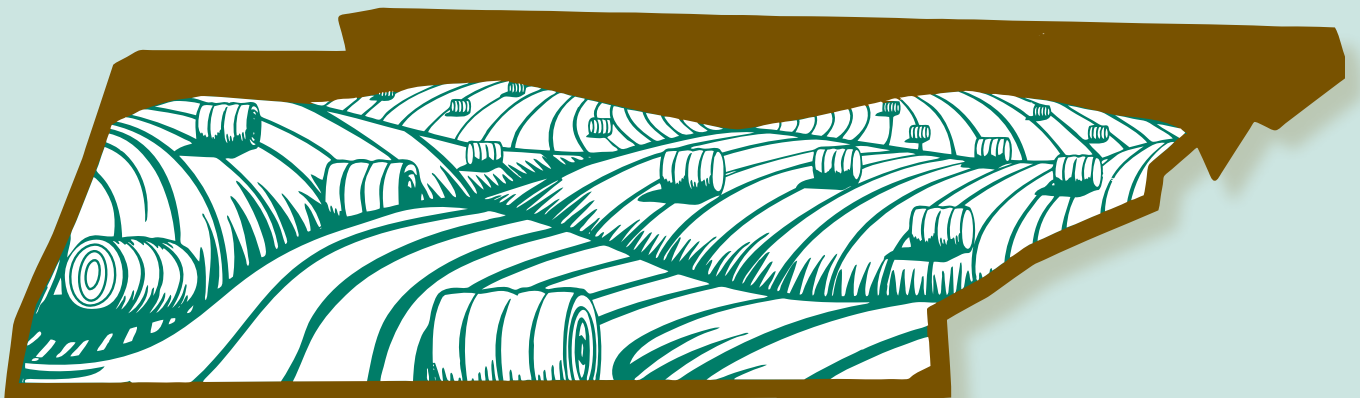


Tennessee Forage Budgets



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This publication contains short-term planning budgets for the most prevalent forage enterprises in Tennessee. Guideline tobacco, livestock and field crop budgets are published in separate publications.

Fertilizer Recommendations

The fertilizer recommendations in the forage budgets are generally for soils that represent a medium soil test. Farmers should have their soils tested to get maximum return from money spent for fertilizer. As forage programs are planned, fertilizer applications must be adjusted to soil test recommendations.

Trade Names and Pesticide Caution

Use of trade or brand names in this publication is for clarity and information; it does not imply approval of the product to the exclusion of others which may be of similar, suitable composition, nor does it guarantee or warrant the product.

Pesticides recommended in the publication were registered for the prescribed uses when these budgets were printed. Pesticide registrations are continuously being reviewed. Should registration of a recommended pesticide be canceled, it will no longer be recommended by the University of Tennessee.

To protect people and the environment, pesticides should be used safely. This is everyone's responsibility, especially the user. Read and follow label directions carefully before you buy, mix, apply, store or dispose of a pesticide. According to laws regulating pesticides, they must be used only as directed by the label.

Applicability and Precision

These budgets are intended as guides only. Adjustments can and should be made when needed to represent specific farm situations. The computer program used to construct these budgets internally calculates totals to the 7th decimal place. Totals for a column may not equal the total of rounded numbers.

Table of Contents

Tennessee Forage Budgets	5
Methods and Assumptions.....	5
Establishment Costs and Methods	5
Pasture Budgets.....	6
Hay and Silage Budgets.....	6
Machinery.....	7
Machinery and Equipment Table	8
Alfalfa Budgets	
Traditional Establishment	9
No-Till Establishment	11
Hay	13
Intensive Grazing	15
Hay Crop Silage	17
Cool-Season Grass Budgets	
Traditional Establishment	19
No-Till Establishment	21
Hay	23
Intensive Grazing	25
Continuous Grazing.....	27
Hay Crop Silage	29
Cool-Season Grass/Clover Budgets	
Traditional Establishment	31
No-Till Establishment	33
Hay	35
Intensive Grazing.....	37
Continuous Grazing.....	39
Hay Crop Silage	41
Summer Annuals Budgets	
Hay, No-Till Establishment.....	43
Intensive Grazing, No-Till Establishment	45
Hay Crop Silage, No-Till Establishment.....	47
Winter Annuals Budgets	
Hay, Traditional Establishment	49
Hay, No-Till Establishment.....	51
Intensive Grazing, No-Till Establishment	53
Hay Crop Silage, Traditional Establishment.....	55
Hay Crop Silage, No-Till Establishment.....	57
Corn Silage Budgets	
Traditional Establishment	59
No-Till Establishment	61
Bermudagrass Budgets	
Traditional Establishment, Seeded	63
No-Till Establishment, Seeded	65
Clipping Establishment	67
Hay	69
Intensive Grazing	71
Grain Sorghum Budget	
Silage, No-Till Establishment	73

Tennessee Forage Budgets

Forage producers in Tennessee can produce a wide range of forage crops. Annual crops may be grown for three to six months as winter or summer forages. Perennial crops may be planted that produce forages for five years or longer. Many forage crops can be grazed, cut for hay or chopped for silage. This publication presents estimated forage crop establishment and production costs for many of these options, assuming above-average levels of management. These budgets should be viewed as examples of feasible forage-crop production methods. They are not necessarily the best ways of growing forage, nor are they to be considered as recommendations.

Methods and Assumptions

Each forage budget includes variable expenses, fixed expenses and labor expenses. Perennial forage crop budgets also include establishment costs. Fixed expenses in the budgets account for annual depreciation and interest costs associated with machinery, equipment and fences. The costs of owning or renting land are not included.

Most forages are produced on the same farms where they are fed to livestock. This causes very little market information to be available for forage crops, making it difficult to obtain typical or average prices for forages other than grass and alfalfa hay. Yield data are also limited, because many forage crops are not measured or weighed before they are fed. As a result, prices and yields are not shown in the forage crop budgets. However, break-even prices are calculated for silage and hay crops at yield levels representative of crops in Tennessee. Break-even prices represent cost-based estimates of forage-crop values.

Establishment Costs and Methods

All the costs of establishing annual forage crops are included in the annual forage crop budgets, because they produce forage for less than one year. Establishment costs for perennial crops must be spread over their productive lives, so that each year of production “repays” a portion of the costs to establish them. This is accomplished by constructing forage crop establishment budgets, then *amortizing* establishment costs for perennial crops. The total establishment cost for each perennial forage crop is treated as a loan that must be repaid, in equal annual payments with interest, during the productive life of the crop. The interest charge represents the cost of borrowing money to finance the establishment cost, if the funds are obtained from a lender. If an owner provides the funds to pay for establishment of a perennial crop, then the interest charge represents the earnings given up by not investing the money in some other activity, such as feeding livestock or purchasing shares in a mutual fund. Amortized establishment costs are included as fixed expenses in perennial forage crop budgets.

Several methods can be used to prepare seedbeds and establish forage crops. The best method to use is influenced by many factors, including soil conservation requirements, costs, soil types, crop rotations and equipment availability. These forage budgets present cost estimates for two establishment methods – traditional and no-till.

Traditional establishment is assumed to include plowing, disking and/or cultimulching before planting. *No-till establishment* eliminates all tillage operations. Seed is planted using sod planters or no-till drills. No-till establishment is usually performed by applying a burn-down

contact herbicide to stubble or a standing prior crop, then planting into the remaining crop residue. Adjustments should be made to the budgets to reflect establishment methods that differ from those used in the budgets. Each perennial forage production budget includes the amortized cost of establishing the crop using no-till planting. To determine production costs using traditional tillage, substitute the amortized cost from the traditional establishment budget in the forage production budget being analyzed.

Pasture Budgets

Two types of pasture budgets are included. Budgets for forage crops that are managed intensively using rotational grazing are referred to as *intensive grazing* budgets. *Continuous grazing* budgets represent the costs of pastures at lower levels of labor, management and production.

In the past, most livestock producers have managed continuous grazing systems, using primarily perennial grass or grass and clover forage crops. Many of the pastures included in continuous grazing systems have been in production for 20 years or more. Establishment and fencing costs are assumed to have been fully recovered for these pastures, so these costs are not included in the continuous grazing budgets. Thus, budgets for continuous grazing include only the costs to maintain perennial forage stands at low-to-moderate levels of production, plus minimal costs for annual fence repairs and maintenance.

For intensive grazing budgets, forage is assumed to be grown in fields sub-divided into smaller grazing paddocks. Following a short period of intensive grazing, each paddock will have a period of rest for forage regrowth. Pastures are grazed when the forage is at a high-quality stage of growth, resulting in increased efficiency in forage production and utilization.

Fence costs vary depending on the materials used, field size and paddock arrangement. In these budgets, fencing cost for intensively grazed crops is estimated based on a 10-acre field, with a high-tensile perimeter fence and polytape used for divider fence. Both the perimeter and divider fence are electrified. A 20-year life for the perimeter fence and a five-year life for the divider fence are assumed. Annual fixed costs for the fence are \$20.29 per acre, which includes \$12.50/acre in depreciation and interest charges for perimeter fences, and \$7.79/acre in depreciation and interest expenses for temporary divider fences. Annual fence repair costs are \$5.56/acre for perimeter fences and \$1.30/acre for temporary divider fences.

Hay and Silage Budgets

Large, 1,000 lb. round bales are used in harvesting all hay crops except alfalfa and bermudagrass, which are harvested as small, rectangular bales weighing about 50 lbs. Costs of removing hay from the field are included as stacking or hauling expenses. The budgets do not estimate the costs of storing or feeding hay.

The raw product for silage comes from the field as green chop. For finished silage, the green chop must be hauled from the field and blown into a silo, dumped in a trench or bunker and packed, or packed into a bag. It must be allowed to go through a fermentation period before reaching proper feeding condition. The silage budgets show expenditures for chopping, hauling and then blowing green chop into upright silos. Again, the budgets do not include storage or feeding costs for silage.

Machinery

All machinery and equipment used in the budgets is listed in the table on page 4. List prices were obtained from manufacturers during August 2005. Machinery ownership and operating costs are calculated following procedures developed in “Machinery Cost Calculation Methods,” AE&RD No. 13, 1998. This publication is available from the authors, or can be obtained online at <http://economics.ag.utk.edu>.

Depreciation and interest costs are estimated assuming all machinery and equipment is six years old. Interest expenses are calculated using an 8 percent interest rate. Fuel costs are based on a diesel price of \$2.10/gallon. All machinery costs are estimated on an hourly basis, then allocated to each budget according to the hours of use of each piece of machinery used in the budget.

Two tables are included with each budget. The first table summarizes the approximate month in which every cultural operation for the forage crop is performed. It also shows the machinery used in each operation, and the estimated time it takes to perform the operations based on speed of operation, width of machinery and field efficiency. Labor hours for operations assume that every hour of machinery operation requires 1.25 hours of labor. This labor hour adjustment accounts for time spent locating, hooking up, adjusting and transporting machinery. Labor cost is \$8.50 per hour, including wages, taxes and payroll overhead costs. This cost represents either a cash cost for hired labor or a non-cash opportunity cost for labor provided by the owner or farm family.

The second table accompanying each budget shows estimated costs per acre for each machine used in the budget. These costs are calculated using the costs per hour reported in the machinery table (page 4) multiplied by the hours of machinery use shown in the estimated machinery and labor requirements table. Variable costs, fixed costs and total costs are shown for each machine and for the entire forage budget on a per-acre basis. Note that labor expense is not included in these machinery costs.

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