

YOU CAN MAKE MONEY PRODUCING AND
MARKETING ALFALFA IN THE 80's

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We are today, as we were during most of the 70's, concerned with the future of the forage enterprise and the livestock species that depend on it. Will they survive an environment in which the emphasis is on grain exports? Will they survive in an environment in which consumers are not able (but hopefully willing) to pay prices for red meats which are profitable for all segments of the livestock industry? Will they survive in the 80's when real interest rates will be relatively high?

These are not simple questions to answer. The answers encompass many facets. We need to consider the action of individual farmers and ranchers throughout the United States and the rest of the world. How will the weather affect their production and their resulting selling prices? How will the U.S. Government affect world trade, agricultural production, price supports and economic activity? How will consumers affect red meat prices in the 80's?

Thus, we must look far beyond the farm gate in laying plans for the future. But, the future is difficult if not impossible to predict. Nevertheless, the more one has planned and prepared for the future, the more one can capitalize on the higher prices when they do occur. Moreover, the better one appreciates and understands the environment surrounding him and how it affects his business, the stronger his position is for managing his resources.

This paper will address three separate view points of the economics of alfalfa. First, we will consider budgets for producing alternative yields of alfalfa per acre. Second, we will examine the economics of alfalfa from the standpoint of the livestock-forage systems and from some non-monetary and social viewpoints. Third, we will briefly discuss some factors which may affect alfalfa and the livestock industries in the future.

Alfalfa Budgets

Estimates of the profits, costs and investments associated with the production of three, five, six and eight tons of alfalfa are presented in Tables 1 to 3. These are only estimates and as such, a column titled "Your Costs" is included in Table 1 for you to use in determining your costs of production.

Table 1. Costs of producing Alfalfa for Specified Yields.

Cost Item	Yield Per Acre				Your Cost
	3 tons	5 tons	6 tons	8 tons	
(costs per acre)					
Establishment and Maintenance					
Fertilizer 1/	\$28.14	\$50.15	\$60.18	\$85.44	
Lime 2/	10.00	10.00	10.00	10.00	
Seed 3/	7.80	7.80	7.80	7.80	
Pesticides 4/	--	26.15	26.15	26.15	
Custom Seeding 5/	1.50	1.50	1.50	1.50	
Interest and misc. 6/	8.54	20.95	22.75	27.30	
Subtotal/ac	55.98	116.55	128.38	158.19	
Harvest					
Machine operation 7/	24.00	40.00	48.00	64.00	
Interest and misc. 6/	4.32	7.20	8.64	11.52	
Machinery investment 8/	64.32	64.32	64.32	64.32	
Storage 9/	23.52	39.20	47.04	62.72	
Labor 10/	20.70	34.50	41.40	55.20	
Subtotal/ac	136.86	185.22	209.40	257.76	
Total Nonland Cost/Acre	192.84	301.77	337.78	415.95	
/Ton	64.28	60.35	56.30	52.00	
Land Cost	80.00	100.00	100.00	135.00	
Total All Costs/Acre	272.84	401.77	437.78	550.95	
/Ton	90.95	80.35	72.96	68.87	

1/ Fertilizer costs are based on removal. K₂O cost 13 cents per pound and P₂O₅ cost 24 cents per pound.

2/ One ton of lime annually, including spreading cost.

3/ Seeding rate of 12 pounds per acre.

4/ Includes weed control and insecticides for potato leaf hopper and alfalfa weevil.

5/ It is more economical to hire the seeding done than to purchase the required equipment to seed, unless equipment is already on the farm.

6/ Interest on operating capital at 14 percent, plus one percent allowance for miscellaneous costs.

7/ Includes fuel and oil, repairs and twine.

8/ Assumed minimum of 60 acres and same depreciation schedule for all equipment for all yields.

9/ Based on 14 square feet per ton, investment cost of \$3.50 per square foot for clear-span building, and annual ownership costs equal to 16 percent of new costs.

10/ Based on wage rate of \$5.00 per hour.

At first glance, it can be determined that "hay ain't cheap." Alfalfa is not a low cost enterprise! The total non-land costs for producing eight tons of alfalfa per acre is estimated to be over \$400. But, it is important to understand that cost per ton declines even though production costs per acre increase as higher yields are achieved.

Total non-land costs vary from \$64 per ton for three tons per acre to \$52 per ton for an eight ton yield. Adding representative land costs increases the total costs per ton to \$91 for three tons per acre and to \$69 per ton for the eight ton yield. The higher the yield, the lower the cost per ton!

A significant portion of these costs are harvest machinery ownership costs and harvest labor costs. Machinery has been included in these budgets at new costs (Table 2). Producers with an existing line of machinery would likely have lower machinery ownership costs. But, if a producer has his own equipment, the ownership costs in machinery are the same whether he has 10 acres or 100 acres of alfalfa and whether he produces two tons or ten tons of alfalfa per acre. Higher yields spread these fixed ownership costs over more tons, thus reducing the fixed costs per ton.

Table 2. Cost of Investment and Annual Ownership Costs Required for Production of Alfalfa in Conventional Rectangular Bales.

Item	Investment	Annual Cost*
Mower-conditioner	\$ 7,050	\$1,515.75
Baler	6,200	1,333.00
2 Wagons	2,250	483.75
Rake	2,550	365.50
Elevator	750	161.25
TOTAL	\$18,800	\$3,859.25

*Annual cost is based on accelerated cost recovery (depreciation) of 10 percent per year, interest at 17 percent (8.5 percent on new cost), taxes at 1.5 percent, insurance at 0.5 percent, and shelter at 1 percent of the investment for a total of 21.5 percent of new cost per year.

The impact of hay price and hay yields on "Net Returns to Land" is demonstrated in Table 3. As would be expected, net returns to land increases with increases in yield and prices. It should be noted that a selling price of over \$60 per ton is required for a positive return to land, regardless of the yield level. Quite simply, these results indicate that producers must achieve large yields of high quality hay if alfalfa hay is to be a feasible enterprise.

Table 3. Impact of Alfalfa Yields and Prices on Net Returns to Land.

Alfalfa Price ^{1/}	Yield Per Acre			
	3 tons	5 tons	6 tons ^{2/}	8 tons ^{2/}
	Net Returns to Land			
\$ 40.00	-\$72.84	-\$101.77	-\$97.78	-\$95.95
50.00	- 42.84	- 51.77	- 37.78	- 15.95
60.00	- 12.84	- 1.77	22.22	64.05
70.00	17.16	48.23	82.22	144.05
80.00	47.16	98.23	142.22	224.05
100.00	107.16	198.23	262.22	384.05
120.00	167.16	298.23	382.22	544.05

^{1/} Net farm price. Does not include transportation costs to point of sale.

^{2/} High management requirements needed as these yields equal to 140 and 200 bushels of corn, respectively.

In preparing budgets for alfalfa hay production, estimating the costs of production is quite simple in that specific yields require certain quantities of fertilizer, seed, chemicals and machinery. Relatively more complex is the task of estimating the market price for the alfalfa. There are several choices for prices. If there is an active hay market in the locale, then a farm price can be estimated. If the hay will be fed to live-stock on the farm where the hay was produced, then an opportunity price can be assigned to the hay. This can be based on the feed value of the hay and its relationship to some other feed with a measurable price, i.e. corn, soybeans, corn silage.

Either of these methods has very serious flaws. First, the market for hay is very thin, that is, the quantity of hay actually moving through the market is quite small. Any change in the quantity of hay will cause the price of hay to move sharply in the opposite direction. Case in point: alfalfa hay is currently selling for \$120 to \$150 per ton at Indiana auctions. This is extremely high given the price of corn and soybean meal. These price relationships exist because many dairy-men believe they must include some high quality alfalfa in the rations; and they are willing to pay almost any price to obtain the needed quantity. High quality alfalfa hay is in short supply due to weather-related harvest problems in 1981. Thus prices have nearly doubled but prices will likely decline sharply when supplies are replenished this summer. As a result, a decision maker must be extremely cautious in selecting alfalfa hay prices to use in three to five year budgets--the general lifetime of a seeding.

Even more difficult is the assignment of a dollar value to the hay fed on a farm where it is produced. The value of the hay is dependent upon the profits generated by the livestock enterprise. With the exception of dairy, the livestock business has not been very profitable in the last three years. As a result, the residual value of the hay fed during this period has generally not been very profitable either.

But, more than livestock prices, the productivity or efficiency of the livestock enterprise plays an important role in determining the value of the alfalfa hay being fed. Any of you who produce 16,000 pounds of milk per cow or wean ninety-five, 500 pound calves from every 100 beef cows know what I mean.

Quite simple, the alfalfa is just a part of the forage-livestock system on each individual farm. Some producers have mastered these forage-livestock systems. These producers have recognized the complex inter-connected components of these systems and be managing them as systems, these above-average producers are able to get more out of the system.

Other producers have not mastered the system and have since abandoned the livestock-forage business. Their farms are evidenced by field after field of corn and soybeans. Besides a high management requirement, there are other reasons why many producers have shunned alfalfa. Alfalfa is a high cost crop as evidenced in Table 1. A larger amount of operating costs are required to establish the crop than a row crop. A forage crop also requires a large investment in specialized harvesting, storage and feeding equipment. A forage producer must maintain two lines of equipment. Third, forages remain a high labor enterprise and labor has a high opportunity cost on many mid-western farms--particularly during the time when the first cutting should be made.

Social Costs

So far this discussion has centered on the impact on the returns and costs associated with growing hay on an individual farm. This discussion totally ignores the impact of the choice of forages versus row crops on soil loss from erosive land. Soil erosion is a complex social issue which the regulatory and legislative processes have not well-addressed so far. What is the cost of soil erosion? Who will ultimately pay this cost? Should producers be compelled by regulations or encouraged by government payments to conserve erosive lands by planting only soil-conserving forages?

But, the opposite social issue in the decades ahead will be concern for feeding the growing population of the world. At first glance, one might believe that the choices are soil-conserving forages or soil-eroding row crops. Highly productive

forages will provide both food and erosion control. Through forages, the erosive lands will be able to produce feed and food while also protecting the environment. Forages will provide the means for the erosive soils to make a very significant contribution to the world's food supply-demand balance.

Answers are not yet available for these social questions but, individual producers have chosen to provide food through forage production on erosive soils. Quite possibly, these are the same producers who have mastered their forage-livestock system!

The Future^{1/}

The future will provide a mixed bag of positive and negative impacts for the livestock-forage industries. One impact will be a regulatory impact in which the choice of crops will be limited to soil-conserving crops on erosive lands. Second, the solar energy advantage of forages will be more fully appreciated. Third, the profitability of forages may be affected by government transfer payments as society rewards farmers who practice certain kinds of land use. Fourth, a doubling or tripling in nitrogen costs due to the de-regulation of natural gas prices will cast increasing favor on nitrogen-producing crops.

On the negative side, increasing energy prices will make forage systems more sensitive to management. "Only good and better managers will survive." High real interest rates will reduce the profitability of forages relative to annual crops because of the high first year establishment costs. Because of the large amount of labor required for timely forage production relative to row crops, the profitability of forages will be closely tied to the future direction of wage rates.

Conclusions

Increasing alfalfa yields per acre will only be one component in making livestock-forage systems profitable in the future. An effective marketing program and an efficient livestock enterprise will be equally, if not more, important. The goal is maximizing economic yields per acre, consistent with the producer's goals and objectives, and the wants and needs of society.

^{1/}Based on paper "Profitability of Forages in Livestock Systems" by Delane Welsch, Professor and Extension Economist, Department of Agricultural and Applied Economics, University of Minnesota, St. Paul, presented February 24, 1982, American Forage and Grassland Conference, Rochester, Minnesota.

Many adjustments will be required of forage-livestock producers in the decade ahead if they are to remain competitive. In summary, they must master all components of their forage-livestock system. Some may be painful adjustments but then change is always difficult. The future of the forage-livestock business depends on the actions of many individual producers. All things considered, the burden of making these adjustments rests squarely on the shoulders of individual producers. Producers will have to decide whether they want to adjust and be competitive or remain bound by tradition and fall behind.

The decisions and the future belong to you, the producers.