

TRENDS IN ALFALFA HAY MARKETING IN ARIZONA

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Abstract: Alfalfa has historically been a major crop in Arizona ranking behind cotton and grain in total acreage. It is grown in all parts of the state from sea level to over 5000 ft. in elevation, although the major acreage has been in central and southwestern Arizona. Alfalfa acreage began to decline sharply in the central region in 1973, and this has continued. Production has remained relatively stable for the past 25 years with decreased acreage being off set by increased yields. The major markets for alfalfa in Arizona are milk cows, cattle on feed and horses. Cattle on feed have decreased in importance since 1973 with the number of feedlots dropping from 102 in 1965 to 17 in 1987. There may be as many as 300,000 horses in Arizona with the bulk of these located in the Phoenix and Tucson areas. This market for alfalfa has been underestimated and is becoming increasingly important. Milk cow numbers remain high in Arizona despite the Dairy Buyout Program implemented last year and this market continues to be a major consumer of Arizona alfalfa.

PRODUCTION TRENDS

Alfalfa has long been an important economic contributor to Arizona agriculture because of its value as a major component in the feed rations of the regions large livestock industry, its value as a soil improvement rotation crop, and its cash flow characteristics. Historically, alfalfa has ranked third behind cotton and grain. (Fig. 1)

Alfalfa is one of the few crops produced in all 15 Arizona counties, and is adapted to a wide range of climatic conditions and soil types from elevations of over 5000 ft. to near sea level (Fig. 2). The cultural practices used to grow this crop and the yields and quality produced vary widely with elevation throughout the state. Annual yields range from 3 to 4 tons/acre in the northern counties where alfalfa may be non-irrigated and harvested 3 or 4 times; to 7 to 9 tons/acre in the central and southwestern counties where alfalfa is intensively irrigated and harvested 8 to 10 times annually. (Fig. 3)

More than three quarters of the state's production occurs in the central and southwestern counties. Mild winter and spring climatic conditions combine with the development of non-dormant, pest resistant varieties and intensive irrigation management to make this region one of the foremost production areas of alfalfa in the world. Arizona yields have continued an upward trend from 5.2 tons/acre in 1966 to 7/6 tons/acre in 1986, and Arizona lead the nation in statewide average yields in 1986. (Fig. 4)

The acreage of alfalfa began to drop in 1973, and continued to decline until last year. State production has remained relatively stable; however, during the last 25 year period with decreased acreage being offset by increased yields (Table 1).

Alfalfa acreage in central Arizona (Maricopa and Pinal counties) has declined rapidly since the early 1970's, while alfalfa acreage along the Colorado River (Yuma, LaPaz and Mohave counties) has remained stable. (Fig. 5). This reduction has occurred largely in response to competition for water and land in the rapidly growing central parts of the state, and the rising energy or pump water costs. Water costs along the river range from \$5 to \$20 per acre foot compared to surface water costs of \$20 to \$40 and pump water costs of \$40 to \$105 or more in the central parts of the state.

MARKET TRENDS

The major markets for alfalfa in Arizona are milk cows, cattle on feed and horses. The relative amount of alfalfa produced in Arizona that is consumed by these markets fluctuates with year and season.

Cattle on Feed is among the largest sectors of Arizona's agricultural economy and a major consumer of alfalfa. On Jan. 1, 1987, 343,000 cattle on feed were in Arizona. This is down by 52% from the peak of 658,000 in 1973. This downward trend was most dramatic

between 1973 and 1975, and has fluctuated between 510,000 and 330,000 since that time (Fig. 6)

Increasing production costs and stable or dropping cattle prices have reduced the profitability of cattle feeding in recent years. The number of feedlots in Arizona has dropped from 102 in 1965 to 17 in 1987. Those feedlots that have remained are among the largest farms in the state. In January 1987, 4 of the largest farms in Arizona were feedlots with 10 feedlots listed in the top 20. The cattle on feed in Arizona are located in Maricopa, Pinal and Yuma counties. (Fig. 7)

The amount and quality of alfalfa consumed by this market fluctuates and is difficult to establish from year to year. While alfalfa is important in the nutrition of dairy cattle and may make up as much as 40% to 60% of the dairy ration, it is perhaps only 10% to 20% of the beef cattle ration. The feedlot manager evaluates alfalfa along with other nutrient sources based upon the principle of "least cost ration". This means that each ingredient is considered for its cost per unit of feed value. The feedlot can and will use lower quality, coarser hay to grind and mix with other components of the overall ration. The feedlots in Arizona typically buy the largest quantity of hay produced during the summer months (June to August) in the central and southwestern parts of the state.

Dairy Cattle

Arizona's dairy industry is a major consumer of alfalfa and has expanded by an average rate of 5% annually over the past 10 years. Arizona is self sufficient in fluid milk production with 1.368 million pounds of milk being produced in 1986, a state record and 4th nationally in milk per cow (15,907 pounds). The average number of milk cows in Arizona was 86,000 in 1986, which was unchanged from 1985 and a state record (Table 2)

Ninety percent of Arizona dairies are located within 60 miles of Phoenix. Phoenix is one of the fastest growing cities in the nation and the relocation of many dairy operations is likely in the coming years. Arizona herds range in size from 80 to 4,000 cows, with an average of slightly over 500 cows, which ranks second nationally.

The dairy program was implemented in 1986 to reduce dairy production nationally. Bids from 15 dairies in Arizona were accepted, slating approximately 10,000 cows, heifers and calves for slaughter or export from April 1986 to August 1987. Expansion by producers not participating in this program was possible in Arizona, and it was unlikely that fluid and manufactured dairy products would be reduced in 1987.

Alfalfa is one of the best all around forages available for dairy cattle and an important and major part of their nutrition. Alfalfa alone does not satisfy the entire nutritional requirements of a dairy herd, but it may represent as much as 40% to 60% of their diet. Dairies normally purchase the bulk of the higher quality alfalfa produced during the fall and spring months in central and southwestern Arizona.

Horses

Horses are perhaps the most underestimated consumers of alfalfa in Arizona. During 1971 the Animal Health Service, Department of Agriculture, conducted a statewide vaccination program to prevent the outbreak of Venezuelan Equine Encephalomyelitis (VEE) The service vaccinated 98,890 horses in Arizona. It is estimated that this represented 70% of the horses in the state at that time. This puts the equine population at 141,271 horses in 1971.

In 1982 the Arizona State Horsemen's Association conducted an Equine survey of the state. The results of this survey indicated that 290,600 horses were in Arizona in that year. A 6% annual increase in Arizona horse populations is reported by this association. If this figure is correct, the number of horses in 1987 would be 380,409.

The bulk of horses in Arizona were located around Phoenix and Tucson in Maricopa and Pima counties (Fig. 8). It is likely that the majority of the horses boarded in this part of the state would be fed alfalfa.

The estimated daily consumption of alfalfa by a properly fed horse is 1.5% of the animal's body weight. An average 900 to 1000 pound horse would consume 13.5 to 15 pounds of alfalfa per day. If the 1982 survey numbers are used, 217,950 horses were located in Maricopa and Pima counties. If these horses are of the 900 to 1000 pound average, between

2.5 and 2.75 tons of alfalfa would be consumed per horse per year or 544,875 to 599,362 tons per year for the entire population. In 1986, 1,178,000 tons of alfalfa were produced in Arizona. If these figures are correct, 45 to 50 percent as much alfalfa as is produced each year in Arizona would be consumed by horses. The Arizona State Horsemen's Association is currently updating these numbers and they are published here, not to imply that they are valid, but to raise the possibility that the percentage of alfalfa consumed by this market may have been underestimated in past years. Compared to population numbers compiled for other areas, these numbers may seem reasonable. For instance, the Dallas/Ft. Worth metroplex had a known population of 204,100 in 1982, the Los Angeles metropolitan area had 305,000 and the state of California had 600,000.

LITERATURE CITED

1. Arizona State Horsemen's Association. 1984 Arizona Equine, Economic Impact Survey 25 pp.
2. Arizona Crop and Livestock Reporting Service. 1970-1986 Arizona Agricultural Statistics.

Table 1

Arizona Alfalfa Acreage, Yield and Production 1965 - 1986

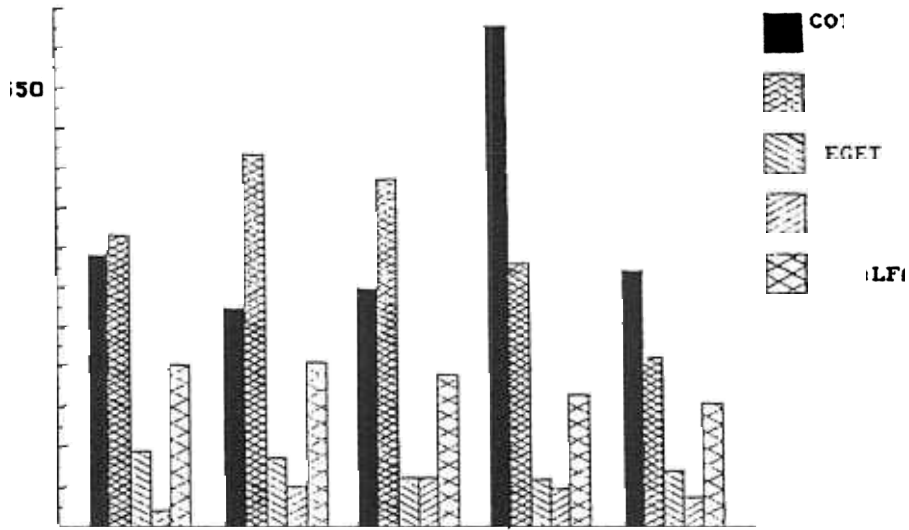
<u>Year</u>	<u>Acres (X1000)</u>	<u>Yield (Tons/A)</u>	<u>Production (X1000)</u>
1965	201	5.4	1,085
1970	205	6.0	1,230
1975	190	6.5	1,235
1980	165	7.0	1,155
1986	155	7.6	1,178

Table 2

Arizona Dairy Cattle Population and Production (1930 - 1986)

<u>Year</u>	<u>Dairy Cattle (X1000)</u>	<u>Production (Lbs./cow x 100)</u>	<u>Total Production (million pounds)</u>
1930	38	5.1	194
1940	43	5.4	232
1950	46	5.9	271
1960	50	9.2	461
1970	50	11.7	585
1980	75	13.6	1,023
1986	86	15.9	1,368

RIZONA
 MAJOR CROP CREAGE
 86



Fig

ALFALFA ACRES
 1
 COUNTY

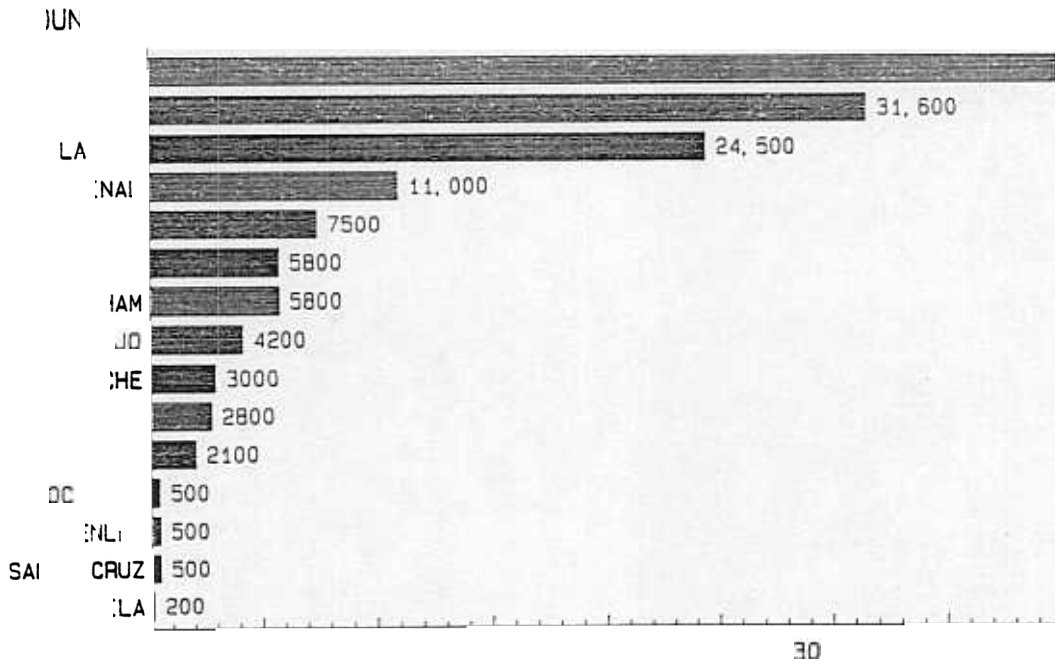
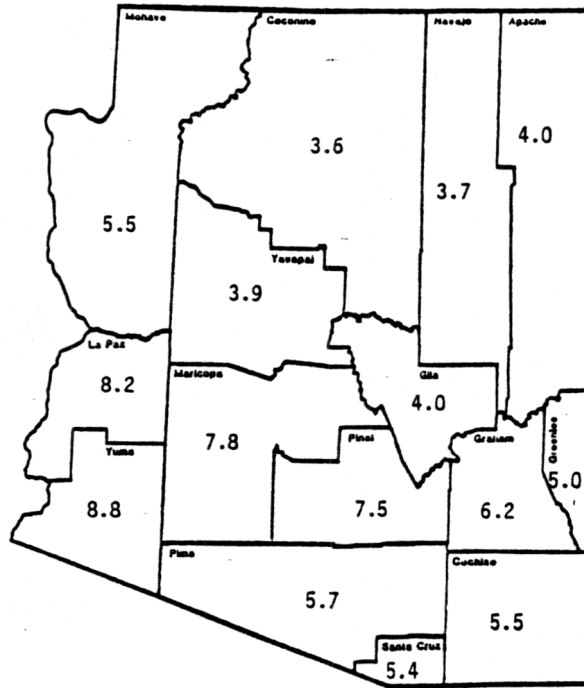


Fig.

ARIZONA COUNTIES



1986 - Alfalfa Yields
Tons/Year

Fig. 3

ARIZONA
ALFALFA YIELDS
(TONS/ACRE)

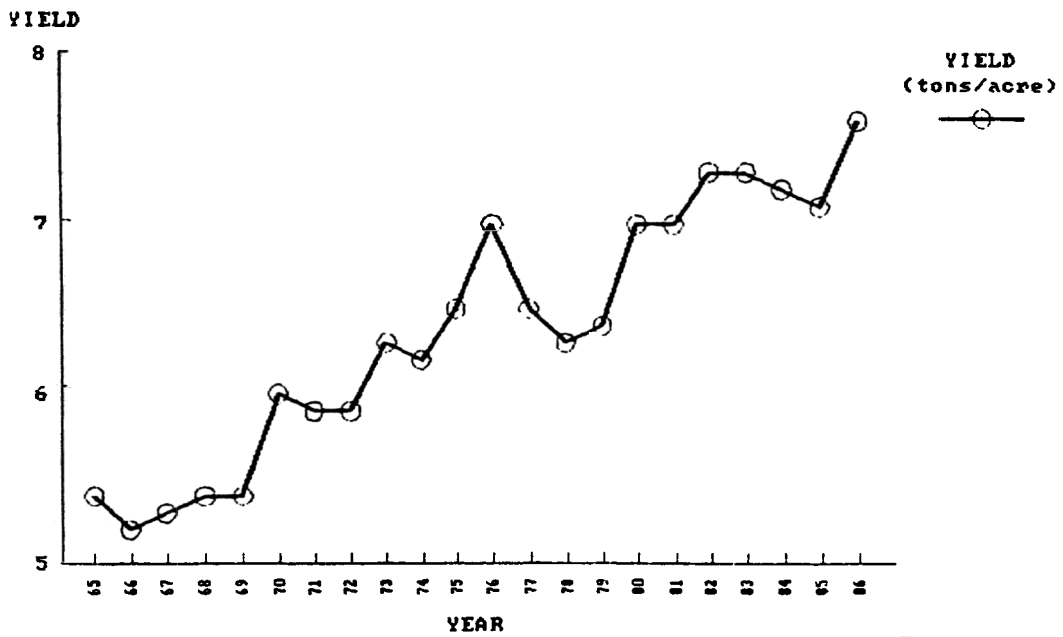


Fig. 4

ARIZONA
ALFALFA ACREAGE
1965-1985

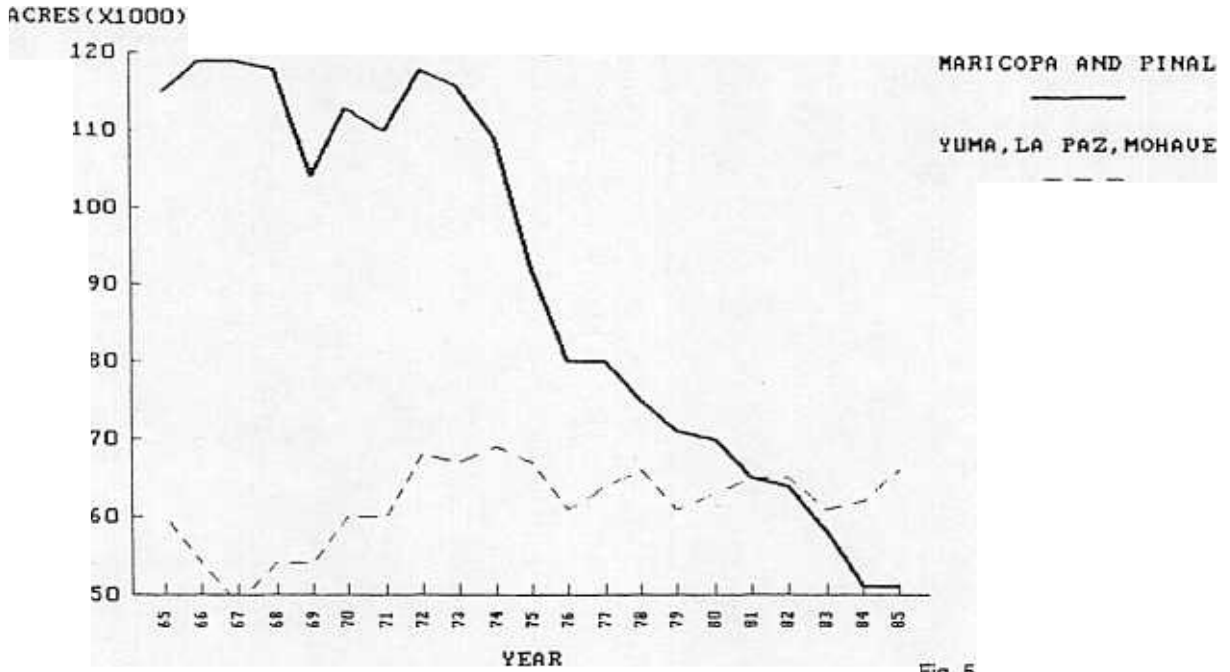


Fig. 5

ARIZONA
CATTLE ON FEED
1965-1987

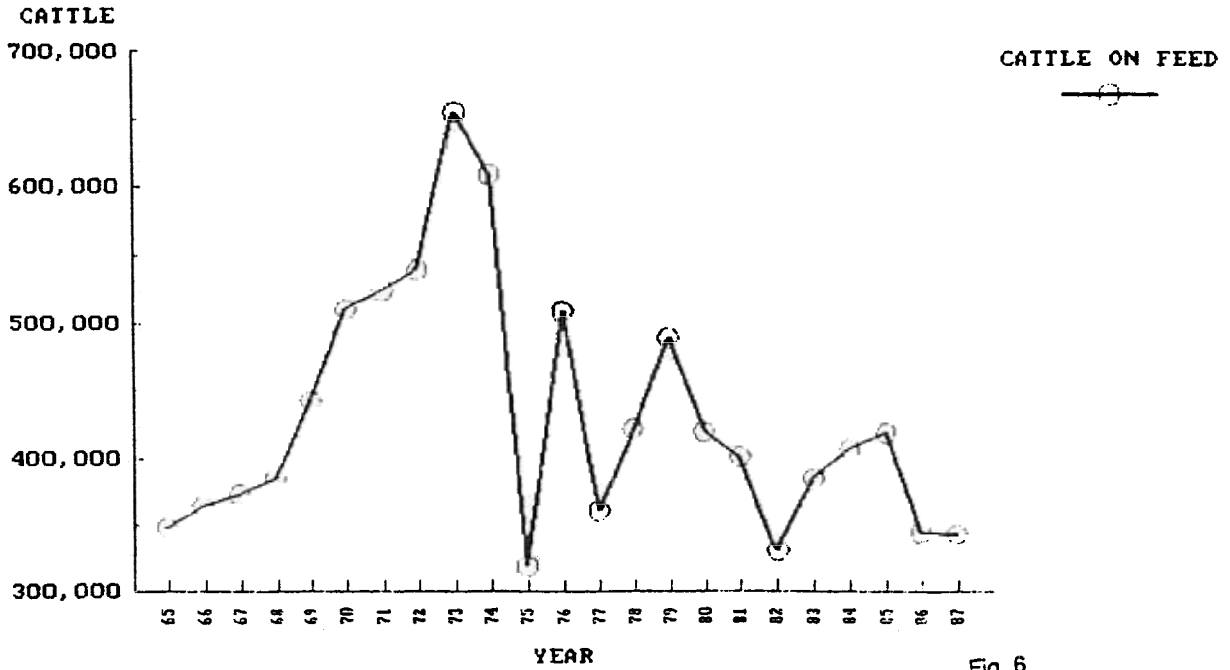
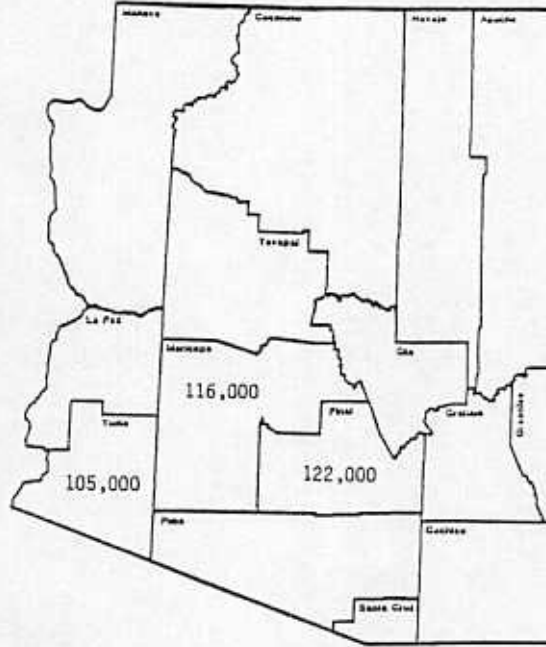


Fig. 6

ARIZONA COUNTIES



Arizona
Cattle on Feed
1986

Fig. 7

