12	17.12	17.12	21.12	22.11	13.68	.83	14.83	10.84	177.55
Depreciation	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.82	3.83	3.83	3.83	45.87
Interest on Investment	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.54	5.55	5.55	5.55	66.51
Total	14.19	23.61	23.06	36.48	26.48	26.48	30.48	31.47	23.04	10.21	24.21	20.22	289.93

Convert to cash flow by applying crop income to expense figures.

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Sample expense flow sheet for the first year: Includes cost of stand establishment.

Activity	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
Establish New Stand		73.21											73.21
Irrigate		3.42	3.42	6.84	6.84	6.84	6.84	6.84	3.41				44.45
Insect Control								5.00					5.00
Taxes				10.00								10.00	20.00
Repairs	1.75						1.75						3.50
Misc. labor materials, etc.	2.25						2.25						4.50
Business Expenses	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.84	9.97
Harvest					7.78	11.67	11.67	11.67	7.78				50.57
Other													
Subtotal Cash Costs	4.83	77.46	4.25	17.67	15.45	19.34	23.34	24.34	12.02	.83	.83	10.84	211.20
Depreciation	1.47	8.99	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.48	1.48	1.48	25.19
Interest on Investment	5.29	9.16	5.29	5.29	5.29	5.30	5.30	5.30	5.30	5.30	5.30	5.30	67.42
Total	11.59	95.61	11.01	24.43	22.21	26.11	30.11	31.11	18.79	7.61	7.61	17.62	303.81

Convert to cash flow by applying crop income to expense figures.

Sample expense flow sheet for the second or third years.

This is a companion sheet to be used with the first year expense flow sheet.
This sheet does not include interest or depreciation on the stand. All costs
of establishment are included in the first year expense flow sheet.

Activity	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	TOTAL
Irrigate		3.42	3.42	6.84	6.84	6.84	6.84	6.84	3.41				44.45
Fertilize											14.00		14.00
Weed Control		10.00											10.00
Insect Control								5.00					5.00
Taxes				10.00								10.00	20.00
Repairs	1.75						1.75						3.50
Misc. labor materials, etc.	2.25						2.25						4.50
Business Expenses	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.83	.84	9.97
Harvest			7.78	11.67	11.67	11.67	11.67	11.67	7.78				73.91
Other													
Subtotal													
Cash Costs	4.83	14.25	12.03	29.34	19.34	19.34	23.34	24.34	12.02	.83	14.83	10.84	185.33
Depreciation	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.48	1.48	1.48	17.67
Interest on Investment	5.29	5.29	5.29	5.29	5.29	5.30	5.30	5.30	5.30	5.30	5.30	5.30	63.55
Total	11.59	21.01	18.79	36.10	26.10	26.11	30.11	31.11	13.79	7.61	21.61	17.62	266.55

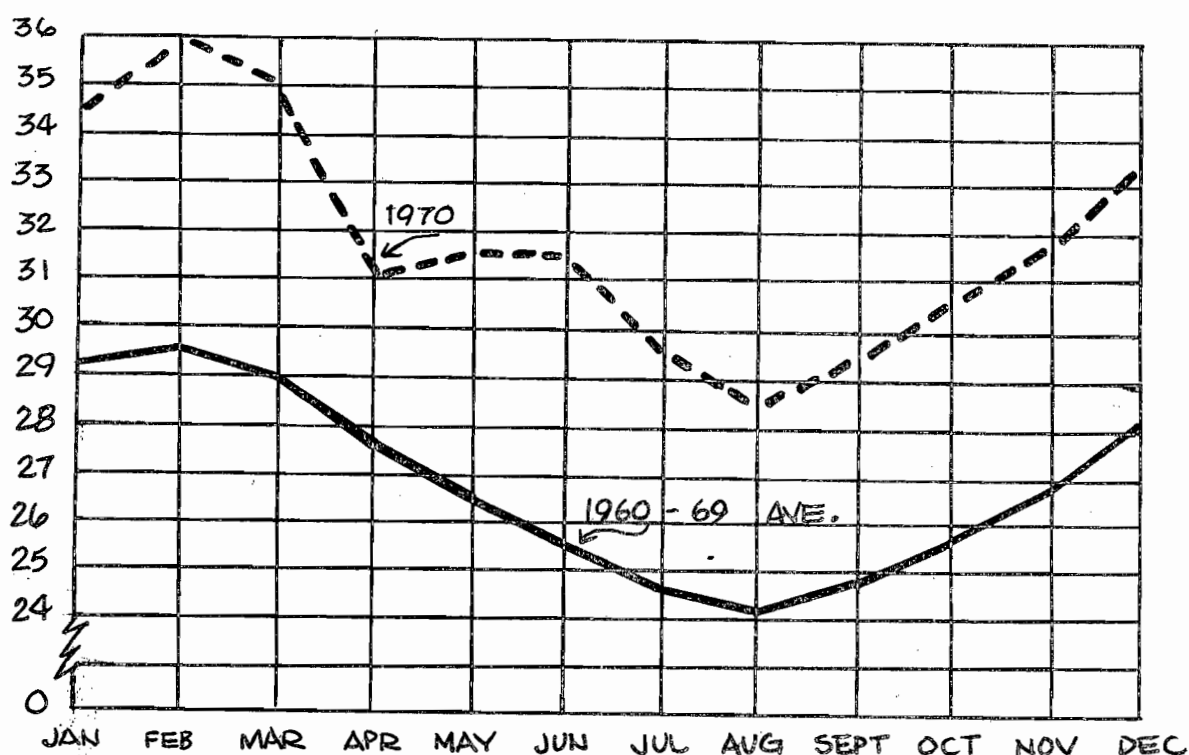
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Convert to cash flow by applying crop income to expense figures.

Sample costs to produce 8 1/2 tons of baled alfalfa hay per acre, at a water cost of \$6.50 per acre foot, with varying land costs. All other costs are assumed to be constant.

Actual cost of land in dollars per acre.	\$200.00	\$400.00	\$600.00	\$800.00	\$1,000.00	\$1,200.00
Total cost of baled hay in dollars per ton.	29.17	30.82	32.46	34.11	35.76	37.40

* CALIFORNIA PRICES TO GROWERS IN DOLLARS PER TON BALED ALFALFA HAY



* Average Price for Baled Alfalfa Hay Received by California Producers on the 15th of Each Month.

Source: California Crop and Livestock Reporting Service and the University of California Agricultural Extension Service.

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