

ALFALFA IN KENTUCKY—SITUATION AND CHALLENGE

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Alfalfa is one of the most important forage crops in the United States. Of all commonly grown forages, it is among the highest in feeding value and has the highest yield potential of all adapted perennial forage legumes. Alfalfa is grown over a wide range of soil and climatic conditions and can play an important role in soil conservation. Alfalfa is a versatile crop which can be used as pasture, hay and silage. As a result of its versatility, yield potential and quality, it can be used successfully in all livestock feeding programs.

Alfalfa, until the early 60's, was referred to by most forage producers as "The Queen of Forage Crops" and then, along came the weevil. With the arrival of the weevil, alfalfa acreage and production dropped. Producers during this era were not equipped with the technology, know-how, and patience to wage an effective war against the destructive weevil. Now the 80's are upon us with a whole new set of circumstances. The have-nots of the 60's are haves of the 80's. We now have the technology, know-how and hopefully the patience to effectively control the weevil. Many growers who have weathered the weevil storm are currently increasing their alfalfa acreage, while others who abandoned alfalfa in the 60's and early 70's are reconsidering alfalfa as a part of their forage program, still others who have never grown alfalfa are becoming interested in this crop as a high quality feed source and as a potential cash crop.

Acreage and Yield - A summary of data collected on alfalfa acreage and yield from 1945 through 1980 by the Crop and Livestock Reporting Service shows a peak in alfalfa acreage in 1965 (Table 1). From that point, acreage declined drastically and continued to decline through the mid 70's. Yield per acre has been disappointingly low over the 35 year period with a high of 3.30 tons/acre in 1970.

Table 1. Alfalfa Acreage and Yield from 1945 through 1980.

Year	Acreage Harvested ¹ -Thousands-	Average Yield/Acre - Tons -
1945	254	2.30
1950	238	2.00
1955	282	2.20
1960	311	2.30
1965	430	2.45
1970	189	3.30
1975	188	2.90
1980	200	2.95

¹Kentucky Agricultural Statistics, Crop & Livestock Reporting Service.

Information contained in Table 2 shows signs of optimism for the 80's. Acreage since 1980 has increased to 230,000 (an increase of 30,000 over 1980) and average yield per acre has gone from 2.95 to 3.80 T/A. This is certainly encouraging and indicates we are going in the right direction but still have a ways to go.

Table 2. Alfalfa Acreage and Yield.

Year	Acreage ¹ -Thousands-	Yield/Acre - Tons -
1980	200	2.95
1982	230 ²	3.80

¹Crop and Livestock Reporting Service

²University of Kentucky Survey-Fall 1982

Potential studies conducted by the University of Kentucky indicated a potential of 2 million acres of alfalfa in the state. This potential, along with the high yield potential of alfalfa, indicates a bright future for alfalfa in the state.

Although the average yields in the state during 1982 is estimated at 3.8 T/A; yields of 5 to 7 tons are being produced by many serious-minded alfalfa producers. Several research and demonstration projects conducted over the past two years have shown production of 5-8 T/A. Results of variety tests seeded at both Lexington and Princeton in 1980 produced yields of 7 to over 8 tons of dry matter during 1982. Seven varieties at Lexington and 6 varieties at Princeton had yields of 8 tons or more during 1982. Studies conducted in conjunction with Dr. Lloyd Murdock and Mr. Bill Talley resulted in record yields during 1982. The high yield research resulted in the production of 10.13 tons of hay per acre under non-irrigated conditions. This yield, to our knowledge, is the highest documented yield ever produced in the state.

Profit and Conservation - Dr. V. E. Jacobs and colleagues at the University of Missouri have conducted extensive analysis on mail-in records from crop producers in Missouri since 1974. Their findings show alfalfa to be a competitive crop (Table 3). Alfalfa ranked second only to soybeans in "Net Land Return" over the eight-year period. When consideration is given to soil loss, alfalfa shows an even higher ranking (Table 4). Results from the Missouri studies showed alfalfa to be the cheapest hay to produce (Table 5).

Table 3. Eight-Year Average Gross Returns, Non-Land Costs, and Net Land Returns for Major Farm Crops Produced by Missouri MIR Cooperators (1974-81).

Crop	Per Acre Costs & Returns			Rank in Net per Acre Return
	Gross Return	Non-land Costs ¹	Net Land Return ²	
Soybeans	\$186	\$102	\$84	1
Corn (grain)	194	160	34	5-6
Corn silage	214	171	43	3
Grain Sorghum	150	116	34	5-6
Wheat	124	86	38	4
ALFALFA HAY	185	134	51	2

¹Includes all per acre costs other than interest on land value.

²Net return in excess of all costs, other than interest on land investment. Thus, it is the return remaining to pay for the use of the land investment.

SOURCE - V. E. Jacobs and Carrol L. Kirtley, University of Missouri Farm Management Newsletter, FM82-8, August 1982.

Table 4. Eight-Year Average MIR Net Land Returns, Estimated Soil Losses, and Returns Per Unit of Soil Loss.

Crop	8 Yr. Avg. Net Land Return	Estimated Soil Loss in Tons per Acre	Net Return per Ton of Estimated Soil Loss
Soybeans	\$ 84	14 to 35	\$ 2 to \$ 6
Corn	34	13 to 25	1 to 3
Corn Silage	43	14 to 30	1 to 3
Grain Sorghum	34	13 to 25	1 to 3
Wheat	38	8 to 13	3 to 5
ALFALFA HAY	51	2 to 4	13 to 25

SOURCE - V. E. Jacobs and Carrol L. Kirtley, University of Missouri Farm Management Newsletter, FM82-8, August 1982.

Table 5. Eight-Year Average Costs Per Acre and Per Ton For Alternative Hay Crops (Missouri MIR Crop Enterprise Analyses).

Hay Crop	Alfalfa Hay	Mixed Hay (Grass-Clover)	Grass and Other Hay
Non-land cost/acre	\$134	\$ 77	\$62
Total cost/acre	189	114	94
Average yield	3.30 T.	1.80 T.	1.51 T.
Non-land cost/ton	41	43	41
Total cost/ton	57	63	62

SOURCE - V. E. Jacobs and Carrol L. Kirtley, University of Missouri Farm Management Newsletter, FM82-8, August 1982.

In 1977 a most interesting program on alfalfa was initiated by Dr. John Baylor and colleagues at Pennsylvania State University. The program "Pennsylvania Alfalfa Growers Program", was developed to measure how much hay, protein, and energy could be produced on an acre under non-irrigated conditions. In addition, the program was designed to determine mineral content and uptake by high yielding alfalfa varieties and to obtain more realistic on-the-farm estimates of alfalfa production cost. Since 1977, this program has involved many Pennsylvania alfalfa growers and is resulting in most comprehensive data on alfalfa production. Table 6 summarizes cost and returns for the first three years of the program.

Table 6. Production and Cost Factors for Those Participants in the Pennsylvania Alfalfa Growers Program Who had Cost Budgets.

	Per Acre		
	1977	1978	1979
Yield (tons) ¹	5.5	5.5	5.9
Crop Value (\$) ²	336	343	372
Production Cost (\$)	<u>174</u>	<u>197</u>	<u>227</u>
Net Return (\$)	162	146	145
Break-Even Yield (tons)	2.8	3.2	3.6

¹Standing yield to cover all costs considering harvest losses.

²Crop value calculated @ \$70 per T hay equivalent times estimated net yield (measured yield less estimated harvest loss).

SOURCE - Water and Baylor. 1980. Pennsylvania.

CHALLENGE

Many of the challenges facing the alfalfa industry in Kentucky will be addressed by those speakers who will follow on the program today. Technology is available for establishing, producing and harvesting high yield and high quality alfalfa. There are, however, several areas that need additional research (no-till establishment, pest control, harvesting, storing and marketing, etc.). These areas are being investigated by research and extension personnel in Kentucky and other states.

To producers, my challenge would be to adopt and utilize the most advanced technology to allow alfalfa to be a profitable crop on your farm. Four objectives should be set in your alfalfa program: 1) to give special attention to details prior to and during establishment that will result in a dense weed-free stand, 2) proper management to produce 5 tons or more each year, 3) manage to keep stands productive for a minimum of 5 years and, 4) market what you produce for profit.

To agribusiness, the challenge would be continue to provide the producer with quality seed, chemicals, fertilizers, equipment and other necessary inputs for optimum production and utilization. Agri-business support of educational efforts have played an important role in the overall research and extension program and are much appreciated.

Perhaps the greatest challenge in Kentucky's alfalfa program at present is that of marketing. There are several encouraging activities presently underway:

- 1) Two county hay associations presently formed and at least eight others in various phases of organizing. In addition, one private alfalfa hay organization has been formed.
- 2) The Kentucky Forage and Grassland Council has established a "Hay Marketing Committee".
- 3) University of Kentucky personnel in Agricultural Economics and Agronomy are currently involved in study of alfalfa marketing including market potential surveys. Other organizations in the state have expressed interest in providing assistance in marketing. It will require time and patience to develop a viable alfalfa marketing system in Kentucky. Three basic principles will need to be adhered to at producer, local and state level, i.e. 1) a supply of hay to attract buyers, 2) quality that is measurable and dependable and, 3) integrity.