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PB1638 Marketing Hay in Tennessee

The University of Tennessee Agricultural Extension Service

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Hay has been an important crop in Tennessee for many years. Acreage devoted to hay has been trending upward over the last two decades, as shown in Figure 1. Acreage of all types of hay harvested in 1998 was 1,785,000, 51 percent larger than acreage harvested in 1980. Hay is the leading crop in Tennessee in terms of acreage harvested mechanically. In 1997, the value of hay produced on Tennessee farms reached $207 million, ranking the crop third in value among all crops. Cash receipts have averaged about 15-20 percent of the total value of hay produced over the last few years. The remainder is reflected in the substantial cash receipts to Tennessee's livestock and milk producers.

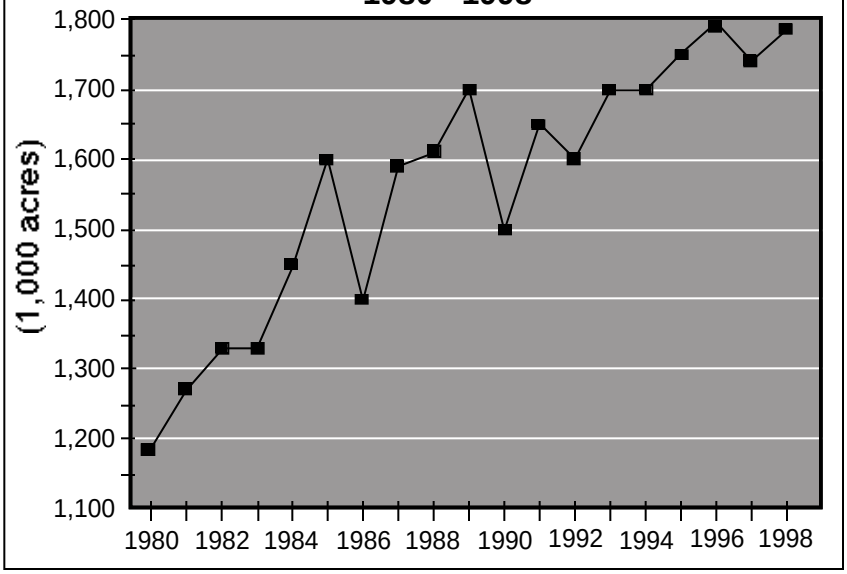
Increasing interest in cash hay production has been noted, as more farmers search for alternatives to traditional grain crops and tobacco. The conservation provisions of recent farm bills are calling farmers' attention to the need to adopt approved conservation practices, including crop rotation and strip cropping on more highly erodible fields. This legislative emphasis has resulted in increased acreage of soil-conserving crops such as hay. There are indications that farmers are devoting larger acreages to hay on traditional crop farms with either a small or no livestock base. This addition to the crop enterprise mix may be designed to achieve greater diversification or to provide better use of existing farm resources. Regardless, producers adding a cash hay enterprise are likely to be willing to devote the necessary time to develop a sound hay production-management-marketing program.

Hay cost-return budgets, developed by The University of Tennessee Agricultural Extension Service and available at county Extension offices, indicate that cash hay production is only marginally profitable for farmers achieving average yields, quality and prices. Therefore, it is imperative that hay producers do their "marketing homework" if the hay enterprise is to make a net addition to farm income.

The Loosely Structured Hay Market

Unlike the market for corn or cattle, the hay market is much less organized and structured.

Figure 1. All Hay Acreage, Tennessee 1980 - 1998



Farmers producing hay for the cash market have no nearby and convenient grain elevator or auction market at which to sell their product. Also, hay is not a single "crop" like soybeans, but many different "crops" in terms of types of hay (alfalfa to tall fescue), quality (high to low) and bale package (small square to large round).

Unlike wheat, cattle or hogs, there are no standardized grades used in the industry as a measure of quality or value. The nutritive value (protein, fiber and energy) of hay can be determined either by near infrared reflectance spectroscopy (NIRS) or through standard laboratory analysis. Hay quality can be analyzed in a few minutes using NIRS technology. The hay sample must be ground. No chemicals are used. The major disadvantages are the difficulty of machine calibration, especially for grass hays, and the sizable cost of the NIRS unit. Some hay auctions in Northern and Western states make use of such equipment, especially for alfalfa. Standard laboratory analysis to determine the nutritive content of hay samples is accomplished by chemically determining the nutrient content of a forage sample. This service is provided by private firms and by The University of Tennessee Soil and Forage Testing Laboratory in Nashville. In 1999, the cost for a basic forage test at the UT lab is $7.

Although some types of hay are shipped long distances, there is no national hay market price structure as there is for corn, cotton and soybeans. Because hay has rather large weight and bulk relative to value, hay markets are more localized.

Hay price data are practically non-existent in Tennessee. No central market exists where hay prices are determined. In contrast to the situation in some large hay-producing states, no hay market news program exists in Tennessee. Consequently, analysis of hay prices is not possible. In most situations, prices are determined by the interaction between a buyer and a seller, both often having only vague or scanty hay market information, with neither party able to closely judge the quality (in terms of nutritive value) of the hay under consideration. Where small volumes are involved, the seller often offers the hay at a particular price per bale, "take it or leave it."

Since there is no hay price reporting system in Tennessee, producers will need to make an extra effort to stay current with general hay market conditions. Cash hay producers should consider price variability and lack of published prices as opportunities for improving prices through better marketing. Producers may consider marketing hay based on quality using forage test results.

Developing an Effective Hay Marketing Program

An important first step is to recognize the need for and value of a marketing program, rather than passively waiting for someone to make inquiry regarding hay that may be for sale. The primary focus of a marketing program should be on improving profitability of the hay enterprise.

Many farmers selling hay are simply disposing of extra forage and do not have the volume nor the interest to justify devoting substantial time and attention to develop a hay sales program. Others who regularly depend on hay sales for a significant part of their gross farm income, or those who anticipate expanding cash hay production, will find marketing efforts more rewarding.

To be most effective in marketing hay, growers should attempt to target sales by type, quality and, perhaps, bale package to a particular class or classes of livestock, or other uses. Types of end uses include:

- horses, ponies or mules
- dairy animals
- beef animals, sheep and other livestock
- dealers
- mulch, industrial and other
- export

The horse market can be divided into breeding farms, pleasure-horse owners, racetracks, ponies and mules. Typically, the horse market is the highest-value market for hay produced in Tennessee. Horse owners are often the most particular about quality as they perceive it and less concerned about price. Because most horses in Tennessee and surrounding states are pleasure animals, owners are less concerned about feed costs than dairy or beef cattle producers. The highest-price horse hay market is probably the thoroughbred breeding farm industry in central Florida and in Kentucky. Quality requirements are rigorous. Farm owners prefer alfalfa or an alfalfa-timothy mixture. They require hay that is bright green, and has fine stems, large leaves and good leaf content. They are not interested in hay that has a musty or moldy odor, is dusty or brown. Most hay purchased by these farms is shipped in from Western states, where it is grown under

irrigated conditions, or from the upper Midwest and the southern part of Canada. Hay producers in those areas have climatic advantages over Tennessee hay producers, and they are also very aware of the quality needs of these high-value markets.

Dairy producers will generally pay less for quality than the top end of the horse hay market, but may pay as much or more than the lower end of the horse hay market for hay of a particular quality. Dairy operators usually prefer a reasonably good quality of legume hay, such as alfalfa. They are also more likely to substitute roughage, energy grains and protein sources to achieve a balanced but lower-cost ration.

Lower-quality hay is generally targeted for the beef cattle industry. Beef cows in particular can effectively make better use of lower-quality hay. Beef producers are generally more concerned about price than quality.

Hay merchandising in Tennessee does not include much dealer activity. Selling to dealers may be worth considering for those with small volumes to sell or for those who do not want to be concerned with the effort required to retail hay. However, the price received for hay sold at the wholesale level will generally be lower than what a producer could realize by retailing the hay.

Other markets may be worth considering. Gardeners and small farm operators are often willing to buy hay for mulching that is moldy, was too mature when cut, is dark brown or is otherwise not desirable for livestock feeding. Farmers reasonably close to zoos may be interested in evaluating this sales opportunity.

Hay may also be sold standing in the field. The owner-seller would not be concerned with labor or machinery required to harvest, haul and store the hay. The buyer gains control over cutting date and, therefore, some control over quality. However, hay producers interested in expansion are not likely to emphasize standing hay sales. The grower loses some control over the business by waiting for a buyer. In the meantime, hay can become overmature and lose quality.

In addition to targeting sales to livestock classes, a cash hay producer is also concerned with such things as the type of hay to produce for each market, geographic sales area and type of bale package.

Many types of grass, legume and mixed hay are produced in Tennessee. Although alfalfa hay is not the dominant type produced in Tennessee, it often sells for the highest prices. It costs more to produce because of higher establishment and annual maintenance costs and a shorter life of the stand. Growers focusing on hay profitability should consider producing the most profitable type or types of hay rather than the cheapest and easiest to produce.

Most hay sold to dairy and beef cattle owners generally does not move across long distances. The horse hay market is often local, but may be 100 or even 500 or more miles away. To compete in more distant markets usually requires that a specialized, extremely high-quality product be produced and delivered. Cost-effective delivery over long distances requires special consideration, because hay is bulky and a rather low-value product. Most of the horse hay that moves 1,000 miles or more to central Florida is part of a two-way, truck-trailer delivery system.

The type of bale package is also part of hay market targeting. While packaging in large round bales may be acceptable for hay targeted for local beef cattle, it is not the most efficient for transporting long distances.

Virtually all hay produced in Tennessee is twine-tied. Producers who wish to consider more distant markets, particularly horse hay markets, should consider the advantages of wire-tied hay. The wire ties allow a heavier bale to be produced. Wire-tied hay is heavier because of greater density of the bale package (9-12 pounds per cubic foot compared with 8-10 pounds for twine-tied) and a larger bale package (16-inch height compared with 14-inch for twine). The greater density of wire-tied bales reduces trucking costs per ton of hay delivered. In some situations, at least, buyers apparently associate wire ties with higher-quality hay. Perhaps this is partly because some of the highest-quality alfalfa hay produced in this country is grown in the Western states under irrigated conditions, and most of it is wire-tied. A Tennessee hay grower will need to carefully consider market potential before deciding to purchase a wire-tie baler.

Factors Affecting Hay Prices

The primary hay price determinants are supply within an area and demand for that hay. Many price factors are beyond the control of a producer. Even so, the producer should be generally aware of hay

market conditions to be an effective marketer. In addition, there are many marketing considerations within the control of the hay producer.

Storing Hay

Hay, like many other crops, has a somewhat predictable seasonal price pattern that can be used to make marketing decisions. For most crops, prices are lowest at harvest, then increase as supplies begin to shrink. Prices often drop a month or two before the next harvest, as buyers delay purchases in anticipation of the new crop. This seasonal price pattern is illustrated in Figure 2, which shows that prices have historically declined during May, June and July, then increased beginning in October. Prices have typically peaked in February or March over the last 10 years.

Hay can be stored inside or outside. In Tennessee, small square bales are usually stored in a barn. Large bales may be stored in a barn, or they may be left outside. Significant storage losses occur in bales that are stored uncovered outside.

Storing hay in a barn reduces storage losses but involves additional costs. Typical barn storage costs include the following items:

Interest or opportunity cost. The appropriate rate is the market earnings rate on the value of hay that could be sold or the interest cost on a loan that could be reduced if the hay were sold out of the field.

Loading the hay out of the field, *hauling* it to the barn and *stacking* it. Included are labor, fuel and equipment costs.

Fire insurance premium. Insurance companies in Tennessee quote a rate of about $1.60 per $100 worth of hay.

Shrinkage. Hay loses some weight and quality during storage. As with grains, farmers often overlook this cost item.

Barn expense. This cost will depend on whether the barn is old or new, owned or leased, and the type of structure. Some growers may consider this cost primarily an overhead cost and not include it as a storage cost item.

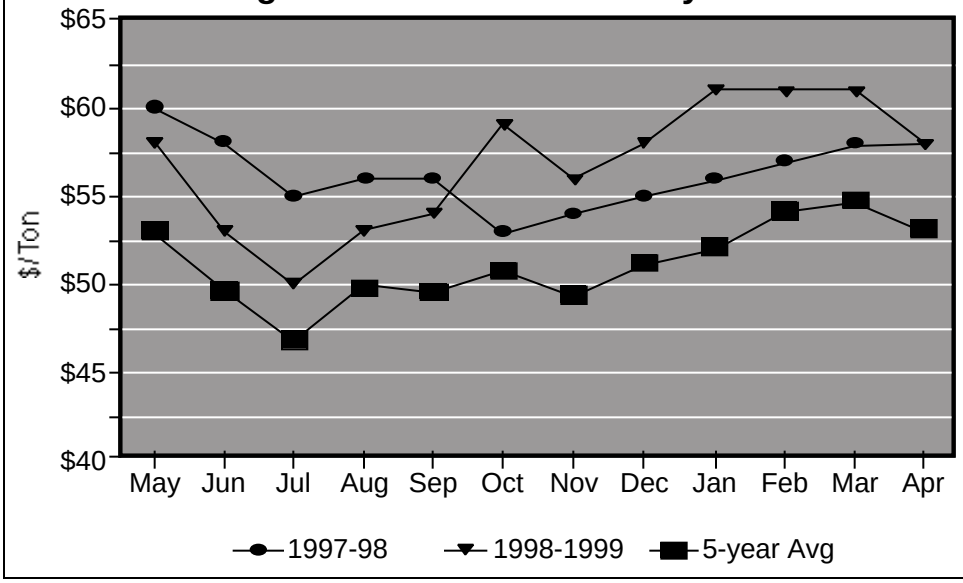
Any additional advertising needed to help sell stored hay.

For example, if hay valued at $65 per ton is stored for six months, at an annual interest rate of 8 percent ($2.60 per ton), and with loading, hauling and stacking charges of $5 per ton, fire insurance premium of $1.04 per ton and shrinkage of 8 percent ($5.20 per ton), total costs amount to $13.84 per ton. The storage period price increase has to exceed this amount to make storage a paying proposition. Based on an evaluation of U.S. hay prices during the 1990s, average seasonal price increases for spring or fall-cut hay have not been nearly this large.

Promotion and Advertising

An important part of a sound marketing or sales program involves the attempt to make potential buyers aware of the particular hay type, bale package and quality available for sale. This is especially important for those who are shifting to cash hay production or expanding acreage. A major goal of an advertising-promotion program is to develop a reputation for providing the quality of hay desired by a customer for a particular class of livestock or other end use. Many people are attracted by low prices, so it is important, especially to beginning cash hay producers, for potential buyers to see the hay offered, and perhaps analyze it to verify that it has been advertised accurately. Repeat business is important.

Figure 2 . Tennessee All Hay Prices



Hay may be priced by the bale or the ton, depending primarily on the volume under consideration. Sales involving less than a ton are usually based on a per-bale price, because it is impractical to have the hay weighed. Table 1 shows prices for small, square bales at various weights and prices per ton.

Two types of balers can be used to produce large, round bales of hay. Fixed-chamber balers use a bale chamber that does not vary in size, resulting in lower-density bales. Variable chamber balers use belts to vary the chamber size as bales are rolled, producing higher-density bales. Differences in round baler types, hay moisture levels and round bale sizes can lead to large differences in weights of round bales. Equivalent prices per ton and per large, round bale are shown in Table 2 for various bale sizes and weights.

Most farmers who have sold hay over time have experienced revenue losses because of non-payment. Some hay producers try to minimize these losses by insisting on payment when the hay is weighed and loaded out. They extend credit only to neighbors who are known to be sound credit risks, or to dealers they sell to quite often. One problem with demanding payment at loading or weighing is that it may mean a loss of sales. It may or may not be profitable to risk small (hopefully) losses if the quantity and price can be increased through credit sales. If the decision is made to extend credit, the risk of loss can be reduced by requesting and checking out credit references and financial information, being prompt in billing and being aggressive in collecting.

In advertising and merchandising hay effectively over a long period of time, it is advisable to be honest, treat customers fairly, understand and try to fill the needs of customers and be specific about hay available for sale. Again, sales should be targeted to specific markets for the highest average price.

Table 1.
Equivalent Prices per Ton and per Bale for Small, Square Hay Bales*

Price/Ton	Bale Weight (Pounds)	Price/Bale	Price/Ton	Bale Weight (Pounds)	Price/Bale
$50	40	$1.00	$80	40	$1.60
	45	$1.12		45	$1.80
	50	$1.25		50	$2.00
	55	$1.38		55	$2.20
	60	$1.50		60	$2.40
$60	40	$1.20	$90	40	$1.80
	45	$1.35		45	$2.02
	50	$1.50		50	$2.25
	55	$1.65		55	$2.48
	60	$1.80		60	$2.70
$70	40	$1.40	$100	40	$2.00
	45	$1.58		45	$2.25
	50	$1.75		50	$2.50
	55	$1.92		55	$2.75
	60	$2.10		60	$3.00

** Prices per ton other than those shown can be used to calculate bale prices. For example, at a price of $120/ton, the price per 50-pound bale is 1.2 ($120/$100) times the price shown when hay is valued at $100/ton. The price per bale is $3 ($2.50 times 1.2). A bale price can be converted to a ton price by dividing the ton weight (2000 pounds) by the actual weight of a bale. A 45-pound bale selling for $2 is equivalent to a per ton price of $88.89 (2000 pounds divided by 45 pounds times $2).*

Summary

Cash hay production in Tennessee is attracting increasing interest. Because the hay enterprise appears to be only marginally profitable with average yields and prices, a sound production-management-marketing program is essential if it is to make a significant contribution to income. A hay producer can improve profitability of the hay enterprise by improving yields and quality, and by making the effort to evaluate marketing opportunities and the associated marketing costs, market prices and quality requirements of each alternative. At this point, hay sales can be targeted to specific markets. Contact your county Extension office for assistance in developing an appropriate hay production-management-marketing program.

Table 2. Equivalent Prices per Ton and per Bale for Large, Round Hay Bales*

Bale Size																			
4ft Diameter x 4ft Length				4ft Diameter x 5ft Length				5ft Diameter x 4ft Length				5ft Diameter x 5ft Length				6ft Diameter x 5ft Length			
Price $/ton	Bale Density	Weight (lbs)	Price $/bale	Price $/ton	Bale Density	Weight (lbs)	Price $/bale	Price $/ton	Bale Density	Weight (lbs)	Price $/bale	Price $/ton	Bale Density	Weight (lbs)	Price $/bale	Price $/ton	Bale Density	Weight (lbs)	Price $/bale
$40	Low	250	$5.00	$40	Low	300	$6.00	$40	Low	400	$8.00	$40	Low	500	$10.00	$40	Low	700	$14.00
		300	$6.00			375	$7.50			500	$10.00			600	$12.00			850	$17.00
		350	$7.00			450	$9.00			550	$11.00			700	$14.00			1,000	$20.00
	High	450	$9.00		High	550	$11.00		High	700	$14.00		High	900	$18.00		High	1,300	$26.00
		600	$12.00			750	$15.00			1,000	$20.00			1,200	$24.00			1,700	$34.00
		700	$14.00			900	$18.00			1,100	$22.00			1,400	$28.00			2,000	$40.00
$50	Low	250	$6.25	$50	Low	300	$7.50	$50	Low	400	$10.00	$50	Low	500	$12.50	$50	Low	700	$17.50
		300	$7.50			375	$9.38			500	$12.50			600	$15.00			850	$21.25
		350	$8.75			450	$11.25			550	$13.75			700	$17.50			1,000	$25.00
	High	450	$11.25		High	550	$13.75		High	700	$17.50		High	900	$22.50		High	1,300	$32.50
		600	$15.00			750	$18.75			1,000	$25.00			1,200	$30.00			1,700	$42.50
		700	$17.50			900	$22.50			1,100	$27.50			1,400	$35.00			2,000	$50.00
$60	Low	250	$7.50	$60	Low	300	$9.00	$60	Low	400	$12.00	$60	Low	500	$15.00	$60	Low	700	$21.00
		300	$9.00			375	$11.25			500	$15.00			600	$18.00			850	$22.50
		350	$10.50			450	$13.50			550	$16.50			700	$21.00			1,000	$30.00
	High	450	$13.50		High	550	$16.50		High	700	$21.00		High	900	$27.00		High	1,300	$39.00
		600	$18.00			750	$22.50			1,000	$30.00			1,200	$36.00			1,700	$51.00
		700	$21.00			900	$27.00			1,100	$33.00			1,400	$42.00			2,000	$60.00
$70	Low	250	$8.75	$70	Low	300	$10.50	$70	Low	400	$14.00	$70	Low	500	$17.50	$70	Low	700	$24.50
		300	$10.50			375	$13.13			500	$17.50			600	$21.00			850	$29.75
		350	$12.25			450	$15.75			550	$19.25			700	$24.50			1,000	$35.00
	High	450	$15.75		High	550	$19.25		High	700	$24.50		High	900	$31.50		High	1,300	$45.50
		600	$21.00			750	$26.25			1,000	$35.00			1,200	$42.00			1,700	$59.50
		700	$24.50			900	$31.50			1,100	$38.50			1,400	$49.00			2,000	$70.00

**Prices per ton other than those shown can be used to calculated bale prices. For example, at a price of $80/ton, the price per 900-pound, high density 4'x5' bale is 1.14 ($80/$70) times the $70/ton price. The price per bale is $31.50 times 1.14, or $35.91 per bale. A bale price can be converted to a ton price by dividing the ton weight (2,000 pounds) by the actual weight of a bale. A 500-pound 5'x4' low density bale selling for $14.00 is equivalent to a per ton price of $56.00 (2,000 pounds divided by 500 pounds times $14.00).*

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