

ECONOMIC ANALYSIS OF SELECTED HORSE  
PRODUCTION SYSTEMS IN OKLAHOMA

By

JENNIFER CHERYL GOODE

Bachelor of Science

University of California

Davis, California

1984

Submitted to the Faculty of the Graduate College  
of the Oklahoma State University  
in partial fulfillment of the requirements  
for the Degree of  
MASTER OF SCIENCE  
December, 1987

Thesis  
1987  
G647e  
cop. 2



ECONOMIC ANALYSIS OF SELECTED HORSE  
PRODUCTION SYSTEMS IN OKLAHOMA

Thesis Approved:

*Odele L. Welch*  
\_\_\_\_\_  
Thesis Adviser

*Don R. Toppleff*  
\_\_\_\_\_

*Ralph A. John*  
\_\_\_\_\_

*Norman N. Durham*  
\_\_\_\_\_  
Dean of the Graduate College

## TABLE OF CONTENTS

Chapter	Page
I.	INTRODUCTION ..... 1
	Methodology ..... 4
	Procedures..... 4
II.	OVERVIEW OF OKLAHOMA HORSE OPERATIONS AND LITERATURE REVIEW ..... 6
	Broodmare Farm Producing Yearlings for Sale..... 6
	Stallion Farms ..... 7
	Sales Preparation Farms ..... 7
	Breaking and Training Facilities ..... 8
	Focus of this Study ..... 9
	Review of Literature..... 9
III.	ACTIVITY BUDGETS FOR HORSES AND PASTURE ..... 14
	Components of Activity Budgets ..... 15
	Horse Farm Dynamics ..... 27
	Nutrient Requirements..... 31
	Nutritional Contribution of Pasture System..... 32
	Salt and Minerals..... 42
	Medical and Farrier Expenses ..... 42
	Labor ..... 45
	Machinery and Equipment Operating Costs..... 50
	Intermediate Capital Items and Ownership Costs ..... 50
	Operating Capital..... 58
	Horse Investment ..... 58
	Taxes..... 59
	Insurance..... 60
	Land ..... 60
	Production and Sales ..... 61
	Pasture Budgets and Pasture Costs in Horse Budgets..... 63
IV.	ANALYSIS OF HORSE ENTERPRISE BUDGETS..... 64
	40 Mare Breeding Farm Producing Yearlings on Year Round Pasture System..... 64
	40 Mare Breeding Farm Producing Yearlings on Drylot ..... 65
	Two Stallion Unit, Confined System ..... 66
	Outside Mare Boarding Operation..... 66

Chapter	Page
Horse Operation Overhead Cost .....	67
The Farm Layout.....	68
Whole Farm Budget Analysis .....	70
Returns to Owned Resources.....	77
A Horse Owners Hypothesis.....	82
The Effect of Different Weaning Rates .....	83
Tax Considerations .....	85
 V. SUMMARY AND CONCLUSIONS.....	 88
 A SELECTED BIBLIOGRAPHY.....	 93
 APPENDIX A - SELECTED PASTURE BUDGETS.....	 95

## LIST OF TABLES

Table	Page
I. Broodmares on Pasture Budget.....	17
II. Broodmares on Drylot Budget.....	19
III. Stallion Budget.....	21
IV. Outside Mare Budget .....	23
V. Overhead Cost Budget .....	25
VI. Miscellaneous Assumptions Used in Determining Pasture and Nutritional Requirements .....	28
VII. Ration and Hay Nutrients for Horse Herd.....	33
VIII. Nutrition Requirements Calendar for the Broodmare Band and Offspring.....	34
IX. Nutrients Required and Total Amount Fed to Different Classes of Horses on the Drylot System .....	36
X. Nutritional Requirements Met by Pasture and Supplement.....	39
XI. Breeding Farm Health Calendar.....	43
XII. Labor Needed for 40 Broodmares Producing Yearlings, Pasture System.....	46
XIII. Labor Needed for 40 Broodmares Producing Yearlings, Drylot System.....	47
XIV. Labor Needed for Two Stallions.....	48
XV. Labor Needed for Outside Mare Operation (40 Mares).....	49

Table	Page
XVI. Buildings and Equipment for a 40 Broodmare Pasture Operation .....	51
XVII. Buildings and Equipment for a 40 Broodmare Drylot Operation ....	52
XVIII. Buildings and Equipment for a Stallion Operation (2 Stallions).....	53
XIX. Buildings and Equipment for an Outside Mare Operation (40 Mares).....	54
XX. Buildings and Equipment for the Overhead Farm Costs Budget .....	55
XXI. Costs of Sending Yearlings to Auction.....	62
XXII. Whole Farm Analysis: 40 Broodmares Producing Yearlings on Pasture, 2 Stallions, Plus Overhead Costs.....	71
XXIII. Whole Farm Analysis: 40 Broodmares Producing Yearlings on Drylot, 2 Stallions, Plus Overhead Costs.....	73
XXIV. Whole Farm Analysis: 40 Broodmares Producing Yearlings on Pasture, 2 Stallions, 40 Outside Mares, Plus Overhead Costs...	74
XXV. Whole Farm Analysis: 40 Broodmares Producing Yearlings on Drylot, 2 Stallions, 40 Outside Mares, Plus Overhead Costs.....	75
XXVI. Average Sale Prices for <u>Heritage Place</u> Fall AQHA Yearling Sale.....	76
XXVII. Yearling Breakeven Price for Resource Scenario I.....	78
XXVIII. Yearling Breakeven Price for Resource Scenario II.....	79
XXIX. Yearling Breakeven Price for Resource Scenario III.....	80
XXX. Yearling Breakeven Price for Resource Scenario IV.....	81
XXXI. Costs of Different Broodmare Conception Rates.....	84

## LIST OF FIGURES

Figure	Page
1. Farm Layout.....	69



## ACKNOWLEDGEMENTS

I would like to thank Dr. Walker for his encouragement and advice throughout my graduate program. I also want to thank Dr. Topliff and Dr. Plaxico for serving on my graduate committee. Their suggestions and support were invaluable throughout the study. I would also like to thank Dr. Jobes for all his help with the budgets and for all the advice he gave me along the way.

To Henry and Linda Bowlen of Bowlen farms and Virdin and Renna Royce of Royce-R-Ranch I extend sincere thanks. Their involvement contributed greatly to this study. I also wish to thank Fred Schmidt, Charles A. Griffith, R. L. Dalrymple, Jim Pumphrey, Wadell Alton and Gary D. Simmons, of the Samuel Roberts Noble Foundation for their advice and ideas.

I also would like to thank my husband Mark for all his understanding and support through the rough times and his joy and enthusiasm through the good times. My parents, Billy Ray and Sharon Gowdy, encouraged and supported me and for this I thank them. My aunt Frances made me believe in myself and my abilities and I thank her for her constant love and support. I want to thank my officemate, Elaine Dickerson, for putting up with me on the bad days and sharing the good days with me. I extend a sincere thank you to all of these people.

## CHAPTER I

### INTRODUCTION

The Oklahoma horse industry is a large, important part of the Oklahoma economy. It has been described as a multibillion dollar industry providing jobs and income to many state residents (15). Much growth has occurred in recent years partly due to the advent of paramutual racing and the plan to build a major race track in Oklahoma City.

While the industry as a whole is growing, some horse farms are going out of business (25). Many of those remaining have financial trouble brought about in part by declining horse prices, high real interest rates and decreasing land values. A number of people entered the horse industry when the economy was much stronger, but now they are finding it difficult to continue operations. These economic times provide a real business management challenge. Hard, careful economic analysis by horse farm managers is needed to help them through the financial stress they face. Horse Farm managers need economic information in order to make good decisions concerning their operations. This type of information is not readily available and is the focus of this study.

Management has many functions but three very essential ones are planning, implementation and control (1). Planning is the most basic management function. It provides the mode of operation to accomplish the managers objectives. The implementation and control functions of management can only be successfully undertaken after careful planning. Implementing the plan that has been developed in the planning process is the

second major function of management and involves details of putting chosen plans into action. After the plan has been implemented, the control function measures performance and corrects deviations from expected behavior.

The objective of this study is to provide planning, implementation and control information to horsemen so they can improve their management skills. Good economic data are needed for successful horse farm management. Cost information, input use timing, ownership capital requirement and pasture requirements (if a pasture system is being utilized) is information that could be used by management for decision making. These and other questions of planning, implementation and control are answered by the horse enterprise budgets developed, presented and discussed in this study.

In the planning stages, enterprise budgets help managers determine the quantities and costs of various inputs such as feed and labor. Once the manager estimates production costs and returns, net income can be projected. The planning stage is a time for the manager to evaluate the operation and to analyze alternative operations such as running a breeding operation with just own mares or taking in outside mares to breed to his stallions also. If managers have cost information such as the budgets provide, they can figure their average returns and assess overall industry potential.

Enterprise budgets can be used in the implementation stages also. The budgets provide monthly detail, describing jobs to be done each period and the inputs accompanying them. The manager can anticipate needs and be sure that inputs are available on schedule. For the control function of management, product, input and cost amounts projected by the budgets can be compared with actual amounts used or produced. If a significant deviation is noted, a need for corrective measures is signaled. The type of data included in the horse enterprise budgets such as operating inputs, fixed costs (e.g.

depreciation, interest on intermediate capital and taxes and insurance on machines) and timing of use are not always clearly known by the horse farm manager.

Because the production period is so long for horses or because of inadequate record keeping, farm managers often lose track of costs. Managers don't even consider many "hidden costs". There have been few detailed attempts at quantifying the costs associated with a horse breeding operation.

Many decisions farm managers make are based on expected costs. Questions such as what daily fee to charge for outside mares, what breakeven price is needed for yearlings or whether to use a drylot or pasture system are asked by farm managers and can be answered by the budgets presented in this paper.

Farm managers also want to know if their horse operation will be profitable. The budgets developed in this study can be used to look at the profitability of a horse farm. Profitability analysis is used to determine whether an investment project will contribute to long-run returns for the firm. The budgets can be used to determine by how much expected returns exceed expected cash operating costs and if returns exceed cash and ownership costs. Decisions to invest in horses, machinery and land depend on covering both annual cash operating costs and ownership costs such as interest on owned capital and depreciation.

Whether the investment is possible is a question of financial feasibility. The available credit and enterprise cash receipts along with other financial resources must cover monthly cash outflow. An analysis of a potential business may show it is profitable but not financially feasible, or vice versa. Budgeting can answer the question of profitability, but other data such as balance sheets and cash flow projections are needed to answer the feasibility question.

## Methodology

Several different types of horse budgets can be created. An enterprise budget is a general term applied to a budget which summarizes annual inputs, production, prices, costs, returns and resource requirements per unit for a specified enterprise. Horses can be produced in many ways so activity budgets are needed. Activity budgets report annual inputs, production, prices, costs, returns and resource requirements for a unique horse production system. For example, separate (activity) budgets are needed for broodmares producing yearlings on a pasture system and broodmares producing yearlings on drylot. The budgets presented in Table I-V are activity budgets. Whole farm budgets can also be created by combining activity budgets to look at costs for the whole farm operation. Whole farm analysis is presented in Chapter III.

## Procedures

The development of an enterprise budget requires the collection of data and information relating to the general operation of the farm and the inputs, cost and timing. Data were collected for this study largely through personal communication with individuals in the horse industry. Four horse farms were visited and the owners were asked many questions regarding the operation of their farm and the inputs used. Retailers who sell horse related products were visited and asked about the costs of their products. A large amount of information was obtained through communication with the horse specialists in the Animal Science Department of Oklahoma State University (8,26). Much of the pasture plan was developed with the help of individuals at the Samuel Roberts Noble Foundation at Ardmore, Oklahoma and the OSU Agronomy

Department (23). Nutritional requirement information came from both the Animal Science Department and books and articles on horse nutrition (4, 7, 9, 10, 18, 19, 21, 21). Insurance information was obtained from a horse insurance specialist (5).

The data were analyzed and broken down to a per horse or per mare units and entered into the appropriate budget. More explanation of how the data were processed for use in the budgets is given in Chapter III.

This report presents information for economic analysis of horse operations in Oklahoma. In Chapter II, an overview of horse operations is outlined. The overview looks at objectives and general resource needs for each of these operations. A review of literature pertinent to the study is also given in Chapter II. Cost enterprise budgets are previewed and budget data processing is explained in Chapter III. In Chapter IV, each of the enterprise budgets is presented. The budgets are combined in several ways to demonstrate their use in whole farm analysis. Using the whole farm analysis, breakeven yearling prices are estimated. Other considerations for using the enterprise budgets are presented and a short explanation of tax advantages is given. Chapter V provides a summary and conclusions of the study.

## CHAPTER II

### OVERVIEW OF OKLAHOMA HORSE OPERATIONS AND REVIEW OF LITERATURE

Many kinds of horse operations are found in Oklahoma. The type of operation chosen by horsemen depends on their interests foremost, but also on other variables such as the quantity of land and type of facilities available, the amount of capital available to invest, and quality and quantity of labor available. The four most typical horse farm operations seen in Oklahoma are: 1) broodmare farms producing yearlings for sale; 2) stallion farms; 3) sales preparation farms; and, 4) breaking and training facilities. These can be found as separate operations or as a combination of two or more of the above.

#### Broodmare Farm Producing Yearlings for Sale

A yearling producer takes the product from conception to sale in a time period of from 25 to 30 months. The yearlings can be sold at auctions or private treaty. The producers may have only a few mares or they could have over a hundred. They might breed their mares to outside stallions or stand one or more of their own. If they stand their own stallion(s), they would most likely take in outside mares during the breeding season. They might also board a few outside mares on a year round basis for some breeding customers.

The production of yearlings requires a high capital investment for desirable breeding stock and stud fees, as well as for land and buildings. If the feeding

regimen chosen by the producer includes a well managed pasture system, a large amount of land might be required depending on the number of horses to be sustained. Even without an intensive pasture system, some pasture is usually required because farm managers generally like to keep mares and foals on some amount of pasture for esthetic reasons and to give the horses exercise. Very high managerial ability is needed and hired labor must be knowledgeable about the business.

### Stallion Farms

A stallion farm operator stands, on average, 4 to 8 stallions and breeds outside mares almost exclusively. On top of the stud fee, which can range from between \$500 to well over \$10,000 in Oklahoma, a daily mare care fee is charged the mare owner for the length of time the mare is at the farm. This daily fee covers all of her feed and labor expenses plus some overhead costs such as record keeping. All of her breeding and vet costs are passed directly to her owner. This type of operation does not require a large investment in land, but a very high capital investment is needed for purchasing the stallions. High managerial ability is needed and personnel must be capable in handling stallions as well as other aspects of the business. Attractive farm surroundings are very important in this type of operation.

### Sales Preparation Farms

Sales preparation involves getting the horse (e.g. a yearling) in good flesh with a sleek hair coat and teaching the individual to walk smartly and set up properly for showing. Since a horse that has been properly prepared for sale can bring considerably more than the same individual improperly prepared,



more and more horsemen are using this type of service. The length of time involved in sales preparation can vary from two weeks to 30 days for broodmares, and 90 days or longer for sales yearlings. During that time horses are kept in individual stalls, groomed daily, taught their manners and exercised. These farms have a daily charge during preparation to cover the costs of bringing the horse up to the sale, plus the agent gets a percentage commission on the final bid.

This type of operation does not necessarily require a large amount of land because the horses are kept in individual stalls, but high capital costs for facilities are needed. Those that fit horses for sales need to be quite knowledgeable about the fitting process and understand the needs of the market. High quality hired labor is needed.

#### Breaking and Training Facilities

Breaking and training facilities provide the basic training for horses headed for the racing circuits and the show rings. The length of time a horse stays with the trainer depends on the purpose and degree of training required. The owner is charged a daily training fee and in some instances the trainer receives a percentage of any monies earned by the horse while being raced or shown under that particular trainer.

The training facilities can be extensive and require considerable capital investment, both in barns to house the horses and in training tracks for racing horses or show arenas for show horses. If horses are being trained to work cattle, additional facilities will be needed to keep the cattle. The breaking and training of horses represents a very specialized activity requiring a high level of

managerial skill and experienced labor. Training young horses requires patience, knowledge and experience.

### Focus of this Study

This study concentrates on the breeding level of the horse business. An equine breeding operation often represents a significant investment in time and finances. Due to the lengthy production period, the breeder may have to wait several years before realizing a return on the initial investment. It would be easy to lose track of costs put into the business over this time period so the actual net income made from the operation might be hard to calculate. The horse enterprise budgets developed are intended to be used by the breeding farm manager to help assess returns from the business. These budgets should help them determine if they are running a profitable operation.

### Review of Literature

A useful technique in farm management is budgeting. Horse farms could benefit greatly from budgeting, but little research has been done on identifying all of the costs involved in horse production in Oklahoma. Four publications which discussed costs of a breeding operation were helpful in guiding the research.

Lawrence and Downes (14) looked at the costs and returns of Maryland's standardbred breeders. Because they were studying a particular breed used for racing they were able to include returns in their study. The basic questions that prompted their analysis were: 1) Which, if any, breeding operations were profitable? 2) Why were breeding operations generally losing money? 3)

Does there appear to be an optimum sized operation? 4) Should breeders race? and 5) What were the changes since 1970?

They found low profits in the standardbred industry. Only 19% of the breeders sampled showed a profit on their total operations. They found that size was also a factor in profitability. Twenty nine percent of the farms with over five mares were profitable while only 17% of farms with less mares showed a profit.

Breeding farms lost money due to lack of significant sales revenue. Only two farms in their study sold more than two yearlings. Farms that conducted only breeding and did not race any of their own horses would have to have a higher sales price to breakeven. This study found that mean yearling price would have to equal \$5,900 for the smallest farms (one or two mares) and \$11,400 for the largest farms (greater than 10 mares) in order for breeding farms to breakeven.

Larger farms were more likely to show a profit. On the larger farms, income from sales offset the significantly higher expenses.

It appeared that breeders should race some of their horses to reduce money losses given the existing costs and yearling market. Racing income in 23% of the farms made a profitable farm out of a losing operation.

Since 1970, standardbred farms had increased somewhat in size. Investment, adjusted for inflation, increased only on the largest farms; however, acres and labor per horse showed an overall decline. Only the smallest farms had a decrease in expenses and only these showed an improvement in net farm income. Real net income from both breeding and racing operations improved only on the largest farms.

Judge and Petritz (12) looked at the economics of a horse breeding program. They felt that before someone considered entering the breeding

business consideration should be given several factors; 1) the availability of land and capital, 2) the costs that are unique to a breeding program and, 3) the objectives of the breeding program. The above considerations help decide such things as the size of the broodmare band and the feasibility of maintaining a stallion.

Petritz and Judge developed a budget for the production of a foal beginning at the time the mare is bred and assuming selling times to be for weanlings, yearlings, two year olds and three year olds. They looked at both the alternatives of breeding to an outside stallion and maintaining one on the farm.

They stated that the decision to sell offspring should be based on cost information as well as considerations of the desired return to labor, management and capital. Their assumed prices for weanlings, yearlings, two year olds and three year olds were \$2,500, \$3,000, \$4,000 and \$5,000 respectively. The mare cost per foal was \$1,860 and consisted of mare depreciation, building and equipment depreciation, breeding costs, feed, bedding, veterinary expenses, farrier, insurance and "barren overhead" which was the number of years the mare was barren multiplied by her costs divided by the number of foals she is expected to have. To sell the foal as a weanling total costs are the mare costs of \$1,860 plus more grain, veterinary expenses, insurance, farrier and advertising for a total of \$2,055. To sell the young horse as a yearling, mare and offspring costs to weanling are added to additional building and equipment depreciation, feed, bedding, veterinary expenses, insurance, farrier, advertising and auction fee for the yearling period to get a new cost total of \$2,675. For the two and three year old, more of the same items are added to costs. These cost estimates were meant to be used as a guide by which horse breeders could calculate their own costs and returns.

Lohman and Kirkpatrick (16) looked at the costs of owning a thoroughbred broodmare used to breed race horses. The average price for an in-foal broodmare in 1983 was just under \$35,000 so that price was used in their example of the costs of purchasing a mare. They also included a 5% agents fee which brought the price to \$36,750. For the first year of ownership, operating expenses for a Kentucky broodmare were \$2,560 which included insurance, transportation to the farm, board, and vet and farrier. The total operating expenses for the second year of ownership were \$16,645 which included board, vet and farrier charges, insurance and stud fee. The total operating expense of bringing the first yearling to sale are \$24,390. This includes broodmare expenses to weaning time, weanling expenses, yearling expenses and broodmare depreciation for the 1st year.

In the 1970's and early 1980's, the thoroughbred broodstock market was so strong that almost every broodmare purchased made a profit for her owners through selling her foals at yearling sales. But today with the leveling off of demand and the over supply of yearlings, profits cannot be so easily made. The authors reminded their readers that the costs of getting into the yearling market are mostly fixed. The only varying factors between a \$10,000 mare and million dollar mare are depreciation, insurance and stud fee. They feel that it is better to own part of a good horse than all of a bad one.

The research staff of Equine Research, Inc. (6) have looked into the costs of raising a foal. They state that it is important to analyze the costs of horse production before committing a large investment to a breeding enterprise. A breeder needs to evaluate expenditures periodically and should allocate the annual production costs to the annual foal crop. The average costs per foal for a business enterprise (50 farm-owned mares, one stallion, and three employees) were \$3,970.21 and these included feed, farrier services, veterinary

services, pasture maintenance, sales commissions and consignment fees, stallion depreciation, mare depreciation, facilities depreciation, stallion insurance and labor. These expenses brought the foal up to weanling age. The authors believe that cost analysis can provide the breeder with helpful information and a basis for making important management decisions.

The research presented in this report built upon many of the ideas these authors put forth. Knowing the costs involved in running a breeding operation can help a potential horse breeder determine if they want to enter the business or help a farm manager make better management decisions. Determining breakeven prices needed to cover specified costs can help a manager determine if his operation will be profitable. The cost budgets presented in this paper have all of the inputs that some of the above authors looked at and some more. An attempt was made to include every cost, both variable and fixed incurred by the average horse farm. Horse farm managers can use these budgets as guidelines for determining their costs and, in turn, be able to better determine the rate of return to their businesses.

## CHAPTER III

### ACTIVITY BUDGETS FOR HORSES AND PASTURE

Activity budgets for four horse farm operations plus an overhead farm cost budget are developed in this study. These include budgets for broodmares producing yearlings on a pasture system, broodmares producing yearlings on drylot, a stallion operation and an outside mare system. Outside mares are externally owned mares brought onto the farm for breeding purposes. In this case, a drylot is a pasture too small or too heavily stocked to allow for adequate forage production. These budgets are meant to be additive so a horseman can combine budgets to more accurately represent a specific horse operation. The overhead farm cost budget is designed to be used with all the horse budgets. Budgets for selected Oklahoma pastures to be used in the budget for a broodmare producing yearlings on a pasture system are presented in Appendix A.

In this study, only the cost side of the budgets is considered. The horse industry contains many breeds and many breeding and training objectives. The returns to the different breeds and training objectives vary widely. Prices for yearlings can range from \$500 to well above \$100,000 (26). The better thoroughbred yearlings at the Keenland Sale in Kentucky sell for over \$1,000,000. Although the range in yearling prices is not so great in Oklahoma, it is still a problem to develop representative prices for enterprise budgets. Stud fees also range greatly between breeds as well as within breeds. Total sales

for a horse operation were just too variable to try to include in these budgets, thus, receipts are left to horse owners and others in the horse industry to determine or as the subject of further study.

Data gathered to be used in these budgets concern costs of inputs, production and timing. They are purposely not exact for any one farm. These budgets are meant to be used as representative cases of horse operations. Not all breeding farms are the same. Different breeds of horses as well as different management styles will result in different costs, or require different quantities or types of inputs. But, these budgets can be used as a starting place in figuring costs to a specific horse operation. They can also be used as reminders of all the different costs inherent to the horse business. The column in the horse budgets for "your value" is very important. If producers feel they have better information concerning a cost item, it can be entered there along with actual stud fees and expected yearling sales. Published budgets are very versatile and adaptable to any breeding farm.

A new development in the enterprise budget system is the potential for transfer of the budgets to microcomputer. If an individual farm manager wants a complete printout on farm costs and returns, farm records can be taken to a county extension office, and with the budgets presented in this paper as a base, the manager and the county extension agent can build a personalized budget for a particular operation. Clearly, thorough and concise record keeping can be invaluable to the manager in providing the data needed.

#### Components of Activity Budgets

The procedures, data and assumptions used in the four breeding farm budgets and the horse farm overhead costs budget are described in the



following sections. These budgets were built using the Oklahoma State University Budget Generator (13). Tables I through V show the horse enterprise budgets. They include a 40 broodmares producing yearlings on pasture budget, a 40 broodmares producing yearlings on drylot budget, a stallion budget, an outsidemare budget and an overhead costs budget. An enterprise budget is a projection of costs and returns for some future period to produce a unit of an enterprise and can be an important farm management tool. The first page of an enterprise budget lists all the operating inputs and their total cost. It also shows the fixed costs such as machinery, equipment, livestock and land. The OSU budget generator calculates the interest paid on all the fixed cost investments and estimates their depreciation, taxes and insurance. The total fixed cost is shown at the bottom of that section. Production is also shown on the first page of the enterprise budgets. Most budgets list amounts produced, although some amounts are not included because of difficulty in estimation. Returns are not included in the horse budgets. Horse prices are so variable that this is left for the producer to determine. The last lines of the budgets give the returns above all costs except overhead, risk and management. This is a negative number because no returns are shown. It is, in reality, the total cost of the operation. Table I is for a 40 mare breeding farm producing yearlings on year round bermuda and small grain grazeout pastures. The title and footnote on the budgets describe the activity.

Input and product amounts by months along with prices are given on the second page of the budget. Machinery used and times over are also provided. Standard machine performance and cost equations are used in the OSU Budget Generator computer program to calculate machinery hours and costs

TABLE I  
BROODMARES ON PASTURE BUDGET

40 MARE BREEDING FARM SELLING YEARLINGS; COSTS/MARE YEAR ROUND PASTURE SYSTEM					
OPERATING INPUTS:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
STUD FEES PAID	HD.	0.000	1.000	0.00	_____
YEARLING AD	HD.	1.000	45.000	45.00	_____
CONSIGNMENT FEES	HD.	1.000	232.500	232.50	_____
FITTING CHARGES	HD.	1.000	673.830	673.83	_____
PAPERS&REGIS.	HD.	1.000	12.000	12.00	_____
S.G. PAST., DM	CWT.	3.080	78.230	240.95	_____
WINTER PAST., DM	CWT.	1.180	5.360	6.32	_____
SUMMER PAST., DM	CWT.	1.180	33.980	40.10	_____
ALFALFA HAY	LBS.	0.045	891.919	40.14	_____
CREEP RATION	LBS.	0.100	316.160	31.62	_____
GROWING RATION	LBS.	0.100	1015.320	101.53	_____
HERD RATION	LBS.	0.090	680.959	61.29	_____
SALT & MIN.	HD.	1.000	5.280	5.28	_____
VET & MED.	HD.	1.000	311.000	311.00	_____
FARRIER	HD.	1.000	180.000	180.00	_____
STRAW	BL.	1.000	9.620	9.62	_____
CARRYOVER CAPTL.	DOL.	0.115	340.670	39.18	_____
ANNUAL OPERATING CAPITAL	DOL.	0.115	643.235	73.97	_____
MACHINERY LABOR	HR.	4.500	9.438	42.47	_____
EQUIPMENT LABOR	HR.	4.500	1.239	5.57	_____
LIVESTOCK LABOR	HR.	4.500	93.340	420.03	_____
MACHINERY FUEL,LUBE,REPAIRS	DOL.			35.36	_____
EQUIPMENT FUEL,LUBE,REPAIRS	DOL.			42.03	_____
<b>TOTAL OPERATING COST</b>				<b>2649.78</b>	_____
<b>FIXED COSTS</b>	<b>AMOUNT</b>	<b>VALUE</b>		<b>YOUR VALUE</b>	
MACHINERY					
INTEREST AT 11.50%	157.66	18.13			_____
DEPR., TAXES INSURANCE		27.73			_____
EQUIPMENT					
INTEREST AT 11.50%	2232.80	256.77			_____
DEPR., TAXES INSURANCE		175.08			_____
BREEDING STOCK					
BROODMARE	1692.00				_____
INTEREST AT 11.50%	1692.00	194.58			_____
DEPR., TAXES INSURANCE		189.63			_____
LAND					
INVESTMENT COST		152.11			_____
TAXES		3.39			_____
<b>TOTAL FIXED COST</b>				<b>1017.42</b>	_____
<b>PRODUCTION:</b>	<b>UNITS</b>	<b>PRICE</b>	<b>QUANTITY</b>	<b>VALUE</b>	<b>YOUR VALUE</b>
YRLGS (AUCTION)	HD.	0.000	0.420	0.00	_____
YRLGS (PRIVATE)	HD.	0.000	0.180	0.00	_____
CULL YEARLINGS	HD.	0.000	0.200	0.00	_____
<b>TOTAL RECEIPTS</b>				<b>0.00</b>	_____
<b>RETURNS ABOVE TOTAL OPERATING COSTS</b>				<b>-2649.78</b>	_____
<b>RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD,RISK,AND MANAGEMENT</b>				<b>-3667.20</b>	_____
BERMUDA AND SMALL GRAIN PASTURE WITH SUPPLEMENTATION				GOODE, TOPLIFF, WALKER	
CREEP FOALS; GROWING RATION TO WEANLINGS; 80% WEANING RATE					
TAX RATE DESIGNED TO INCLUDE ONLY BROODMARES				08/13/87	
PROCESSED BY DEPT. OF AGRI. ECON. - OKLAHOMA STATE UNIVERSITY					



TABLE II  
BROODMARES ON DRYLOT BUDGET

40 MARE BREEDING FARM SELLING YEARLINGS; COSTS/MARE DRYLOT SYSTEM (PASTURE TOO SMALL TO SUPPORT FORAGE)						
OPERATING INPUTS:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE	
STUD FEES PAID	HD.	0.000	1.000	0.00		
YEARLING AD	HD.	1.000	45.000	45.00		
CONSIGNMENT FEES	HD.	1.000	232.500	232.50		
FITTING CHARGES	HD.	1.000	673.830	673.83		
PAPERS&REGIS.	HD.	1.000	12.000	12.00		
BERMUDA HAY	LBS.	0.030	5615.195	168.46		
ALFALFA HAY	LBS.	0.043	1532.079	65.88		
CREEP RATION	LBS.	0.100	316.160	31.62		
GROWING RATION	LBS.	0.100	1854.399	185.44		
HERD RATION	LBS.	0.090	1362.010	122.58		
SALT & MIN.	HD.	1.000	1.760	1.76		
VET & MED.	HD.	1.000	311.000	311.00		
FARRIER	HD.	1.000	180.000	180.00		
STRAW	BL.	1.000	9.620	9.62		
CARRYOVER CAPTL.	DOL.	0.115	508.380	58.46		
ANNUAL OPERATING CAPITAL	DOL.	0.115	629.563	72.40		
MACHINERY LABOR	HR.	4.500	10.914	49.11		
EQUIPMENT LABOR	HR.	4.500	0.929	4.18		
HORSE LABOR	HR.	4.500	114.610	515.74		
MACHINERY FUEL,LUBE,REPAIRS	DOL.			41.08		
EQUIPMENT FUEL,LUBE,REPAIRS	DOL.			31.97		
<b>TOTAL OPERATING COST</b>				<b>2812.63</b>		
<b>FIXED COSTS</b>		<b>AMOUNT</b>		<b>VALUE</b>		<b>YOUR VALUE</b>
MACHINERY						
INTEREST AT 11.50%		174.13		20.02		
DEPR., TAXES INSURANCE				31.02		
EQUIPMENT						
INTEREST AT 11.50%		1615.99		185.84		
DEPR., TAXES INSURANCE				129.14		
BREEDING STOCK						
BROODMARE		1692.00				
INTEREST AT 11.50%		1692.00		194.58		
DEPR., TAXES INSURANCE				189.63		
LAND						
INVESTMENT COST				56.38		
TAXES				1.27		
<b>TOTAL FIXED COST</b>				<b>807.89</b>		
<b>PRODUCTION:</b>	<b>UNITS</b>	<b>PRICE</b>	<b>QUANTITY</b>	<b>VALUE</b>		<b>YOUR VALUE</b>
YRLGS (AUTION)	HD.	0.000	0.420	0.00		
YRLGS (PRIVATE)	HD.	0.000	0.180	0.00		
CULL YEARLINGS	HD.	0.000	0.200	0.00		
<b>TOTAL RECEIPTS</b>				<b>0.00</b>		
<b>RETURNS ABOVE TOTAL OPERATING COSTS</b>				<b>-2812.63</b>		
<b>RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD,RISK,AND MANAGEMENT</b>				<b>-3620.52</b>		
CREEP FOALS: GROWING RATION TO WEANLINGS						GOODE, TOPLIFF, WALKER
80% WEANING RATE						
TAX RATE DESIGNED TO INCLUDE ONLY BROODMARES						08/13/87
PROCESSED BY DEPT. OF AGRI. ECON. - OKLAHOMA STATE UNIVERSITY						



TABLE III  
STALLION BUDGET

TWO STALLION UNIT, CONFINED SYSTEM ALFALFA HAY AND 13.9% C.P. HERD RATION COSTS/STALLION					
OPERATING INPUTS:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
ALFALFA HAY	LBS.	0.045	4457.598	200.59	_____
HERD RATION	LBS.	0.090	1499.198	134.93	_____
SALT & MIN.	HD.	1.000	0.630	0.63	_____
VET & MED.	HD.	1.000	75.000	75.00	_____
FARRIER	HD.	1.000	180.000	180.00	_____
WOOD SHAVINGS	HD.	1.000	240.000	240.00	_____
STALLION ADS	HD.	1.000	1250.000	1250.00	_____
ANNUAL OPERATING CAPITAL	DOL.	0.115	1240.730	142.66	_____
MACHINERY LABOR	HR.	4.500	21.490	96.70	_____
EQUIPMENT LABOR	HR.	4.500	1.763	7.94	_____
HORSE LABOR	HR.	4.500	542.949	2443.27	_____
MACHINERY FUEL,LUBE,REPAIRS	DOL.			30.54	_____
EQUIPMENT FUEL,LUBE,REPAIRS	DOL.			129.80	_____
<b>TOTAL OPERATING COST</b>				<b>4932.08</b>	_____
<b>FIXED COSTS</b>		<b>AMOUNT</b>		<b>VALUE</b>	<b>YOUR VALUE</b>
MACHINERY					_____
INTEREST AT 11.50%		134.92		15.52	_____
DEPR., TAXES INSURANCE				23.06	_____
EQUIPMENT					_____
INTEREST AT 11.50%		10054.58		1156.28	_____
DEPR., TAXES INSURANCE				696.18	_____
BREEDING STOCK					_____
STALLION		50000.00			_____
INTEREST AT 11.50%		50000.00		5750.00	_____
DEPR., TAXES INSURANCE				2950.00	_____
LAND					_____
INVESTMENT COST				63.63	_____
TAXES				1.43	_____
<b>TOTAL FIXED COST</b>				<b>10656.29</b>	_____
<b>PRODUCTION:</b>	<b>UNITS</b>	<b>PRICE</b>	<b>QUANTITY</b>	<b>VALUE</b>	<b>YOUR VALUE</b>
STUD FEES EARNED	HD.	0.000	40.000	0.00	_____
<b>RETURNS ABOVE TOTAL OPERATING COSTS</b>				<b>-4932.08</b>	_____
<b>RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD, RISK, AND MANAGEMENT</b>				<b>-15588.36</b>	_____
ASSUMES NO SHOWING EXPENSES				GOODE, TOPLIFF, WALKER	
ONE STALLION COVERS UP TO 40 MARES; STALLS AND PADDOCKS					
FOR 2 STALLIONS, PLUS BREEDING FACILITIES.				07/22/87	
PROCESSED BY DEPT. OF AGRI. ECON. - OKLAHOMA STATE UNIVERSITY					



TABLE IV  
OUTSIDE MARE BUDGET

OUTSIDE MARE BOARDING OPERATION 40 MARE UNIT, CONFINEMENT SYSTEM 60 DAY STAY, COSTS/MARE					
OPERATING INPUTS:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
ALFALFA HAY	LBS.	0.045	604.000	27.18	_____
HERD RATION	LBS.	0.090	362.400	32.62	_____
SALT & MIN.	HD.	1.000	0.500	0.50	_____
WOOD SHAVINGS	HD.	1.000	40.000	40.00	_____
ANNUAL OPERATING CAPITAL	DOL.	0.115	47.727	5.49	_____
MACHINERY LABOR	HR.	4.500	4.392	19.77	_____
EQUIPMENT LABOR	HR.	4.500	10.250	46.12	_____
HORSE LABOR	HR.	4.500	8.389	37.75	_____
MACHINERY FUEL, LUBE, REPAIRS	DOL.			1.06	_____
EQUIPMENT FUEL, LUBE, REPAIRS	DOL.			4.02	_____
<b>TOTAL OPERATING COST</b>				<b>214.51</b>	_____
FIXED COSTS		AMOUNT		VALUE	YOUR VALUE
MACHINERY					_____
INTEREST AT 11.50%		7.66		0.88	_____
DEPR., TAXES INSURANCE				1.00	_____
EQUIPMENT					_____
INTEREST AT 11.50%		378.34		43.51	_____
DEPR., TAXES INSURANCE				21.72	_____
LAND					_____
INVESTMENT COST				1.06	_____
TAXES				0.01	_____
<b>TOTAL FIXED COST</b>				<b>68.18</b>	_____
PRODUCTION:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
BOARDING FEES	DOL.	0.000	40.000	0.00	_____
<b>RETURNS ABOVE TOTAL OPERATING COSTS</b>				<b>-214.51</b>	_____
<b>RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD, RISK, AND MANAGEMENT</b>				<b>-282.69</b>	_____
THIS BUDGET MUST BE USED WITH STALLION & OVERHEAD				GOODE, TOPLIFF, WALMER	
BUDGETS TO INCLUDE ALL COSTS. ANY COSTS NOT INCLUDED ON THIS				07/22/87	
BUDGET ARE PASSED ON TO THE MARE OWNER.					
PROCESSED BY DEPT. OF AGRI. ECON. - OKLAHOMA STATE UNIVERSITY					



TABLE IV (CONTINUED)

BUDGET FILL 2

OUTSIDE HARE BOARDING OPERATION  
30 HARE UNIT, CONFINEMENT SYSTEM  
30 DAY SVAC, COSTS/HARE

LINE		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE	WEIGHT	18	19	17	18
DESCRIPTION	NUMBER OF UNITS													PRICE	WEIGHT	UNIT	ITEM	TYPE	CONT
1	BOARDING FEES	0.00	10.00	10.00	10.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	1.000	18.409	2.	0.
OPERATING INPUTS																			
11	ALFALFA HAY	0.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00	0.840	1.000	18.409	3.	0.	0.
12	WERT SATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	1.000	18.409	3.	0.	0.
13	WERT SATION	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	1.000	18.409	3.	0.	0.
14	WOOD SHAVINGS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	1.000	18.409	3.	0.	0.
MACHINERY REQUIREMENTS																			
16	UTILITY CART	0.00	0.40	1.13	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	0.000	0.000	0.000	0.000
EQUIPMENT REQUIREMENTS																			
38	BLDGS (100 SPT) O													11.000	0.025	0.000	0.000	0.000	0.000
39	HANDLING EQUIP O													1.000	0.025	0.000	0.000	0.000	0.000
40	LIVESTOCK LABOR	0.00	1.27	3.18	3.78	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00						
MONTHLY SUMMARY OF RECEIPTS AND EXPENDITURES																			
CATEGORY	YEAR UNIT	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL					
TOTAL VARIABLE COST	DOLL	0.00	19.11	39.02	33.03	32.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	103.58					
ANNUAL CAPITAL	DOLL	0.00	1.59	4.89	0.01	0.78	0.78	0.78	0.78	0.78	0.00	0.00	0.00	47.73					
LABOR REQUIREMENTS																			
MACHINERY LABOR	HR	0.00	0.51	1.24	1.50	0.78	0.00	0.00	0.00	0.00	0.00	0.00	0.00	4.39					
LIVESTOCK LABOR	HR	0.00	1.27	3.18	3.78	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.39					
EQUIPMENT LABOR	HR	0.00	1.88	3.88	3.88	3.88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.28					
TOTAL LABOR	HR	0.00	3.66	8.30	9.16	4.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	23.05					
MACHINERY REQUIREMENTS BY MONTH																			
UTILITY CART	HR	0.00	0.40	1.13	1.30	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.99					
MONTHLY EQUIPMENT REQUIREMENTS AS A PROPORTION OF THE ITEM'S WHOLE FARM USE																			
BLDGS (100 SPT) O	NO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0250					
HANDLING EQUIP O	NO	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0250					
THE FINAL ENTRY IN EACH ROW REPRESENTS THE PROPORTION OF THE ITEM'S TIME ALLOCATED TO THE BUDGET UNIT																			
MACHINERY RENT AND VARIABLE COST PER HOUR																			
UTILITY CART	CODE	0.21	0.01	0.03	0.03	0.23	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23					
ANNUAL COST SUMMARY FOR EQUIPMENT AND LIVESTOCK																			
LINE	ITEM	SIZE	UNIT	PRICE	DEPRE	INTEREST	INSUR	TANES	REPAIRS AND	LIFE	HOURS	TOI DWN	TOI OPER						
38	BLDGS (100 SPT) O	1.00	HD.	367.48	7.58	31.14	1.10	1.23	1.24	0.00	0.00	0.00	10.70						
39	HANDLING EQUIP O	1.00	HD.	107.40	21.48	15.30	0.00	1.34	10.70	0.00	2.00	28.00	10.70						
ANNUAL CHARGES MADE IN THIS BUDGET FOR EQUIPMENT AND LIVESTOCK																			
LINE	ITEM	SIZE	UNIT	NUMBER	PROPOR	OWNERSHIP	OPERATING	INTEREST	LABOR	HOURS	CHARGED	CHARGED	CHARGED						
38	BLDGS (100 SPT) O	1.00	HD.	0.00	0.00	21.08	3.13	43.13	10.28										
39	HANDLING EQUIP O	1.00	HD.	0.00	0.00	0.72	0.27	0.30	0.00										
THIS BUDGET MUST BE USED WITH STALLION & OVERHEAD CODES: TOP/LIFF, WALKER, MACHINERY COMPLEMENT 13 BUDGET TO INCLUDE ALL COSTS. ANY COSTS NOT INCLUDED ON THIS BUDGET ARE PASSED ON TO THE HARE OWNER. CODE: 07/22/87 EQUIPMENT COMPLEMENT 13 PRICE VECTOR 4																			
***NO NAME CHANGES HAVE BEEN STORED WITH THIS BUDGET***																			
***NO COMPLEMENT CHANGES HAVE BEEN STORED WITH THIS BUDGET***																			

TABLE V  
OVERHEAD COST BUDGET

HORSE OPERATION OVERHEAD COSTS TO BE USED WITH ALL HORSE BUDGETS ON WHOLE FARM BASIS					
OPERATING INPUTS:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
WHOLE FARM AD	EA.	1.000	1400.000	1400.00	_____
VET SUPPLIES	EA.	1.000	300.000	300.00	_____
INSUR. PREMIUMS	EA.	1.000	447.000	447.00	_____
UTILITIES	EA.	1.000	4800.000	4800.00	_____
ORGANIZATIONS	EA.	1.000	70.000	70.00	_____
FARM MAGAZINES	EA.	1.000	51.000	51.00	_____
ANNUAL OPERATING CAPITAL	DOL.	0.115	3428.490	394.28	_____
MACHINERY LABOR	HR.	4.500	37.304	167.87	_____
EQUIPMENT LABOR	HR.	4.500	4.584	20.63	_____
OFFICE LABOR	HR.	4.500	1087.198	4892.39	_____
MACHINERY FUEL, LUBE, REPAIRS	DOL.			114.24	_____
EQUIPMENT FUEL, LUBE, REPAIRS	DOL.			124.94	_____
<b>TOTAL OPERATING COST</b>				<b>12782.32</b>	_____
<b>FIXED COSTS</b>		<b>AMOUNT</b>		<b>VALUE</b>	<b>YOUR VALUE</b>
MACHINERY					_____
INTEREST AT 11.50%		369.85		42.53	_____
DEPR., TAXES INSURANCE				70.60	_____
EQUIPMENT					_____
INTEREST AT 11.50%		10666.31		1226.63	_____
DEPR., TAXES INSURANCE				727.72	_____
LAND					_____
INVESTMENT COST				127.64	_____
TAXES				2.88	_____
<b>TOTAL FIXED COST</b>				<b>2198.01</b>	_____
<b>PRODUCTION:</b>	<b>UNITS</b>	<b>PRICE</b>	<b>QUANTITY</b>	<b>VALUE</b>	<b>YOUR VALUE</b>
OTHER FARM INCCM	DOL.	0.000	1.000	0.00	_____
<b>RETURNS ABOVE TOTAL OPERATING COSTS</b>				<b>-12782.32</b>	_____
<b>RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD, RISK, AND MANAGEMENT</b>				<b>-14980.33</b>	_____
BUILDINGS INCLUDE AN OFFICE(12' X 24'), A TACK AND SUPPLY ROOM(12' X 12'), A FEED ROOM(12' X 12'), AND AN EQUIPMENT SHED(624 SQ FEET).				GODDE, TOPLIFF, WALKER 07/22/87	
PROCESSED BY DEPT. OF AGRIC. ECON. - OKLAHOMA STATE UNIVERSITY					



per head. The last two sections of the budget's second page give the machinery, equipment and horse investments required.

Refer to various sections of the budgets as needed in reading the following pages.

### Horse Farm Dynamics

The annual dynamics for the 40 mare breeding operation are given in Table VI. With an assumed 80% weaning rate, the broodmare band consists of 32 "broodmares" (either pregnant or lactating) and eight open mares. Mares exit the band by culling. Two are sold each year in September and two new mares are purchased as replacements. The budget shows that a foal is born on April 1st and weaned August 1st at four months of age. This study assumes that the births of the 32 foals would be scattered from January through May and weaning would take place from May through September. The herd dynamics table shows this situation. No foals are assumed to die. From August 1st to December 31st there are 32 weanlings. As of January 1st of the year following their birth, all the weanlings are considered yearlings because horses have a universal birthdate of January 1st. The yearlings are kept until June 1st at which time they are culled and sent to auction (25%), sold private treaty (22%) or sent to a sales preparation barn and sold in September (53%). The band composition assumptions affect feed and pasture requirements across the year as well as expenses. The timing of production and operating inputs on the back of the budget in Tables I-V reflects the herd dynamics in Table VI.

TABLE VI

MISCELLANEOUS ASSUMPTIONS USED IN DETERMINING  
PASTURE AND NUTRITIONAL REQUIREMENTS

A. Herd composition by months for a 40 mare unit.

Components	Months											
	J	F	M	A	M	J	J	A	S	O	N	D
	H E A D											
Broodmares	8	8	8	8	10	20	34	40	40	38	28	14
Pregnant mares <sup>a</sup>	30	20	6	0	0	0	0	0	0	2	12	26
Lactating mares	2	12	26	32	30	20	6	0	0	0	0	0
Foals	2	12	26	32	30	20	6	0	0	0	0	0
Weanlings	0	0	0	0	2	12	26	32	32	32	32	32
Yearlings <sup>b</sup>	32	32	32	32	32	0	0	0	0	0	0	0

B. Assumed Foaling Rates by Months<sup>c</sup>

Jan.	Feb.	Mar.	April
.0625	.3125	.4375	.1873

C. Assumed Weaning Per Cent (%)<sup>d</sup> - 80%

D. Average Daily Gains

	(LBS/day)	(KG/day)
0-3 mos.	2.65	1.20
4-6 mos.	2	.91
7-12 mos.	1.6	.73
13-18 mos.	1	.45

E. Weights

	(LBS)	(KG)
3 mos.	350	159.10
4 mos.	410	186.37
5 mos.	470	213.64
6 mos.	530	240.92
7 mos.	578	262.74
8 mos.	626	284.55
9 mos.	674	306.37
10 mos.	722	328.19
11 mos.	770	350.01

TABLE VI (Continued)

E.	Weights (Continued)	(LBS)	(KG)
	12 mos.	818	371.83
	13 mos.	848	385.47
	14 mos.	878	399.10
	15 mos.	908	412.74
	16 mos.	938	439.10
	17 mos.	968	440.01
	18 mos.	998	453.65

F. The equation used in determining digestible energy (MCals) for growing horses was:

Weanlings:  $DE \text{ Mcal} = .017 \text{ Body wt. (Kg)} + 14.22 \text{ Avg. Daily Gain (Kg)}$

Yearlings:  $DE \text{ Mcal} = .0135 \text{ Body wt. (Kg)} + 28.04 \text{ Avg. Daily Gain (Kg)}$

Crude Protein requirements are:

Weanlings: 48 g of crude protein per Mcal DE in diet

Yearlings: 44 g of crude protein per Mcal DE in diet

G. Nutritional Content of the Pasture

	DE (MCALS/LB)	%CP
Small Grain Pasture	1.3	20
Burmuda Grass Pasture Nov-April	.7	4
Burmuda Grass Pasture May-June	1.0	11
Burmuda Grass Pasture July & Sept	.95	10
Burmuda Grass pasture Aug & Oct	.9	9

I. Estimates of Pounds of Dry Matter Produced Per Acre: <sup>e</sup>

Burmuda - 6200 lbs/acre

Small Grain Grazeout - 3150 lbs/acre

J. Percentage of Body Weight in Pasture Consumed by Horses: <sup>f</sup>

Mature Horse	2.0%
Weanling	2.5%
Yearling	2.5%

<sup>a</sup> Broodmares do not show up as pregnant mares until 90 days before foaling.

<sup>b</sup> Weanlings become yearlings as of January 1, regardless of their birthdate.

TABLE VI (Continued)

---

<sup>c</sup> A Virginia study of a large number of mares reported the following conception rates by months:

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.
28.6	27.8	45.4	51.8	57.2	51.9	59.3	45.0	57.1

<sup>d</sup> The Virginia study reported the following mare performance data:

Conception %	Foaling %	Weaning %
80.1	73.8	70.8

The national foal crop has been estimated at 65-80 percent.

<sup>e</sup> Yields and quantities assume "normal years" and assumed dry matter basis.

<sup>f</sup> Estimated by Dr. Freeman, OSU Extension, Animal Science and Dr. Potter, Animal Science Department, Texas A&M.

---

## Nutrient Requirements

National Research Council (NRC) estimates of nutrient requirements for horses were used in the nutrient calculations for the budgets (18). Nutrient needs for horses are determined by animal size, function (e.g. growth and lactation) and condition along with the band composition data by months. Animal weights assumed are: 100 lb. birth weights; 410 weaning wt. (4 mo.); 818 lb. yearling (12 mo.); 998 lb. long yearling weight (18 mo.); and, 1100 lb. mature weight (26). Rates of gain assumed in the young horses are given in Table VI. The nutrient requirements of the growing horses were determined by equations shown in Table VI (19).

These equations were used because they give more exact information about the young horse's nutritional requirements according to their age and weight than do the NRC estimates.

For the 40 broodmares on year round pasture budget, the quality of pasture forage across the year is an important aspect of animal performance at different growth and production stages. Estimates must be made of pasture energy and protein content by months. Data used in determining the nutrient content of the pasture and lbs. of dry matter available to the horses on the budget's pasture system are given in Table IV. These numbers cannot be exact because every year is different. Budget users must make adjustments (e.g. in supplementation of pasture) to suit their own estimates of pasture nutrient contents. This is part of the ongoing job of implementation and control by a farm manager. The amount of pasture and supplementation needed by the mare unit (the broodmare, her foal, and her yearling) is shown under operating inputs in Table I. For example, a yearly total of 891,919 lbs. of alfalfa hay is needed for



a mare unit. On the reverse side of the budget, the amounts of feed needed for each month are given.

In the drylot and confinement systems budget, all nutrients come from hay and grain. Alfalfa and bermuda hay are used. Bermuda hay is substituted for the more expensive alfalfa hay when it meets the nutritional requirements. Three grain rations are used in this budget: creep ration (19.4% CP) for young foals, growing ration (16.1% CP) for weanlings and yearlings and herd ration (13.9% CP) for mature horses. These budgets assume that the cost per cwt of grain and that the cost per ton of hay includes delivery. Tables VII and VIII summarize the basic data used to develop hay and ration requirements. Different classes of horses have different requirements, so diets were balanced to meet specific needs. The diets used in these budgets are examples that meet average values for the types of horses under consideration. The feeding plan for the horses on drylot can be seen in Table IX. Other nutrient sources can be utilized if they are more readily available or cost effective.

#### Nutritional Contribution of Pasture System

Several steps were required in determining the nutritional contribution of the pasture system and the amount, if any, of supplementation needed. The procedure is outlined below.

First, a check was made to determine whether the 140 acres initially chosen for the farm would sustain 40 mares and their offspring. To do that, the pounds of forage dry matter produced by the pasture each month were estimated and compared to the dry matter requirements of the horses. Estimates of dry matter intake are shown in Table VI. The assumed pounds of dry matter produced per acre for the broodmares on pasture budget is less than

TABLE VII  
RATION AND HAY NUTRIENTS FOR HORSE HERD<sup>a</sup>

Item	Nutrient Specifications (Dry Matter Basis)	
	Digestible Energy (DE) Mcal/lb.	% Crude Protein (CP)
Ration		
1. Herd Ration	1.5	13.9
2. Growing Ration	1.6	16.1
3. Creep Ration	1.6	19.4
Hay		
1. Coastal Bermuda	.9	9.0
2. Alfalfa (mid bloom)	.9	15.0

<sup>a</sup> Rations include: Vitamin A, Vitamin D, Calcium, Phosphorous, trace Minerals and Salt. The protein source would be chosen to meet amino acid balance needs. Crimped or cracked grains and a pelleted protein-mineral supplement comprise the rations.

TABLE VIII  
NUTRITIONAL REQUIREMENT CALENDAR FOR THE  
BROODMARE BAND AND OFFSPRING PER DAY

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
<b>Foals</b>												
#Horses	0	0	2	12	26	20	6	0	0	0	0	0
DE <sup>a</sup> (MCALS)			6.85	6.85	6.85	6.85	6.85					
CP <sup>b</sup> (KG)			.41	.41	.41	.41	.41					
CA <sup>c</sup> (G)			18	18	18	18	18					
P <sup>d</sup> (G) <sup>f</sup>			13	13	13	13	13					
DM <sup>e</sup> /DAY (lbs)			5.25	5.4	5.63	5.88	6.15					
<b>Weanlings</b>												
#Horses	0	0	0	0	2	12	26	32	32	32	32	32
DE (MCALS)					16.57	16.64	16.61 <sup>g</sup>	16.15	15.4	15.31	15.68	16.05
CP (KG)					.8	.8	.8	.78	.74	.74	.75	.77
CA (G)					34	34	34	34	34	34	34	34
P (G)					25	25	25	25	25	25	25	25
DM/DAY (lbs)					11.75	12.0	12.53	13.49	14.75	15.95	17.15	18.35
<b>Yearlings</b>												
#Horses	32	32	32	32	32	0	0	0	0	0	0	0
DE (MCALS)	16.47	17.06	17.69	18.06	18.29							
CP (KG)	.78	.79	.79	.79	.81							
CA (G)	31	31	31	31	31							
P (G)	22	22	22	22	22							
DM/DAY (lbs)	19.52	20.56	21.38	22.14	22.89							
<b>Preg. Mares (Last 90 Days)</b>												
#Horses	30	20	6	0	0	0	0	0	0	2	12	26
DE (MCALS)	18.4	18.4	18.4							18.4	18.4	18.4
CP (KG)	.77	.77	.77							.77	.77	.77
CA (G)	34	34	3							34	34	34
P (G)	23	23	23							23	23	23
DM/DAY (lbs)	22	22	22							22	22	22

TABLE VIII (Continued)

	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC
<b>Lac. Mares (0-3 Months)</b>												
# Horses	2	12	26	30	20	6		0	0	0	0	0
DE (MCALS)	28.3	28.3	28.3	28.3	28.3	28.3						
CP (KG)	1.36	1.36	1.36	1.36	1.36	1.36						
CA (G)	50	50	50	50	50	50						
P (G)	34	34	34	34	34	34						
DM/DAY (lbs)	22	22	22	22	22	22						
<b>Lac. Mares (4th Month)</b>												
# Horses	0	0	0	2	10	14	6	0	0	0	0	0
DE (MCALS)				24.3	24.3	24.3	24.3					
CP (KG)				1.09	1.09	1.09	1.09					
CA (G)				41	41	41	41					
P (G)				27	27	27	27					
DM/DAY (lbs)				22	22	22	22					
<b>Mature Horses</b>												
# Horses	8	8	8	8	10	20	34	40	40	38	26	12
DE (MCALS)	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4	16.4
CP (KG)	.64	.64	.64	.64	.64	.64	.64	.64	.64	.64	.64	.64
CA (G)	23	23	23	23	23	23	23	23	23	23	23	23
P (G)	14	14	14	14	14	14	14	14	14	14	14	14
DM/DAY (lbs)	22	22	22	22	22	22	22	22	22	22	22	22

<sup>a</sup>DE = digestible energy

<sup>b</sup>CP = crude protein

<sup>c</sup>CA = calcium

<sup>d</sup>P = potassium

<sup>e</sup>DM = dry matter

<sup>f</sup>Dry Matter per day is the maximum.

<sup>g</sup>DE and CA start to decrease for a few months as the rates of gain on the older horses decrease. See Table II, Sections D and F.

TABLE IX  
NUTRIENTS REQUIRED AND TOTAL AMOUNT FED TO DIFFERENT  
CLASSES OF HORSES ON THE DRYLOT SYSTEM PER DAY

		Required	Total	Grain	Alfalfa Hay	Bermuda Hay
<b>Weanlings</b>						
May	LBS DM			8.5	3.5	
	DE (Mcas)	16.57	16.75	13.6	3.15	
	CP (Kgs)	.79	.85	.62	.24	
June	LBS DM			8.5	3.5	
	DE (Mcal)	16.64	16.75	13.6	3.15	
	CP (Kgs)	1.75	1.89	1.37	.53	
July	LBS DM			8.5	3.5	
	DE (Mcal)	16.61	16.75	13.6	3.15	
	CP (Kgs)	1.75	1.89	.62	.53	
Aug.	LBS DM			8.25	3.25	
	DE (Mcal)	16.15	16.21	13.28	2.93	
	CP (Kgs)	1.72	1.82	1.37	.49	
Sept.	LBS DM			8	3	
	DE (Mcal)	15.4	15.5	12.8	2.7	
	CP (Kgs)	1.63	1.68	1.23	.45	
Oct.	LBS			8	3	
	DE	15.31	15.5	12.8	2.7	
	CP	1.63	1.68	1.25	.45	
Nov.	LBS			6.5	3	3
	DE	15.68	15.8	10.4	2.7	2.7
	CP	1.65	1.77	1.05	.45	.23
Dec.	LBS			6.75	3	3
	DE	16.05	16.2	10.8	2.7	2.7
	CP	1.69	1.77	1.09	.45	.23
<b>Yearlings</b>						
Jan	LBS DM			7	3.75	3.75
	DE (Mcal)	17.8	17.96	11.2	3.38	3.38
	CP (Kgs)	1.72	1.91	1.13	.49	.29
Feb	LBS DM			7	3.75	3.75
	DE (Mcal)	17.85	17.96	11.2	3.38	3.38
	CP (Kgs)	1.72	1.91	1.13	.49	.29
Mar	LBS DM			7	3.75	3.75
	DE (Mcal)	17.92	17.96	11.2	3.38	3.38
	CP (Kgs)	1.74	1.91	1.13	.49	.29

TABLE IX (Continued)

		Required	Total	Grain	Alfalfa Hay	Bermuda Hay
Apr.	LBS DM			7	3	4.75
	DE (Mcals)	18.06	18.18	11.2	2.7	4.28
	CP (Kgs)	1.74	2.01	1.13	.45	.43
May	LBS DM			7	3	5
	DE (Mcals)	18.29	18.40	11.2	2.7	4.5
	CP (Kgs)	1.78	2.03	1.13	.45	.45
Pregnant Mares (last 90 days)						
Jan	LBS DM			4		14
	DE (Mcals)	18.3	18.6	6		12.6
	CP (Kgs)	2.99	1.82	.56		1.26
Feb	LBS DM	"	"	"		"
	DE (Mcals)	"	"	"		"
	CP (Kgs)	"	"	"		"
Mar	LBS DM	"	"	"		"
	DE (Mcals)	"	"	"		"
	CP (Kgs)	"	"	"		"
Lactating Mares (0-3 months)						
April	LBS DM			12	6	6
	DE (Mcals)	28.3	28.8	18	5.4	5.4
	CP (Kgs)	2.99	3.11	1.67	.9	.54
May	LBS DM	"	"	"	"	"
	DE (Mcals)	"	"	"	"	"
	CP (Kgs)	"	"	"	"	"
June	LBS DM	"	"	"	"	"
	DE (Mcals)	"	"	"	"	"
	CP (Kgs)	"	"	"	"	"
Lactating Mares (4th month)						
July	LBS DM			8	8	6
	DE (Mcals)	24.3	24.6	12	7.2	5.4
	CP (Kgs)	2.4	2.7	1.11	1.05	.54
Mature Horses						
Jan-Dec	LBS DM					18.5
	DE (Mcals)	16.4	16.65			16.65
	CP (Kgs)	1.41	1.67			1.67

the amount on the pasture budgets (Appendix A). This was a risk management technique to insure an adequate amount of forage for all of the horses. For these calculations the foaling was spread out from January to April to approximate numbers of horses on pasture per month. Assumed foaling rates per month and other horse numbers are given in Table VI. Having determined that there was nominally enough dry matter for the number of horses on the farm, the nutritional needs of the different classification of horses per month were determined and compared to the nutritional content of the pasture. Where the pasture did not meet all of the horses' nutritional requirements, hay or grain supplementation is given. This is shown in Table X. The weanlings were fed hay and grain at levels that would seem unnecessary looking at the nutritional value of the pasture because their digestive track is not yet developed enough to use pasture to its full potential (26). Lactating broodmares on pasture were fed grain in amounts that caused their nutritional intake to be greater than their requirement. Lactation is a critical time for the mare nutritionally so extra grain was fed as a margin of protection. The nutritional intake of the yearlings on small grain pasture is in excess of their requirement because of the high nutritional value of the pasture.

Snow or very wet weather can hamper the horses ability to graze so a provision for bad weather days is included in the budget. From November to March it is assumed that there will be five bad weather days per month. Enough extra hay was added to the budget to feed all the horses over these periods.

It was assumed that the horse farm hired custom farming for pasture production and maintenance. More will be said about this in the pasture budget section later in this chapter.

TABLE X  
NUTRITIONAL REQUIREMENTS MET BY PASTURE  
AND SUPPLEMENT PER DAY

Item	Requirement	Provided by Pasture Alone	Provided With Supplementation
<b>WEANLINGS</b>			
May (B) <sup>a</sup>			
DE <sub>r</sub> <sup>b</sup>	16.57	11.75	16.93
CP <sub>r</sub> <sup>c</sup>	.78	.59	.83
DM <sub>i</sub> <sup>d</sup>	11.75		
June (B)			
DE <sub>r</sub>	16.64	12.0	16.93
CP <sub>r</sub>	.8	.63	.83
DM <sub>i</sub>	12.0		
July (B)			
DE <sub>r</sub>	16.61	11.90	17.3
CP <sub>r</sub>	.8	.57	.85
DM <sub>i</sub>	12.53		
August (B)			
DE <sub>r</sub>	16.15	12.14	18.01
CP <sub>r</sub>	.78	.55	.90
DM <sub>i</sub>	13.49		
September (B)			
DE <sub>r</sub>	15.4	14.01	19.3
CP <sub>r</sub>	.74	.67	.95
DM <sub>i</sub>	14.75		
October (SG)			
DE <sub>r</sub>	15.31	14.36	20.0
CP <sub>r</sub>	.75	.65	.97
DM <sub>i</sub>	15.95		
November (SG)			
DE <sub>r</sub>	15.68	12.01	18.4
CP <sub>r</sub>	.75	.31	.82
DM <sub>i</sub>	17.15		
December (SG)			
DE <sub>r</sub>	16.05	12.85	19.6
CP <sub>r</sub>	.77	.33	.86
DM <sub>i</sub>	18.35		



TABLE X (Continued)

Item	Requirement	Provided by Pasture Alone	Provided With Supplementation
<b>YEARLINGS</b>			
January (SG)			
DE <sub>r</sub>	16.47	25.38	
CP <sub>r</sub>	.78	1.77	
DM <sub>i</sub>	19.52		
February (SO)			
DE <sub>r</sub>	17.06	26.73	
CP <sub>r</sub>	.79	1.87	
DM <sub>i</sub>	20.56		
March (SG)			
DE <sub>r</sub>	17.69	27.79	
CP <sub>r</sub>	.79	1.94	
DM <sub>i</sub>	21.38		
April (SG) <sup>e</sup>			
DE <sub>r</sub>	18.06	28.78	
CP <sub>r</sub>	.79	2.01	
DM <sub>i</sub>	22.14		
May (SG)			
DE <sub>r</sub>	18.29	29.76	
CP <sub>r</sub>	.81	2.08	
DM <sub>i</sub>	22.89		
<b>PREGNANT MARES (SG)</b>			
DE <sub>r</sub>	18.4	28.6	
CP <sub>r</sub>	.77	2	
DM <sub>i</sub>	22		
<b>LACTATING MARES 0-3 MONTHS</b>			
June (B)			
DE <sub>r</sub>	28.3	22	31.1
CP <sub>r</sub>	1.36	1.1	1.48
DM <sub>i</sub>	22		
(SG)			
DE <sub>r</sub>	28.3	28.6	
CP <sub>r</sub>	1.36	2	
DM <sub>i</sub>	22		

TABLE X (Continued)

Item	Requirement	Provided by Pasture Alone	Provided With Supplementation
<b>LACTATING MARES 4TH MONTH</b>			
<b>July (B)</b>			
DE <sub>r</sub>	24.3	20.09	26.9
CP <sub>r</sub>	1.09	1.0	1.25
DM <sub>i</sub>	22		
<b>Jan-Apr. (B)</b>			
DE <sub>r</sub>	16.4	15.4	21.4
CP <sub>r</sub>	.64	.4	.65
DM <sub>i</sub>	22		
<b>May-June (B)</b>			
DE <sub>r</sub>	16.4	22	
CP <sub>r</sub>	.64	1.1	
DM <sub>i</sub>	22		
<b>July &amp; Sept. (B)</b>			
DE <sub>r</sub>	16.4	20.9	
CP <sub>r</sub>	.64	1	
DM <sub>i</sub>	22		
<b>Oct-Dec (SG)</b>			
DE <sub>r</sub>	16.4	28.6	
CP <sub>r</sub>	.64	2	
DM <sub>i</sub>	22		

- <sup>a</sup>B = Bermuda Pasture  
<sup>b</sup>DE<sub>r</sub> = Digestible energy required (MCal)  
<sup>c</sup>CP<sub>r</sub> = Crude protein required  
<sup>d</sup>DM<sub>i</sub> = Dry matter intake lbs./day  
<sup>e</sup>SG = Small Grain Pasture

### Salt and Minerals

Salt blocks with trace minerals are available to the horses on a free choice basis and were assumed to be kept out of the weather. The horses consume approximately 10 lbs. of salt per year (26). Two 40 lb. blocks are assumed to be needed for each pasture per year. One 40 lb. block per stallion is included in the stallion budget and it lasts four years. The outside mare budget has small 5 lb. blocks in each stall. These small blocks are assumed to last two years.

### Medical and Farrier Expenses

Table XI illustrates the breeding farm health calendar and gives the Vet-Med-Farrier expenses for a mare unit (26) The stallion is not part of the mare unit in these budgets. This calendar gives recommended practices. Vet-Med. costs will vary for different yearly conditions. Table I gives the Vet-Med and Farrier costs under operating inputs. A total Vet-Med cost of \$311.00 and Farrier cost of \$180.00 is charged the mare unit.

The budget for outside mares has an added Vet-Med expense to the rest of the farm because having outside mares on a horse farm is expected to increase the introduction and spread of certain diseases such as foal pneumonia and strangles (26). The outside mares incur no Vet-Med-Farrier expenses of their own because all those type expenses are billed directly to their owners.

On the 40 broodmare budgets a miscellaneous Vet cost of \$5.00 per month for a mare unit or \$200 per month for all 40 mares is added to the Vet-Med cost to cover such events as injury, sickness or the treatment of reproductive problems. The stallion budget has a large amount of medical equipment included in it. Table XIV lists this equipment. Consumable Vet-Med supplies are added to the overhead budget. This includes such items as

TABLE XI  
BREEDING FARM HEALTH CALENDAR

Month	Pregnant Mares	Open Mares	Weanlings	Yearlings	Stallions
	(Event or Job)				
January	Rhino Booster Balance Ration For Last Trimester	Rhino Booster Begin Teasing		Rhino Booster	Rhino Booster
February	Trim Feet	Trim Feet		Trim Feet	Shoe Feet
March	Vaccinate Deworm	Vaccinate Deworm Begin Breeding		Vaccinate Deworm	Vaccinate Deworm
April	Foaling Trim Feet	Preg. Test Bred Mares Trim Feet	Birth	Trim Feet	Shoe Feet
May	Begin Breeding				
June	Pregnancy Test Deworm Trim Feet	Pregnancy Test Deworm Trim Feet		Deworm Trim Feet	Deworm Shoe Feet
July					
August	Trim Feet	Trim Feet	Trim Feet Vaccinate		Shoe Feet
September	Rhino Booster Deworm	Rhino Booster Deworm	Vaccine Booster Deworm		Rhino Booster Deworm

TABLE XI (Continued)

Month	Pregnant Mares	Open Mares	Weanlings	Yearlings	Stallions
October	Trim Feet	Trim Feet	Trim Feet		Shoe Feet
November	Rhino Booster Check Teeth	Check Teeth			Check Teeth Reproductive Exam Fertility Check
December	Deworm- Trim Feet-	Deworm Trim Feet	Deworm Trim Feet		Deworm Shoe Feet

Assumptions and Comments

1. Mare Foals April 1st
2. Foal is Weaned Aug. 1st
3. Yearlings leave farm in June
4. Breeding is in March-May and is done by the farm manager
5. The Vaccination is a tetnus, influenza, sleeping sickness (EEE,WEE, VEE) combination
6. Rhino = Rhinopneumonitis

Price List of Vet and Farrier Services

- Rhino Booster \$15
- Vaccination \$15
- Worming \$15
- Pregnancy Test \$10
- Trim \$15
- Shoe \$30
- All Other Vet Functions Performed by Farm Manager

bandages, syringes, and medicines. These supplies and the medical equipment on the overhead budget such as a refrigerator, thermometers, scissors, and leg wraps are meant to be used by all of the horse enterprise budgets.

### Labor

Labor is an important component of a horse operation. Labor needed for a horse enterprise derives from machinery and equipment operation and from feeding and other animal care tasks. Pasture labor is included in the pasture budgets presented later. Machinery use and performance rates are used by the budget generator to directly calculate machinery labor. Labor for livestock, equipment maintenance, and repair is given as an annual requirement for each equipment item. Equipment lists on the back of all budgets have annual labor for equipment items in Column 11.

Horse labor estimates presented in these budgets were formulated by talking to different horsemen about their labor requirements and trying as accurately as possible to determine the number of hours of labor needed for the four different types of horse operations (2, 22). A breakdown of labor estimates is given in Tables XII through XV. Overhead farm cost labor is included in Table XX. The labor estimates were made for a specific number of horses and then converted to labor per horse. Horse labor consists of such things as feeding, stall cleaning, doctoring, breeding and other activity necessary for the health and well being of the horses and varies by the type of horse enterprise. The cost of labor was estimated to be \$4.50 per hour.

Office labor is included on the overhead farm costs budget. It is estimated that a well managed horse operation will require, on average, three hours per day of office work including recordkeeping, sales and public relations. Labor is

TABLE XII  
LABOR NEEDED FOR 40 BROODMARES-PRODUCING YEARLINGS,  
PASTURE SYSTEM

Job	MONTHS		
	Jan. - May Hrs/Day	June - Aug. Hrs/Day	Sept. -Dec. Hrs/Day
<b>Horse Labor</b>			
Feeding	2	1	2
Stall cleaning	2	.5	.5
Doctoring	.25	.25	.25
Foaling	1	0	0
Halter Breaking	0	2	2
Monotoring	11	0	0
	16.25	3.75	4.75
<b>Machinery Labor</b>			
Pickup			
Feeding	.30	.30	.30
Misc. (checking horses, fixing fence)	.25	.25	.25
Trailer, 2 horse	.1	.1	.07
Trailer, 4 horse	.07	.3	.07
Utility cart			
Feeding	.15	.1	.1
Stall cleaning	.15	.1	.1
	1.02	1.15	.89
<b>TOTAL LABOR</b>	<b>17.27</b>	<b>4.9</b>	<b>5.64</b>
<b>TOTAL LABOR PER HORSE PER DAY</b>	<b>.43</b>	<b>.12</b>	<b>.14</b>

TABLE XIII  
LABOR NEEDED FOR 40 BROODMARES-PRODUCING YEARLINGS,  
DRYLOT SYSTEM

Job	MONTHS		
	Jan. - May Hrs/Day	June - Aug. Hrs/Day	Sept. -Dec. Hrs/Day
<b>Horse Labor</b>			
Feeding	3.5	2.5	3.5
Stall cleaning	2	.5	.5
Doctoring	.25	.25	.25
Foaling	1	0	0
Halter Breaking	0	2	2
Monotoring	11	0	0
	17.75	5.75	6.75
<b>Machinery Labor</b>			
Pickup			
Feeding	.80	.80	.80
Misc. (checking horses, fixing fence)	.25	.25	.25
Trailer, 2 horse	.1	.1	.07
Trailer, 4 horse	.07	.3	.07
Utility cart			
Feeding	.15	.1	.1
Stall cleaning	.15	.1	.1
	1.52	1.65	1.39
<b>TOTAL LABOR</b>	<b>19.27</b>	<b>7.40</b>	<b>8.14</b>
<b>TOTAL LABOR PER HORSE PER DAY</b>	<b>.48</b>	<b>.19</b>	<b>.20</b>



TABLE XIV  
LABOR NEEDED FOR TWO STALLIONS

Job/Time of Year	Feb.-June (Hrs/Day)	July-Jan. (Hrs/Day)
<b>Horse Labor</b>		
Feeding	.5	.5
Stall Cleaning	.25	.25
Blanketing	.125	.125
Grooming	1	1
Turning Out	.125	.125
Teasing	1.57	0
Breeding (includes collecting, lab work, and insemination)	1.15	0
	<u>3.72</u>	<u>2</u>
<b>Machinery Labor</b>		
Pickup	.03	.03
Trailer, 2 Horse	.02	.02
<b>Utility Cart</b>		
Feeding	.08	.08
Stall Cleaning	.08	.08
	<u>.26</u>	<u>.26</u>
<b>Total Labor</b>	<b>3.98</b>	<b>2.26</b>
<b>Total Labor per Horse/Day</b>	<b>1.99</b>	<b>1.13</b>

TABLE XV  
LABOR NEEDED FOR OUTSIDE MARE  
OPERATION (40 MARES)

Job	Month			
	Feb.	Mar. (Hrs/Day)	Apr.	May
<u>Horse Labor</u>				
Feeding	.34	.83	1.0	.5
Stall Cleaning	<u>1.34</u>	<u>3.34</u>	<u>4.0</u>	<u>2.0</u>
Sub Total	1.68	4.17	5.0	2.5
<u>Machinery Labor</u>				
Feeding	.34	.83	1.0	.5
Stall Cleaning	<u>.34</u>	<u>.83</u>	<u>1.0</u>	<u>.5</u>
Sub Total	.68	1.66	2.0	1.0
Total Labor	2.36	5.83	7.0	3.5
Total Labor per horse/day	.06	.15	.18	.09

included on the overhead budget for lawnmowing and grounds keeping. Not only does this type of work reduce fire hazard, but also enhances the public image of the facility.

The quality of labor is very important in the management of a horse operation. The owner and family might contribute some of the labor, but on a large scale horse breeding operation, some additional labor will have to be hired.

### Machinery and Equipment Operating Costs

Tables XVI through XX contain machinery and equipment complements for the different budgets. Machinery and equipment that would be used by a horse farm, regardless of the type of horse operation are included on the overhead farm costs budget. The use of the machinery shows up on the other budgets. The overhead costs budget includes one and one-half hour per week of pickup use for going to town for supplies and running business related errands. The budget generator calculates the fuel, lubrication and repairs using standardized estimating equations and fuel, machine and equipment data entered by the user.

### Intermediate Capital Items and Ownership Costs

The fixed cost of machinery, equipment, breeding stock and land make up the second major section of the budget. Machinery consists of the pick-up, a four horse trailer, a two horse trailer and a utility cart, which is a modified golf cart used for feeding and stall cleaning. The equipment section refers to the facilities and the handling, feeding, barn and office equipment listed in Tables XVI through XX. The breeding stock section reflects the investment costs of

TABLE XVI  
 BUILDINGS AND EQUIPMENT FOR A 40 BROODMARE  
 PASTURE OPERATION

Item	Description	Purchase Price
Buildings and Facilities	Main Barn (1984 sq. ft.)	\$30,760.00
	Hay Barn (576 sq. ft.)	4,624.00
	Loafing Sheds (10x20) 14 @ \$2000	28,000.00
	Loafing Sheds (9x12) 2 @ \$412.00	2,400.00
	Artificial Light System	308.75
	Monotoring System	445.00
		<hr/>
		\$66,537.75
Fence	26,241.6 ft. @ \$4.00/ft.	\$104,966.40
Feeding Equipment	10' Horse Feeders - 4 @ \$719	\$2,876.00
	5' Horse Feeders - 2 @ \$471	942.00
	Rubber Feed Pans - 80 @ \$4.39	351.00
	Fence Feeders - 2 @ \$76.95	153.90
	Creep Feeders - 2 @ \$200	400.00
	Double Pasture Waterers 4 @ \$260	1,040.00
	Single Pasture Waterers 4 @ \$240	960.00
		<hr/>
		\$6,722.00
Handling Equipment	Insecticide Sprayer	\$4.98
	Cotton Ropes - 14 @ \$4.95	69.30
	Foal Halters - 5 @ \$8.95	44.75
	Yearling Halters - 5 @ \$11.79	58.95
	Horse Halters - 8 @ \$11.79	94.32
	Broodmare Collars - 50 @ \$2.00	100.00
	Winter Blankets - 2 @ 115.95	231.90
	Summer Sheets - 2 @ \$78.95	157.90
	Rubber Curry Comb	2.95
	Plastic Comb	.59
	Stiff Brush	2.95
	Medium Brush	4.95
	Soft Brush	6.75
	Water Scrapper	.99
Hoof Pick	1.00	
	<hr/>	
		\$785.88

TABLE XVII  
 BUILDINGS AND EQUIPMENT FOR A 40 BROODMARE  
 DRYLOT OPERATION

Item	Description	Purchase Price
Buildings and Facilities	Main Barn (1984 sq. ft.)	\$30,760.00
	Hay Barn (576 sq. ft.)	4,624.00
	Loafing Sheds (10x20) 14 @ \$2000	28,000.00
	Loafing Sheds (9x12) 2 @ \$412.00	2,400.00
	Artificial Light System	308.75
	Monotoring System	445.00
		<u>\$66,537.75</u>
Fence	13,152.18 ft. @ \$4.00/ft.	\$52,608.72
Feeding Equipment	10' Horse Feeders - 7 @ \$719	\$5,033.00
	5' Horse Feeders - 4 @ \$471	1,884.00
	Rubber Feed Pans - 100 @ \$4.39	439.00
	Creep Feeders - 2 @ \$200	400.00
	Double Pasture Waterers 4 @ \$260	1,040.00
	Single Pasture Waterers 4 @ \$240	960.00
		<u>\$9,756.00</u>
Handling Equipment	Insecticide Sprayer	\$4.98
	Cotton Ropes - 14 @ \$4.95	69.30
	Foal Halters - 5 @ \$8.95	44.75
	Yearling Halters - 5 @ \$11.79	58.95
	Horse Halters - 8 @ \$11.79	94.32
	Broodmare Collars - 50 @ \$2.00	100.00
	Winter Blankets - 2 @ 115.95	231.90
	Summer Sheets - 2 @ \$78.95	157.90
	Rubber Curry Comb	2.95
	Plastic Comb	.59
	Stiff Brush	2.95
	Medium Brush	4.95
	Soft Brush	6.75
	Water Scrapper	.99
Hoof Pick	1.00	
	<u>\$785.88</u>	

TABLE XIII  
BUILDINGS AND EQUIPMENT FOR A STALLION  
OPERATION (2 STALLIONS)

Item	Description	Purchase Price
Buildings and Facilities	Main Barn (408 sq. ft.)	\$8,120.00
	Hay Barn (240 sq. ft.)	1,920.00
	Lab/Breeding Area (816 sq. ft.)	16,240.00
		\$26,280.00
Fence	2032 ft @ 4.00/ft	\$8128.00
Handling Equipment	Leather Halters - 2 @ \$50.00	\$100.00
	Leather & Chain Leads - 2 @ 22.64	45.28
	Nylon Halters - 2 @ \$11.79	23.93
	Cotton Ropes - 4 @ \$4.95	19.80
	Winter Blankets - 2 @ 143.55	287.10
	Summer Sheets - 2 @ 78.38	156.60
	Stiff Brush	2.95
	Medium Brush	4.95
	Soft Brush	6.75
	Comb	.49
	Rubber Curry Comb	2.95
	Hoof Pick	1.00
	Rubber Bucket	9.19
	Clippers	39.97
	Water Scrapper	.99
	Sprayer	4.98
	\$706.56	
Vet/Med Equipment	Microscope	\$300.00
	Slides and Cover Slips	20.00
	Spec 20	1,000.00
	2 AV's and Assorted Equip.	500.00
	Incubator	800.00
	Breeding Chute	1,375.00
	Collecting Dummy	1,000.00
	\$4,995.00	

TABLE XIX  
BUILDINGS AND EQUIPMENT FOR AN OUTSIDE  
MARE OPERATION (40 MARES)

Item	Description	Purchase Price
Buildings	Mare Motel (8160 sq. ft.)	\$30,000
Handling Equipment	Nylon Halters - 10 @ \$11.79	117.90
	Cotton Ropes - 10 @ \$4.95	49.50
	Broodmare Collars - 5 @ \$2.00	100.00
		<hr/> \$267.40

TABLE XX  
 BUILDINGS AND EQUIPMENT FOR THE  
 OVERHEAD FARM COSTS BUDGET

Item	Description	Purchase Price
Buildings	Equipment Shed (624 sq. ft.)	\$6,900.00
	Office, Tack and Supply Room, and Feed Room (816 sq. ft.)	12,540.00
		<u>\$19,440.00</u>
Feeding Equipment	Feed Storage Bin	\$400.00
	Hay Hooks, 2 Pair	12.00
		<u>\$412.00</u>
Medical Equipment	Refrigerator	\$250.00
	Misc. Supplies	100.00
		<u>\$350.00</u>
Barn/Office Equipment	"Chew Stop"	\$12.00
	Hoses (2 @ \$16.00)	32.00
	Large Flashlight	29.77
	Wheelbarrow (2 @ \$79.00)	158.00
	Pitchfork	13.75
	Shovel	19.87
	Rack	7.75
	"Poop Scoop"	23.40
	Large Broom	7.95
	Small Broom	5.95
	Stall-Tool Rack	24.25
	Step Ladder	6.95
	Assorted Hand Tools	100.00
Office Supplies and Furniture	900.00	
		<u>\$1,342.63</u>
Machinery	Pickup, .75 tons	\$13,500.00
	4 Horse Trailer	4,000.00
	2 Horse Trailer	2,000.00
	Utility Cart	1,000.00
	Lawn Mower	127.00
		<u>\$20,627.00</u>
Farm Sign		\$200.00
		<u>\$20,627.00</u>
Total Initial Overhead Investment		<u>\$42,371.63</u>



TABLE XX (Continued)

Item	Description	Purchase Price
<u>Yearly Overhead Costs</u>		
Advertising	Whole Farm	\$1,400.00
Consumable Medical Supplies		300.00
Insurance Premiums		447.00
Utilities		4,800.00
Dues to Organizations		70.00
Farm Magazines		51.00
Overhead Machinery and equipment labor	41.89 hrs. at \$4.50/hr.	189.00
Office Labor	1,087.20 hrs. at \$4.50/hr.	4,892.00
Total Yearly Overhead Costs		<u>\$12,149.00</u>

either one stallion or one broodmare. Land is assumed to be owned in these budgets so the investment costs for the amount of land needed per mare unit or stallion are entered here. Details of investment in and use of each item are given on the second page of the budget. Interest is calculated on intermediate capital items and reported separately from taxes, insurance and depreciation. Table I shows the levels of interest, depreciation, taxes and insurance. Interest on the machinery per mare unit is \$18.13 and depreciation, taxes and insurance are \$27.73. Interest on the equipment for the breeding operation comes to \$256.77 and depreciation, taxes and insurance total \$175.08. The interest paid on the broodmare investment is \$194.58 while her depreciation and taxes are \$189.63. The interest paid on the amount of land needed per mare unit for this pasture system is \$152.11 while taxes are \$3.39. The purchase or list price of the capital items is used by the OSU Budget Generator to calculate the fixed costs.

The equipment and livestock section on the second page of the budget contains the horse investment and fixed cost calculations. Depreciation on the broodmares is by straightline depreciation. It is assumed that the stallions do not depreciate. They are expected to be worth their purchase price, and hopefully more, up until death. Although stallions are not depreciated on this budget, a constant interest rate of 11.5% is charged on the purchase price across their lifetime. A tradeoff relationship exists between depreciating the stallions and an interest charge on the full investment across the life of the investment. For example paying 11.5% on the purchase price is equivalent to paying 10.08% on the average investment and depreciating the stallions over 15 years with a salvage value of \$25,000. The stallion owner will depreciate the stallion for tax purposes.

## Operating Capital

The interest on operating capital in the operating cost section is calculated on net operating debt outstanding each month. The amounts are given on the back of the budget in the annual capital row.

Enterprise budgets provide for a production period of one year or less. Since the production period for yearlings is longer than one year, some additional information had to be added to the budgets. From a cost accounting point of view, the total costs (including interest) for producing a yearling sold in September each year are desired. The budgeting process includes requirements for both a foal and yearling from April through September, so all costs are covered. However, some money is tied up for 17 months. The budget underestimates capital by not including the April to September mare and foal interest expenses for September-year one through September-year two. To solve this problem, a row titled "carryover capital" was added to the budget. All the costs incurred by the mare and foal from April 1st to August 31st were included in this row. This number was multiplied by the interest rate (11.5%) to determine the carryover capital interest.

## Horse Investment

Broodmares have an assumed life of 15 years. Cull mares are sold in September of each year and replacement mares are bought. A replacement mare is valued at \$3000 and the cull mares are assumed to bring \$.35/lb. or \$385 at an auction or through private treaty sale (26). The money received for the cull mare along with her depreciation pays for the replacement mare as follows:

Depreciation on a \$3000 mare for 15 yrs. @ \$174.40/yr.	\$2,616
Salvage on cull mare	384
	<hr/>
Price of replacement mare	\$3,000

Investment costs of broodmares and stallions are required for cost calculation of the budget. A stallion is assumed to cost \$50,000 and a broodmare is assumed to cost \$3,000 (26). Although breeding stock costs will vary greatly depending on the breed of horses being raised and whether they are being bred for racing, halter or performance, costs entered are considered reasonable for someone trying to realize a profit in the horse business. These costs are most typical of quarter type horses. Thoroughbred breeding stock is priced considerably higher. The stallion value is considered a minimum.

On page one of the budget under horse investment, the average investment is given. This number is the purchase price plus the salvage value, divided by 2. In the case of the broodmare, the average investment is:

$$\frac{\$3000 + \$385}{2} = \$1692$$

Since the stallion is not assumed to depreciate, his average investment is the same as his purchase price.

### Taxes

Personal taxes on the horses are entered in the operating costs. The taxes are figured on the horses assessed value. The assumptions and calculations required to determine the taxes are as follows:

$$\text{Average investment} * \text{Assessment Ratio} * \text{Average Millage} = \text{Taxes paid per animal}$$

$$\text{Assessment Ratio} = 10\%$$

$$\text{Average Millage} = 81.00$$

The assessment and millage values are state averages obtained from the Oklahoma Tax Commission

For these budgets, taxes are assumed to be paid only on the breeding stock. In reality, taxes would be paid on all horses on the ground, but since we are not looking at the return side of the yearlings, it would be difficult to assess their value for the tax purposes. The taxes on the young horses would not be a very large value so it will not affect the results much.

#### Insurance

The stallions are assumed to be valued at their purchase price across their lifetime. Insurance is purchased for the stallions for 5% of their value, or on average, \$2500 a year (5). No insurance is purchased for the mares or young stock.

#### Land

Land is another fixed cost included in the budgets. The breakdown of the amounts of acreage for each individual budget including pasture, paddock and barn space is as follows:

Broodmares producing yearlings on pasture	143 acres
Broodmares producing yearlings on drylot	53 acres
Stallions	3 acres
Outside mares	1 acre
Overhead budget	3 acres

The cost for land was included in the budget under fixed costs. The value of the land was estimated using land value data for improved pasture in southeastern

Oklahoma counties. The average value was \$370/acre. A total land value per head for each budget was obtained as follows:

$$\frac{\$370/\text{acre} \cdot \text{number of acres}}{\text{number of horse units}} = \text{value of land per unit}$$

The land value in the overhead budgets is on a whole farm basis. The land value is multiplied by an interest rate of 11.5% (the Average Statewide Federal Land Bank interest rate) to give the land charge. The tax rate per head on the land was also figured and added into the charge for land. Land costs are a major expense on some of the budgets.

### Production and Sales

Production amounts and values are given in the third section of the budget. The price received for yearlings is left blank for the farm manager to fill in with the average price he receives or hopes to receive. The lesser quality yearlings are run through auctions in June (25%). Some of the best yearlings will be sold by private treaty and are expected to bring the highest prices (21%). These are also assumed to be sold in June. Yearlings that go on to the fall sale (53%) are first sent to a fitting operation for 90 days. A per diem charge of \$17.50 is charged each horse for the time spent there (26). The fitting costs and the auction consignment fees are considered marketing costs and must be taken into consideration. These costs are given in Table XXI.

If a horse farm includes stallions, additional income may be generated from stud fees. The stallion budget includes 40 breedings per stallion per year, but there could be more or less. Breedings to owned mares would not generate stud fee returns. The manager using the budget can estimate the number of breedings and put in any stud fees received.

TABLE XXI  
COSTS OF SENDING YEARLINGS TO AUCTION

Item	Cost Per Year
June Auction	
\$100 consignment fee x 8 yearlings	\$800.00
5% sales company commission fee	<u>      (1)</u>
Yearling Advertising	\$1800.00
Fitting Charges - \$17.50/day x 90 days x 17 yearlings	\$26,775.00
Fall Auction	
\$500 consignment fee x 17 yearlings	\$8,500.00
5% sales company commission fee	<u>      (1)</u>
5% fitting agents fee	<u>      (1)</u>

---

<sup>1</sup> Cost depends on final sales price.

---

The outside mare budget produces boarding fee income. The farm manager charges the outside mare owner a daily fee to cover all of the mares expenses. This fee has a measure of profit included in it. The Boarding fee assumed in the outside mare budget is \$8.00 per day.

The overhead costs budget shows a production item called other farm income. If a farm has other income such as year-round boarding, riding lessons, or training fees, it can be entered there.

### Pasture Budgets and Pasture Costs in Horse Budgets

Small grain grazeout and bermuda pastures chosen to use in the 40 broodmare on pasture budgets are given in Appendix A. The pasture budgets chosen are for Southeastern Oklahoma. The total pasture production and maintenance costs are assumed to be paid as custom farming expenses. The information on the pasture budgets parallels that described for horses. Operating inputs are summarized in the first section of the budgets and details are provided by months on the back. The costs on the pasture budgets are given on a per acre basis, so by dividing the cost per acre by the assumed cwt/acre given in Table VI, the cost per cwt of pasture could be determined. For example, the cost per acre of bermuda pasture is \$73.21. By dividing this by 62 cwt/acre, the amount shown for bermuda grass on Table III, a cost of \$1.18/cwt is found. The costs per cwt of pasture are added in the pasture rows of the operating input section in the mares on pasture budget. In this way, the costs inherent to maintaining good quality pasture are charged in the horse enterprise.



## CHAPTER IV

### ANALYSIS OF THE HORSE ENTERPRISE BUDGETS

In this section, each budget is reviewed individually and then combined for selected whole farm analysis. Breakeven costs for yearlings and the validity of certain suppositions held by horsemen are evaluated using the whole farm results. The effects of different weaning rates and tax considerations are also reviewed.

#### 40 Mare Breeding Farm Producing Yearlings on Year Round Pasture System

This budget is shown in Table I. The operating inputs are given in the first section including feed, pasture and vet-med expenses and marketing expenses such as advertising and consignment fees. The lactating mares on bermuda pasture were supplemented at levels a little higher than their requirements (Table VII), as a risk management technique to insure adequate nutrition during this critical period. Also included in operating inputs are labor, capital requirements and fuel, lube and repairs. The total operating cost for a mare unit is \$2,630.79.

The next section of the budget gives the fixed cost. The land cost per mare unit on this budget is \$155.50 because of the requirement of 3.5 acres of pasture per mare unit. Fencing is also a major expense. The total fixed cost is \$1,017.42. The production on this budget is the 32 yearlings to be sold either

private treaty, at the fall sales or as cull yearlings in June sales. The total cost to this operation per mare unit is \$3,648.21.

#### Forty Mare Breeding Farm Producing Yearlings on Drylot

This budget is shown in Table II. Because these horses are not utilizing pasture as part of their diets, the cost of feed is greater on this budget. The additional feed also increases the amount of capital and labor needed. The total cost per mare unit for operating inputs is \$2,799.92. This budget has a considerably lower cost for land than did the pasture system budget and also has a lower cost for facilities and equipment. The total fixed cost for this budget was only \$807.89 per mare unit. The decrease in fixed costs on this budget was enough to make the total costs only \$3,607.81, or \$30.40 cheaper per mare unit than the pasture system budget. The costs of the extra land, increased amount of fence and the pasture production and maintenance for a pasture system was enough to make buying all the feed and not using pasture less expensive.

Although the drylot system has lower costs, other considerations favor a pasture system. A farm using large, well managed pastures has a more classical and aesthetically pleasing appearance. Beautiful surroundings can help enhance a yearling's price. Using large, well managed pastures also helps decrease certain health problems that are brought about by overcrowding. These issues need to be looked at along with the cost of an intensive pasture system when determining if pasture or drylot should be used on a farm.

### Two Stallion Unit, Confined System

This budget, shown in Table III, contains operating inputs such as feed, bedding, and vet-med-farrier, as well as a considerable amount of advertising. Advertising stallions heavily in horse magazines is intended to insure a full booking. Labor is an expensive input on the stallion budget because so much labor is required in the breeding season. The total cost of operating inputs is \$4,932.08 per stallion. Under fixed costs, stallions have a very high cost of equipment and facilities due to the special breeding and lab equipment and breeding facilities needed by a stallion operation. Good quality stallions are very expensive and this is reflected in the horse investment costs in these budgets. The total fixed costs per stallion is \$10,656.29 with interest on the horse accounting for 54 percent. The production on the stallion budget is stud fees earned. It is assumed that each stallion can cover 40 mares. The total cost per stallion to the stallion operation is \$15,588.36.

### Outside Mare Boarding Operation

This budget is shown in Table IV. The operation is assumed to have 40 mares and all of the operating inputs are for a 60 day stay. The costs per mare are \$214.51. The only major fixed cost requirement is a "mare motel" which is an open type of barn to house the 40 mares and facilitate handling for breeding. The total fixed cost is \$68.18 per mare. The production is boarding fees. The total cost per outside mare is \$282.69. This comes to \$4.71 per day to cover each mare's cost. Overhead costs are \$.35 per day when there are 114 horses on the farm. So a total of \$5.06 is needed per day to cover all the outside mares costs including overhead.

### Horse Operation Overhead Cost

The overhead costs budget in Table V contains the costs inherent to carrying out the aforementioned horse systems but not included in the budgets. The operating inputs include whole farm advertising, vet supplies, insurance premiums, dues to organizations, and subscriptions to farm magazines. The labor is for office work, lawn mowing and maintenance on the office, tack and supply room, feed room and equipment shed, plus maintenance on tools and barn equipment. The total operating cost is \$12,782.32. The total fixed costs are \$2,198.01. The production is other farm income such as income generated through giving riding lessons, training horses or boarding horses year round. The total cost for overhead is \$14,980.33.

Horse breeding operations in Oklahoma are organized in many different ways. Some farms have only their own stallions and mares. Others take in many outside mares. Some farms have only stallions and bring in outside mares exclusively. To make these budgets useful for analyzing all of the above situations, the budgets are divided into broodmare producing yearling budgets, a stallion budget and an outside mare budget. The enterprise budgets are meant to be additive. They can be added together to depict the type of farm being looked at. The overhead farm costs budget is to be used with all the budgets above. It includes overhead costs that must be met by any horse farm. The overhead costs included in this budget are meant to be used within a range of 20-80 horses. If less than 20 horses are on the farm, overhead costs per horse would start to rise because there are more expenses allowed for in this budget than 20 horses would require. As the number of horses starts increasing from 20 to 80, the overhead costs per horse start to decrease. If more than 80 horses are on the farm, overhead cost per horse should not

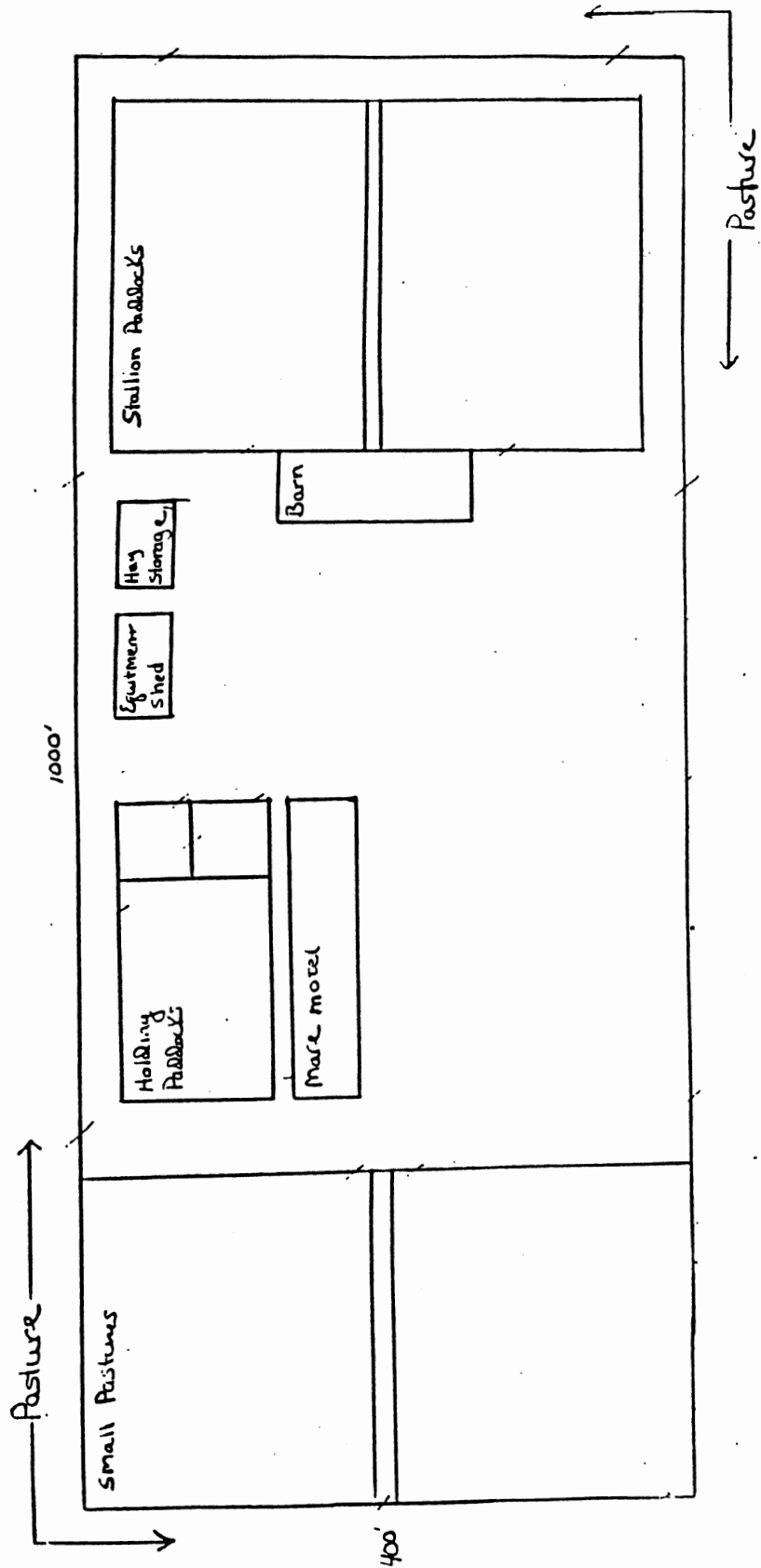
decline because not enough expenses are included on the budget to handle that many horses.

### The Farm Layout

Before making estimates of the costs for a horse breeding operation, a clear picture of what a horse breeding farm might contain is needed. To do this, a hypothetical physical farm plan was drawn up. The plan is shown in Figure 1. The plan depicts a whole farm operation combining four of the budgets: the 40 broodmares producing yearlings on a pasture system, the stallions, the outside mares and the overhead costs. The 150 acres includes seven 20 acre pastures, four small grain and three bermuda. The pasture layout provides separate pastures for groups of horses with different nutritional needs and allows for a limited amount of pasture rotation. Two large loafing sheds (10' x 20') are provided for each pasture. Two smaller one acre pastures are provided for keeping a mare and foal, an injured horse, or separating a single or small number of horses from the rest of the groups. A small loafing shed (9' x 12') is provided for each of these. There are also three paddocks, two 50' x 50' and one 100' x 150' used for limited turn out and an artificial light program used to get the mares to come into estrus earlier than they normally would. All of the pastures and paddocks are provided with automatic waterers. The stallions are each given one acre turnout pastures which are primarily provided for their exercise.

A main barn consisting of 3672 sq. feet is included which has an office, a tack and supply room, a feed room, a breeding area and lab, two stallion stalls, two foaling stalls, and six other stalls. On many farms the stallions and breeding area are separate from the main barn, but since the cost is being figured on a square foot basis, without assuming size economies or diseconomies, a single

**FIGURE 1: FARM LAYOUT**  
**For 40 BROODMARES, 40 OUTSIDE MARES**  
**And 2 STALLIONS**



barn is depicted. A mare motel which houses 40 mares is included on the farm for the outside mares. An equipment shed (664 sq. ft.) and hay barn (576 sq. ft.) are included in the farm plan.

Wood plank fencing is assumed to be used in the smaller pastures and paddocks around the barn area while wire mesh fencing is used on the remainder of the farm. A total of 30,357 feet of fence is used on the farm. A weighed average of the costs for the two different types of fencing is used on the budgets. Seventeen gates are also included in the fencing system. The costs for all the facilities provided for in the farm plan are given in Tables XVI through XX. When the whole farm is split into individual budgets, those parts of the farm plan that are essential to that enterprise go into that budget. For example, the stallions' two turnout pastures, their two stalls, and the breeding area and lab are in the stallion budget. Other components of the farm plan are included in the mares on pasture, outside mare and overhead budgets. For the 40 broodmares on drylot system, less acreage and fence is required.

#### Whole Farm Budget Analysis

The purpose of the whole farm analysis is to compare costs associated with different combinations of the budgets on a whole farm basis. Table XXII shows results for a farm consisting of 40 Broodmares producing yearlings on year round pasture, two stallions and the overhead costs. The inputs needed and the total costs for that farm are given. The total farm cost is \$194,088.00. The cost per yearling raised is \$6,065.00 After adding the sales company's and the fitting agent's 5% commissions based on a breakeven price of \$6,065.00, the total yearling breakeven price is \$6,463.00 This farm with 40 broodmares

TABLE XXII

WHOLE FARM ANALYSIS: FORTY BROODMARES PRODUCING YEARLINGS  
ON PASTURE, TWO STALLIONS, PLUS OVERHEAD COSTS

INPUTS <sup>1</sup>	TOTAL COSTS
Feed (including salt and minerals)	\$10,267
Pasture (60 acres bermuda; 80 acres small grain)	12,158
Vet and Med	12,890
Farrier	7,560
Bedding	865
Advertising	5,700
Marketing (consignment fees, fitting charges)	36,253
Papers and Registration	480
Insurance	447
Utilities	4,800
Dues to Organizations	70
Farm Magazines	51
Labor	28,900
Annual operating capital	4,005
Carryover capital	1,567
Machinery and equipment repairs, fuel and lube	3,868
Machinery costs <sup>2</sup>	2,025
Facility and equipment costs <sup>2</sup>	22,933
Horse investment costs <sup>2</sup>	32,768
Land costs <sup>3</sup>	<u>6,481</u>
Total farm cost	\$194,088
Cost per yearling (32 raised and sold)	6,065
5% sales company commission on 25 yearlings	237
5% agents fee on 17 yearlings sold in Sept.	<u>161</u>
<b>TOTAL YEARLING BREAKEVEN PRICE</b>	<b>\$6,463</b>

<sup>1</sup> A detailed breakdown of inputs is available in individual enterprise budget tables.

<sup>2</sup> Includes interest, depreciation, taxes, and insurance

<sup>3</sup> Includes interest and taxes



on pasture and two stallions would have to average \$6,463.00 per yearling sold just to cover all of costs.

Table XXIII provides the total farm cost and the breakeven yearling cost for a farm consisting of 40 mares on drylot and two stallions. The total farm costs on this system were \$2,123, less than on the pasture system. The total breakeven price per yearling on this system was \$6,392. Although the variable costs are less on the pasture system, the higher fixed costs due to the increased amount of land needed made the extensive pasture system slightly more expensive than keeping horses in small pastures and feeding them full rations.

Tables XXIV and XXV show the pasture and drylot systems with stallions and the outside mares. These tables assume some returns to the outside mare boarding operation. First, a \$8.00 per day mare care charge is given (26). This represents about a \$2.94 return per day per horse after direct expenses are paid. A \$500 per mare stud fee assumed for this budget. \$500 is 1% of the stallion's value, a rule of thumb for figuring the value of the stallion service. After these returns are added in, the breakeven yearling price on the farm with 40 mares on pasture, two stallions and 40 outside mares and the farm with 40 mares on drylot, two stallions and 40 outside mares are \$5,533.00 and \$5,463.00, respectively. These prices are considerably lower than the breakeven prices for horse breeding operations that did not take in outside mares and collect stud fees.

The breakeven yearling price determined above is the amount that the yearlings would have to be sold for just to cover all the costs to the farm. The average sale prices for the Heritage Place fall AQHA yearling sale for the past three years are given in Table XXVI. Looking at the 1986 sale prices, none of the farms in this study would break even on their yearlings.

TABLE XXIII

WHOLE FARM ANALYSIS: 40 BROADMARES PRODUCING YEARLINGS ON  
 DRYLOT, 2 STALLIONS, PLUS OVERHEAD COSTS

INPUTS <sup>1</sup>	TOTAL COST
Feed (including salt and minerals)	23,702
Vet and Med	12,890
Farrier	7,560
Bedding	865
Advertising	5,700
Marketing (consignment fees, fitting charges)	36,253
Papers and registration	480
Insurance	447
Utilities	4800
Organizations	70
Farm magazines	51
Labor	32,937
Annual operating capital	3,970
Carryover capital	2,339
Machinery and equipment repairs	4,081
Machinery costs <sup>2</sup>	2,232
Facility and equipment costs <sup>2</sup>	18,259
Horse investment costs <sup>2</sup>	32,768
Land costs <sup>3</sup>	<u>2,561</u>
Total farm cost	191,965
Cost per yearling	5,999
5% sales company commission on 25 yearlings	234
5% agents fee on 17 yearlings sold in Sept.	<u>159</u>
<b>TOTAL YEARLING BREAKEVEN PRICE</b>	<b>\$6,392</b>

<sup>1</sup> A detailed breakdown of inputs is available in individual enterprise budget tables

<sup>2</sup> Includes interest, depreciation, taxes, and insurance

<sup>3</sup> Includes interest and taxes

TABLE XXIV

WHOLE FARM ANALYSIS: 40 BROODMARES PRODUCING YEARLINGS ON PASTURE, 2 STALLIONS, 40 OUTSIDE MARES, PLUS OVERHEAD COSTS

INPUTS <sup>1</sup>	TOTAL COSTS
Feed (including salt and minerals)	\$12,679
Pasture (60 acres bermuda; 80 acres small grain)	12,158
Vet and Med	12,890
Farrier	7,560
Bedding	2,465
Advertising	5,700
Marketing (consignment fees, fitting charges)	36,253
Papers and Registration	480
Insurance	447
Utilities	4,800
Dues to Organizations	70
Farm Magazines	51
Labor	33,046
Annual operating capital	4,225
Carryover capital	1,567
Machinery and equipment repairs, fuel and lube	4,018
Machinery costs <sup>2</sup>	2,100
Facility and equipment costs <sup>2</sup>	25,542
Horse investment costs <sup>2</sup>	32,768
Land costs <sup>3</sup>	<u>6,524</u>
Total farm costs	\$205,343
Gross returns from outside mares <sup>4</sup>	-19,200
Stud fees earned <sup>5</sup>	<u>-20,000</u>
Adjusted farm cost	\$166,143
Costs per yearling	5,192
5% sales company commission on 25 yearlings sold in Sept.	202
5% agents commission fee on 17 yearlings sold in Sept.	<u>138</u>
TOTAL YEARLING BREAK-EVEN PRICE	\$5,533

<sup>1</sup> Detailed breakdown of inputs can be seen on individual enterprise budget tables

<sup>2</sup> Includes interest, depreciation, taxes, and insurance

<sup>3</sup> Includes interest and taxes

<sup>4</sup> Assuming a mare care rate of \$8.00 per day for 40 mares

<sup>5</sup> Assuming an average stud fee of \$500 for 40 mares

TABLE XXV

WHOLE FARM ANALYSIS: 40 BROODMARES PRODUCING YEARLINGS ON  
 DRYLOT, 2 STALLIONS, 40 OUTSIDE MARES PLUS OVERHEAD COSTS

INPUTS <sup>1</sup>	TOTAL COSTS
Feed (including salt and minerals)	\$26,114
Vet and Med	12,890
Farrier	7,560
Bedding	2,465
Advertising	5,700
Marketing (consignment fees, fitting charges)	36,253
Papers and Registration	480
Insurance	447
Utilities	4,800
Dues to Organizations	70
Farm Magazines	51
Labor	37,083
Annual operating capital	4,190
Carryover capital	2,339
Machinery and equipment repairs, fuel and lube	4,284
Machinery costs <sup>2</sup>	2,307
Facility and equipment costs <sup>2</sup>	20,868
Horse investment costs <sup>2</sup>	32,768
Land costs <sup>3</sup>	<u>2,604</u>
Total farm costs	\$203,273
Gross returns from outside mares <sup>4</sup>	-19,200
Stud fees earned <sup>5</sup>	<u>-20,000</u>
Adjusted farm cost	\$164,073
Costs per yearling	5,127
5% sales company commission on 25 yearlings sold in Sept.	200
5% agents commission fee on 17 yearlings sold in Sept.	<u>136</u>
<b>TOTAL YEARLING BREAKEVEN PRICE</b>	<b>\$5,463</b>

<sup>1</sup> Detailed breakdown of inputs can be seen on individual enterprise budget tables

<sup>2</sup> Includes interest, depreciation, taxes, and insurance

<sup>3</sup> Includes interest and taxes

<sup>4</sup> Assuming a mare care rate of \$8.00 per day

<sup>5</sup> Assuming an average stud fee of \$500

TABLE XXVI  
AVERAGE SALE PRICES FOR HERITAGE PLACE <sup>a</sup>  
FALL AQHA <sup>b</sup> YEARLING SALE

---

1984	\$8,606
1985	\$7,676
1986	\$5,170

---

<sup>a</sup> Heritage Place is a horse auction company located in Oklahoma City. Data was obtained through their office.

<sup>b</sup> AQHA - American Quarter Horse Association.

## Returns to Owned Resources

The horse enterprise budgets developed for this study assume that the farm owners pay for all resources or pay an opportunity cost for them. In this section, target returns to owned resources are considered in evaluating breakeven yearling prices. Four different scenarios are evaluated: 1) a husband and wife working full time on their farm, and owning their land, machinery and equipment and facilities; 2) a husband and wife working full time on their farm and owning the land; 3) an operator owning the land, machinery, equipment and facilities but hiring all the labor, and 4) an operator and family working on the farm but owning no resources. In all the scenarios a target income of \$30,000 to owned resources is assumed. Each scenario is worked out for a farm with 40 broodmares producing yearlings on drylot with two stallions and the same farm with 40 outside mares added (Tables XXIII and XXI). First the total cost of the farm is shown and the target income is added. The adjusted total cost is used for the farm with outside mares. The costs of the owned resources are then subtracted. In the case of labor, the cost is the number of hours the owners work multiplied by \$4.50, the price of labor in the budget. In the case of land, machinery, equipment and facilities, the cost is the amount of interest paid on these resources each year by the owners. This new total cost is divided by 32 to get new costs per yearling for the different scenarios. The 5% sales company commissions and the 5% agents fees are then added to get a new total breakeven price for yearlings. The results of these scenarios can be seen in Tables XXVII-XXX.

The lowest yearling breakeven price is given by Scenario I for the farm taking in outside mares and the highest yearling breakeven price is given by Scenario III for the farm not taking in outside mares. The lower breakeven

TABLE XXVII

YEARLING BREAKEVEN PRICE FOR RESOURCE SCENARIO 1<sup>a</sup>


---

a. 40 Broodmares (drylot system) and 2 stallions	
Total cost	\$191,965
Target income	+ <u>30,000</u>
	\$221,965
Cost of labor	(- 17,280)
Cost of land	(- 2,510)
Cost of machinery	(874)
Cost of equipment and facilities	<u>(10,973)</u>
(Cost) - (Returns to owned resources)	\$190,327
	<u>+32 yearlings</u>
Cost per yearling	\$5,948
5% sales company commission on 25 yearlings	232
5% agents fee on 17 yearlings	<u>158</u>
Total Yearling Breakeven Price	\$6,338
b. 40 broodmares (drylot system), 2 stallions and 40 outside mares	
Total cost, adjusted	\$164,073
Target income	+ <u>30,000</u>
	\$194,073
Cost of labor	(- 17,280)
Cost of land	(2,553)
Cost of machinery	(909)
Cost of equipment and facilities	<u>(12,713)</u>
(Cost) - (Returns to owned resources)	\$160,618
	<u>+32 yearlings</u>
Cost per yearling	\$5,019
5% sales company commission on 25 yearlings	196
5% agents fee on 17 yearlings	<u>133</u>
Total Yearling Breakeven Price	\$5,348

---

<sup>a</sup>SCENARIO I

Husband and wife provide 40 hours of labor each per week and own the land, machinery, and equipment.

TABLE XXVIII

YEARLING BREAKEVEN PRICE FOR RESOURCE SCENARIO II<sup>a</sup>


---

a. 40 broodmares (drylot system) and 2 stallions	
Total cost	\$191,965
Target income	+ <u>30,000</u>
	\$221,965
Cost of labor	(- 17,280)
Cost of land	(- <u>2,510</u> )
(Cost) - (Returns to owned resources)	\$202,175
	<u>+32 yearlings</u>
Cost per yearling	\$6,318
5% sales company commission on 25 yearlings	246
5% agents fee on 17 yearlings	<u>167</u>
Total Yearling Breakeven Price	\$6,731
b. 40 broodmares (drylot system), 2 stallions and 40 outside mares	
Total cost, adjusted	\$164,073
Target income	+ <u>30,000</u>
	\$194,073
Cost of labor	(- 17,280)
Cost of land	(- <u>2,553</u> )
(Cost) - (Returns to owned resources)	\$174,240
	<u>+32 yearlings</u>
Cost per yearling	\$5,445
5% sales company commission on 25 yearlings	212
5% agents fee on 17 yearlings	<u>144</u>
Total Yearling Breakeven Price	\$5,801

---

<sup>a</sup>SCENARIO II

Husband and wife provide 40 hours of labor each per week and own the land



TABLE XXIX

YEARLING BREAKEVEN PRICE FOR RESOURCE SCENARIO III<sup>a</sup>


---

a. 40 broodmares (drylot system) and 2 stallions	
Total cost	\$191,965
Target income	+ <u>30,000</u>
	\$221,965
Cost of land	(- 2,511)
Cost of machinery	(874)
Cost of equipment and facilities	<u>(10,973)</u>
(Cost) - (Returns to owned resources)	\$207,607
	<u>+32 yearlings</u>
Cost per yearling	\$6,488
5% sales company commission on 25 yearlings	253
5% agents fee on 17 yearlings	<u>172</u>
Total Yearling Breakeven Price	\$6,913
b. 40 broodmares (drylot system), 2 stallions and 40 outside mares	
Total cost, adjusted	\$164,073
Target income	+ <u>30,000</u>
	\$194,073
Cost of land	(- 2,553)
Cost of machinery	(909)
Cost of equipment and facilities	<u>(12,713)</u>
(Cost) - (Returns to owned resources)	\$177,898
	<u>+32 yearlings</u>
Cost per yearling	\$5,559
5% sales company commission on 25 yearlings	217
5% agents fee on 17 yearlings	<u>147</u>
Total Yearling Breakeven Price	\$5,923

---

<sup>a</sup>SCENARIO III

The operator owns the land, machinery, and equipment and hires all labor.

TABLE XXX

YEARLING BREAKEVEN PRICE FOR RESOURCE SCENARIO IV <sup>a</sup>


---

a. 40 broodmares (drylot system) and 2 stallions	
Total cost	\$191,965
Target income	+ <u>30,000</u>
	\$221,965
Cost of operator and family labor	(- <u>25,920</u> )
(Cost) - (Returns to owned resources)	\$196,045
	<u>+32 yearlings</u>
Cost per yearling	\$6,126
5% sales company commission on 25 yearlings	239
5% agents fee on 17 yearlings	<u>162</u>
Total Yearling Breakeven Price	\$6,527
b. 40 broodmares (drylot system), 2 stallions and 40 outside mares	
Total cost	\$164,073
Target income	+ <u>30,000</u>
	\$194,073
Cost of labor	(- <u>25,920</u> )
(Cost) - (Returns to owned resources)	\$168,153
	<u>+32 yearlings</u>
Cost per yearling	\$5,255
5% sales company commission on 25 yearlings	205
5% agents fee on 17 yearlings	<u>139</u>
Total Yearling Breakeven Price	\$5,599

---

<sup>a</sup>SCENARIO IV

Husband, wife and children provide 120 hours of labor per week

prices occurs for the farms that own the most resources. The greatest effect was for cases in which the operators provided most of the labor.

These results show that the more resources that a horseman owns, the lower his breakeven yearling price will be. Horsemen who have been in the horse breeding business and have most of their resources paid for and who supply a large amount of their own labor stand a better chance of surviving those hard economic times. This is not a good time to start a horse business from scratch if all "costs" must be paid. Yearling prices will not support all the costs of an operation in which many of the resources are not owned. Of course, the resource owner must be willing to accept the target income (in this case \$30,000) in lieu of the opportunity cost of the owned resources.

#### A Horse Owners Hypothesis

A commonly held belief among horse breeders is that they are able to pay for their total operating and fixed stallion costs through stud fees earned and for their equipment and facilities cost through outside mare care fees. They believe that their net income is from the sale of yearlings. With the information obtained in this study, this supposition will be tested. Data used came from Tables I-V.

If stud fees are assumed to be \$500 per mare and 40 outside mares are taken in, a total of \$20,000 is made in stallion fees. The costs incurred by the two stallions on the farm are \$27,648.92 in operating inputs and fixed costs plus \$356.70 in overhead costs for a total of \$28,005.62. In this case, the stallion fees cover 71% of the costs of keeping the stallions.

If outside mare care is assumed to return \$8.00 per day, after subtracting out the operating costs to board the 40 mares, a residue of \$7,488 remains. The interest, depreciation, taxes and insurance on the equipment and facilities

The interest, depreciation, taxes and insurance on the equipment and facilities comes to \$17,701.07. The residue on the mare care covers only 42% of the equipment and machinery costs.

These results, based on the data obtained from the study, show that the cost of the stallion is not entirely covered by stud fees and the depreciation on the facilities and equipment are not entirely covered by outside mare boarding fees. These results are only accurate for the number of horses that this study assumed. With more or less horses, the results could be different.

### The Effect of Different Weaning Rates

The information generated by these budgets can be used to look at the effect of different weaning rates. Among horse farms, weaning rates range from 60% to 90%. Low weaning rates could be due to inadequate nutrition and health programs, poor breeding techniques or inadequate foal care. How much do low weaning rates add to costs?

In this study a weaning rate of 80% is assumed. On the 40 mares producing yearlings on drylot budget (Table XVIII) a total cost per mare unit is \$3,648.00. If this cost is converted to a costs per yearling basis it would be \$4,560.00 per yearling for 32 yearlings. If a farm had a weaning rate of only 60%, or 24 foals for 40 broodmares, the costs per yearling would increase. If there were only 24 foals, the amounts and total costs of many of the inputs needed would change and this can be seen in Table XXXI. Although the total operating cost would decrease under these assumptions, the total cost per yearling would increase to \$5,280. The better job a farm manager can do of getting mares in foal and raising healthy foals, the lower costs per foal will be.

TABLE XXXI  
COSTS OF DIFFERENT BROODMARE WEANING RATES

---

	Input Costs Per Mare with 60% Weaning Rate (\$)	Input Costs Per Mare with 80% Weaning Rate (\$)
Consignment fees	177.50	232.50
Fitting charges	511.88	673.83
Papers and registration	9.00	12.00
Small grain pasture	188.95	240.95
Bermuda pasture	51.76	47.03
Alfalfa hay	26.04	40.14
Creep ration	23.71	31.62
Growing ration	76.15	101.53
Herd ration	68.54	61.29
Vet & Med	329.00	311.00
Horse Labor	410.40	420.03

---

With proper breeding management, culling and foal care, weaning rates of 80-90% are not unusual.

### Tax Considerations

The budgets presented in this study are all on a before tax basis. Tax benefits may be available to the serious breeder who meets the IRS's definition of a business (6, 16). The IRS has a hobby loss provision. It states that if you are engaged in a certain endeavor and your motive is personal enjoyment, rather than making a profit, you cannot write off any of the expenses you incur in that endeavor. Conversely, if you can prove you were engaged in that activity for a profit, it is a business and your losses are fully deductible against other income. A horse farm does not necessarily have to make a profit to be declared a business, but the facts and circumstances surrounding the farm must indicate that it is in the business to make a profit. There are nine factors that are important indicators of profit motive:

1. Whether or not the taxpayer carries on the horse operation in a business-like manner. A farm operator should keep accurate books and records.
2. Expertise of taxpayer or his advisors.
3. The amount of time and effort expended by the taxpayer in carrying on his horse operations.
4. Expectation that assets used in the activity such as land and horses will appreciate in value.
5. The taxpayers success in other areas.
6. The taxpayers history of profits and losses with respect to the horse business.

7. The amount of profits generated by the activity in relation to the amount of losses. This is part of the two-out-of-seven presumption that states that a horse business must show a profit two out of seven years.
8. Substantial income from sources other than the horse business.
9. Elements of personal pleasure and recreation.

If the breeding operation qualifies as a business, some tax advantages are available to the horse owner. A horse business can depreciate horses as an ordinary business expense. A horse breeder can take deductions for such items as labor, tack, tools, veterinary costs, feed (or production costs if feed is grown on the farm), and breeding fees. Capital expenditures are not deductible but most can be depreciated. There is an involuntary conversion deduction which is any loss of property (e.g., equipment, buildings, horses) due to theft, natural disaster, disease, fire, or other unforeseen circumstance.

The new tax law passed in 1986 contains three major changes which will impact on the horse industry (17). One new law requires full absorption accounting on animals raised for draft, sport or breeding purposes. Before the new tax law, horses raised by a farm had a zero tax basis and the full costs of raising that animal could be deducted. Now the animals must be assigned a market value and a portion of the cost has to be capitalized. The amount of expenses deducted is reduced by the basis or value of the animal. Another new provision of the tax law states that if individuals do not materially participate in a horse business, they cannot deduct losses from it. This would apply to individuals in limited partnerships or those people with other sources of income who just invest passively in a horse or horse operation. Another tax change is that the capital gains provision has been eliminated. Under the old law, if an animal was purchased, held for over 24 months, and then sold, the owner could

claim a capital gain. If a horse was purchased for \$2,000 and after 24 months, sold for \$20,000, there was an \$18,000 gain. In the past a horseman would have to pay taxes on only 40% of gain, but the new tax law requires the horseman to pay taxes on the full \$18,000.

Although many people consider horses a "tax shelter", the tax provisions available to horse businesses are the same as those offered to most commercial farmers. These tax treatments are often necessary for the economic viability of horse operations.



## CHAPTER V

### SUMMARY AND CONCLUSIONS

This study provides information and guidance to Oklahoma horse breeders who need to estimate costs for their breeding operations. Horse budgets developed in this study are meant to be used as management tools. The horse budgets can be used for the planning, implementation and control phases of a horse farm management and can help the manager make better economic decisions regarding their operations.

The typical kinds of horse operations found in Oklahoma are; 1) broodmare farms producing yearlings for sale, 2) stallion farms, 3) sales preparation farms and, 4) breaking and training facilities. These farms are found as separate operations or combined in different ways. This study concentrates on the breeding level of the horse business so only the first two types of operations are looked at.

Several publications provide limited information on horse farm economics. Lawrence and Downes (14) looked at the costs and returns of Maryland's standardbred breeders, Judge and Petritz (12) studied the economics of a horse breeding program, Lohman and Kirkpatrick (16) reported costs of owning a thoroughbred broodmare to produce race horses and the Research Staff of Equine Research, Inc. (6) looked into the costs of raising a foal. All of the above authors believed that knowing clearly what costs are and what they involve is an important component of running a successful horse breeding operation.

Four horse budgets and one overhead farm costs budget are developed in this study. The four horse budgets include broodmares producing yearlings on year round pasture, broodmares producing yearlings on drylot (pastures too small and heavily stocked to sustain adequate forage), stallions and outside mare boarding. The overhead cost budget contains other costs inherent to carrying out the aforementioned horse systems but not included on those budgets. Overhead costs include such inputs as whole farm advertising, farm insurance premiums and office labor. The overhead cost budget is meant to be used with all of the other budgets.

Descriptions of data development for producing the budgets are provided, including inputs to be included, costs of the inputs and the timing of their use. Labor, machinery, equipment, and capital requirements are estimated and included in the budget. Operating and ownership costs are added to arrive at the total cost of each operation per horse unit.

The nutritional requirements of the broodmares using the pasture system were based on use of pasture dry matter of specified qualities month by month. When the pasture did not meet the horses total requirement, supplementation was added. All of the other budgets use hay and grain to meet the horses' nutritional requirements.

Returns were not estimated for this study. The range of returns for horses is very great and depends on breed and purpose. Horse owners need to estimate their own returns and add them to the budget to see if their operation is losing money, breaking even or making a profit.

Each individual budget is analyzed in the study and the total costs are determined. The broodmares producing yearlings on pasture budget had a total cost per mare unit of \$3,667. The broodmares producing yearlings on drylot had a total cost per mare unit of \$3,621. Although the horses on pasture

had a lower total operating cost due to less feed and labor requirements, the fixed costs due to the extra land, fencing and pasture production resulted in the pasture system being a little more expensive to operate. The stallion budget resulted in a total cost per stallion of \$15,588. Outside mares that stay on the farm for 60 days to be bred incur costs of \$283 each. Estimated horse farm overhead costs are \$14,980 per year.

The budgets are combined in several ways in the whole farm analysis part of the study. The total costs for these different combinations were determined. Yearling breakeven values are determined by dividing total farm costs by the number of yearlings. For a farm consisting of 40 Broodmares on pasture and two stallions, total costs including overhead cost, are \$194,088 and the breakeven cost of the yearlings is \$6,463. For a farm with broodmares on drylot and two stallions and including overhead costs, the total farm cost is \$191,965 with a yearling breakeven price of \$6,392. A farm with 40 broodmares on drylot, two stallions, overhead costs and 40 outside mares had a total cost of \$203,243, but after stud fees and boarding charges were subtracted, an adjusted total cost of \$174,816 remained. This gave a yearling breakeven price of \$5,463 sale data from Heritage Place, a horse auction facility, listed their average fall sale price for 1986 as \$5,170. None of the hypothetical farms evaluated could break even selling yearlings at that price.

Returns to owned resources were evaluated by setting up several scenarios in which the owners are assumed to own different amounts of farm resources for which they need a \$30,000 return. Under these assumptions, whole farm costs were determined and yearling breakeven prices were estimated. The four scenarios used were: 1) A husband and wife working 40 hours each on the farm and owning the land, machinery, and equipment, 2) a husband and wife working 40 hours each and owning the land, 3) a person

owning the land, machinery, and equipment but hiring the labor, and 4) a family supplying 120 hours of labor per week. These scenarios were tried using the 40 Broodmares on drylot with two stallions whole farm plan and that same plan with 40 outside mares added. The scenario that gave the lowest breakeven price for yearlings, \$5,348, was scenario 1 with 40 broodmares, two stallions and 40 outside mares. In general, the more resources that the farm owned, the lower their total costs and breakeven yearling prices would be.

The budgets developed in this study have many applications. They were used to test a hypothesis commonly held by horseman that the costs of the stallion(s) can be covered by stud fees and facility and equipment depreciation can be paid for by outside mare boarding fees. When this hypothesis was tested using the data gathered in this study, it was shown that stud fees cover 71% of the cost of the stallions and outside mare boarding fees cover 42% of the cost of the equipment and facilities for the number of horses assumed. With a fewer or greater amount of horses, these results would change.

The horse budgets were also used to determine the effect of different weaning rates on the breakeven price for yearlings. A comparison was made of an 80% weaning rate, as assumed in this study and a 60% weaning rate. The lower weaning rate resulted in higher breakeven prices required by the yearling. If horse owners can work toward higher weaning rates, their breakeven prices will be lower.

This study looks briefly at tax considerations for the horse farm owner. If a horse farm is considered a business by IRS standards, there are some tax advantages that horsemen can use for their operations. The 1986 tax law changes took away some of the tax incentives and these changes are discussed.

Many refinements and improvements can be made in horse budgets and farm analysis. A system for determining returns is needed. One way to make this easier would be to prepare more breed and purpose-specific budgets such as "thoroughbred race horses" or "quarter horse stockhorses". This would also help make costs more specific. Budgets for other horse operations like breaking-training facilities and sales preparation barns need to be developed. It would also be advantageous to prepare budgets that produce weanlings and two year olds. A more detailed look at horse farm tax considerations is also needed. Taxes can play a large role in horse farm business so tax advantages need to be well understood by the farm manager.

Horses are a difficult species of animal to analyze economically because of the great diversity of breeds and use, but hopefully this study, and the future studies suggested can help horse farm managers better evaluate their financial positions and survive difficult economic times.

## A SELECTED BIBLIOGRAPHY

1. Boehlje, M. D. and Eidman, V. R. Farm Management, John Wiley and Sons, NY, 1984.
2. Bowlar, H. & L., Bowlar Farms. Personal communication, May, 1986.
3. Clark, V. The horse business: more than a taxing question. The Quarter Horse Journal, January, 1985.
4. Cunna, T. J., Horse Feeding and Nutrition: A Series of Monographs. Academic Press Inc., NY, 1983.
5. Torrance, P., Equine Investors: Personal Communication, August, 1986.
6. Equine Research Inc. Staffs. Breeding Management and Foal Development, Equine Research Inc., Tyler, TX, 1982.
7. Evans, W. J. Horses. W. H. Freeman and Company, 1981.
8. Freeman, D. W., Ph.D., Personal Communication, 1986.
9. Freeman, D. W., Ph.D., Ration Formulation for Horses, OSU Extension Facts, 3997.
10. Hintz, H. F., Ph.D. Horse Nutrition: A Practical Guide. Arco Publishing Inc., NY, 1983.
11. Holt, J., Ph.D. Is Their Profit in Cheap Horses? Proceedings of Florida Horseman's Seminar, January, 1984.
12. Judge, M. and Petritz, D. C. Economics of a Breeding Program. Paper presented at Purdue Farm Science Days, 1976.
13. Ketke, D. D. Operation of the Enterprise Budget Generator. Oklahoma Agricultural Experiment Station Research Report, p. 790, Stillwater, OK, 1979.
14. Lawrence, R. G. and Downs, J. M., Costs and Returns of Maryland's Sandard Breed Breeders. Maryland Agricultural Experiment Station Research Report MP-963, College Park, MD, 1981.

15. Lenard, V. and Doeksen, G. A. The Economic Impact of the Horse Industry in Oklahoma. Oklahoma Equine Agricultural Symposium Proceedings, August, 1984.
16. Lohman, J. and Kirkpatrick, A. Successful Thoroughbred Investment in a Changing Market. Thoroughbred Publishers, Inc., Lexington, KY, 1984.
17. Merrit, W., Tax Consultant. Personal communication, July 1987.
18. N.R.C., 1978, Nutrient Requirements of Domestic Animals, #6. Nutrient Requirements of Horses. (4th revised edition). National Academy of Sciences, Washington, D.C.
19. Ott, E., A., Ph.D. Nutritional Requirements of the Growing Foal. Oklahoma Equine Symposium Proceedings, April, 1986.
20. Potter, G. D., Ph.D. with Jennings, J. Horse Nutrition and Feeding. The Quarter Horse Journal. December, 1973.
21. Potter, G. D., Ph.D. Horse Nutrition and Feeding Management. Oklahoma Equine Symposium Proceedings, August 1984.
22. Royce, V. and R., Royce-R-Ranch: Personal Communication, May, 1986.
23. Schmidt, F., Griffith, C. A., Dalrymple, R. L., Pumphrey, J., Alton W. and Simmons, G. D. of the Samuel Roberts Nobel Foundation: Personal communication, July, 1986.
24. Schmidt, F. Horse Production Costs. Oklahoma Equine Agriculture Symposium Proceedings, August, 1984.
25. Tippens, T. W., Esq. The Best is Yet to Come. Speedhorse Vol. 18, No. 3, October, 1985.
26. Topliff, D. R., Ph.D. Personal communication, 1986-1987.

**APPENDIX A**

**SELECTED PASTURE BUDGETS**



TABLE I  
BERMUDA GRASS BUDGET

BERMUDA GRASS ROTATION GRAZING		83900201 11/01/86 SOUTHEAST			
OPERATING INPUTS:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
NITROGEN (N)	LBS.	0.160	140.000	22.40	_____
PHOSPH (P2O5)	LBS.	0.150	40.000	6.00	_____
POTASH (K2O)	LBS.	0.090	60.000	5.40	_____
RNTFERTSPRD/ACRE	ACRE	1.250	5.000	6.25	_____
2-4-D	ACRE	2.500	0.330	0.82	_____
1/10 EST. COST	ACRE	110.000	0.100	11.00	_____
HERBICIDE	ACRE	5.500	0.330	1.81	_____
ANNUAL OPERATING CAPITAL	DOL.	0.115	24.896	2.86	_____
LABOR CHARGES	HR.	3.208	0.447	1.43	_____
MACHINERY FUEL,LUBE,REPAIRS	ACRE			4.30	_____
TOTAL OPERATING COST				62.29	_____
FIXED COSTS		VALUE YOUR VALUE			
MACHINERY					
INTEREST AT 11.5%	DOL.	4.660	_____	_____	_____
DEPR.,TAXES,INSUR.	DOL.	6.266	_____	_____	_____
LAND					
INTEREST AT 0.0%	DOL.	0.000	_____	_____	_____
TAXES	DOL.	0.000	_____	_____	_____
TOTAL FIXED COSTS		10.93		_____	_____
PRODUCTION:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
PASTURE	AUM'S	0.000	11.600	0.00	_____
RETURNS ABOVE TOTAL OPERATING COSTS				-62.29	_____
RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD,RISK AND MANAGEMENT				-73.21	_____
HERBICIDE IS PARAQUAT, APPLIED EVERY 3 YEARS FOR WINTER ANNUALS. 2,4-D APPLIED EVERY 3 YEARS.				WALKER,MCMURPHY	

PROCESSED BY DEPT. OF AGRI. ECON. - OKLAHOMA STATE UNIVERSITY  
PROGRAM DEVELOPED BY DEPT. OF AGRI. ECON. OKLAHOMA STATE UNIVERSITY

BUDGET IDENTIFICATION NUMBER 839002010 808 8

ANNUAL CAPITAL MONTH 8

BUDGET RECORD NUMBER 68  
BUDGET FILE 2

BERMUDA GRASS  
ROTATION GRAZING

83900201  
11/01/88  
SOUTHEAST

LINE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
PRODUCTION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE	WEIGHT	UNIT	ITEM	TYPE	CONT
2 PASTURE	0.20	0.00	0.00	0.75	NUMBER OF UNITS 1.75 2.75 2.75			1.30	1.50	0.20	0.20	0.20	-1.000	0.000	10.	180.	2.	0.
OPERATING INPUTS																		
RATE/UNIT																		
11 NITROGEN (N)	0.00	0.00	0.00	40.00	0.00	40.00	0.00	60.00	0.00	0.00	0.00	0.00	-1.000	0.000	12.	211.	3.	0.
12 PHOSPH (P205)	0.00	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.000	0.000	12.	214.	3.	0.
13 POTASH (K2O)	0.00	0.00	0.00	60.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.000	0.000	12.	216.	3.	0.
14 RNTFERTSPRD/ACRE	0.00	0.00	0.00	1.00	0.00	1.00	1.00	1.00	0.00	0.00	0.00	0.00	-1.000	0.000	7.	382.	3.	0.
15 2-4-0	0.00	0.00	0.00	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	-2.500	0.000	7.	251.	3.	0.
16 1/10 EST. COST	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	10.000	0.000	7.	238.	3.	0.
17 HERBICIDE	0.00	0.00	0.33	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	8.500	0.000	7.	250.	3.	0.
MACHINERY REQUIREMENTS																		
TIMES OVER																		
43 ROD WEEDER	0.00	0.00	0.00	1.00	0.00	1.00	0.00	1.00	0.00	0.00	0.00	0.00	0.000	0.000	3.	69.	4.	0.
44 DRILL W/FERT.	0.00	0.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	3.	72.	4.	0.
50 OTHER LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07						

MONTHLY SUMMARY OF RECEIPTS AND EXPENSES	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
TOTAL RECEIPTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TOTAL EXPENSES	0.00	0.00	0.00	3.12	19.62	1.25	10.34	12.25	11.42	0.00	0.00	0.00	0.00
RETURNS TO LAND, LABOR, CAPITAL, MACHINERY, OVERHEAD, RISK, AND MANAGEMENT													-57.99

ANNUAL CAPITAL	DOL.	1.97	1.97	2.23	3.87	3.97	0.00	1.02	1.97	1.97	1.97	1.97	24.90
----------------	------	------	------	------	------	------	------	------	------	------	------	------	-------

LABOR REQUIREMENTS BY MONTH	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MACHINERY LABOR	0.00	0.00	0.09	0.07	0.00	0.15	0.00	0.07	0.00	0.00	0.00	0.00	0.37
OTHER LABOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07
TOTAL LABOR	0.00	0.00	0.09	0.07	0.00	0.15	0.00	0.07	0.00	0.00	0.00	0.00	0.45

MACHINE	CODE	DEPR	INSUR.	TAX	TOTAL FIXED	REPAIR	FUEL	LUB.	TOTAL VARIABLE	INT.	HR/TIME
TRACTOR(3)	3	7.52	0.41	1.07	9.00	4.40	4.30	0.64	9.34	7.95	1.00
ROD WEEDER	69	8.20	0.25	0.92	9.27	0.00	0.00	0.00	0.00	4.71	0.06
DRILL W/FERT.	72	10.27	0.44	1.25	11.96	8.10	0.00	0.00	8.10	8.44	0.07

OPERATION	ITEM NO.	DATE	TIMES OVER	LABOR HOURS	MACHINE HOURS	FUEL OIL LUB. REPAIR PER ACRE	FIXED COSTS PER ACRE
ROD WEEDER	3.69	AUG	1.00	0.067	0.055	0.57	1.80
DRILL W/FERT.	3.72	MAR	1.00	0.086	0.071	1.30	2.76
ROD WEEDER	3.69	APR	1.00	0.067	0.055	0.57	1.80
ROD WEEDER	3.69	JUN	1.00	0.067	0.055	0.57	1.80
DRILL W/FERT.	3.72	JUN	1.00	0.086	0.071	1.30	2.76
TOTAL				0.372	0.307	3.30	10.93

NAME OF MACHINE	CODE	WIDTH (FEET)	INITIAL PRICE	SPEED (MPH)	FIELD EFFIC. ENCY	RC1	RC2	RC3	HOURS USED ANNUALLY	YEARS OWNED	RFV1	RFV2	PURCHASE PRICE	FUEL TYPE	HOURS OF LIFE	HP	FUEL MULT
TRACTOR(3)	3	200.0	64000.	4.5	0.83	1.25	0.000631	1.60	600.	10.0	0.680	0.920	64000.	3.	15000.	200.	0.050
ROD WEEDER	69	30.0	8200.	6.0	0.83	0.65	0.000251	1.80	100.	10.0	0.600	0.885	8200.	0.	2000.	0.	0.000
DRILL W/FERT.	72	27.0	12478.	6.0	0.72	0.65	0.000251	1.80	100.	10.0	0.600	0.885	12478.	0.	1000.	0.	0.000

HERBICIDE IS PARAQUAT APPLIED EVERY 3 YEARS FOR WINTER WALKER, MCMURPHY MACHINERY COMPLEMENT 8  
ANNUALS. 2, 4-D APPLIED EVERY 3 YEARS. EQUIPMENT COMPLEMENT 8  
PRICE VECTOR 8

GENERAL NAME CHANGE	LINE CHANGE	VALUE	GENERAL NAME CHANGE	LINE CHANGE	VALUE	GENERAL NAME CHANGE	LINE CHANGE	VALUE	GENERAL NAME CHANGE	LINE CHANGE	VALUE	GENERAL NAME CHANGE	LINE CHANGE	VALUE
MACH COMP CHGS	309	8.250000	MACH COMP CHGS	98	2500.000000	MACH COMP CHGS	3	1.000000	MACH COMP CHGS	5	1.000000	MACH COMP CHGS	6	0.600000
	98	0.000000		98	1.000000		98	11.		98	12.		98	13.
	98	0.000000		98	25.000000		98	2.		98	3.		98	4.
	29	1.000000		29	0.600000		29	3.		29	9.		29	10.
	29	0.000000		29	0.000000		29	14.		29	15.		29	16.
	69	0.000000		69			69			69			69	

TABLE 1 (Continued)

TABLE II  
SMALL GRAIN GRAZEOUT BUDGET

SMALL GRAIN GRAZEOUT 89500101  
CLAY AND LOAM SOILS USUALLY USE CLASSES I & II 11/01/86  
SOUTHEAST

-----					
OPERATING INPUTS:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
SEED	BU.	13.000	1.150	14.95	_____
18-46-O FERT	CWT.	9.250	1.000	9.25	_____
NITROGEN (N)	LBS.	0.160	40.000	6.40	_____
RNTFERTSPRD/ACRE	ACRE	1.250	2.000	2.50	_____
ANHYDROUS AMMON	LBS.	0.130	100.000	13.00	_____
ANNUAL OPERATING CAPITAL	DOL.	0.115	40.178	4.62	_____
LABOR CHARGES	HR.	3.174	1.781	5.65	_____
MACHINERY FUEL, LUBE, REPAIRS	ACRE			15.26	_____
TOTAL OPERATING COST				71.63	_____
-----					
FIXED COSTS				VALUE	YOUR VALUE
MACHINERY					
INTEREST AT 11.5%	DOL.	11.441			_____
DEPR., TAXES, INSUR.	DOL.	13.997			_____
LAND					
INTEREST AT 0.0%	DOL.	0.000			_____
TAXES	DOL.	0.000			_____
TOTAL FIXED COSTS				25.44	_____
-----					
PRODUCTION:	UNITS	PRICE	QUANTITY	VALUE	YOUR VALUE
WHEAT PASTURE	AUMS	0.000	7.000	0.00	_____
RETURNS ABOVE TOTAL OPERATING COSTS				-71.63	_____
RETURNS ABOVE ALL COSTS EXCEPT OVERHEAD, RISK AND MANAGEMENT				-97.07	_____
-----					

100# 18-46-O FALL, 40# WHEAT, 60# RYE, 15# RYEGRASS-SEED TICE, WALKER, MCMURPHY  
100# ANHYDROUS IN LATE SUMMER, 40# IN SPRING

07/22/87

PROCESSED BY DEPT. OF AGRI. ECON. - OKLAHOMA STATE UNIVERSITY  
PROGRAM DEVELOPED BY DEPT. OF AGRI. ECON. OKLAHOMA STATE UNIVERSITY

TABLE II (Continued)

BUDGET IDENTIFICATION NUMBER 895001016 804 8														ANNUAL CAPITAL MONTH 6				BUDGET RECORD NUMBER 66			
SMALL GRAIN GRAZEOUT														89500101							
CLAY AND LOAM SOILS USUALLY USE CLASSES I & II														11/01/86							
														SOUTHEAST							
LINE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18			
PRODUCTION	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	PRICE	WEIGHT	UNIT	ITEM	TYPE	CONT			
1 WHEAT PASTURE	0.90	0.60	0.80	1.00	1.20	0.80	0.00	0.00	0.00	0.00	0.50	1.20	-1.000	0.000	10.	151.	2.	0.			
OPERATING INPUTS																					
	RATE/UNIT																				
11 SEED	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.18	0.00	0.00	0.00	13.000	0.000	2.	190.	3.	0.			
12 18-48-0 FERT	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.000	0.000	16.	217.	3.	0.			
13 NITROGEN (N)	0.00	0.00	40.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-1.000	0.000	12.	211.	3.	0.			
17 RNTFERTSPRD/ACRE	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	-1.000	0.000	7.	362.	3.	0.			
18 ANHYDROUS AMMON	0.00	0.00	0.00	0.00	0.00	0.00	0.00	100.00	0.00	0.00	0.00	0.00	-1.000	0.000	12.	210.	3.	0.			
MACHINERY REQUIREMENTS																					
	TIMES OVER																				
38 V-PLOW 8 SHANK	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	5.	37.	4.	0.			
39 M.B.PLOW(10-ULE	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	5.	33.	4.	0.			
40 TANDEM DISK	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.000	0.000	5.	47.	4.	0.			
41 CRUST BUSTER	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.000	0.000	5.	54.	4.	0.			
42 FIELD CULTIVATOR	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.000	0.000	2.	60.	4.	0.			
43 PICKUP 75 TON	0.00	0.00	0.10	0.00	0.00	0.10	0.00	0.05	0.05	0.00	0.00	0.00	0.000	0.000	2.	12.	4.	0.			
44 DRILL WO/FERT.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.000	2.	71.	4.	0.			
50 OTHER LABOR	0.00	0.00	0.10	0.00	0.00	0.10	0.10	0.10	0.00	0.00	0.00	0.14									

MONTHLY SUMMARY OF RECEIPTS AND EXPENSES																		
CATEGORY	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL					
TOTAL RECEIPTS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00					
TOTAL EXPENSES	0.00	0.00	0.00	8.23	0.00	0.00	0.00	5.10	4.76	15.66	27.61	0.00	61.36					
RETURNS TO LAND, LABOR, CAPITAL, MACHINERY, OVERHEAD, RISK, AND MANAGEMENT													-61.36					
ANNUAL CAPITAL	DOL.	4.00	4.00	4.69	4.69	4.69	0.00	0.40	1.70	4.00	4.00	4.00	40.18					
LABOR REQUIREMENTS BY MONTH																		
MACHINERY LABOR	HR.	0.00	0.00	0.12	0.00	0.00	0.44	0.21	0.23	0.25	0.00	0.00	1.24					
OTHER LABOR	HR.	0.00	0.00	0.10	0.00	0.00	0.10	0.10	0.10	0.00	0.00	0.00	0.64					
TOTAL LABOR	HR.	0.00	0.00	0.22	0.00	0.00	0.54	0.31	0.33	0.25	0.00	0.00	1.78					

MACHINERY FIXED AND VARIABLE COSTS PER HOUR																		
MACHINE CODE	DEPR	INSUR.	TAX	TOTAL FIXED	REPAIR	FUEL	LUB.	VARIABLE	INT.	HR/TIME								
TRACTOR(2)	5.14	0.34	0.87	7.35	3.59	3.61	0.54	7.75	6.49	1.00								
TRACTOR(5)4WD	10.96	0.60	1.55	13.12	6.41	6.45	0.97	13.83	11.58	1.00								
PICKUP 75 TON	3.31	0.10	0.23	3.63	2.20	3.09	0.46	5.75	1.83	1.00								
V-PLOW 8 SHANK	1.26	0.05	0.15	1.47	2.11	0.00	0.00	2.11	1.04	0.26								
M.B.PLOW(10-ULE	6.11	0.26	0.74	7.12	12.48	0.00	0.00	12.48	5.03	0.17								
TANDEM DISK	4.00	0.17	0.49	4.66	2.29	0.00	0.00	2.29	3.29	0.09								
CRUST BUSTER	4.00	0.19	0.59	4.77	0.72	0.00	0.00	0.72	3.67	0.05								
FIELD CULTIVATOR	7.98	0.00	0.00	9.30	2.78	0.00	0.00	2.78	6.66	0.05								
DRILL WO/FERT.	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.05								

OPERATION																		
ITEM NO.	DATE	TIMES OVER	LABOR HOURS	MACHINE HOURS	FUEL	OIL	LUB.	FIXED COSTS PER ACRE										
M.B.PLOW(10-ULE	8.33 JUL	1.00	0.208	0.172	4.76			6.76										
TANDEM DISK	8.47 AUG	1.00	0.104	0.086	1.50			3.02										
CRUST BUSTER	8.34 AUG	1.00	0.066	0.058	0.87			1.94										
PICKUP 75 TON	5.12 AUG	0.05	0.060	0.050	0.29			0.27										
CRUST BUSTER	3.64 SEP	1.00	0.068	0.055	0.87			1.94										
FIELD CULTIVATOR	3.90 SEP	1.00	0.054	0.054	0.81			1.69										
PICKUP 75 TON	1.12 SEP	0.05	0.060	0.050	0.29			0.27										
DRILL WO/FERT.	2.71 SEP	1.00	0.055	0.045	0.39			0.69										
PICKUP 75 TON	1.12 MAR	0.10	0.120	0.100	0.88			0.85										
V-PLOW 8 SHANK	8.37 JUN	1.00	0.316	0.261	4.53			7.76										
PICKUP 75 TON	1.12 JUN	0.10	0.120	0.100	0.88			0.85										
TOTAL			1.241	1.028	15.26			25.44										

MACHINERY COMPLEMENT																		
NAME OF MACHINE	CODE	WIDTH (FEET)	INITIAL LIST PRICE	SPEED (MPH)	FIELD EFFICIENCY	RC1	RC2	RC3	RC4	HOURS USED ANNUALLY	YEARS OWNED	RFV1	RFV2	PURCHASE PRICE	FUEL TYPE	HOURS OF LIFE	HP	FUEL MULT
TRACTOR(2)	2.	175.0	52300.	4.5	0.88	1.25	0.000631	1.60	500.	10.0	0.580	0.920	52300.	3.	12000.	175.	0.048	
TRACTOR(5)4WD	5.	300.0	93300.	4.5	0.88	1.25	0.000631	1.60	600.	10.0	0.580	0.920	93300.	3.	12000.	300.	0.050	
PICKUP 75 TON	12.	8.0	13500.	20.0	0.88	0.80	0.001585	1.40	600.	4.0	0.670	0.885	13500.	1.	4000.	130.	0.044	
M.B.PLOW(10-ULE	33.	13.3	13000.	4.3	0.80	2.00	0.002510	1.30	175.	10.0	0.600	0.885	13000.	0.	2000.	0.	0.000	
V-PLOW 8 SHANK	37.	8.3	2300.	4.5	0.85	0.60	0.002510	1.80	150.	10.0	0.600	0.885	2300.	0.	2000.	0.	0.000	
TANDEM DISK	47.	20.0	8500.	6.0	0.80	0.60	0.000251	1.80	175.	10.0	0.600	0.885	8500.	0.	2000.	0.	0.000	
CRUST BUSTER	84.	36.0	4200.	6.0	0.70	0.65	0.000251	1.80	75.	12.0	0.600	0.885	4200.	0.	2000.	0.	0.000	
FIELD CULTIVATOR	60.	40.0	9700.	6.0	0.75	1.00	0.000251	1.80	100.	10.0	0.600	0.885	9700.	0.	2000.	0.	0.000	
DRILL WO/FERT.	71.	42.0	0.	6.0	0.72	0.65	0.000251	1.80	100.	10.0	0.600	0.885	0.	0.	1000.	0.	0.000	

100# 18-48-0 FALL, 40# WHEAT, 60# RYE, 15# RYEGRASS-SEED TICE,WALKER,MCMURPHY MACHINERY COMPLEMENT 8  
100# ANHYDROUS IN LATE SUMMER, 40# IN SPRING 07/22/87 EQUIPMENT COMPLEMENT 8  
PRICE VECTOR 4

MACHNRY NAME CHANGE--> 97 ELECTRIC FENCE																			
LINE CHANGE	VALUE	RW	CL	LINE CHANGE	VALUE	RW	CL	LINE CHANGE	VALUE	RW	CL	LINE CHANGE	VALUE	RW	CL	LINE CHANGE	VALUE	RW	CL
97.2	8.250000	97.	3.	300.000000	97.	8.	1.000000	97.5	1.000000	97.	5.	1.000000	97.6	0.500000	97.	7.	0.000000	97.	13.
97.4	0.000000	97.	8.	1.000000	97.	10.	0.000000	97.11	0.000000	97.	11.	0.000000	97.12	0.000000	97.	13.	0.000000	97.	13.
12.3	13800.000000	12.	4.	20.000000	12.	5.	0.880000	12.6	0.880000	12.	7.	0.880000	12.7	0.001585	12.	8.	1.400000	12.	8.
12.8	800.000000	12.	10.	0.870000	12.	11.	0.870000	12.12	0.855000	12.	13.	1380.000000	12.14	0.000000	12.	14.	1.000000	12.	14.
12.15	4000.000000	12.	16.	130.000000	25.	2.	8.300000	25.3	300.000000	25.	3.	1.000000	25.4	1.000000	25.	5.	1.000000	25.	5.
25.8	0.600000	25.	7.	4.000000	25.	8.	0.000000	25.9	1.000000	25.	10.	10.000000	25.11	0.000000	25.	11.	0.000000	25.	11.
25.12	0.000000	25.	13.	300.000000	25.	14.	0.000000	25.15	25.000000	25.	16.	0.000000	25.16	0.000000	25.	16.	0.000000	25.	16.

2

VITA

Jennifer Cheryl Goode

Candidate for the Degree of

Master of Science

Thesis: ECONOMIC ANALYSIS OF SELECTED HORSE PRODUCTION  
SYSTEMS IN OKLAHOMA

Major Field: Agricultural Economics

Biographical:

Personal Data: Born in Columbus, Ohio, May 28, 1961, the daughter of  
Ms. Sharon Gowdy. Married to Mark Rayner, May 23, 1987.

Education: Graduated from Clearlake High School, Lakeport, CA in June  
1979; received Bachelor of Science degree in Animal Science from  
University of California, Davis in 1984; enrolled in Masters program  
at Oklahoma State University, 1985-87; completed requirements for  
the Master of Science Degree in December, 1987.

Professional Experience: Enumerator, California Department of  
Agriculture, 1981-83; Research Assistant, University of California  
Davis, 1983-84; Animal Technician, University of California Primate  
Center, 1985; Graduate Research Assistant, Oklahoma State  
University, 1986-87; Credit Examiner, Farm Credit Administration,  
1987.