



Analyzing business adjustments: whole-farm budgeting

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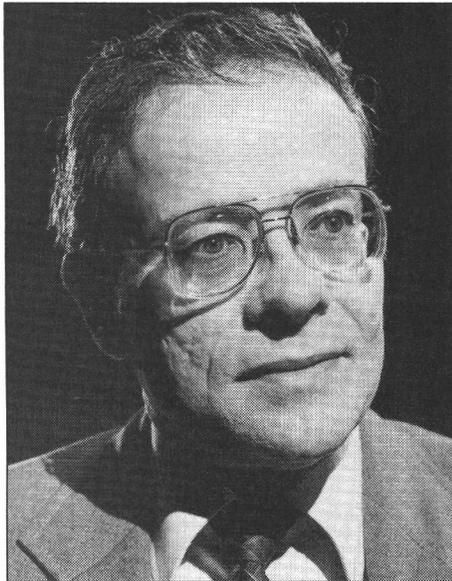
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Whole-farm budgeting

Analyzing business adjustments: whole-farm budgeting



Richard O. Hawkins

This is one module of the *Business Management in Agriculture* series and is intended to be used with its corresponding videotape. The script may vary from the actual videotape text.

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A former county Extension agent, Hawkins holds a graduate degree in agricultural economics from the University of Minnesota.

Purpose

The purpose of this module is to help you:

1. learn one definition of a "successful" farm,
2. understand success indicators (profitability, liquidity and solvency), how to identify emerging problems in each category, and three strategies to improve each,
3. learn about relationships between land and labor and how those relationships affect selection of enterprises on your farm,
4. be aware that there are at least three tools for analyzing potential major changes in your farm business,
5. learn strategic principles and steps underlying the decision-making process associated with whole-farm budgeting,
6. learn how to establish a "typical" year as a basis for projecting future alternatives for your farm,
7. follow a sample farm to learn how you can use the whole-farm budget process, and
8. become aware of precautions when doing whole-farm budgeting.

Videotape script

By Richard Hawkins

Change has been the hallmark of American agriculture. The great adaptability of the American farmer to changing economic conditions, the ongoing technological revolution and changing consumer demand have created the fascinating saga of the U.S. agricultural industry.

Historically, many farmers have been highly successful, however not all have fared so well. Many farmers were successful until changing times caught up and passed their businesses by.

Are there ways to analyze potential major changes in your business to help bring you continued success? Yes. I'd like to share some of the principles, concepts and tools that have helped farm families make successful business adjustments.

First, maybe we should ask: What is success in farming? I'm sure there are as many definitions as there are those who think about it. My definition of success in farming is a family, group or individual, happy because they are accomplishing their goals through agricultural production. To be successful, a farm business must have profitability, liquidity and solvency over the long term or it won't last.

Simply stated, profitability means receiving positive returns from the resources (labor, management and capital) you commit to farming. Liquidity means having cash when cash is needed. Solvency means being able to pay off all debts at a given point in time if the business had to be ended.

Other videotapes in this series focus on tools that help you determine profitability, liquidity and solvency for past years. You've learned about farm records, the balance sheet, the income statement and how to use them to analyze business performance. These tools enable you to compare current business performance with your goals and help you address the first step in the management process -- defining the problem. Our job is to deal with the second step in the management process -- analyzing alternative solutions to problems.

When to use a complete budget

Three tools for analyzing alternatives are the complete budget, the partial budget and the capital budget. We'll focus on the complete budget approach for analyzing major changes in a farm business. A complete budget is the most appropriate tool to use when 1. alternative courses of action will change the size and/or organization of your business, or when 2. these changes will have a long-term impact on your business in terms of enterprises, finances, etc.

COMPLETE BUDGET

	Present farm program	Alt. 1	Alt. 2
Total Receipts	_____	_____	_____
Total Expenses	=====	=====	=====
Net Farm Earnings	_____	_____	_____

When properly done, a complete budget allows you to compare your present farm program with projections of receipts, expenses and net earnings of each potential alternative.

A complete budget in its simplest form looks like this. Net earnings for each alternative can be directly compared.

Before we get into the nuts and bolts of complete budgeting, maybe we should step back and think about two questions farmers sometimes ask. The first is: "I analyzed last year's business performance, and things looked not great but all right, so why should I do a complete budget?" The second is: "Things seem to be in kind of a mess, but I don't know what alternatives I have, so what should I do?"

The first question can be answered in two ways: First, maybe your operation just needs fine tuning to keep it on track. If so, using a partial budget (covered in another module) to look at small changes, together with cash flow projections for the coming year, might be the correct step. You might be mostly concerned about proper cash flow management, which Dr. Barnard discusses in another module. Second, you may want to do a complete whole-farm budget of your operation to see if it has profitability, liquidity and solvency staying-power over the long term. After analyzing that, you may decide your business just needs fine tuning or a search for more promising alternatives.

The second question (about what alternatives you should consider) can be complex. After analyzing past business performance, you should be able to determine whether problems center on profitability, liquidity or solvency, or some combination of these.

When profitability is your weakness, you should consider alternatives (using existing resources) that: improve production management, improve marketing management, improve financial management, or some combination of these.

Let's look closer at each of these categories. Under improving production management, four areas of consideration are: improved production efficiency of enterprises, improved combination of enterprises, better use of fixed facilities and equipment, and improved replacement of fixed assets.

Under improving marketing management, think about how you can improve purchasing of inputs as well as sales of output. Can you purchase inputs more effectively in terms of both cost and timing? On the sales side, consider developing sound marketing plans with attention to price and timing.

In improving financial management, there may be opportunities to use less costly methods or sources of financing or controlling assets.

Sometimes, when profitability is the problem, increasing the resource base offers possibilities such as expanding your more profitable enterprises. Likewise, decreasing the resource base, by ridding your business of unprofitable enterprises or high-cost resources, may be worth considering.

If liquidity appears to be the main problem -- even when profitability is acceptable -- you may want to study alternatives that will restructure the level and timing of debt payments. Other options center around increasing and speeding up cash inflows while decreasing and slowing down outflows. Finally, there is the unpopular choice of reducing family spending.

If solvency is the problem, but profitability and liquidity are okay, the situation will likely correct itself in time. If your solvency position is intolerable, you may want to investigate giving up ownership and renting back, or soliciting outside equity capital. This could lead you to consider changing the way your business is organized, that is, partnership or corporation versus sole proprietorship. If the solvency problem is only in non-real estate assets and debts, refinancing is a possible solution.

Land/labor relationships

In many cases, you can find possible alternatives by analyzing the relationship between land and labor in your business. This relationship strongly suggests the type of enterprises you should have.

For example, when land is scarce relative to labor, labor-intensive enterprises will often maximize returns. Alternatives include intensive livestock operations such as dairying or feeder pig production. In very small units, labor-intensive crops, such as vegetables and specialty crops, may be best.

When labor is in short supply relative to land, enterprise selection usually focuses on cash cropping the highest-profit crops in a geographic area. Low-labor, high-feed livestock operations might be added to market feed crops, but only if they fit within labor restrictions. Range-based cattle operations work well when resources include limited labor, extensive land and a harsh climate.

When land and labor are about evenly matched, economical enterprises often include livestock operations, such as farrow-to-finish hogs, that use labor to produce the basic commodity (baby pigs) and home-grown crops (corn) to feed them while selling excess crops.

Farm plans that do not follow the basic considerations of enterprise selection often have limited profit potential and are likely to be based on non-monetary goals.

Three equations that define profitability, solvency and

PROFIT =

volume X (price per unit
- cost per unit)

**GROWTH IN
SOLVENCY OR
NET WORTH =**

- Profits
- Income taxes
- Family living
-

CASH GENERATED =

- Net cash income
- Income taxes
- Family living
-

liquidity provide another way to look at possible alternatives.

In the profit equation, any alternative that will have favorable impact on volume, price per unit and/or cost per unit is worth considering.

To improve solvency or net worth, alternatives that increase profits should get first consideration, along with income tax management and careful planning for family spending.

To improve liquidity, alternatives that increase net cash income, along with controlling taxes and family living outlays, should be considered.

Look at the long-range picture

Now let's get to the complete budget process itself. Remember, we're applying this tool to analyze major business changes. These changes will likely impact the business for many years, so we want to adopt a long-range perspective as the first step in the process. Farmers, ag lenders and ag educators have a tendency to develop farm plans for just the coming year. In doing a long-range complete budget, we want to focus on the results for each alternative in a "typical" future year when the alternative is fully phased in and running smoothly.

Now that we're thinking long range, let's move to the second step. Your first alternative is to continue farming as you are. So let's describe a typical year of the status quo. This will accomplish two things. First, you can check out your current operation for long-term success, and second, you can measure other alternatives against the results. The following eight steps tell what you need to know to complete a whole-farm budget.

Eight steps to a complete budget

1. If you continue farming as you are, what annual gross income can you expect? What crops and how many acres of each will you grow in a typical year, and what yields can you expect?
2. What livestock will you have and how many or how much product will you sell in a typical year? (Good farm records will be a big help in this process.)
3. What income can you expect from sales of crops and livestock and/or livestock products in a typical year? Remember that livestock feed needs must be met, so you can't sell the entire crop. If you're thinking of a typical year, you can assume that one year's crop and livestock production are sold and inventories average out over time.

In determining sales income, the biggest problem probably is deciding what prices to use. Price instability suggests there is no reason to use current prices for future production. An average price over the past five years may

be useful, but there are no assurances that the next five years will be the same. Many state Extension services produce long-term "planning" prices based on past averages and projected economic conditions plus long-term price relationships between commodities. These projections are good to use for starters.

There are two important points I'd like to make before leaving crop and livestock planning. The first has to do with government programs and their impact on farm planning. Experience suggests that, in doing a long-term budget, it is best to ignore current government programs and to develop crop programs that use all acreage in the most productive way. You have no guarantees as to what kind of government programs will be in place in the future. To base *long-term* plans on *current* programs seems dangerous. However, deciding whether to participate in such programs is certainly an absolutely essential part of *annual* planning.

The second point concerns credibility. Projected yields for crops and livestock in your long-range plan should be based on your actual track record -- not on what you hope to attain.

4. You now have an estimate of typical crop and livestock gross income. To this you need to add any other farm income that would be realized in a typical year. Examples might include income for custom work and gas tax refunds. The total amount is the typical expected annual gross income from continuing to farm as you are now.

5. Your next step involves chasing down typical cash production expenses. Again, a good set of records is invaluable. If your records aren't up to snuff, think about how much you typically spend per acre per crop for inputs like fertilizer, seed and chemicals. Items that you can't put on a per acre basis can be added later. Use the same approach for livestock expenses. It is important that these figures be accurate for your operation.

One caution about relying entirely on last year's expense records: Last year may not have been typical due to unusual repairs, government program participation or unusual pest treatments. In such cases, some adjustments, such as using a three-year average, should be made to represent a typical year.

At this point you may want to see how your cost structure compares to other's costs. Enterprise budgets, published by Extension, and the annual summaries of record keeping associations and ag lenders are good references for cost information not available from your records. They could also provide some insight into alternatives you might want to consider later.

6. Now add crop and livestock expenses and any other typical expenses that you couldn't break down among crop and livestock enterprises. Those expenses might include real

WHAT PRICES TO USE?

Do not use current prices!
Better -- use average of past five years
Best -- use long-term planning prices

estate taxes, farm insurance, repairs, fuel, utilities, rent and miscellaneous.

7. With typical income and most cash expenses taken care of, you can turn to identifying typical debt payments. Operating outlays can be financed with equity and/or debt capital. If the latter is used, you'll have to estimate typical annual interest cost. You must also account for term debt -- debt with payments scheduled over more than one year. You can determine annual principal and interest payments from your financial statement and loan repayment schedules. You can then add up loan payments on term debt, and interest on operating loans for a typical year.

8. The last information you need is the amount of depreciation for a typical year and the typical amount spent on family living. You should base estimates of family living outlays on long-term goals rather than what you can squeeze by with right now.

To analyze other alternative farm plans, you follow the same steps, estimating changes in crops, acres, livestock and livestock numbers, compiling total incomes and costs alongside the complete long-term budget of your current operation.

The trickiest part of planning each alternative usually involves buying or selling capital assets such as land, equipment and breeding animals. This changes the beginning balance sheet and also adds or subtracts from debt payments and depreciation.

That's a lot of work isn't it? Fortunately, many Extension services have hand or computerized formats to help you with the budgeting process.

An example: Alex Case

The process will probably make more sense if you look at the results of a long-range complete budget for an example farm.

Let's get acquainted with the Alex M. Case farm and study his complete budget for a couple of alternatives, using one of Extension's computerized budgeting formats called FINLRB. FINLRB is one of four financial planning and analysis programs under the overall title of FINPACK, which is available in more than 30 states through the Extension service.

Alex is considering dropping his rented land (140 acres) and doubling feeder pig finishing from 600 to 1,200 head in Alternative 2 (p. 16). In Alternative 3 he is dropping rented land and feeder pigs, and switching to a 180-litter farrow-to-finish operation. The Cases want to find out if Alternatives 2 or 3 can pay for the additional investment and still have better profitability, liquidity and solvency characteristics than their present operation (Alternative 1).

We next look at an abbreviated report (p. 17) of the income and expense projected for each alternative in a typical year once each alternative is up and running. By subtracting, we get projected typical net cash farm income. Adjusting this figure by the amount of depreciation in a typical year gives projected profit, which is the same as return to labor, management and equity capital.

We can then see how the profits, created by additional investments, compare in terms of returns to labor and management, and the rates of return to investment, equity and added investment (p. 18, Table 3).

If you were consistent in estimating yields, prices and expenses, you can compare which of the three alternatives has the most potential profit. For Alex, Alternative 3 appears to be the most profitable.

Let's look at the Case farm's liquidity potential in the long-term typical year (p. 18, Table 4). Remember, liquidity is a separate issue from profitability.

Using the previously calculated net cash income and adding expected non-farm income, we have cash available after farm expenses. The first demand on this cash is family living, so we subtract that. Next, we subtract income taxes (that would likely have to be paid based on profits, depreciation and family tax exemptions). That leaves us with cash available for principal payments on term debt. By adding back the interest on term debt previously taken out, we get cash available for principal and interest payments. Now if we add up all term debt payments and subtract that number from cash available, we have the cash available in a typical year after farm expenses, family living, income taxes and debt payment. A comparison shows that Alternative 3 has the best liquidity potential.

Finally, let's look at the solvency potential of these alternatives (p. 19, Table 5). To determine solvency, add the value of any added assets (for each alternative) to your starting balance sheet. Then add the value of any new debts incurred in financing those assets. By calculating net worth, you can see how things will stand at the start of each plan.

Alternatives 2 and 3 show a lower net worth at the start of each plan. This occurs because the market value of the added assets, once they were in place, was less than their cost or the debt they created. If you want to, you can calculate solvency ratios, just as you learned in the balance sheet discussion.

For long-term budgeting, it is more important to project what might happen to net worth over time. Going back to our formula for determining change in solvency, we can project the expected typical net worth change by taking the net profit for each alternative and subtracting taxes and family living and adding any net non-farm income (p. 19,

CAUTIONS ON LONG-RANGE BUDGETING

1. Garbage in, garbage out.
2. Better alternatives may exist.
3. You may not be able to get there even if you want to.
4. How much risk is involved?
5. Is management ability there?
6. Can you sell the plan to lenders?

Table 6). Note that the present program and Alternative 2 appear weaker than Alternative 3.

Overall, Alternative 3 appears to have the best profitability, liquidity and solvency characteristics of the three alternatives.

Which alternative?

We've talked about the first two steps in the decision-making process: defining the problem and analyzing alternative solutions. The third step is weighing alternatives and deciding what to pursue. That brings us to some cautions. I can think of at least six.

1. Whether you use blank paper, hand forms or a computer to do complete budgeting, the saying "garbage in, garbage out" still applies. It's important to remember that you tackle this process to get information you need to make good decisions. Naturally, you are the last person in the world you want to fib to.

2. You only get results from alternatives you budget -- there might be a better alternative that you haven't considered.

3. Just because a particular alternative looks good in the long term doesn't necessarily mean you can get there from where you are now. Sometimes a major adjustment can result in too many expenses and too much debt before income starts increasing. The result can be a severe cash flow problem. This means that before deciding on a long-term direction, you have to project and study short-term cash flow implications.

4. Can you determine how much risk is involved and how much risk you and your family can tolerate? You'll note that the Case's budgeting results also give them an idea of the potential profitability, liquidity and solvency of their alternatives if they suffer a 10% decline in production or in the value of production (p. 19, Table 7).

5. Another area of concern is whether or not the management ability exists to carry out an alternative farm plan.

6. Finally, your plan must be one you can "sell" to lenders.

In summary, complete budgeting is a tool to analyze major changes in your farm business. The process includes estimating total receipts, total costs and resultant net earnings for each alternative, so you can see which has the best chance of achieving satisfactory levels of profitability, liquidity and solvency. Determining which alternatives to analyze depends on how you define your business's problems, the kind and amount of resources available, and the economic climate surrounding various options.

To find out whether your business can survive a transition from one alternative to another, and to clarify risks involved, you should follow up long-range planning (whole-farm budgeting) with short-range cash flow planning.

You will find with experience that budgeting, if correctly used, will reward you with a better understanding of your business.

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Contact your state Extension farm management specialist for methodology and forms used in your state.

Exercise 1

Video questions

Indicate whether each of the following statements is true (T) or false (F), or select the most appropriate answer.

- _____ 1. Success in farming might be defined in many ways. Of the following, which best fits your thoughts?
- a. size of the business
 - b. amount of land owned and paid for
 - c. goals being met and everybody happy
 - d. not paying income taxes
 - e. paying income taxes
- T F 2. Profitability is defined as positive returns to the resources you commit to farming.
- T F 3. Liquidity is a measure of water percolation through soil versus the water retention capacity of soil.
- T F 4. Solvency is a measure of the rate at which applied fertilizer ingredients dissolve and become usable to crops.
- T F 5. It is foolish to spend any management time making long-range projections for a farm business when there is so much to do and so many difficulties just to get through this year.
- T F 6. Complete budgeting refers to farming within a definite set of costs set by a lender, while partial budgeting refers to the same thing, but with the lender allowing a little more flexibility.
- T F 7. Strategies to improve the profitability of a farm business without changing resources include improving production, marketing and financial management.
- T F 8. As long as profit is a problem on a farm, expanding the farm's size should never be considered.
- T F 9. Refinancing debts is almost always the beginning of the end of a farm business.
- T F 10. The relationship between how much labor a family is willing to put into farming, and the amount and quality of the land they farm, is important in determining what crop and livestock enterprises they should be involved in.
- T F 11. Cattle feeding fits best on a small or medium-sized farm.

- T F 12. Profits and cash generated are essentially the same thing.
- T F 13. The level of depreciation is a key factor in determining cash generated by a farm business.
- T F 14. A long-range plan for a farm business should focus on the results of a typical future year when the alternative under consideration is set up and running smoothly.
- T F 15. If you decide to do a long-range plan for your farm business, it's best to use current commodity prices because "that's reality."
- T F 16. Last year's expenses should always be used, without change, when doing a long-range plan for your farm business.
- T F 17. You should analyze the short-term cash flow implications of making a major change in your farm business before deciding to make the change, even though the long-range plan says it should work.
- T F 18. You should consider any alternative form of business for your farm even though it involves enterprises you don't like or don't have the ability to manage.
- T F 19. Once you have struggled through the long-range complete budget process, you'll never have to do it again, so you might as well do it now.
- T F 20. The complete long-range budgeting process is another way to get information that can help you make good farm business decisions.

Exercise 2

Analyzing budgeting data

The following questions should help you become familiar with some typical feedback from a sample whole-farm budgeting procedure.

Review the Alex and Kate Case farm situation statement (p. 15) to get a feel for their problem and the solutions they are thinking about.

1. Study the plan description of the alternatives (Output Table 1, p. 16) which Alex and Kate used to do their long-range budget. Alternative 1 shows a typical future year if the operation stays the same with rented land, corn and soybeans, and 600 head of feeder pigs finished each year. Alternative 2 describes dropping the rented land and doubling the number of pigs per year. Alternative 3 describes dropping the rented land and going to a farrow-to-finish hog operation with 180 litters sold per typical year. Note that added investment is necessary (facilities, breeding livestock, etc.) to establish Alternatives 2 and 3.
 - a. Based on the land/labor relationship explained in the videotape, and considering that the Cases have 3,000 to 4,000 hours to put into full-time farming, do any of these alternatives fit their situation?
 - b. Realizing you don't have a lot of information on this farm, are there other alternatives you think would fit their resources better? Why?
2. Review the profit or loss statement (Output Table 2, p. 17) . Look at each income and expense item in Alternatives 2 and 3 compared to Alternative 1.
 - a. Since prices and costs are consistent across alternatives, does the change in level of dollars for each item make sense? For instance, seed cost in Alternative 1 is \$7,073. With fewer acres of the same crops and the same proportion of crops, seed cost should be lower in Alternative 2 (\$4,798) and lower in Alternative 3 (\$5,215) but higher than Alternative 2, because there are proportionately more acres of corn than soybeans.
 - b. Which alternative has the highest profits?
3. Study the profitability measures (Output Table 3, p. 18). All alternatives showed profits in Output Table 2. How do these profits compare when measured as returns to the resources -- management and labor, total investment, and net worth or owner equity -- used in each alternative?

4. Study the cash flow capacity (Output Table 4, p. 18). Note that all are cash items. Assuming that all dollar figures are correct:
- a. Calculate cash available after loan payments for Alternative 1 (Output Table 4) using the following formulas:
 1. $\text{Income} = \text{net cash farm income} + \text{net cash non-farm income} - \text{family living} - \text{taxes} = \text{cash available for principal payments}$
 2. $\text{Cash available for principal} + \text{interest on term debt} = \text{cash for term debt service}$
 3. $\text{Cash for term debt service} - \text{term debt payments} = \text{cash available after loan payments}$
 - b. What would cash available after loan payments be used for?
5. Study the solvency section (Output Tables 5 and 6, p. 19). The net worth change projected per year is the amount left over from profits, after family living expenses and taxes are paid, plus non-farm income.
- a. If family living expenses for this family are projected at \$20,000 instead of \$16,000, would any of these alternatives provide net worth growth?
 - b. Alternative 3 has the best potential for net worth growth. Which has the greatest risk? Why?
6. Assuming the Case family takes this plan to the lender who supplies their operating credit, and you are that lender:
- a. Will you go along with this plan?
 - b. What other information, if any, would you like to see?

The Alex and Kate Case farm situation

Alex and Kate Case operate a Midwestern farm which was purchased from his mother on a contract for deed. The farm consists of 320 acres, of which 295 are tillable. They also cash rent 140 tillable acres.

They operate a corn and soybean cash crop farm. To supplement cash grain income, they buy and finish out about 600 feeder pigs per year. Kate shares in the farm operation, takes care of their three children and does some substitute teaching, usually bringing in \$2,000 to \$3,000 per year.

The Cases are serious about being successful full-time farmers. They are currently being forced into making some hard decisions. Alex and Kate's net worth has been eroding the past few years. This year, although the trend has been toward lower rental rates, the Case's landlord -- Emma Tuff -- has decided to hold their rent firmly at \$110 per acre. They figure they need the rented land to continue their cash crop operation. To maintain their income without the rented land, they would have to expand their livestock program. In this event they would consider finishing more feeder pigs or converting to a farrow-to-finish hog operation.

The Case farm financial statement as of January 1, 19X1, shows a net worth of \$272,467. The business is 37% in debt. From here we begin an analysis of the Case farm's alternative long-range plans using FINLRB.

Long-range farm budget -- Output Table 1

Plan description		<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Total crop acres		435	295	295
Total hours labor		2,149	1,854	3,619
Change in farm investment		\$ 0	\$ 18,000	\$ 95,150
Change in farm non-real estate debt		0	18,800	37,137
Change in farm real estate debt		0	0	91,350
Crop acres	<u>Yield/acre</u>			
Feed corn	115.0 bu.	218	148	197
Soybeans	36.0 bu.	217	147	98
Livestock plan	<u>Unit</u>			
Finish feeder pigs	Head	600	1,200	0
Farrow-finish hogs	Litters	0	0	180
Corn equivalents	<u>Bushel</u>			
Produced		25,070	17,020	22,655
Fed		6,000	12,000	18,900
Balance		19,070	5,020	3,755

Output Table 2 Projected profitability

Profit or loss statement	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Corn equivalents \$ 2.45 per bu.	\$ 46,722	\$ 1 2,299	\$ 9,200
Soybeans	44,919	30,429	20,286
Finish hogs	61,044	122,089	0
Raised hogs	0	0	132,131
Cull and other livestock income	0	0	7,740
Other farm income	200	200	200
Gross farm income	152,885	165,017	169,557
Seed	7,073	4,798	5,215
Fertilizer	10,028	6,808	9,062
Crop chemicals	8,916	6,046	5,899
Crop insurance	4,563	3,093	2,652
Drying fuel	2,616	1,776	2,364
Purchased feed	10,800	21,600	37,800
Veterinary and livestock supply	1,800	3,600	5,760
Livestock marketing	1,200	2,400	3,600
Feeder livestock purchase	23,400	46,800	0
Fuel and oil	6,100	4,425	5,500
Repairs	5,500	5,000	6,500
Rent and lease payments	15,400	0	0
Farm taxes	2,600	2,600	3,000
Farm insurance	1,900	1,900	2,400
Utilities	1,000	700	2,400
Crop marketing	1,625	625	450
Interest	21,348	22,913	35,546
Miscellaneous	2,000	2,000	3,000
Cash operating expense	127,869	137,084	131,147
Net cash farm income	25,016	27,933	38,410
Depreciation	11,000	12,500	16,500
Profit or loss	14,016	15,433	21,910

Output Table 3

Profitability measures	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Labor and mgt. earnings	\$ -1,759	\$ -294	\$ 8,135
Rate of return on farm investment	4.8%	5.7%	7.5%
Rate of return on farm net worth	-0.4%	0.8%	1.5%
Rate of return on added investment		20.5%	13.4%
Net profit margin	15.7%	21.2%	23.0%
Asset turnover	30.6%	26.8%	32.8%
Interest on farm net worth (6%)	\$ 15,775	\$ 15,727	\$ 13,775
Farm interest paid	21,348	22,913	35,546
Value of operator's labor and mgt.	15,070	13,327	18,478
Return on farm investment	20,294	25,019	38,978
Total farm investment	422,540	440,540	517,690
Return to farm net worth	-1,054	2,106	3,432
Total farm net worth	262,917	262,117	229,580
Added return to added investment		4,725	18,684
Added capital invested		23,000	139,150
Value of farm production	129,485	118,217	169,557

Output Table 4 Projected liquidity

Cash flow capacity	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Net cash farm income	\$ 25,016	\$ 27,933	\$ 38,410
Non-farm income	2,000	2,000	0
Net cash available	27,016	29,933	38,410
Family living	16,000	16,000	16,000
Income tax and Social Security	2,664	3,168	2,596
Cash avail. for principal payments	8,352	10,765	19,814
Interest on interm. and long-term debt	16,479	17,909	31,062
Cash avail. for principal and interest	24,831	28,674	58,876
Federal Land Bank payment	13,508	13,508	0
Bank #1 non-real estate payment	10,553	13,040	16,884
Federal Land Bank payment	0	0	24,547
Total scheduled principal and interest	24,061	26,548	41,430
Cash avail. after loan payments	—————	2,127	9,445
Annual replacement (mach, equip, br lvstk)	9,500	9,500	12,500
Farm non-real estate principal paid	4,485	5,543	7,177
Cash required for replacement	5,015	3,957	5,323
Cash surplus or deficit (-)	-4,244	-1,831	4,122

Output Table 5 Solvency

Financial statement	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Farm current and intermediate assets	\$ 113,500	\$ 125,500	\$ 152,300
Farm long-term assets	309,040	315,040	365,390
Non-farm assets	12,400	12,400	12,400
Total assets	434,940	452,940	530,090
Farm current and intermediate liabilities	67,623	86,423	104,760
Farm long-term liabilities	92,000	92,000	183,350
Non-farm liabilities	350	350	350
Total liabilities	159,973	178,773	288,460
Net worth	274,967	274,167	241,630

Output Table 6 Solvency

Solvency measures	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Current + interm. liability/asset ratio	59.6%	68.9%	68.8%
Long-term liability/asset ratio	29.8%	29.2%	50.2%
Total liability/asset ratio	36.8%	39.5%	54.4%
Net worth change per year	\$ -2,648	\$ -1,735	\$ 3,314

Output Table 7 Sensitivity analysis

Effect of a 10% decrease in production or value of production

	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Gross farm income	\$ 136,146	\$ 145,595	\$ 147,991
Cash operating expense	127,869	137,084	131,147
Net cash farm income	8,278	8,511	16,843
Profit or loss	-2,722	-3,989	343
Labor and mgt. earnings	\$ -18,497	\$ -19,716	\$ -13,431
Rate of return on farm investment	- 0.1 %	0.4 %	2.7 %
Rate of return on farm net worth	- 6.4 %	- 6.2 %	- 7.4 %
Rate of return on added investment		8.9 %	10.4 %
Cash available after loan payments	\$ -13,704	\$ -14,527	\$ -9,925
Cash surplus or deficit (-)	-18,718	-18,484	-15,249
Net worth change per year	-17,122	-18,389	-16,057

Exercise 3

Gathering data for farm budgeting

1. Based on what you've learned about long-range complete budgeting, make a list of 10 pieces of information you would need to do the process for your own farm.

Information needed

(Example) Assets and debts
(Example) Crop acres and yields

Where available

Up-to-date balance sheet
Past records, plus what you know
about your farm

1.	_____	_____
2.	_____	_____
3.	_____	_____
4.	_____	_____
5.	_____	_____
6.	_____	_____
7.	_____	_____
8.	_____	_____
9.	_____	_____
10.	_____	_____

2. Study the hand or computer forms that are available for long-range complete budgeting in your area. Identify the information you need to complete the forms.
3. Do a long-range projection for your farm using the procedure you studied.

Answer key 1

Video questions

Indicate whether each of the following statements is true (T) or false (F), or select the most appropriate answer.

c

1. Success in farming might be defined in many ways. Of the following, which best fits your thoughts?
- size of the business
 - amount of land owned and paid for
 - goals being met and everybody happy
 - not paying income taxes
 - paying income taxes

Comment: C. Opinion plays a role in answering this question. All of the above answers have been suggested by farmers as indicators of success. Realistically, families happily fulfilling their goals through farming sounds like a good, if subjective, measure to us.

T **F**

2. Profitability is defined as positive returns to the resources you commit to farming.

Comment: True. But positive returns might not be high enough if, by using your resources in another way, you could produce higher levels of profit. Profitability and level of profitability are both important.

T **F**

3. Liquidity is a measure of water percolation through soil versus the water retention capacity of soil.

Comment: False. Liquidity means having cash when cash is needed. The more cash available over immediate needs, the higher the degree of liquidity.

T **F**

4. Solvency is a measure of the rate at which applied fertilizer ingredients dissolve and become usable to crops.

Comment: False. Solvency means being able to pay off all debt at a given point in time if the business had to be ended. The degree of solvency would indicate how much you would have left after the debt was paid.

- T E** 5. It is foolish to spend any management time making long-range projections for a farm business when there is so much to do and so many difficulties just to get through this year.

Comment: We think this is false. Some might disagree. Burying yourself in day-to-day survival may keep you from seeing the forest because of the trees.

- T E** 6. Complete budgeting refers to farming within a definite set of costs set by a lender, while partial budgeting refers to the same thing, but with the lender allowing a little more flexibility.

Comment: False. Complete budgeting refers to planning, or budgeting out, the whole farm business by projecting all receipts and expenses, thus attaining projected net earnings for each proposed alternative course of action.

- T F** 7. Strategies to improve profitability of a farm business without changing resources include improving production, marketing and financial management.

Comment: True. This, of course, simply means getting better before getting bigger. Doing a more economically efficient job in these areas will improve profits.

- T E** 8. As long as profit is a problem on a farm, expanding the farm's size should never be considered.

Comment: False. In many cases, getting better before getting bigger does apply to farming. However, it is possible that expansion of well-run enterprises and/or an increase in resources, such as rented land, will provide increased income at low enough cost to turn an unprofitable situation around. Sometimes it takes money to make money.

- T E** 9. Refinancing debts is almost always the beginning of the end of a farm business.

Comment: False. In many cases refinancing, particularly short-term debts to long term, will reduce cash outflow in a typical year, thus permitting improvement in the business's liquidity even though payments must be made over a longer period of time.

- T F** 10. The relationship between how much labor a family is willing to put into farming, and the amount and quality of the land they farm, is important in determining what crop and livestock enterprises they should be involved in.

Comment: True. This is a basic principle of farm planning. The business should match, or make best use of, available resources to maximize potential income.

T E 11. Cattle feeding fits best on a small or medium-sized farm.

Comment: False. Cattle feeding is a prime example of an enterprise that fits a large farm setting. It doesn't take much labor relative to the amount of land (feed) that the enterprise needs.

T E 12. Profits and cash generated are essentially the same thing.

Comment: False. Profits are returns to labor, management and equity capital. Depreciation and inventory changes in physical quantity and their associated value must be adjusted in relation to cash income. Cash generated does not consider depreciation or inventories, but only the cash available for debt payment after family living, income tax and cash farm expenses are subtracted. Cash from non-farm sources can be considered part of available cash. Such non-farm cash income is never considered when determining farm profits.

T E 13. The level of depreciation is a key factor in determining cash generated by a farm business.

Comment: False. Depreciation is not a cash expense but rather a "book" adjustment to the value of assets. As such, it has no impact on available cash except through tax savings. On the other hand, cash spent on replacement of assets would impact the cash generating level of the business.

T F 14. A long-range plan for a farm business should focus on the results of a typical future year when the alternative under consideration is set up and running smoothly.

Comment: True. You don't know what the future holds, but basing plans on the usual rather than the unusual seems sound. For instance, you wouldn't plan for the highest or lowest yields, but for the yields you'd typically expect.

T E 15. If you decide to do a long-range plan for your farm business, it's best to use current commodity prices because "that's reality."

Comment: False. History tells us there is no reason to use current prices for future production. Supply and demand are constantly changing because of the collective decisions of producers and consumers as they interpret economic conditions. As producers and consumers manage, they almost automatically bring about price changes, and not necessarily according to any pattern.

T E 16. Last year's expenses should always be used, without change, when doing a long-range plan for your farm business.

Comment: False. Last year may not have been typical because of unusual conditions. Participation in a PIK-type program is an example. Nonetheless, last year's expenses can be used as a guide in long-range planning, tempered with what you usually do rather than what was unusual.

- T F** 17. You should analyze the short-term cash flow implications of making a major change in your farm business before deciding to make the change, even though the long-range plan says it should work.

Comment: True. Sometimes what appears to be a positive outcome in the long term is impossible to attain because of your current financial standing and the need for large amounts of cash to get the long-term alternative up and functioning.

- T E** 18. You should consider any alternative form of business for your farm even though it involves enterprises you don't like or don't have the ability to manage.

Comment: False. It is a waste of management time to consider and budget out farming alternatives you know you wouldn't like, feel you can't handle, or that don't come close to your personal goals.

- T E** 19. Once you have struggled through the long-range complete budget process, you'll never have to do it again, so you might as well do it now.

Comment: False. Most successful farm managers continue to search for business improvements to match continuing change in economic conditions and changes in their goals.

- T F** 20. Complete long-range budgeting is another way to get information that can help you make good farm business decisions.

Comment: True. Although complete long-range budgeting probably won't give you definitive answers, it will help you uncover useful facts for decision-making and will give you a clearer understanding of yourself and your business in changing times.

Answer key 2

Analyzing budgeting data

- 1a. Alternatives 1 and 2 do not effectively employ available labor and therefore have poorer profitability, liquidity and solvency characteristics than Alternative 3. Finishing feeder pigs is not a labor-intensive type enterprise, at least at the levels discussed for this farm. The mix of available labor and land suggests organization around intensive livestock programs such as those in Alternative 3.
- 1b. The Cases might consider a combination of Alternatives 1 and 2, where rented land is retained and perhaps more land added along with the feeder operation of Alternative 2. Machinery and crop storage facilities already exist for the larger crop operation, and the investment for additional feeding facilities is modest compared to the investments for Alternative 3. Continued off-farm work would probably still be necessary, however. Financing needs for all acres and 1,200 feeder pigs are largely operating-type loans as compared to term loans needed for Alternative 3.

A further alternative might be the same as Alternative 3 but producing only 40-lb. feeder pigs rather than finishing them out. This would be a truly intensive livestock program with about the same investment as Alternative 3 but with more litters. The direction depends on how the family feels about moving to a larger farm or a smaller, more intensive farm. Each has its own risks, and each needs certain skills. In this case, the unavailability of additional rented land and poor relations with the landlord make farrow-to-finish or feeder pig production more feasible.

- 2a. What we want to point out is that you must project expenses carefully and realistically. The expense figures must be accurate in order to relate to profitability, liquidity and solvency results.
- 2b. Alternative 3 has the highest profits in terms of dollars and in terms of profitability measures.
3. The labor and management earnings measures for Alternatives 1 and 2 indicate under-employment in these parts of the business. Alternative 3, while not very high in labor and management earnings, points to more favorable returns. The rate of return to farm investment and farm net worth are stronger in Alternative 3, although we would like to see higher levels of returns to net worth, even in Alternative 3.

Returns to added investment can then be compared directly to the interest rate charge on added borrowing. As long as it's higher than the borrowing rate, progress is possible.

Finally, net profit margin measures the efficiency of production, while asset turnover measures the efficiency of the use of capital. The higher these percentages, the better. Alternative 3 is the strongest.

4a. The correct answer is \$770. This is the cash that should be typically available after all farm expenses, income taxes, family living expenses, and principal and interest payments are made.

4b. When doing a typical long-range plan, cash after loan payments is needed for annual replacement of machinery, equipment and breeding livestock (such as boars, bulls, etc.). The annual replacement needed in Alternative 1 is \$9,500 for a typical year to keep the intermediate assets from deteriorating. The \$770 of "cash after loan payments" won't go very far toward \$9,500. Out of the debt payments in the intermediate-type loans, the principal is \$4,485. This amount is already going toward keeping the equipment, etc., together. An additional \$5,015 is still needed to achieve the sought-after replacement level. In this case, that leaves us \$4,244 short of getting the job done. In the typical-year context, being short in this category leads to mushrooming borrowing and/or the loss of intermediate assets as they wear out.

If a cash surplus is projected, as in Alternative 3, this money is available for additional family living or saving, faster debt payment and/or additional investment on or off the farm.

5a. No. Even Alternative 3, which has the highest profit level, won't provide for net worth growth:

Profit	\$ 21,910	(Output Table 2)
- Family living at	<u>20,000</u>	
	= \$ 1,910	
- Income taxes at	<u>2,596</u>	(Output Table 4)
	= \$ -686	

Gain in net worth comes out of retained earnings over the long term.

5b. A first look would suggest that Alternative 3 is riskiest because of the liability/asset ratios. At the outset, this business would be 54.4% ($288,460 + 530,090$) in debt compared to lower levels of indebtedness in Alternative 1 (36.8% or $159,973 + 434,940$) and Alternative 2 (39.5% or $178,733 + 452,940$).

A look at Table 7, however, gives us more information on the risks.

This table is a rerun of all alternatives assuming a 10% "across the board" reduction in the value of production. We now see that all alternatives are essentially negative in profits, cash and net worth change, but Alternative 3 is less negative than the others. However, the following before-and-after comparison shows volume of dollar decline to be greater in Alternative 3.

	<u>Alt. 1</u>	<u>Alt. 2</u>	<u>Alt. 3</u>
Profits (Output Table 2)	\$14,016	\$15,433	\$21,910
Profits after -10% (Output Table 7)	- (<u>-2,722</u>)	- (<u>-3,989</u>)	- (<u>343</u>)
Decline in profit	\$16,738	\$19,422	\$21,567
Cash (Output Table 4)	\$-4,244	\$-1,831	\$ 4,122
Cash after -10% (Output Table 7)	- (<u>-18,718</u>)	- (<u>-18,484</u>)	- (<u>-15,249</u>)
Decline in cash	\$14,474	\$16,653	\$19,371
Net worth change (Output Table 6)	\$-2,648	\$-1,735	\$ 3,314
Net worth change after -10% (Output Table 7)	- (<u>-17,122</u>)	- (<u>-18,389</u>)	- (<u>-16,057</u>)
Decline in net profit	\$14,474	\$16,654	\$19,371

6. Your facilitator will discuss this question.

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