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Cost of
Production

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USING THE BUDGET GENERATOR IN
AGRICULTURAL DECISION MAKING

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DECISION MAKING

Statement of the Problem

Agricultural business managers, students and researchers are in constant demand of tools to aid in their decision making process. Questions such as "What to produce?" and "How much to produce?" and "When to Market" etc. are familiar tunes to each manager. Answers to these questions determine the success level of the manager. Obviously then, decision making is a very important process which requires careful evaluation. Decisions can be complex and multidimensional. Decision makers need simplifying methods or techniques that can be used in analyzing selected courses of action. For students, knowledge of these decision aids will better prepare them for positions of responsibility they will likely hold later in life.

Three tools or analytical models common to farm management decision making are budgeting, linear programming, and simulation. Budgeting, can be best thought of as a pre-defined schedule used to allocate (distribute) expenses. Linear programming is an analytical technique that is used in locating specific profit maximizing production combinations or cost minimizing resource combinations for use in the production process. Simulation enables a person to "look" into the future. It is especially useful when considering expansion and estimating impacts of different expansion routes (3). These impacts could include such things as the effect on capital structure requirements, credit needs and uses, tax management, cash flow and other factors that are related to the longer run effects of the business. These three tools can be combined or used independently. In any event these are all very viable tools in the decision making process.

Budgeting particularly, allows decision makers to allocate expenses and receipts to specific enterprises. Expenses and receipts can be further refined

to show cash and non-cash expenses and crop or livestock product receipts. Much of the basic data used in budgeting is also utilized in a linear program or a simulation approach.

Objectives

This paper is designed to discuss the Firm Enterprise Data System (FEDS) a budgeting process that can be utilized as a decision making tool (4). The FEDS system is a revision of the Oklahoma State Budget Generator. Use of the FEDS system by the classroom, producers and researchers will be discussed.

Methodology

The Firm Enterprise Data System (FEDS), commonly referred to as the FEDS Budget Generator, is specifically designed to develop enterprise budgets given input costs, output prices and the necessary input-output production information (4). These budgets can be used to provide classroom examples of production returns and costs, aid farmers in decision making, and help researchers analyze record results.

The Budget Generator is a computerized budgeting process that will efficiently calculate budget comparisons for selected prices, yields and input/output quantities. Depreciation, management charges, land charges and interest charges are included as cost items (2).

Results and Findings

Classroom Use

Budgets provide excellent learning examples for the classroom. They aid students in identifying the major production cost categories. The Budget Generator groups costs into four major categories which include: variable costs, ownership (fixed) costs, land charges and management charges.

The following is the budget outline used by the FEDS Budget Generator:

1. Investment
2. Production
3. Variable Costs

4. Income Above Variable Costs
5. Ownership Costs
6. Return to Land and Management
7. Land Charge
8. Management Charge
9. Total Costs
10. Return Above All Costs

In the budget outline, the investment section specifies the initial level of investment, while production includes the quantity (output) and price (market) of the product being produced. Each of the respective costs are subtracted from the calculated production to determine income above variable costs, return to land and management and return above all costs.

Budgets are quite useful in providing students with a better understanding of the relative importance of each cost component. For instance, feed represents a variable cost while building investment represents ownership costs. Moreover, budgets enable students to compare costs on a short run basis as well as in the long run through the use of variable, ownership, and land costs. The FEDS system will also contribute in making decisions concerning various farm planning situations. For example, students can compare enterprises according to income, risk and cash flow feasibility. These budgets can also be used as a mode for demonstrating modern management technology--namely computerized techniques.

Producer Use

Producers can benefit from the Budget Generator in several ways (1). The Budget Generator can aid farmers in farm planning, enterprise evaluation, cash flow projection, tax planning and obtaining credit. For example, the budgets can be used by farmers when evaluating expansion plans. They can compare budgets for different enterprises and enterprise size. Prices and costs within the budget, can be varied to see how sensitive the budget results are. This aids in locating

costs which are very sensitive to budget results and profitability.

The Budget Generator provides an enterprise cash flow. With this, future re-payment problems can be pinpointed and those problems worked out in advance with the banker. Additionally, budgets may encourage users to maintain better records, thus providing more accurate costs and yields for the budgeting process. Better records would be beneficial to the entire farm business.

Research Use

The FEDS budget system is also a vital tool in research. Budgets can be used to compare the profitability and cash flow between enterprises. The sensitivity of yields, prices and or operating costs toward profitability can be analyzed by changing the levels of the respective values. The FEDS system allows several of these changes to be made within one computer run.

The FEDS system has computer space to store 2500 budgets. Once a budget is stored, changes can be made with a minimum amount of time, computer costs, and chance for errors. Costs and quantities can be adjusted according to the type of analysis being performed. Budgets can be processed on a per year or a per state basis. For instance, corn production budget in Missouri for 1979 can be produced.

Researchers can utilize budgets in comparing enterprises as well as evaluating different production systems within an enterprise. To illustrate, research use of the FEDS system, a swine production system is used. The first step in this process was to develop a base budget and store it on the computer. From this the appropriate changes can be made. For example, Table 1 represents one phase of the total analysis which can be performed.

In calculating return above all costs for the farrow-to-finish swine production system market hog and cull sow prices and number of pigs per sow per year were varied. The budget can make alterations similar to these quickly and efficiently.

Summary

Budgets can be a very useful tool in teaching cost and return concepts, farm managers in decision making and providing researchers with appropriate analysis. They can be used to compare profitability of different enterprises. Sensitivity of enterprise to changing prices, yields, and input-output quantities can be evaluated. These types of changes are computed very quickly and easily.

Along with budgets, linear programming, and simulation are decision making aids. Linear programming is similar to budgeting but it allows for optimizing some objectives. Simulation allows for a (systemized) process in decision making including behavioral characteristics of the decision makers. Budgeting, linear programming, and simulation all fit into the decision making process. As yet they have been given independent treatment for most decisions. Hopefully in the future they can be combined into one tool.

TABLE 1

Return Above All Costs For Swine Production

	.64	\$-11	\$283	\$587	\$872	\$1167	\$1461	.56		
	.56	-203	55	312	570	827	1085	.48		
Market	.48	-395	-175	46	267	488	897	.40	Cull	
Hog	.40	-587	-403	-219	-35	149	333	.32	Sow	
Price	.32	-779	-631	-484	-337	-190	-43	.24	Price	
\$/lb.	.24	-970	-860	-749	-639	-529	-418	.16	\$/lb.	
		10	12	14	16	18	20			
		Pigs/Sow/Year								

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