

COST AND RETURN OF ALFALFA HAY PRODUCTION

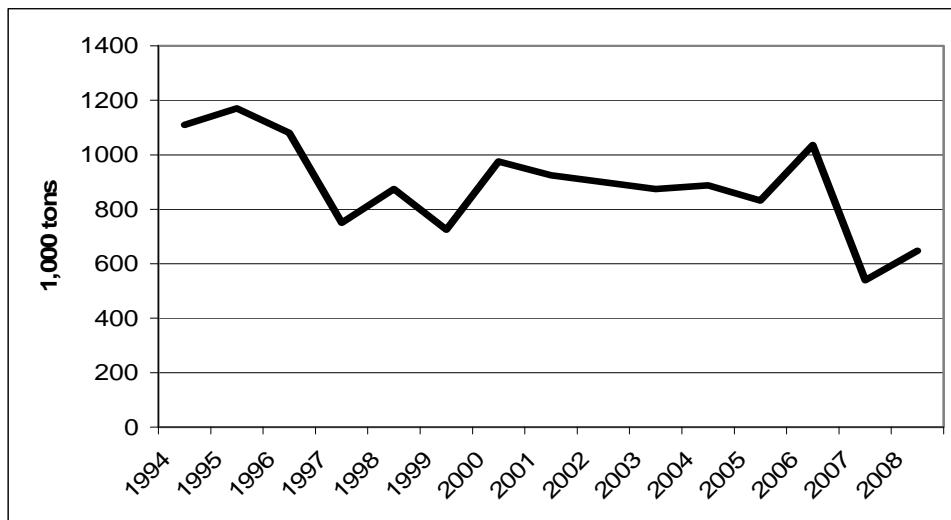
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The last few years have been nothing short of a roller coaster ride for Kentucky agriculture. Kentucky is coming off back-to-back drought years, which have challenged both livestock and crop producers. At the same time, farmers are dealing with decreasing output prices and rising input prices. This is a recipe for pure frustration and alfalfa producers have not been isolated from these challenges.

Alfalfa has always been somewhat under that radar screen in terms of production in KY. It has historically been a fairly profitable crop, yet Kentucky typically harvests around one quarter of one million acres annually for hay. Alfalfa was greatly affected by the adverse growing conditions over the last two years. This impact can be seen below in figure 1, which shows the recent history of Kentucky Alfalfa production.

Figure 1: Kentucky Alfalfa / Alfalfa Mix Hay Production (1994 – 2008)

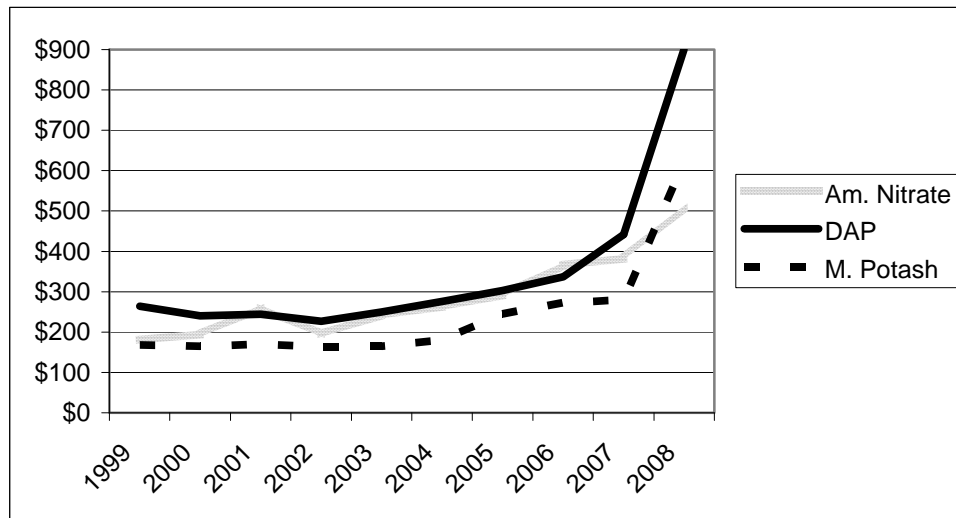


Source: USDA NASS

Both 2007 and 2008 were low yield years. A spring freeze, followed by severe drought left estimated Kentucky alfalfa yields at 1.8 tons per acre in 2007. Production was depressed in 2008 due to both drought and a 40,000 acre decrease in harvested alfalfa acres. This likely occurred for several reasons including dry weather, high seed costs, and competition for ground from corn and soybeans. The result can be seen above with incredibly low production levels in each of the last two years.

In addition to weather and yield concerns, rising input costs have also been a major concern for alfalfa producers on the last several years. Rising fuel and fertilizer costs have drastically changed the profit expectations for alfalfa hay. Figure 2 shows the trend in common fertilizer prices from 1999 to 2008. Notice the steady upward trend followed by a projected drastic jump from 2007 to 2008.

Figure 2: Common Fertilizer Prices: 1999 to 2008



Source: KY Agricultural Statistics and Annual Report (1999 -2007), 2008 is estimated

These same challenges will remain at play in 2009. While there are some signs of decreasing fuel and fertilizer prices, they will remain high by historical standards. At the same time, weather remains the biggest wildcard. It is virtually impossible to make money on alfalfa with the types of yields that we have seen over the past couple years. And, alfalfa price is very sensitive to local supplies and alternative feed prices.

Figure 3 presents an estimated alfalfa budget for 2009. This budget skeleton is available on-line in spreadsheet form at the following address: <http://www.ca.uky.edu/agecon/index.php>. Simply click on budgets and look for “AEC Forage Budgets”. While attempts have been made to make this budget as realistic as possible, one should clearly modify this budget based on their own situation.

The budget is set up for alfalfa square bale hay production and assumes a yield of just over five tons per acre. The assumed sale price is \$125 per ton or \$4.69 per 75 lb square bale. This price is meant to include production and moving costs, not delivery to buyer. One should also be aware that this price would represent the price of an average alfalfa bale. In some cases, lower quality bales may move at a considerable discount to higher quality bales. Cost estimates are based on the best estimates available, but certainly should be changed based on actual quotes in the producer’s area.

Figure 3: Estimated Alfalfa Budget for 2009

**ALFALFA HAY ENTERPRISE
ESTIMATED COSTS AND RETURNS**

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Total Acres in Enterprise:	200	acre				
Number Bales per Acre:	140.0					
Weight per Bale:	75	lbs				
	AMOUNT	UNIT	PRICE	FREQUENCY	TOTAL	TOTAL
GROSS RETURNS					Per Acre	Enterprise
Hay (Sold or On-Farm Value)	5.25	tons	\$125.00	annually	\$656.25	\$131,250
VARIABLE COSTS						
Seed	20	lbs	\$5.00	every 5 years	\$20.00	\$4,000
Nitrogen	0	lbs	\$0.45	annually	\$0.00	\$0
Phosphorus	75	lbs	\$0.60	annually	\$45.00	\$9,000
Potassium	300	lbs	\$0.75	annually	\$225.00	\$45,000
Boron	2	lbs	\$10.00	every 2 years	\$10.00	\$2,000
Lime	3	tons	\$15.00	every 3 years	\$15.00	\$3,000
Herbicides	1	acre	\$30.00	annually	\$30.00	\$6,000
Hay Preservative	1	acre	\$0.00	annually	\$0.00	\$0
Fuel and Oil	1	acre	\$50.00	annually	\$50.00	\$10,000
Repairs	1	acre	\$30.00	annually	\$30.00	\$6,000
Custom Application	1	acre	\$0.00	annually	\$0.00	\$0
Equipment Rental	1	acre	\$0.00	annually	\$0.00	\$0
Cash Land Rent	1	acre	\$0.00	annually	\$0.00	\$0
Hired Labor	3	hours / ac	\$10.00	annually	\$30.00	\$6,000
Interest (1/2 year)	\$455.00	dollars	7.0%	annually	\$31.85	\$6,370
TOTAL VARIABLE COST					\$486.85	\$97,370
RETURN ABOVE VARIABLE COST					\$169.40	\$33,880
FIXED COSTS						
Annual Interest on Investment	1	acre	\$30.00		\$30.00	\$6,000
Annual Depreciation of Capital Assets	1	acre	\$50.00		\$50.00	\$10,000
Insurance: Casualty and Liability	1	acre	\$10.00		\$10.00	\$2,000
Operator and Family Labor	3	hours / ac	\$10.00		\$30.00	\$6,000
TOTAL FIXED COST					\$120.00	\$24,000
TOTAL COSTS					\$606.85	\$121,370
RETURN TO LAND AND MANAGEMENT					\$49.40	\$9,880
Break Even Price	\$92.73	per ton to pay VARIABLE costs at	5.3	tons per acre		
Break Even Yield	3.9	tons to cover VARIABLE costs at	\$5.25	per ton		
Break Even Price	\$115.59	per ton to cover TOTAL costs at	5.3	tons per acre		
Break Even Yield	4.9	tons to cover TOTAL costs at	\$125.00	per ton		

Finally, I think is important that we look at the sensitivity of this return to land and management per acre to both price and yield. This will help the producer think about the level of risk that is involved with the alfalfa enterprise this year. Table 1 below is a simple sensitivity table that shows estimated returns to land and management using the same set of assumptions as shown in the budget estimate in Figure 3. The only items changed from the budget in figure 3 are price per ton and yield per acre.

Table 1. Return to Land and Management as Price and Yield Change

Yield	Price per ton Received				
	\$100	\$125	\$150	\$175	\$200
3.5 tons	(\$256.85)	(\$169.35)	(\$81.85)	\$5.56	\$93.15
4.0 tons	(\$206.85)	(\$106.85)	(\$6.85)	\$93.15	\$193.15
4.5 tons	(\$156.85)	(\$44.35)	\$68.15	\$180.65	\$293.15
5.0 tons	(\$106.85)	\$18.15	\$143.15	\$268.15	\$393.15
5.5 tons	(\$56.85)	\$80.65	\$218.15	\$355.65	\$493.15
6.0 tons	(\$6.85)	\$143.15	\$293.15	\$443.15	\$593.15

Table 1 shows the amount of risk that is out there in 2009 and is probably a better way to look at the upcoming year than a single snapshot as in Figure 3. Notice that at a price of \$100 per ton, money is still lost at a six ton yield per acre. On the other end of the spectrum, note that if yields are as low as 3.5 tons per acre, price must be nearly \$175 per ton to cover all costs. Producers should look at table 1 and think about where their yields are in a typical year and what prices they have been moving hay for recently.

While 2009 will likely be another challenging year for Kentucky farmers, alfalfa has the potential to be a positive contributor to the farm this year if production costs are reasonable and weather allows for decent production levels. I would strongly recommend that each producer work through a budget similar to figure 3 for their own operation and generate a sensitivity table similar to table 1. Soil conditions, fertilizer costs, machinery compliments, and many other factors will vary greatly across operations in Kentucky. The more effort that is made to adjust the proceeding numbers, the better position the producer will be in to evaluate the costs and returns to alfalfa hay production in 2009.