



Planning
a High
Management
Limited
Resource
Beef Herd

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Information contained herein is available to all persons without regard to race, color, sex, or national origin.

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INTRODUCTION

A farm planning "case study" is described in this report based upon the current expansion of the beef herd enterprise of an on-going diversified farm in south Alabama. The two basic objectives of this beef analysis are (1) to identify and analyze input and management components critical to the establishment and long-term success of the beef enterprise, and (2) to illustrate the financial budgeting and planning processes often used in agricultural economics education and extension programs.

The problems faced by the case farmer are typical of those confronting beef farmers throughout the Southeast: highly volatile beef prices and feed prices, lower than desired conception and gain rates, and inadequate utilization of land, labor, and management resources. The pervasiveness of these problems has resulted in extremely depressed profitability in the beef herd sector during recent years (Economic Indicators of the Farm Sector.)

The farmer's beef production concerns can be broadly summarized as inadequate returns to beef herd management. The business goal of the farmer was to establish a profitable beef herd on a presently owned

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155-acre farm adjacent to the home farm. This beef herd project was "high priority" because the farm was to be operated by a daughter and son-in-law, with the express purpose of providing them a substantial share of their family income.

Key components of the farm plan include an intensive, high tonnage feed production system, improved genetic stock, intensive management of conception and gain rates, marketing effectiveness, and careful control of costs.

This study is specific to the region where the farm is located and to the preferences and abilities of the farm manager. However, both established and beginning farmers in other regions of the state may find the illustration of budgeting and planning principles and the discussion of effects on profitability of production, price, and expense factors to be beneficial to their operations. The part-time nature of the operation analyzed will be of particular interest to farmers who are increasingly turning to off-farm sources of income to supplement presently depressed levels of farm earnings.

RELATED INFORMATION

The Southeast had the highest proportion of cows and heifers in beef herds, and by far the fastest rate of increase in the breeding herd. Unprecedented changes in income in the 1970's and increases in variable costs unrelated to the beef cycle have created financial difficulties for farmers (5). This study also found that utilization of pasture and silage increased with the intensity of the feeding program. Calf crops in the

Southeast were found to be more responsive to the cost of feed than in other regions (1). Several studies have emphasized the vulnerability of both small and large producers to rapid changes in feed supplies and prices (5,2). These studies also indicate the importance of maintaining flexibility in resource use and management and provide useful enterprise budgeting and investment analysis for the interested producer.

One of the widely recognized advantages of part-time beef operations is the relatively low labor requirement necessary to maintain the herd. A survey in Northeastern states found producers preferred cow/calf enterprises to augment income, effectively use available land and buildings, employ the labor of family members, maintain land expenses, and lower taxes (3).

THE FARM PLANNING PROCESS

The investment of a farmer's time and management resources in the planning process has become increasingly necessary to ensure the highest feasible returns in a time of rapidly changing technology and escalating costs. Producing crops and livestock "the way it has always been done" is not a guarantee of adequate returns.^{1/} Careful and systematic analysis of production alternatives and the impacts of alternative plans on profitability has become an increasing requirement of farm survival for

^{1/}Continuing past production traditions has seldom provided a guarantee of success. In addition to accelerating technological changes in agriculture, farmers currently must contend with widely fluctuating dollar exchange rates, export policies, and interest rates. Future Federal farm programs may be less supportive of income levels. Should this policy change occur, management responsibilities will increase as program controls and government income "buffering" measures in agriculture diminish.

many commercial size operations. The basic steps in the planning process used in this case study are briefly illustrated below.

- (1) Inventory available resources and specific operator objectives.
- (2) Select enterprises to be considered.
- (3) Prepare enterprise budgets.
- (4) Develop a farm plan.
- (5) Analyze the plan for profitability and financial feasibility.

The analysis of alternative options to the present organization of production resources is based on a thorough understanding of personal objectives, preferences, and abilities on comprehensive knowledge of resources available to the farmer (step 1). The farmer analyzed in this study satisfied these criteria very well. During several years of experience he had developed an intimate knowledge of beef husbandry (with periods of both profits and losses), had taken the time to become acquainted with beef and feed production techniques used by his neighbors, had acquired detailed knowledge of the productive characteristics of the livestock, labor, and land resources controlled, and also had identified basic personal and business goals.

Knowledge of available resources and management objectives comprises the basic rationale for selecting enterprises to consider for the farm (step 2). For example, it is of little use to analyze a hog enterprise if the manager simply does not have personal interest in raising hogs. On the other hand, the availability of specialized resources, such as a hog or dairy parlor, increases the feasibility of these enterprises. The

preferences of individual farmers for reducing risk through enterprise diversification should also be considered. The dependence on only one source (enterprise) of income on the farm can result in large declines in family income should prices for that enterprise fall.

Preparation of budgets for each enterprise selected for analysis can be described as the "heart" of the planning process (step 3). This is readily understandable since the accuracy and comprehensiveness of the cost and receipt projections in the budget will be in large part responsible for a "go" or "stop" signal to management. Without careful analysis of enterprise profitability, there will be limited confidence in the wisdom of basing the planning and reorganization of the farm on the enterprise projections.

Formulation of the farm plan in this case study was based on the principle of maximizing returns to resources limiting the farm's productive capability (step 4). The plan is based on the interplay between available farm resources (e.g., tillable land and labor) and resource requirements for each enterprise (e.g., inputs needed to produce each acre of corn). This step will be discussed in greater detail later in the report.

For farm situations where enterprises considered are few, and there is limited competition for the land and labor resources among the alternative enterprises (because of specialized enterprise requirements), the planning process can be adequately developed with careful evaluation of inputs and returns information in the enterprise budgets (and without simplified programming). The "simplified programming" method employed to plan the

case farm is a more systematic version of the enterprise planning that many farmers develop with "back of an envelope" arithmetic.^{2/} A brief description of the resource allocation rules used in the farm plan and a useful reference for the interested reader are also provided in Appendix A.

After completion of the initial planning process, analysis of the farm plan's overall profitability and financial feasibility is the final step in the planning process (step 5). The adequacy of both financing and bottom-line profitability determines which of the following to do:

- (1) Proceed with the plan
- (2) Evaluate the need and potential for cost-cutting
- (3) Consider the development of substitute enterprises to potentially improve profits or
- (4) In limited cases to consider "cutting back" or disinvesting to improve farm returns.

THE RESOURCE BASE AND MANAGEMENT OBJECTIVES

The case farm consisted of 120 acres of pasture, 35 acres of well drained tillable land, and 5 acres with a house, two small barns, machine shed, livestock scales, and a 2-acre pond. Because of the importance of pasture, most of which was not suitable for tillage because of relatively steep slope and consequent vulnerability to erosion, the farm has been primarily used for a beef herd. The herd had been based on traditional

^{2/}The least acceptable planning method is not to develop and compare projected enterprise costs and sales receipts. It is of critical importance to know which crop and livestock enterprises are responsible for both profits and losses on the farm.

breeds, such as Hereford and Angus. Overall conception and calf gain rates were slightly above average for the region. However, the farmer desired to increase conception and gain rates to superior levels. The farmer has recently obtained superior production performance from a limited number of Brahma/Angus cross cows and an exotic breed bull (Simmental). The 35 acres of tillable land have typically produced corn grain and soybeans, with average yields of approximately 110 and 40 bushels, respectively. Irrigation with pond collected surface runoff water is feasible for the cropped land.

Potential enterprises, projected permanent assets, and priority management objectives for the case farm are described in table 1. As shown, six production enterprises were selected for analysis, consisting of three livestock (including catfish) and three crop types. Note that the crop enterprises compete for the 35 acres of tillable land. While future expansion with rented or purchased tillable land is possible, the decision has been made at this stage of farm development to restrict the farm to land currently owned.^{3/} Assets that are not enterprise specific are indicated near the bottom of the table. The availability of structurally

^{3/}The success of expansion through land purchase often critically depends on the timing of the land acquisition. During the late 1970's and early 1980's, aggressive land expansion proved to be less successful than in the early 1970's. Expansion with rented crop or winter grazing land may be currently feasible, however, the preference is to wait until the farm has become better established financially, the transition to the beginning farmer has been made, and the management tools of the beginning farmer have been proven. Also, observe in table 1 that the importance of determining the resource base is readily evident in the planning context. One must know what assets are available in order to decide on their optimal use.

sound house was important to the feasibility of this part-time operation since it saved rent. Although not purchased at the time the plan was formulated, the machinery assets are included to better permit the development of cost projections. Machinery investment is very limited because of the initial preference to consider custom hiring of cropping activities for the small amount of cropland.

Management objectives for the cow/calf and silage enterprises are more detailed. The focus on these enterprises was based on two objectives viewed to be important: (1) a highly productive livestock enterprise to utilize pasture land, and (2) the availability of plentiful, home-grown feed supplies. The objectives relating to the cow/calf herd in table 1 exceed the present performance of the herd, and no doubt exceed the typical beef herd performance in the State. Based on past experience with the herd, the most difficult goal may be the 95 percent conception rate. However, given high quality genetic stock and intensive results-oriented management, all objectives are believed to be attainable.

ENTERPRISE BUDGETS

Budget information for the cow/calf herd and silage production enterprises is provided in tables 2-3. The enterprise budgets developed for the four additional enterprises shown in table 1, stockers, channel catfish, dryland corn, and irrigated corn, are included in Appendix B. A typical budget format consists of gross receipts, variable costs, income above variable costs, fixed costs, total costs, and finally net returns to land, labor, and management (table 2, lines 1-6). Land, labor, and manage-

ment costs are usually not included in representative budgets because these costs vary widely across operations. The cow/calf and double-cropped silage enterprises provide an excellent illustration of the individual and unique nature of the budgeting exercise. The information in tables 2-3 differs from Alabama and Florida Cooperative Extension Service budgets for the following reasons.^{4/}

(A) Prices are based on the farmer's individual expectations.

An excellent example is the \$0.75 per pound paid recently for breeding stock heifers of similar genetic stock to the planned Simmetal-Brahmma/Angus cross. The steer calf price of \$0.66 per pound was thought to be reasonable over the long-run.

(B) Yield levels correspond to characteristics of the resource base and management.

Steer calf weights of 625 pounds at 300 days, table 1, and silage yields of 16 tons corn and 12 tons grain sorghum, table 2, illustrate this point. Soil fertility in the immediate area studied is quite high compared to most of the state. (The average corn and sorghum silage yields in Alabama in 1985 were, respectively, 12 and 10.5 tons.)

^{4/}State Cooperative Extension Service budgets are developed to provide general guidelines to the farmer based on above average management practices. While every attempt is made to ensure that the cost and price projections are representative, there exists no farmer with costs that exactly coincide with the Extension budgets. This is why farmers are strongly encouraged to individualize budget costs and returns to more accurately represent their own farm operations.

(C) Variable input prices and quantities differ by farm.

Because grain sorghum silage is high in protein, the protein supplement cost has been reduced compared to a more representative budget, table 2. Also, most cow/calf enterprise budgets do not rely as heavily on silage for feed.

(D) Fixed costs are firm specific.

The age, condition, whether purchased new or used, and the quantity of fixed assets largely determine fixed costs. In table 2, fixed costs are dominated by opportunity interest on the cow herd (the foregone interest if the herd were sold and the proceeds deposited in a savings account). The tractor and machinery fixed costs level in table 3 of \$51.02 suggest that custom hiring of most machinery operations would be preferable to incurring the fixed depreciation, interest and repair costs associated with machinery ownership.

Both enterprises shown in tables 2-3 have positive returns to land, labor, and management (bottom of tables). The cow/calf return of \$17,239 appears large, however, this amount must also cover the time spent managing the operation plus the investment cost of pasture, table 2. The net return in the silage enterprise budget of \$170 per acre, before land, labor, and management costs, is very favorable. This indicates that the feed productivity of this enterprise is quite substantial when valued at \$15 per ton, a price believed to be reasonable for the area studied.

Finally, note that the full cost of the 662 tons of silage fed to the beef herd has been included as a cost in the beef budget, table 2. This

permits the silage budget to in effect, "stand alone." The production of each enterprise is credited to that enterprise. This allocation permits the farmer to identify livestock profits or losses with either the feed production or meat production phase of the operation. The farm planning process (below) incorporates the returns from each enterprise budget (including those in Appendix B) in the development of a "whole farm" plan.

THE FARM PLAN

The key information necessary to prepare the farm plan includes description of resource availability, resource requirements, and net income above variable costs on an enterprise basis, table 4. This information is then systematically processed into the "plan" itself, with allocation and profit maximization rules, table 5.

As indicated in column 1 of table 4, land resources have been categorized as pasture, tillable, and ponds. Labor periods are based on the timing of cropping procedures. The first period is a relatively slow winter period, while soil preparation and first crop planting traditionally occur during the second period comprising most of February and March. Because of the farmer's preference, the development of catfish production was restricted to 2 acres. The amount of each type of land and the amount of labor (by period) that is available for use on the farm is shown in column 2.

With the exception of the bottom line in table 4, columns 3-8 show the resources required for each enterprise by type of land and by labor period. For example, the cow/calf herd is projected to require 120 acres

of pasture and 237.5 hours labor in the December to early February period. As would be expected, the heaviest periods of labor for the silage enterprise occur during the two harvests in June and November. The bottom line lists net income after variable costs and fixed machinery costs for each enterprise (a return to land, labor, and management). Machinery fixed costs were included in this study because in a large reorganization of the farm they can be readily changed. The "bottom line" now reflects a return that approximates what the farmer expects at the end of the production period. (Farm plans may also be based on returns after variable costs only.) Because of the greater difficulties in valuing long term assets, there is often less confidence in the estimated size of the fixed (especially when interest expense is included) compared to variable costs.^{5/}

The cow/calf herd was the first enterprise selected for the farm plan, table 5. This decision was based on the following steps:

(1) Select the enterprise with the highest maximum net income, based on the total units that can be produced with the farm's resource base.

(2) Identify the input that "limits" production of the enterprise.

(3) Determine which enterprise provides the highest returns to the limiting input.

(4) If this enterprise is that identified in the first step, select this enterprise in the first step, switch the analysis to the newly identified enterprise and begin anew with step 1.

^{5/}Financial leverage issues are particularly important for beginning farmers and expanding farm operations. In the farm analyzed, there is the possibility of financing by the previous owner for the beginning farmer.

The beef herd was selected first in table 5 because its maximum income level of \$17,239 was higher than the silage enterprise maximum income of \$5,965 (i.e., \$170.44 per acre times 35 acres), and the beef herd offered the highest return to its limiting input (pasture land).^{6/}

Double crop silage was the second enterprise selected. Because 319 tons of silage remain to be sold or used after meeting the feed requirements of the beef herd, management must develop a marketing strategy for this unused silage (see table 5, footnote 2). Following inclusion of the channel catfish enterprise, no remaining enterprises entered the farm plan. Pasture and tillable land had been utilized by the beef herd and silage enterprises. The maximum amount of the catfish enterprise had also been included (subject to the 2-acre preference limit of the farmer).

The stocker enterprise required 250 hours in labor period one and 298 hours in labor period 6; respectively, only 128 and 237 hours remained available (table 4 vs. table 5). The farmer could have hired additional labor, worked longer hours during the first labor-period, or reduced the size of the stocker enterprise in recognition of the time limit. Because of both personal preference and the intensive labor and management required with the November/December calving period, the decision was made to exclude

^{6/}The maximum enterprise level is determined by dividing the resource available by the amount required for each enterprise unit, i.e., divide columns 2 by 3 for each of rows 1-10 in table 4. The results for the cow/calf level are 1 (pasture), 1.6 (first labor period), 2.6 (second labor period), etc. Since the ratio thus obtained shows the maximum amount of the enterprise that can be produced with the respective resource, the smallest ratio is the one that limits the total enterprise size. Pasture proved to be the limiting input, in the case of the beef enterprise.

stockers from the farm plan at this time. (It is, however, reassuring to know that feed can be made available if the farmer decides in the future to stocker the steers.)

The last row in table 5 indicates that 200 or more hours of unused labor remain in each of periods 2, 3 and 5. Of the original 2,899 hours of available annual labor, 1,074 (or 37 percent) remain unused. This time can be employed in work for the father-in-law, other farmers, or off-farm work to generate additional income for family consumption, debt repayment, or investment purposes. Such an arrangement would reduce business and financial risk by diversifying family income into a farm component (traditionally with high variability) and a nonfarm component (less variable). The level of accumulated net income shown in the last row of column 11, \$23,606, is quite substantial for the size of farm considered. This income amount is before fixed costs for land ownership, own labor, and management have been charged.

INCOME PROJECTIONS UNDER ALTERNATIVE FINANCIAL CONDITIONS

The reasonableness of the income projection developed in column 11 of the farm plan, table 5, depends on several critical planning assumptions made by management. A statement of projected cash and noncash income and expense provides financial analysis of the proposed farm organization, table 6.

Total gross receipts, primarily due to strong sales from the cow/calf enterprise, are estimated to be \$65,746. Cash variable expenses of \$26,998

include \$7,620 for three annual applications of nitrogen (plus additional amounts of potash, phosphate, and mixed fertilizer) and outlays of approximately \$2,000 each for crop fertilization, custom machinery expense, protein supplement, and floating fish feed. Custom machinery expense reflects primarily planting and harvesting costs. It is assumed the farmer will assist with cultivation, spraying, and harvest. Custom hauling and commissions on sales of beef cattle were also substantial. Cash variable expenses do not include the silage feed costs of \$9,922, table 2, since silage was produced on the farm. Fixed costs include interest costs associated with machinery, equipment, and buildings (\$2,050), the breeding herd investment (\$9,150), and land and improvements (\$10,600). Total fixed costs are projected to be \$25,907.

FACTORS AFFECTING PROFITABILITY

Several factors affecting projected profitability are analyzed in table 7. Column 3 shows farm income after interest charges for all permanent assets with the exception of case 7 (the 25 percent equity case). The rates of return shown in column (4) are before interest on breeding livestock, machinery, and real estate to permit consistent comparison among cases. Return to management (column 5) indicates the residual remaining after interest expense and a charge of \$7,301 for operator labor opportunity costs. Because labor charges reflect counting and checking cows by family members as well as more skilled beef husbandry tasks, a \$4.00 labor cost was utilized rather than the \$4.25 shown in the enterprise budgets.

The first case in table 7 is based on the income and expense projections in table 6. Note that factors in sections B and C tend to be

unique rather than offsetting. For example, there is no opposite price movement in section C, to illustrate the effects of a 15 percent cattle price increase compared to the 15 percent price decline shown in case 2 of section B. The interested reader can estimate the impact of an opposite case effect by reversing the sign of changes between the base case and the alternative case.^{7/}

The net farm income of \$12,841 in the base case is lower than the amount shown in the farm plan, table 5, because of inclusion of all fixed interest costs on land and breeding livestock. The factor most adversely affecting returns was a projected 15 percent decline in beef prices, case (2); no management costs were covered, and the shortfall in own labor costs was a negative \$2,923. The heifer price and silage price declines indicated in cases (3) and (4) resulted in positive returns to management of, respectively, \$1,659 and \$3,151. These results are encouraging since the farmer would receive a payment for own labor as well as some payment for the management input. Low conception rates result in net farm income of \$8,219, less than a 14 percent return on assets before interest charges, and a minimal \$918 return to management. A 2 percentage point increase in interest rates on fixed assets resulted in income above interest of \$8,481 and returns to management of \$1,180, case (6).

In general, the adverse effects of the conditions in Section B do not critically affect performance since interest and own labor costs are

^{7/}For example, if 15 percent lower beef prices reduce income by \$8,463 (case 2 vs. 1, \$12,841-\$4,378), a 15 percent increase would result in income of \$21,304, \$8,463 above the base case (other things equal).

covered. However, family income is relatively low, and the joint occurrence of two or more of the downside factors would result in an inability to generate income for family consumption needs. Payment of loan principal would not be feasible with the income levels shown in Section B. In this context, the generation of additional farm or off-farm income by the operator and/or spouse would be very helpful.

Traditionally, very few farms have had financial leverage approaching the situation in cases (2) through (6), where there is no owner equity in permanent assets. A position of one-fourth equity in the farm assets shown in table 1 increases net farm income from \$12,841, the base case, to \$18,291, case (7). If the approximately \$55,000 equity position in this case is not feasible for the operator, which would be a typical situation for the beginning farmer, case (8) shows that an 8 percent interest rate with a "land contract" on the real estate assets would provide income only about \$3,300 less than in the 25 percent equity case.

Another alternative to increase family income would be to utilize remaining labor available in the farm plan (table 5) to supplement income from the beef herd. For example, provision of skilled farm labor services to neighboring farmers improved income to \$18,211, case (9).

The farmer believed that the feed rations in the beef budget were generous. It is possible that good management in combination with an excellent breeding and feeding program may result in increased gain rates. Case (10) indicates the positive effect of higher gains. The last case achieves similar income to the high gain rate case by obtaining cost savings of 15 percent on the non-financial inputs. While income in case

(11) is less than two other cases in section C, returns to management are the second highest, \$9,590. This is because savings due to cost control in case (11) were credited to management, while the addition of off-farm income in case (9) was not credited to the farm management input.

The return levels shown in table 7 would appear to adequately cover all farm related costs and, in most cases, a large share of family living expenses even when there is very little equity in the farm and market rates of interest are charged. However, these results are based on intensive management and cost control. Farmers may not automatically assume their management level will measure up to the standards set in the enterprise budgets. It is also clear that under varying economic conditions the provisions of some level of off-farm income is a key to the success of this plan. This is particularly true if both prices and production yields are lower than anticipated in the farm plan. Preliminary validation of the farm plan is discussed in Appendix C.

SUMMARY AND CONCLUSIONS

This study illustrates the farm planning process for an ongoing operation in the south Alabama-Florida panhandle, and points out the projected viability of an intensive management beef herd based on abundant, home-grown feed supplies. Most of the silage, the most profitable production unit, is marketed through a high quality beef herd enterprise.

The primary strengths of the proposed farm plan are considered to be its profitability and flexibility. The net income level in table 6 and the positive returns to capital, labor, and management shown for most cases in table 7, indicate considerable earnings strength. The presence of sub-

stantial equity capital and/or off-farm income from the remaining (unused) labor hours would increase the operation's long run viability.

The operation is quite flexible because of very limited machinery and facilities investment, use of custom machinery services for the 35 acres of double-cropped silage, and the presence of large quantities of unused labor and feed (if the remaining silage is not sold). In addition, family members could readily assist with the feeding, moving and "checking" requirements of the herd. The relatively low returns to the catfish enterprise suggest that there would be few adverse effects associated with terminating this enterprise and utilizing the added 315 hours formerly used to raise fish, to expand beef production or off-farm income. Finally, there exists flexibility to use gun irrigation for crop production, should this become necessary.

The primary weaknesses of the farm plan are its vulnerability to low beef prices and low beef or feed yields due to management difficulties. A 15 percent decline in all cattle prices would result in a negative return to management. The most important issue, however, is the ability of management "to deliver" on production objectives. In this regard, it is recognized that management on the "home" farm has been successful with livestock and crop enterprises. The returns in this plan are based primarily on cost estimates and production objectives developed by experienced management. It is also reassuring that the importance of high conception rates, good daily gain rates, and effective cost control is recognized in the planning process. A "near-miss" on a difficult goal is preferred to attaining an "easy" objective.

Each farm situation is unique to the resources available and the abilities and preferences of the farmer. The reader is encouraged to recognize the importance of tailoring Cooperative Extension Service enterprise budgets to the individual costs and yields of each operation. The usefulness of developing sound price and yield projections and ensuring effective cost control for each enterprise cannot be overemphasized. The cost control issue is especially critical given the price/cost squeeze prevalent in current agricultural production.

The planning exercise focuses on efficiency, advanced production methods, sound enterprise combinations, flexibility to react to changing economic conditions, and overall excellence in the management of resources. The challenge for the Alabama farmer is to provide efficient cost control, marketing, and production techniques with the aid of effective farm planning.

FOOTNOTES

1/Continuing past production traditions has seldom provided a guarantee of success. In addition to accelerating technological changes in agriculture, farmers currently must contend with widely fluctuating dollar exchange rates, export policies, and interest rates. Future Federal farm programs may be less supportive of income levels. Should this policy change occur, management responsibilities will increase as program controls and government income "buffering" measures in agriculture diminish.

2/The least acceptable planning method is not to develop and compare projected enterprise costs and sales receipts. It is of critical importance to know which crop and livestock enterprises are responsible for both profits and losses on the farm.

3/The success of expansion through land purchase often critically depends on the timing of the land acquisition. During the late 1970's and early 1980's, aggressive land expansion proved to be less successful than in the early 1970's. Expansion with rented crop or winter grazing land may be currently feasible, however, the preference is to wait until the farm has become better established financially, the transition to the beginning farmer has been made, and the management tools of the beginning farmer have been proven. Also, observe in table 1 that the importance of determining the resource base is readily evident in the planning context. One must know what assets are available in order to decide on their optimal use.

4/State Cooperative Extension Service budgets are developed to provide general guidelines to the farmer based on above average management practices. While every attempt is made to ensure that the cost and price projections are representative, there exists no farmer with costs that exactly coincide with the Extension budgets. This is why farmers are strongly encouraged to individualize budget costs and returns to more accurately represent their own farm operations.

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APPENDIX A

Simplified Programming

Simplified programming is a resource and enterprise allocation process for the farmer to use in selecting the optimal enterprise combination for the specific farm situation. The selected combination of enterprises maximizes the net farm income by allocating limited resources to enterprises with the greatest net return for each unit of that resource. Enterprises initially chosen to be included in the simplified programming process should be limited to no more than seven or eight unless a microcomputer is available to apply the programming routine. Any farmer can apply the simplified programming process to the farm with little expense.

Enterprise budgets are the "heart" or basis of the simplified programming process. These budgets consist of estimated prices, yields, and costs. The more accurate these estimates are, the better the planning will be since all simplified programming tables and the final farm plan depend on enterprise budget accuracy. Fine-tuning the enterprise budgets by the individual farmer for the specific farm situation is necessary to obtain the best farm plan solution to resource use. Comparing actual year-end performance to projected performance permits farmers to learn from their errors in projecting costs, yields, and prices. The next year's projections will substantially benefit from this learning process.

The simplified programming process includes the following steps:

- (1) Making a complete inventory of available resources on the farm;

(2) determining the long range plans of the farmer; (3) selecting desirable and appropriate enterprises; (4) preparing accurate enterprise budgets for each enterprise to be considered; (5) preparing tables using information gathered on resources, budgets, etc.; and (6) examining the completed farm plan for any evident errors or any unacceptable results.

If the farm plan does not look right to the farmer who will be implementing the plan, then adjustments to the enterprise budgets or imposed restrictions that limit the dominance of a particular enterprise or to the available resource base may be necessary to obtain a new, more suitable plan solution. A detailed description and example of the simplified programming process may be found in Circular 232, "Simplified Programming as a Farm Management Tool," written by J. L. Boutwell and E. W. McCoy and published in 1977 by the Agricultural Experiment Station, Auburn University, Alabama 36849.

APPENDIX B

Enterprise Budget Tables

Table 1. Potential Enterprises, Projected Permanent Assets and Major Management Objectives

Potential enterprise	Item	Projected permanent assets			Major management objectives
		Unit number	Unit value	Total value	
1. Cow/calf	Acres bahiagrass pasture	120	\$500	\$60,000	2 percent maximum death loss
	Cows: Brahma/Angus cross	140	550	77,000	95 percent conception rate
	Bulls: exotic breed	3	1,500	4,500	November/December calving
	Heifers: replacement	20	500	10,000	Sell heifers as high quality breeding stock
	Feed wagon (used)	1	1,500	1,500	625 lb. steer weights at 300 days
2. Stockers	Feeding facilities, storage	1	10,000	10,000	
	Feeding facilities		1,000	1,000	2.08 lb. daily gain rate Two percent maximum death loss
3. Channel catfish	Pond acres	2	400	800	3,500 lbs. fish yield per acre
4. Corn/sorghum silage (double-cropped)	Tillable acres ^{1/}	35	1,200	42,000	16 tons corn silage yield
					12 tons sorghum silage yield
5. Dryland corn	Tillable acres ^{1/}				Custom machinery expense not to exceed \$65 per acre.
6. Irrigated corn for grain	Tillable acres ^{1/}				110 bu. yield
General	Barns (utility)	2	1,000	2,000	150 bu. yield
	Tractor/loader (used)	1	3,000	3,000	Machinery and buildings repair expense minimized
	Pick-up truck (used)	1	2,000	2,000	while providing quality maintenance.
	Bush hog (used)	1	800	800	
	Scraper blade (used)	1	200	200	
	Acres homstead site	3	400	1,200	
Total value farm assets				218,003	
Value farm house				35,000	
Total value permanent assets				253,003	

^{1/}Only 35 acres tillable land were available; thus crop enterprises are substitutes for each crops to be produced and harvested with the custom of machinery services.

Table 2. Cow-Calf Budget for 140 Cow Herd, Coastal Plains Region of Alabama

Item	Weight each	Unit	Quantity	Price or cost/unit	Total amount
1. Gross receipts					
Steer calves	6.25	cwt.	65.00	\$66.00	\$26,812.50
Breeding stock heifers	5.75	cwt.	45.00	75.00	19,406.25
Cull cows	11.5	cwt.	20.00	40.00	9,200.00
Cull bulls	20	cwt.	1.00	50.00	1,000.00
Total					56,418.75
2. Variable costs					
Bahfagrass pasture		acre	120.00	63.50	7,620.00
Corn/grain sorghum silage		ton	661.50	15.00	9,922.50
Protein supplement		cwt.	157.50	11.65	1,834.88
Vet. and med.		head	147.00	4.25	624.75
Salt and minerals		cwt.	67.20	8.00	537.60
Custom hauling		head	131.00	2.50	327.50
Sales commission		dol.	56,418.75	0.03	1,692.56
Bull (replacement)		head	1.00	1,500.00	1,500.00
Int. on oper. cap.		dol.	12,029.89	0.13	1,563.89
Total variable costs					25,623.67
3. Income above var. costs					27,379.58
4. Fixed costs					
General overhead		unit	1.00	750.00	750.00
Bahfagrass pasture		acre	120.00	18.50	2,220.00
Oppor. int. on livestk. cap.		dol.	91,500.00	0.10	9,150.00
Oppor. int. on bid. and equip.		dol.	13,500.00	0.10	1,350.00
Depr. on bid. and equip.		dol.			70.77
Other fixed costs on bid. and equip.		dol.			15.17
Total fixed costs					13,555.94
5. Total costs					39,179.61
6. Net returns to land labor and management					17,239.14

Utilizing bahfagrass pasture
15% calf crop

Silage costs based on 52.5 lb./day for 180 days (includes feed for replacement heifers)

Table 3. Silage Enterprise Budget, Corn/sorghum Silage, Double Cropped, Following Recommended Management Practices, Estimated Costs and Returns Per Acre Using 6-Row Equipment, Lower Coastal Plains Region of Alabama

Item	Unit	Quantity	Price or cost/unit	Total amount
1. Gross receipts				
Corn silage	tons	16.00	\$15.00	\$240.00
Sorghum silage	tons	12.00	15.00	180.00
Total				420.00
2. Variable costs				
Corn seed	lbs.	18.67	1.10	20.54
Sorghum seed	lbs.	8.00	0.70	5.60
Fertilizer				
Nitrogen	lbs.	250.00	0.13	32.50
Phosphate	lbs.	80.00	0.24	19.20
Potash	lbs.	80.00	0.14	11.20
Lime (Prorated)	tons	0.66	23.00	15.18
Herbicide	acre	2.00	8.00	16.00
Insecticide	acre	3.00	5.75	17.25
Custom machinery expense	dol.	1.00	51.02	51.02
Fuel, oil, lubricants	acre	2.00	10.73	21.46
Int. on oper. cap.	dol.	104.97	0.13	13.65
Total variable costs				223.59
3. Income above var. costs				196.41
4. Fixed costs				
General overhead	acre	190.00	0.07	13.30
5. Machinery labor costs				
Preharvest	hour	2.29	4.25	9.73
Harvest	hour	0.69	4.25	2.93
Total machinery and labor costs				12.67
6. Total costs				249.56
7. Net returns to land				
Labor and management				170.44

Table 4. Enterprise Resource Situation, Requirements, and Net Income

Resource enterprise units (1)	Amount available (2)	Cow/ calf (140 head) (3)	Stockers (63 head) (4)	Corn/ sorghum silage (1 acre) (5)	Corn for grain (1 acre) (6)	Irrig. corn for grain (1 acre) (7)	Catfish (1 acre) (8)
LAND							
1. Pasture	120.00 acres	120.00					
2. Tillable	35.00 acres			1.00	1.00	1.00	
3. Ponds	2.00 acres						1.00
LABOR							
1. 12/1-2/10	380.00 hours	237.50	250.00	0.41	0.60	0.60	
2. 2/11-31/31	407.00 hours	158.37	153.01	0.86	0.70	0.70	
3. 4/1-4/30	420.00 hours	97.90	1.80	1.16	1.00	1.24	18.00
4. 5/1-6/30	520.00 hours	196.23	17.10	3.53	2.30	2.50	36.00
5. 7/1-8/31	540.00 hours	205.32	30.59	0.33			61.43
6. 9/1-11/30	632.00 hours	303.85	298.11	2.60	1.20	1.20	42.00
7. Catfish (2 acres)							1.00
8. Net returns to land, labor, and management		17,239.14	1,820.18	170.44	116.10	96.49	200.83

Table 5. The Farm Plan

Resources (1)	Land acres			Labor hours						Accumulated net Income (11)
	Pasture (2)	Crop (3)	Ponds (4)	1 (5)	2 (6)	3 (7)	4 (8)	5 (9)	6 (10)	
Total available	120.00	35.00	2.00	380.00	407.00	420.00	520.00	540.00	632.00	
Cow/calf	120.00	0.00	0.00	237.50	158.37	97.90	196.23	205.32	303.85	17,239.14

Unused	0.00	35.00	2.00	142.50	248.63	322.10	323.77	334.68	328.15	
Corn/sorghum silage	0.00	35.00	0.00	14.35	30.10	40.60	123.55	11.55	91.00	5,965.40

Unused	0.00	0.00	2.00	128.15	218.53	281.50	200.22	323.13	237.15	
Cattfish	0.00	0.00	2.00	0.00	0.00	36.00	72.00	122.86	84.00	401.66

Unused	0.00	0.00	0.00	128.15	218.53	245.50	128.22	200.27	153.15	23,606.20

Net income after payment of silage feed costs to the corn/grain sorghum enterprise.

A total of 980 tons of silage is produced of which 661.5 fed in cow/calf budget, and the remaining 318.5 tons are sold off the farm. The cash sales of silage depends on the continued availability of a local market for silage. Unsold silage may alternatively be fed to stockers or an expanded beef herd. Another option would be to sell grain and reduce silage production.

Table 6. Projected Income Statement for Year Ending December 31, 1986,
 Custom Machinery Services and Fixed Assets Interest Costs Included

Income		Expenses	
Cash	\$		\$
Cattfish (7,000 lb.)	\$4,550.00	Variable costs	
Steer calves (65 head)	26,812.50	Seed	914.9
Heifer calves (45 head)	19,406.25	Fertilizer	2,201.5
Cull cows (20 head)	9,200.00	Lime	531.3
Cull bulls (1 head)	1,000.00	Herbicide	560.0
Silage (318.5 tons)	4,777.50	Insecticide	603.7
Total Cash income	65,746.25	Custom machinery ser.	1,785.7
Non-cash income	0.00	Fuel, oil, lube, rep.	884.3
Total Cash & Non-cash income	65,746.25	Bahagrass pasture	7,620.0
		Protein supplement	1,834.8
		Vet. & Med.	624.7
		Salt and minerals	537.6
		Custom hauling	327.5
		Sales commission	1,692.5
		Replacement bull	1,500.0
		Fingerlings	593.6
		Floating feed	2,157.7
		Chemicals, cattfish	130.0
		Miscellaneous & util.	850.0
		Interest on op. costs	1,647.7
		Total variable costs	26,997.8
		Fixed costs	
		General overhead	1,225.5
		Bahagrass pasture	2,220.0
		Interest payments (@10%)	
		Machinery, equip.,	
		buildings	2,050.3
		Breeding herd	9,150.0
		Land & improvements	10,600.0
		Depreciation: machinery	450.3
		buildings, equip.	211.0
		Total fixed costs	25,907.1
		Total expenses	52,904.9
		TOTAL INCOME	65,746.2
		TOTAL EXPENSES	52,904.9
		NET INCOME	12,841.2

Table 7. Effects of Business and Finance Factors on Income and Profitability

Case	Factors analyzed	Net farm income	Rate of return before interest on fixed assets ^{1/}	Return to farm management ^{2/}
(1)	(2)	(3)	(4)	(5)
		\$	%	\$
Section A: base case				
1. Base projections	Income and expense projections in table 6	12,841	15.8	5,540
Section B: factors negatively affecting income ^{3/}				
2. Low cattle price	Fifteen percent decline in all cattle prices	4,378	12	(2,923)
3. Low heifer price	Heifer price projection of \$0.60 per pound	8,960	14.1	1,659
4. Low silage price	Fifty percent decline in local silage price	10,452	14.8	3,151
5. Low conception rate	Ten percent decline in conception rates	8,219	13.8	918
6. High interest rates	Two percent increase in interest rates on fixed assets	8,481	15.9	1,180
Section C: factors positively affecting income ^{3/}				
7. One fourth equity	Twenty five percent equity position in fixed farm assets	18,291	15.9	10,990
8. Eight percent land contract	Interest of 8 percent charged on real estate assets	14,961	15.9	7,660
9. Off farm income	1,074 hours available (surplus) labor earning \$5.00 per hour	18,211	15.9	5,540
10. High gain rates	Additional 50 pounds gain for steers and heifers at no additional cost	16,674	17.6	9,373
11. Low production costs	Fifteen percent savings on variable expense	16,891	17.7	9,590

^{1/}For the base case, this return is calculated by adding fixed cash interest costs of \$21,800.30 (i.e. \$2,050.30 + \$9,150 + \$10,600 in table 6 to net income of \$12,841. This sum, \$34,641.30 is then divided by farm asset value in table 1, \$218,003, to yield a return of 15.89 percent. ^{2/}Net farm income (column 3) less opportunity labor costs of \$7,301 (\$4.00 per hour on 1,825 hours of operator labor used in the farm plan, table 5).

^{3/}Other assumptions are derived from the base case.

Selected Sales and Financial Characteristics of Southeastern Farms with
Beef Sales Greater Than \$1,000, 1984

Characteristic	Farmers reporting						
	<u>5</u>	<u>10</u>	<u>25</u>	<u>50</u>	<u>75</u>	<u>90</u>	<u>95</u>
1. Beef sales (\$), Percentile range							
2. Total farm sales (\$)	1,200	1,550	2,000	4,076	7,667	18,000	30,102
3. Net farm cashflow (\$)	1,450	1,600	3,900	10,867	72,750	218,000	344,150
4. Total farm and non- farm net cashflow (\$)	-57,582	-27,873	-7,709	-1,686	7,353	41,233	80,634
5. Rate of return to farm assets	-22.4	-10.7	5.2	-.7	1.9	11	14
6. Farm debt (\$)	0	0	0	0	38,000	125,000	305,000

Source: Farm Costs and Returns Survey, 1984, Economic Research USDA. Survey data from Alabama, Georgia, North Carolina, and South Carolina. Sample farmers were selected on a probabilistic basis and table percentiles are based on a survey expansion to represent approximately 24 thousand farms meeting the minimum beef sale requirement. The survey was conducted with personal interviews in the spring of 1985.