

Summary of 1990 Estimated Cost of Growing Alfalfa in Arizona

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Introduction

In the past year, the procedures and publication known as the Arizona Field Crop Budgets (Wade, et al., 1990) have changed somewhat. Most of the changes are in format and definition. The underlying data base has not changed substantially. The information provided here is a summary of the published information. For further details see the publications which are available from the Office of Agricultural Sciences Communication at The University of Arizona.

Alfalfa acreage continues to increase. Profits from growing alfalfa vary widely from year to year depending mostly on the seasonal prices. Prices are dependent on the quality of the hay and the demand for hay in the livestock sector especially the demand of dairies in Arizona and Southern California. Hay markets are mostly local because of high shipping costs. Recent prices for quality alfalfa hay have been attractive. Table 1 gives a brief summary of the recent production history of Arizona alfalfa hay. Alfalfa, like wheat, is an important crop for soil conditioning and crop rotation. Pressures created by increasing production costs and water assessments will require growers continually to monitor production costs. Arizona acreage should be relatively stable with perhaps a slight decrease in acreage because of competing crops like vegetables and cotton.

The cost of producing alfalfa hay in Arizona varies widely depending primarily upon water costs. Table 2 is a summary of the estimated 1990 costs of producing alfalfa hay in Arizona. These estimates were made with information that existed before the crop was planted and harvested and do not reflect adjustments for actual conditions like insect infestations or rainfall that may have existed in each area. None-the-less, the costs represent solid estimates of the expected costs for producing alfalfa hay. Costs for the 1990-91 crop year are not expected to vary greatly. However, uncertainty about fuel and electricity cost may increase costs in all areas. An initial estimate would suggest that fuel cost for machinery might increase by as much as 10% for 1990-91. Electricity and natural gas cost, while more stable, could also see an increase in fuel adjustment cost. Other petroleum based products like fertilizers and pesticides could also increase but at a slower rate.

Results

The results shown in Table 2 provide summaries of the estimated costs of producing alfalfa hay at one site in each of the nine major cropping counties of Arizona. The results should be evaluated by observing the costs for the two major categories: Cash Operating Cost and Total Ownership Cost.

Cash Operating Cost

Cash operating cost consists of those costs that occur in the production of alfalfa hay and that would not occur if one did not grow alfalfa. This cost includes the costs of Paid Labor (all labor including owner/operator labor is assumed to be paid), Chemicals and Application, Machinery Fuel and Repairs, Irrigation (except any assessment which is an ownership cost), and Other Purchases and Services (including interest costs). Differences in operating

cost occur because of different assumptions about custom harvesting, fertilization, insect control and the amount of water provided with any water assessment by irrigation districts.

Ownership Costs

Ownership costs are those costs associated with owning (or renting) the capital resources like land, equipment and water rights (including taxes) required to produce a crop. In addition this cost includes the overhead cost for insuring and housing the capital resources and the costs of management services and management overhead like office cost and farmstead maintenance. Ownership costs for equipment vary if custom harvesting is used. Costs also vary by the type of land and water resources available. For example, in LaPaz county land is assumed to be owned and charged property taxes and opportunity interest based on the tax assessed value. Ownership costs also include a portion of the costs (1/3, assuming a four year crop) of establishing the hay crop.

Net Returns

Net Returns over Cash Operating and Total Ownership Costs are estimated for yields and prices assumed for each area. These yields and prices vary by area depending on the quality of the hay and the distance to markets. Some areas have lesser access to markets and receive lower average prices while other areas are actively involved in shipment to adjacent states. The most profitable areas are those with lower water costs and less insect control. Western Arizona counties of Yuma, LaPaz and Mohave appear to have higher profits (or less loss). Maricopa County also has potential for profits in areas like the Salt River Project with low water costs. High water costs in Southeastern and Central Arizona substantially reduce profits. The Marana area of Pima County appears to have better potential profits if a good market can be sustained.

Break-even Prices

Estimates of the prices required to cover the Cash Operating Cost, the Ownership Cost and the Total Cost for each location is also provided. The estimates are called break-even prices and estimate the prices required with the assumed yields to obtain a profit. They are an estimate of the cost per unit (Hundred Pounds) of producing the crop.

Information is also provided on the assumed levels of selected inputs like water and fertilizer.

Not surprisingly, the highest cost areas are those with high pump water cost. Most areas make a profit at the assumed price and yield. Alfalfa is a profitable crop for most Arizona farmers on a continuous long term basis. Short run soil conditioning and rotation values also increase the value of this crop.

References Cited

- Wade, et al. "1990 Field Crop Budgets, (all Arizona Counties)." Extension Bulletin 9002-9010, Cooperative Extension, The University of Arizona, April 1990.
- U.S. Department of Agriculture. "Arizona Agricultural Statistics." Various Issues, Arizona Agriculture Statistics Service, 1985 and 1989.

Table 1. Alfalfa Hay Production in Arizona, 1980-1990

Year	Harvested Acreage	Production Tons	Yield Tons/Acre	Avg. Price \$/Ton 3/
1980	165,000	1,155,000	7.0	\$82.50
1981	160,000	1,120,000	7.0	\$74.00
1982	160,000	1,168,000	7.3	\$73.50
1983	145,000	1,059,000	7.3	\$93.00
1984	140,000	1,008,000	7.2	\$84.50
1985	145,000	1,030,000	7.1	\$79.50
1986	155,000	1,178,000	7.6	\$70.50
1987	160,000	1,248,000	7.8	\$81.50
1988	155,000	1,225,000	7.9	\$89.50
1989 1/	150,000	1,140,000	7.6	\$96.50
1990 2/	165,000			

Source: USDA, 1988 Arizona Agricultural Statistics, Phoenix, July 1989.

1/ Preliminary., 2/ Indicated.

3/ Weighted Average of all hay, ~90% is Alfalfa Hay.

Table 2. 1990 Estimated Cost of Growing Alfalfa Hay in Arizona

COUNTY	Cochise	Graham	Greenlee	La Paz	Maricopa	Mohave	Pima	Pinal	Yuma
DESCRIPTION									
Area Management Level	Kansas Settlement								
Water Source	Safford Valley								
Irrigation System	Duncan Valley								
Units	Percher								
Price	Salt River								
Yield	Mohave Valley								
Total Revenue	Marana								
	Casa Grande								
	Yuma Valley North								
COST									
Paid Labor	48.30	71.36	33.74	54.78	48.60	53.78	47.78	48.17	55.16
Chemicals & Application	4.98	0.00	29.26	57.10	63.35	54.17	0.00	42.17	75.89
Machinery Fuel & Repairs	65.00	105.98	50.06	65.34	97.27	148.53	83.44	20.16	110.07
Irrigation 1/	257.83	48.51	90.10	13.34	38.79	31.62	150.00	235.03	18.89
Other Purchases & Services	14.33	17.57	75.37	115.81	23.37	31.96	18.41	198.53	38.14
Total Cash Operating Cost	\$390.44	\$243.44	\$278.53	\$308.37	\$269.38	\$320.06	\$308.63	\$545.06	\$287.95
Net Returns Over Variable	\$111.06	\$300.56	\$231.47	\$493.63	\$530.62	\$478.94	\$380.37	\$154.94	\$502.05
Cash Overhead	50.00	41.74	30.54	27.58	28.00	47.84	38.25	60.96	40.22
Capital Allocations 2/	183.37	140.25	137.21	41.21	107.34	184.85	111.09	220.18	128.48
Land Ownership	28.15	78.95	42.65	122.00	88.83	48.97	57.02	38.15	132.23
Management Services	31.23	19.48	22.26	24.51	21.55	25.60	24.77	43.60	23.83
Total Ownership Costs	\$300.75	\$280.42	\$232.68	\$215.30	\$243.72	\$287.26	\$231.13	\$382.89	\$325.76
Total Costs	\$691.19	\$523.86	\$511.21	\$521.67	\$513.10	\$607.32	\$540.76	\$907.95	\$623.71
Net Returns Over Total Cost	(\$189.89)	\$20.14	(\$1.21)	\$278.33	\$266.90	\$192.68	\$159.24	(\$207.95)	\$178.29
BREAK-EVEN COST									
to Cover Operating Cost	\$68.18	\$38.04	\$46.42	\$38.30	\$33.87	\$40.01	\$44.23	\$77.87	\$37.24
to Cover Ownership Cost	50.97	43.82	38.78	26.91	30.47	35.91	33.02	51.84	40.72
to Cover Total Cost	\$117.15	\$81.85	\$85.20	\$65.21	\$64.14	\$75.92	\$77.25	\$129.71	\$77.96
RESOURCE USE									
Water Applications (All)	68.0	84.0	78.0	80.0	73.0	125.0	72.0	80.0	85.0
Labor (Hrs)	7.6	10.9	6.1	9.6	7.8	10.0	7.6	8.1	9.2
Diesel (Gals)	12.4	18.6	10.1	8.0	17.6	29.8	15.2	6.0	17.9
Nonlead (Gals)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Electricity (KWH)	0.0	278.7	0.0	0.0	0.0	455.8	0.0	7,269.1	0.0
Natural Gas (Therms)	549.8	0.0	168.5	0.0	0.0	0.0	0.0	0.0	0.0
Nitrogen (lbs)	0.0	0.0	16.5	0.0	22.0	0.0	0.0	22.0	22.0
Phosphorus (lbs)	0.0	0.0	79.5	18.1	96.0	0.0	0.0	96.0	96.0
Potassium (lbs)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source:
 1/ Water assessment may be included in Land Ownership Cost.
 2/ Stand establishment cost included in capital allocation.