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THE ECONOMICS OF FORAGE & BEEF PRODUCTION IN EAST TEXAS

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East Texas is forage country. Agriculture in terms of farm sales increased by $260 million from 1978 to 1979 in the 37 counties of the Build East Texas (BET) area. The $1.2 billion of farm sales is strongly tied to beef, dairy and hay. Farm income from beef was $376.9 million, dairying $168.2 million and hay sales $82.1 million resulting in a total of $627.2 million in 1979 or over 52% of the total farm sales.

The beef and dairy industry are heavily dependent on forage production and it is accurate to say that the key to profits in East Texas animal production is well managed and utilized forages. Hay produced for off-farm sale has increased dramatically during the past decade. The BET area has gone from a hay importing region to a hay exporting region. Much of the hay moves into Oklahoma and Central Texas. Hay for sale as cash crop is fifth in farm sales in the BET area. It is surpassed only by beef, forestry, dairying and poultry and exceeds the aggregate of all other field crops and all nursery and horticulture enterprises.

The United States has approximately 37 million beef cows. The state of Texas has 16% of the nation's cows or around 6 million head. The BET area has over 1 million cows or 17% of the Texas total or 3% of the nation's total beef cows.

The cow-calf industry in East Texas is comprised of predominately small herds. Over 61% of the area's cows are in herds of 99 or less. These small herds are owned by over 91% of the producers as shown in Table 1.

A large portion of these producers are not full-time farmers or ranchers. They, like workers in other occupations, must hold two jobs to make economic ends meet. These small beef producers are definitely not "hobby farmers". The income from these small herds is a needed source of income and is necessary for family survival and to the health of the local communities' economy.

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The work by forage and animal scientists is applicable to nearly all size farms. According to agricultural economists, the productive efficiency of all but the smallest herds is comparable. Only developments in machinery and mechanization provide the larger producers with any economic advantage.

TABLE 1. BEEF COW OWNERSHIP BY HERD SIZE
(Percent of Farms Owning Percent of Cows)
For All Farms - Northeast Texas

Beef Cow Numbers Per Farm	Percent Of Cows In Herds	Accumulative Totals (Percent)	Percent Of All Farms	Accumulative Totals (Percent)
1 - 19	10.42	10.42	40.54	40.54
20 - 49	26.62	37.04	35.78	76.32
50 - 99	24.08	61.12	14.88	91.20
100 - 199	19.01	80.13	5.95	97.15
200 - 499	11.13	91.27	2.36	99.51
500 and over	8.74	100.00	.49	100.00

Until recently, it was felt that the small cow-calf producers should produce and conserve forage as hay for their on-farm use. However, Extension Service observations and experiences indicate that the machinery costs (either operator-owned or custom work) have increased so rapidly that these smaller producers may be able to purchase hay at costs only slightly above their own production costs. A new enterprise of commercial hay production is developing in the area.

Larger hay production units can spread fixed costs of machinery over their production units so that their total costs per unit are reduced. Farmers with less than 10,000 conventional bales generally cannot afford the investment in hay harvesting equipment. From Table 1, it is clear that most

cattle producers in the East Texas area do not require that large a volume of hay. In addition to increasing costs, custom operators are difficult to schedule and the quality of hay suffers because of over maturity by eventual harvest. In summary, the phenomenal growth in cash sales of hay can be explained by the following factors:

1) The Texas Agricultural Extension Service and Texas Agricultural Experiment Station supporting farmers in their attempt to remain financially solvent have devoted a major effort to forage production, including hay.
2) This area and the surrounding regions have experienced an expanding livestock economy.
3) Northeast Texas has a comparative advantage over the adjacent areas in the production of hay. The acceptance of Coastal bermudagrass and the expansion of that acreage, plus our soil types and rainfall advantage have supported this trend.
4) The structure of our beef and dairy economy is encouraging the trend to expand commercial hay production. For example, over 61 percent of the beef cows in Northeast Texas are in herds of 99 cows or less. These smaller operations are probably finding that it is more profitable to devote their available land and labor resources to improving and intensifying their livestock management rather than conserving hay. The increase in the costs of machinery and custom baling are also contributing factors.
5) The simplicity of hay production and its economic profitability. Hay is the most profitable extensive type field crop in the area. A good producer can consistently exceed $100 per acre over labor, other production costs and fixed costs. Larger commercial operations can significantly lower conserving costs by the purchase of equipment out of reach of smaller producers.

Production costs of Coastal bermudagrass hay are shown in Table 2.

TABLE 2. ESTIMATED COSTS & RETURNS FOR COASTAL BERMUDAGRASS HAY - NORTHEAST TEXAS

INCOME:	
Hay (300 bales at $1.30 each)[1]	$390.00
TOTAL INCOME[1]	$390.00
VARIABLE COSTS:	
Fertilizer 300-100-200	$ 94.00
Herbicide	2.25
Machinery, Tractors & Labor	12.75
Interest on Operating Capital	3.61
CUSTOM BALING (300 bales @ $.40)	$120.00
TOTAL OPERATING COSTS	$232.64
RETURNS ABOVE OPERATING COSTS	$157.36
FIXED COSTS	$ 22.92
TOTAL COSTS	$255.56
NET RETURNS	$134.44

[1]Hay Sold in Field. Projected 1979.

Beef Production Costs

The cost of maintaining a cow in East Texas is increasing rapidly. Variable costs are now being equaled by fixed costs as shown in Table 3. While the profit of nearly $130 per cow looks good, notice that it is only favorable with a high percent calf crop and favorable prices.

TABLE 3. ESTIMATED COSTS & RETURNS FROM COW-CALF PRODUCTION IN NORTHEAST TEXAS

INCOME:	
Calves (440 lb. calf @ $.97 with 86% calf crop)	$367.05
Cull cows (1,000 lbs. @ $.65 replaced every 8 years	78.00
Hay (22 bales @ $1.25)	27.50
TOTAL INCOME[1]	$472.55
VARIABLE COSTS:	
Pasture Improvement	$ 68.12
Hay Baling	29.80
Labor	34.29
Other Costs	35.06
Interest on Operating Capital	5.57
TOTAL OPERATING COSTS	$172.84
RETURNS ABOVE OPERATING COSTS	$299.71
FIXED COSTS	$169.94
TOTAL COSTS	$342.78
NET RETURNS	$129.77

[1]Assumes stocking rate of 2 acres per cow with 8 year cow life and 2% cow death loss.

Forage production well-managed and utilized can reduce costs by increasing stocking rate, sale weights and calving percentage at the lowest cost per pound of beef sold.

Forage production techniques and animal management practices developed at the Texas A&M Research and Extension Center at Overton are designed to permit the producer to increase his animal's nutrition level through forages and to maximize profits. The percent calf crop is the one goal that a high quality forage program can achieve that will result in the greatest profits. At the same time, calf weights and animal health will be improved. For the producer selling 500 pound calves, a 10% loss in calving percentage represents a 50 pound loss per cow average in pounds of beef sold.

TABLE 4. EFFECT OF CALVING PERCENTAGE ON PER POUND COST OF PRODUCING BEEF

(Production Cost in Lbs. of Beef With Total Cow Cost - $343)

	WEANING WEIGHT					
	500	450	425	400	375	350
100% Calf Crop	.69	.76	.81	.86	.92	.98
90%	450 .76	405 .85	382 .90	360 .95	337 1.02	315 1.09
80%	400 .86	360 .92	340 1.01	320 1.07	300 1.14	280 1.23
70%	350 .98	315 1.09	297 1.16	280 1.23	262 1.31	245 1.40
60%	300 1.14	270 1.27	255 1.35	240 1.43	225 1.52	210 1.63

Top Figure - Lbs. Calf Produced/Cow

Bottom Figure - Cost/Lb. of Calf

A producer with $343 per cow costs and 100% calf crop has $.69 per pound cost in calves sold. With a 70% calf crop, this cost increases to $.98 pound with only 350 pounds of calf sold per cow as shown in Table 4.

FORAGE PRODUCTION PRACTICES TO INCREASE PROFITS

Intensify grazing to lower cost per cow and increase nutrition and production. There is a great deal of opinion that increasing energy and fertilizer costs will cause East Texas cow-calf producers to reduce fertilizer usage severely and stock fewer cows per acre. In the opinion of this writer, the extra chemicals and mechanical methods required to prevent undesirable species (both herbaceous and woody) and to maintain forage quality under a reduced fertility program will increase costs. In addition, the interest and investment in additional land per cow make an extensive system less profitable. The optimum level will remain about one cow per one to two acres of total forage land. Rotational grazing, particularly of summer perennials, will become more necessary. If producers decide to go the purchased hay route, they will want to reduce the acreage of summer pastures to improved quality and reduce excess summer production.

To limit hay buying needs, an increased acreage in winter pastures of small grains and ryegrass and the expansion of clover-ryegrass overseeding on the remaining summer perennial acreage is required. The improvement in forage quality will result in better animal nutrition and increased calf crops and sale weights. The incorporation of small grains for the cow herd will enhance the desirability of fall calving and the need for restricted (2 hours per day) grazing on the winter pasture. This in turn will significantly reduce feeding labor as well as hay needs.

ANIMAL MANAGEMENT PRACTICES TO INCREASE PROFITS

The improvement of forage production and quality will greatly improve animal nutrition and performance. In general, East Texas cow-calf producers need a crossbred cow with good milking ability. This type cow will probably require some Brahman blood. A purebred bull that will sire growthy calves is also essential.

Nutrition requirements vary with gestation and lactation periods so the forage program should have peak quality and quantity produced at the times when the cattle nutrient requirements are maximum. Costs

can be reduced if the major portion of the forage is grazed rather than conserved. A year round grazing program is highly desirable even if not completely attainable at this time.

Since forage quality is a function of stage of growth, pastures should be closely grazed. This necessarily involves rotational grazing. All market calves should be implanted with a growth stimulant. An overall animal health, management and marketing program should be closely integrated to the forage program.

SUMMARY - The cow-calf industry is an important industry in East Texas. Profitable production in the future will be based on a good forage program that maximizes grazing rather than conserving. Pastures should be a mixture of summer forages such as Coastal overseeded to winter legumes and ryegrass. Additional winter grazing can be obtained from small grain and ryegrass pastures. Research and Extension programs from the Overton Center are designed to help producers with these opportunities.