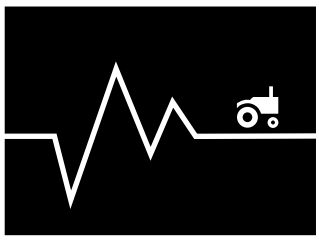

chapter nine

COMPUTERIZED DECISION AIDS

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Farm and Enterprise Profit and Cashflow (FEPAC) Program

Jeff Connor and Bart Eleveld

System requirements

IBM PC compatible computer
Window 95 or Windows 98 operating system
Microsoft Excel 97 or higher

Getting Started

1. Create a FEPAC subdirectory by clicking on *My Computer*, then on *C:* (or the letter indicating the drive where you want the directory) then on *File* and *New*. Name the subdirectory *FEPAC.*
2. To start a new analysis, click on *My Computer*, *C:*, *FEPAC*, and then *FEPAC.xls*.
3. To start the example application click on *My Computer*, *C:*, *FEPAC*, and then on *FEPAC-EXAMPLE.xls*.
4. Save your work occasionally to the C:\FEPAC subdirectory using the "save as" button on the FEPAC toolbar.

Overview

The Farm and Enterprise Profit and Cash Flow (FEPAC) Program is a modified Excel workbook. It is a planning tool that allows you to assess the profit and cash flow a farm plan will generate. FEPAC also provides a convenient assessment of the sensitivity of profit and cash flow to key assumptions about prices, yields and other variables in your farm plan (i.e. acreage dedicated to each enterprise, cost of production etc.).

The Excel workbook consists of five worksheets or spreadsheet templates:

- User's guide—describes the computer mechanics of how to use the workbook (e.g. how to print and save files).
- Enterprise revenues—describes the farm's enterprises (acres, yields) and sales (prices, quantities).
- Enterprise expenses—describes production expense associated with each enterprise.
- Enterprise cash flow—estimates enterprise cash-flows and break-even prices.
- Family cash-flow and farm profit—describes profit and cash flow from farm and family activities combined.

This chapter and the Excel file *FEPAC-EXAMPLE.XLS* on the CD-ROM are the documentation for the FEPAC program. The chapter explains how FEPAC can be used by describing an example dry land wheat farm plan entered on the *FEPAC-EXAMPLE.XLS* file. The best way to use this program documentation is to print a copy of this chapter and read it while viewing the *FEPAC-EXAMPLE.XLS* file on your computer screen. The first

worksheet on *FEPAC-EXAMPLE.XLS* is a user's guide; it describes the computer mechanics involved in using the workbook, such as how to print and save files.The user's guide also explains how to use the FEPAC tutorial mode, which will automatically guide you through the steps of a FEPAC analysis.

Doing a complete FEPAC analysis is a four step process:
1. Enterprise net cash flow analysis
2. Farm family net cash flow analysis
3. Farm plan profitability analysis
4. Sensitivity analysis

The *Objectives* section of this chapter gives an overview of the objectives of each analysis step.

The *Input/output overview* section briefly describes the worksheets and the parts of the worksheets referred to as *input areas*, *output areas* or *input/output areas*. For each analysis step, the required inputs and where they are entered are described, as well as resulting output and where it can be found.

The section *Detailed instructions* discusses input and analysis issues with reference to the example application contained in the file *FEPAC-EXAMPLE.XLS* .

The section *Detailed results interpretation* describes where results can be found in the *FEPAC-EXAMPLE.XLS* workbook and how they can be interpreted.

Objectives

1. Enterprise net cash flow analysis

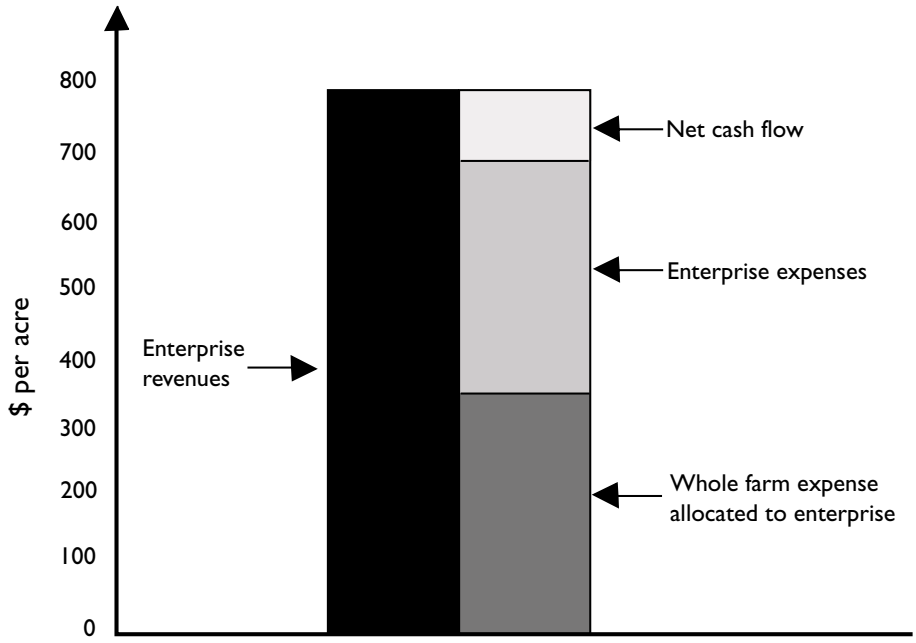
The overall objective is to estimate the net cash flow (cash revenue minus cash expense) for each of the individual enterprises involved in your farm plan on a per acre basis, as well as for the total farm operation.

As illustrated in Figure 1, for any enterprise:

net cash = revenue (units of output sold x the average price received) – enterprise expenses and whole farm expenses allocated to the enterprise

Any unique farm activity that produces a product used on the farm or sold in the market is one of your farm's enterprises. Examples of enterprises include alfalfa production, cows producing calves, and custom work. It is often useful to think of a single crop or livestock type as more than one enterprise because costs and expenses associated with producing the crop or animal in a different way can be vary. For example, dry-land wheat grown on owned land has costs, such as term debt interest, that are not applicable to dry-land wheat grown on share leased land.

Figure 1. Enterprise Net Cash Flow



2. Farm family net cash flow analysis

The objective is to measure farm and non-farm net cash flow, which is your ability to cover all planned production expenses and family living expenses with planned cash inflows. A positive value indicates that you can cover all expenses and have a margin for error. A negative number tells you that if things run as planned you'll need to borrow money, earn more off the farm, spend less, or liquidate assets to cover all expenses.

Farm and non-farm net cash flow is equal to cash inflow minus cash outflow. Cash *inflow* is net cash flow from farm enterprises plus cash from government farm program payments, non-farm income, capital asset sales and cash from new debt. Cash *outflow* for the farm family include cash for capital asset purchases, family living expense, taxes and cash purchases of capital assets.

3. Farm plan profitability analysis

The objective of this step is to compute approximate net farm income. Net farm income is a pretty good approximation of returns to the family's labor, management, and equity investment in the farm. The computation begins with the results of the analysis in the second step, *farm net cash income,* which sometimes is not a good measure of profit because it doesn't account for several important inventory adjustments. Part of the net cash flow from farm enterprises may come from crop, livestock, and other in-

ventory adjustments. Also, whole farm expenditures for term debt principal may be more or less than the value of fixed assets that are used up in a year (depreciation).

4. Sensitivity analysis

Because FEPAC is a planning tool, using it requires making assumptions concerning prices and yields that will occur in the future, acres you will plant, heads of livestock you will raise, costs of production and so forth. The objective of the sensitivity analysis step is to see how changing the assumptions about yield, price, or other farm plan variables will effect cash flow and profit.

Input/output overview

Table 1 describes the worksheets and the parts of the worksheets referred to as *input areas*, *output areas* or *input/output areas*. For each analysis step, required inputs and where they are entered are described, as well as resulting output and where it can be found.

Table 1. Input/output overview

Step	Worksheet	Type of item	Item
1.	Enterprise Net Cash Flow		
1.1	Enterprise Revenues		
	Input area 1	Input	Enterprise description
	Input area 2	Input	Marketing plan
	Output area1	Output	Revenues from each enterprise
		Output	Revenues from all enterprises combined
1.2	Enterprise Expenses		
	Input areas 3 and 4	Input	Enterprise specific expenses
	Input area 5	Input	Information about how to allocate whole farm expenses
	Input areas 6 and 7	Input	Whole farm expenses
	Output area 2	Output	Summary of enterprise specific and total expenses for each enterprise
		Output	Summary of total expense for all enterprises combined
1.3	Enterprise Cash Flow Report		
	Input/output area 8	Output	Summary of enterprise specific and total expenses for each enterprise
	Input/output area 9	Output	Net cash flow from all enterprises combined
		Output	Enterprise break-even prices
2.	Farm Family Net Cash Flow Analysis		
2.1	Farm Income and Family Cash Flow		
	Input/output area 9	Input	Cash flows from government farm programs and non-farm income, and withdraws for family living expenses
		Input	Net cash flow from financing, capital asset sales and purchases
		Input	Cash payments for income and social security taxes
		Output	Farm and non-farm net cash flow
3	Farm Plan Profitability Analysis		

Table 1. Input/output overview *continued*

Step	Worksheet	Type of item	Item
3.1	Family Cash Flow and Farm Profit		
	Input/output area 10	Input	Anticipated farm asset depreciation
		Input	Anticipated Inventories in at end of last year and plan year
		Output	Approximate net farm income
4	Sensitivity Analysis		
4.1	Quick Version		
	Enterprise Cash Flow Report		
		Input	Change average per unit price
		Input	Change yield and quantity sold
		Output	New enterprise cash flow results
	Family Cash Flow and Farm Profit		
		Output	New enterprise cash flow results
		Output	New farm and family combined net cash flow
		Output	New net farm income
4.2	More Elaborate Version		
	Enterprise Revenues and/or Enterprise Expenses		
		Input	Change enterprise scope (acres or head), yield ownership etc.
		Input	Change marketing plans
		Input	Change enterprise production expenses
	Enterprise Cash Flow Report and Family Cash Flow and Farm Profit		
		Output	New enterprise cash flow results
		Output	New farm and family combined net cash flow
		Output	New net farm income

Detailed input instructions

This section is a description of the specific values you will have to enter in each analysis step. The focus is on conceptual issues related to specific required entries such as how to treat share leases, a custom work enterprise or an alternate year fallow crop. The discussion and figures in this section refer to the example FEPAC analysis for a Pacific Northwest dryland wheat operation contained in the file *FEPAC-EXAMPLE.XLS*. The discussion and subsection numbering follows the outline in Table 1—*Input/output overview*.

Note: Using the detailed input instructions will require that you view the Excel file *FEPAC-EXAMPLE.XLS*. Subsections of the detailed input instructions refer to specific worksheets and their input and output areas. Each time you need to move to a new worksheet to follow the instructions, you will be told to turn to the applicable sheet.

1. Enterprise net cash flow analysis

Turn to the **Enterprise revenues** *worksheet*

1.1. Enterprise revenues worksheet

The *enterprise revenues* worksheet is used to enter enterprise descriptions (acres you plan to plant, yields you expect, etc.) and marketing plans. The worksheet provides revenue projections based on the plans you enter. As you can see in the worksheet, there are two input areas and one output area.

1.1.a. Input area 1—Enterprise description

Input area 1, *enterprise description*, on the *enterprise revenues* worksheet is used to describe the basic characteristics of the enterprises included in your farm plan. There is space for a maximum of eight enterprises. Our example farmer is planning two enterprises, wheat grown on owned land and wheat grown on share-leased land. In item 1, he has named these "Johnson place owned wheat" and "wheat leased."

Type of enterprise and land ownership

For item 2, the farmer has selected "crop" from the *type of enterprise* list (crop, livestock, custom) in both cases. For the first enterprise the grower chose "owned" from the list (owned, share lease, rented) in the item 3, *ownership* and "share lease" for the second enterprise. It is important to enter the correct ownership category because this information is used later to allocate the cost of land ownership to owned land enterprises and not to the share leased or rented land enterprises.

Acres cropped and acres fallow

In the first enterprise, a wheat-fallow rotation, the grower indicated that item 4 *acres cropped* has a value of 300 (acres) and item 5 *acres fallow* also has a value of 300. By including fallow acreage with the owned wheat enterprise, the cost of owning land that is cropped as well as land that is fallowed (600 acres in total) will be used to compute the cash flow that this enterprise generates.

Livestock enterprises

If the farm plan had involved a livestock enterprise, the grower would have indicated that item 2 (*type of enterprise*) was "livestock", and made no entries for items 3 through 6 *ownership*, *acres cropped*, *acres fallowed* , and *enterprise total acreage*. The grower would have entered the number of head for item 7 *head of livestock*.

Yield and yield units

The grower entered the expected yield in item 8 *yield per acre or head* and indicated that the *yield or custom work units* in item 9 are bushels.

Custom work enterprises
If the grower had planned to do 600 acres of seed drilling for others as a custom enterprise, the grower would have had to indicate that item 2, *type of enterprise* was "custom". Items 3-6 would have been left blank because the enterprise does not involve land. The grower would have had to enter the anticipated number of custom work units (600) as item 7 and "acres" as item 9 indicating that the units of custom work are acres. Further discussion on how to deal with custom enterprises is found in the description of input area 2 (section 1.1.b.).

Share leases
Item 10, *owner share lease percentage*, is important if you have an enterprise that involves a share crop lease arrangement. In the example grower's second enterprise ("wheat lease"), the item 3 entry defines this enterprise as a share lease. The item 10 entry says that the grower keeps 70% of the yield and the landowner gets 30%. Because the grower is anticipating 70 bushels per acre total, the anticipated *owner share of yield units/acre*, item 11, is 49 bushels per acre. Item 11 is computed for you.

Crop and livestock inventories
In some instances you may have inventories of crops or livestock at the beginning of the year. You'll want to enter these amounts as item 13, *units inventory at year begin*, because they are a source of potential revenue. You will want to account for them when evaluating your farm plan.

Acreage tallies
The last three rows in input area 1, items 14-16, are tallies of acreage by ownership type. This information is provided so that you can check the consistency of your enterprise descriptions with your land ownership and lease arrangements.

1.1.b. Input area 2—Marketing plan
Input area 2 is used to describe the marketing plans associated with each of the enterprises in your farm plan. There is space to include a maximum of four separate marketing activities for each enterprise. Notice that the names of your enterprises are transferred from input area 1 by the program from other areas to make it easy for you to keep up.

Total units available for marketing
The first item, *total units available for marketing* , is a number computed for you and is based on your entries in the enterprise description (input area 1). The number is the operator share of yield plus inventory carried forward. For the example operation, this is the owner share of yield for enterprise 1 (13,500 bushels) and the owner share of yield from enterprise 2 (39,200

bushels.) Since there wasn't any inventory at the beginning of the year, yield from the current year provides the total units available for marketing.

Marketing activity description
Items 2-13 describe a maximum of four marketing activities. For each marketing activity, enter the marketing method (e.g.. cash sale, pre-harvest contract, etc.), the number of units sold, and the price per unit. Our example grower plans to sell the wheat yield from enterprise 1 two ways, 4000 bushels on a pre-harvest contract basis at $3.35/bu. and 8000 bushels on a cash sale basis at 3.65/bushel from enterprise 2.

Consistency check: units available for marketing, units committed for sale, and inventory at year end.
Item 15 (*units committed for sale*)and 16 (*units inventory year end*)are computed for you. If the value of item 15 exceeds the value of item *1 (total units available for marketing*) the plan is infeasible—you are planning to sell more than you have available. The program will highlight this condition with an error message. The grower in our example has 13,500 bushels available from planned production activities for enterprise 1 (shown in item 1.) In item 15, he has specified plans to market 12,000 bushels. As item 16 *inventory at year end* shows, this leaves the grower with an enterprise 1 year end inventory of 1,500 bushels. ***When evaluating your plan make sure to check "inventory at year end."*** If this isn't what you intend, adjust your planned marketing activities accordingly.

Marketing plan for custom enterprises
You would typically use only the first marketing activity for custom enterprises. You will have to enter the number listed as item 1, *total units available for marketing* again as item 3, *units sold* and the price you anticipate receiving for custom work units as item 4 *price*.

1.2. Enterprise expenses worksheet
Turn to the **Enterprise expenses** *worksheet*

The enterprise expenses worksheet is used to enter enterprise expenses. The worksheet is built to allow separate treatment of enterprise specific expenses and whole farm expenses. Input areas 3 and 4 are the part of the worksheet where enterprise specific expenses are entered. Input areas 5, 6, and 7 are the part of the worksheet dealing with whole farm expenses and how they are allocated to specific enterprises.

1.2.a. Input area 3—Enterprise specific expenses (pre-specified categories) Input area 4—Enterprise specific expenses (your own categories)

Many farm operating expenses are associated with a particular enterprise, for example when you pay for crop insurance to insure a specific crop or buy seed to plant a specific crop, those are an enterprise specific expense. Enterprise specific expenses should be entered in input area 3 (*pre-specified categories*) and/or 4 (*your own categories*.) Use the area that best meets your needs. For instance, our example grower entered all the enterprise specific expenses for enterprise 1 in the appropriate categories, including $46.90/acre for fertilizer (item 5 in input area 3). However, for enterprise 2 he wanted to distinguish between the cost of ammonium sulfate and lime. He didn't enter any fertilizer expenses in input area 3. Instead, he entered his own categories in input area 4: ammonium sulfate as item 1 at $32.25/ac. and lime as item 2 at $13.15/ac.

Item 3 at the bottom of input area 4 is the total of all enterprise specific expenses entered in both input area 3 as pre-specified categories and in input area 4 as owner specified categories.

1.2.b. Input area 5—Whole farm expense allocation

Although some costs, such as a fertilizer formulation on your wheat crop, are clearly associated with a single enterprise, there are other costs, including expenses relating to land (e.g. taxes), equipment (e.g. tractors), and facilities (e.g. barns), that should be shared among your various enterprises. Input area 5 is where you distribute, on a percentage basis, the land and other whole farm costs so that all of the costs directly associated with each enterprise are considered in computing its profitability. FEPAC treats owned land and other whole farm expenses (i.e. facilities and equipment) separately.

Land expense allocation

Item 1 in input area 5 is *owned land costs*, where the program allocates land ownership costs only to the acreage you own. On rented acreage, the rent should be treated as an enterprise specific expense. On share leased land, land cost is accounted for on the enterprise revenues worksheet by including only your share of yield when calculating enterprise revenues.

For our example grower, 100% of land ownership costs (items 1 and 2 in input area 6, *term debt interest: land*, and *term debt principal: land*) are allocated to enterprise 1. In contrast no land ownership costs are associated with enterprise 2 because it is a share lease enterprise.

Other whole farm expense allocation

Item 2 in input area 5 is the share of all whole farm costs (other than the land) that is allocated to each enterprise. Enter a percentage that repre-

sents your best estimate of the proportion of the whole farm resources that are used in each enterprise; the program automatically checks to make sure that the percentages total one hundred. Our example grower believes that about 27% of his whole farm cost (other than land) should be allocated to enterprise 1 and 73% to enterprise 2. These values are based on his equipment hours use, with about 27% of the hours on enterprise 1 and about 73% on enterprise 2.

1.2.c. Input area 6—Whole-farm expenses (pre-specified categories) Input area 7—Whole-farm expenses (your own categories)

Whole farm expenses should be entered in the second column of input areas 6 (*pre-specified categories*) and/or input area 7 (*your own categories*). Note that you are asked to enter the *entire expense*, not the per acre expenses as required in enterprise specific input areas 3 and 4. Each of the whole-farm expense items that you enter in these areas will be divided among your enterprises, based on the percentages you entered in input area 5. For example, item 8 (*machinery: repair and maintenance*) in input area 6 shows that 73% of the farm machinery repair and maintenance is allocated to the 800 acre share leased wheat enterprise. So the enterprise expense per acre of farm machinery repair and maintenance is ($6987*.73)/800=$6.38/acre.

2 Farm family net cash flow analysis

Turn to the family cashflow & farm profit worksheet

2.1. Input/output area 9—Farm family net cash flow

The combined input and output area 9 on the *family cashflow & farm profit* worksheet gives an estimate of net cash flow generated by farm income, off farm income, expenses net of taxes, and capital asset sales and purchases.

Items 2 through 4 are potential sources of cash flow related to farming in general, but not to a specific enterprise. Item 3, *cash from capital asset adjustments*, is the net cash flow from sales and purchases of capital assets. You should enter the full cost of any capital assets you purchase even if part of the cost is financed. The cash you receive from new debt to pay for such purchases is entered as item 4 (*cash received from new term debt loans*).

Item 5 (*net farm cash income*) is the sum of items 1 though 4 and is calculated by the program.

Items 6 through 8 are used to account for non-farm cash flow. Item 6, *cash received from non-farm sources*, is where you enter the total amount you expect to receive from wages (before tax and social security withdraws), pension and other transfer payments, dividend and other investment in-

come, and other non-farm income. This amount is $32,100 in the case of our example grower. The state and federal income tax you expect to pay on net income from farm and non-farm income is entered in item 7 (*income and social security tax*). Our example grower enters $8,650 in item 7. Item 8, *withdraws for family living expense*, is the total you withdraw for family living expenses ($27,940 in the case of our example grower).

Item 9, *farm and non-farm net cash flow*, is a measure of your ability to cover all planned production expenses and withdraws for family living expenses. It is calculated by FEPAC. A positive value means that you can cover withdraws and have cash left over. Our example grower can cover all planned expenses and family living expense withdraws and still has a cash surplus of $25,776. A negative number tells you that if things run as planned you'll need to borrow money, earn more off the farm, spend less, or liquidate assets to cover all expenses.

3. Enterprise net cash flow analysis

Turn to the family cashflow & farm profit worksheet

3.1. Input/output area 10—Approximate net farm income

Items 1through 8 in the combined input and output area 10 are used to account for depreciation and inventory adjustments associated with your farm plan. Item 1 (*cost of capital asset use*) is an adjustment made to account for any differences between the rate which you plan to pay for capital assets (term debt payments) and the rate at which you are diminishing their value through use (depreciation). Our example grower entered $22,450 for depreciation based on an update of last year's income tax depreciation table. Because only $17,245 in principal payments are planned, a $5,205 subtraction is the first adjustment.

Item 2, *crop and livestock inventory*, is an adjustment calculated by FEPAC. The point of this adjustment is that if you begin the year with a large inventory of stored crop and have none at year end, you may generate a positive cash flow but not make a profit. For our example grower the opposite is true, an inventory worth $23,955 is planned at year end, while the starting inventory was zero. The second adjustment to arrive at net farm income involves adding this $23,955 to net farm cash income.

Item 3 (*investment in growing crops*) is used to adjust for changes in investment in growing crops. If you've made a major change in how you produce which will only have revenue consequences next year this can be important. For example if you are significantly expanding acreage in winter wheat, the costs will be incurred this year but revenues will only be realized next year. If you think this is an important issue for your operation, you'll have to

account for it. You'll need to enter the value all of production expense incurred last calendar year for crops not harvested by year end and the value all of production expenses you plan to incur in the upcoming calendar year for crops you don't plan to harvested by year end. If you don't plan significant changes in the scope of your crop enterprises, changes in investment in growing crop are not very important

Failure to account for changes in value of inventory (Items 4-8) over the course of your farm plan year will sometimes result in a distorted estimate of net farm income. If you anticipate significant changes in accounts payable and receivable, changes in supply inventories, changes in pre-paid expenses, or changes in expected tax payments you should enter the farm plan year beginning and ending values in the space provided.

Item 9 is *net farm income*, a reasonably accurate approximation of returns to the family labor management and equity.

4. Sensitivity analysis

Turn to enterprise cashflow report worksheet.

Because FEPAC is a planning tool, using it requires that you make assumptions concerning prices and yields that will occur in the future, acres you will plant or head of livestock you will raise, costs of production, and so forth. The sensitivity analysis step shows you how these assumptions might effect cash flow and profit. You can do a sensitivity analysis (or several) after you have completed the first step, the first two steps, or after you have completed all three steps. There are two ways to do a FEPAC sensitivity analysis: 1) *quick sensitivity analysis, and 2) more elaborate sensitivity analysis.*

Note: Before you perform any sensitivity analysis, you should save your workbook; once you've made changes you may not be able to retrieve your original numbers. Use the "file save-as" menu option to create a separate file for your sensitivity analysis. Make sure to give each scenario you consider a unique name when you save it.

The quick sensitivity analysis

You have completed step 1 when you have completed both the *enterprise revenues*, and *enterprise expenses* worksheets. At this point the *enterprise cash-flow report* worksheet contains a summary of per acre costs, revenues, net cash flow, and break-even prices for each enterprise. This is a good time to do the first sensitivity analysis. The *enterprise cash-flow report* can perform a quick and convenient examination of how different assumed prices and yields will influence cash flow and profit.

All that you need to do is enter alternative values for yield (item 6—*yield per unit*), price (item 8—*average price per unit*), and/or quantity (item 10—*quantity_*sold). When you change yield assumptions for an enterprise, the quantity available for sale will change automatically, but you will have to change item 10 (quantity sold) by yourself. Once you've changed the appropriate items, the enterprise cash flow will reflect the new assumptions.

If you've completed the step 2 or step 3 analysis, the alternative prices and yields you enter on the *enterprise cash-flow report* will be reflected in input/output areas 9 (for step 2) and 10 (for step 3) on the *family cash flow and farm profit* worksheet. To restore the original values that you entered on the previous worksheets, click on the gray *click here to restore original value* button.

A more elaborate sensitivity analysis
More elaborate "what if" analyses that involves changes in enterprise scope (e.g. changes in crop enterprise acreage) or changes in costs will require that you modify the appropriate entries on the *enterprise revenues*, and *enterprise expenses* worksheets. For example, what would happen if you added a custom work enterprise involving 600 acres of plowing work for neighbors, or 50 head of beef cattle, or bought a new tractor? **Before you do this, make sure you have saved your results to this point because once you've made changes you will not be able to retrieve your original numbers.**

Detailed output interpretation

1.1 Output area 1—Enterprise revenues and Enterprise and whole farm revenue

Turn to the **Enterprise revenues** *worksheet*
Once you've described your enterprises and marketing plans, FEPAC gives you a summary of the cashflow and value of production from each enterprise and for the farm as a whole. This information is presented in output area 1.

Output area 1, item 1 (*op. Share enterprise cash from sales*) is the value of cash sales from each enterprise and item 2 (*op. Share enterprise value of products*) is the value of products from each enterprise. Item 3 *"enterprise inventory adjustment value*", is the dollar value of any change in inventory with each unit valued at the weighted average price for the enterprise. The value of products from each enterprise will be greater than the value of cash sales if the ending inventory exceeds the beginning inventory for the enterprise. This is the case for our example grower who begins with no inventory in enterprise 1 and ends with 1,500 bushels. Given the weighted average price of $3.45 that the grower is anticipating, the value of this inventory will increase by $5,175.

Items 4 through 6 are *whole farm cash from sales*, *whole farm value of production*, and *total farm inventory adjustment*. Our example farm plan indicates that the grower expects to generate $154,080 dollars in farm sales and increase the value of crop inventory by $23,955, which adds up to a $178,035 planned total value of output.

1.2. Output area 2—Enterprise and whole farm cost

Turn to the bottom of the **Enterprise expenses** *worksheet*

Output area 2 is a summary of the expenses associated with your farm plan. Items 1, 2 and 3 are *enterprise specific expenses per acre, whole farm expenses per acre allocated to each enterprise,* and the *total enterprise expenses per acre* (enterprise specific and whole farm). For our example farmer's first enterprise, total enterprise expenses (item 3) are $155.57/acre, which is the sum of $89.07/acre in enterprise specific expenses (item 1) and a $66.50/acre share of whole farm expenses allocated to the enterprise (item 2.)

Item 4 is the *total enterprise expenses* which is the total per acre (or head) expenses multiplied by the units (acres or head). For our example grower the enterprise 2 expense is $123.88/acre times 800acres, for a total of $98,702.06. Item 5, *total farm cash expenses* is the sum of enterprise expenses for all of the enterprises.

1.3. Output/input area 8—enterprise cash flow report

Turn to the **Enterprise cashflow report** *worksheet*

This output area compiles revenue and cost information from output area 1 and output area 2 to produce net cash estimates. The first 14 items in this area are summarized enterprise expenses and enterprise revenues:

Items 1 through 7 are a summary of your enterprise descriptions (see input area 1 and output area 1 descriptions for more details).
Items 8 through 11 summarize your marketing plan and expected revenues (see input area 2 and output area 2 descriptions for more details).
Items 12 through 14 summarize expenses associated with each enterprise (see the descriptions for input areas 3 through 7 for more details).

Items 15-20 are the bottom line numbers. They describe how well your plan's anticipated production revenues cover the expected production expenses.

Items 15 (*net cash flow/acre or head*) and 16 (*net cash flow for enterprise*) describe enterprise returns on a per acre and the entire enterprise basis. A positive number means that the enterprise cash revenues exceed all enterprise cash expenses (i.e. the enterprise will make money.) A negative number means the enterprise cash costs are expected to exceed the

enterprise cash revenues (i.e. the enterprise will lose money.) As illustrated in figure 4, the net cash flow from enterprise 1 is a minus $5,271.94 because the expenses per acre exceed the revenues per acre by $17.57 on 300 acres. Net cash flow from enterprise 2, on the other hand, is a positive $13,977.94 because the revenues per acre exceed the expenses per acre by $17.47 on 800 acres.

Items 17 (*break-even price covering enterprise specific cash cost*) and 18 (*break-even price covering enterprise specific cash costs*) are two break-even prices. Item 17 is the break-even price covering all enterprise specific cash expenses. If you anticipate receiving a price lower than this, the cash revenues that the enterprise would generate wouldn't cover the cash costs related specifically to the enterprise. If our example grower anticipated receiving less than $1.98/bushel for wheat from the owned acreage, revenues from the enterprise wouldn't cover enterprise specific cash expenses.

Item 18 indicates that at prices above the break-even price covering all cash costs ($3.46/bu.) cash flow from enterprise 1 will be positive. The value of the crop, if it all were sold at this price, will exceed the enterprise specific and whole farm cash expenses allocated to enterprise 1 by the example grower. At prices between the break-even prices of $1.98 and $3.46, the enterprise will produce a negative cash flow but not producing the crop would probably create a larger negative cash flow. This is because most whole farm expenses are fixed costs (e.g. term debt payments) and probably can't be avoided in the immediate future even if the crop is not planted. By producing and selling at say $3.00/bu. the example grower will cover all enterprise 1 specific expenses, and generate some cash to cover whole farm expenses.

Item 19 (*net cash flow from all enterprises*) is net cash flow for the entire farm, which is the sum of the net cash flows from each enterprise. In the case of our example farm, the sum of net cash flow from enterprise 1 (–$5,271.94) and enterprise 2 ($13,977.94) is $8,706. This is the net additionto the family's cash flow that the grower can expect from farming enterprises next year provided everything goes according to plan.

2.1. Input/output area 9—Farm family net cash flow

Turn to the **Family cashflow & farm profit worksheet**

Item 8 (*farm and non-farm net cash flow*) in input/output area 9 is a measure of your ability to cover all planned production expenses and withdraws for family living expenses. A positive value indicates that you can cover withdraws and have cash left over. Our example grower can cover all planned expenses as well as family living expense withdraws and still have a cash surplus of $25,776. A negative number tells you that if things

run as planned, you'll need to borrow money, earn more off the farm, spend less or liquidate assets to cover all expenses.

Input/output area 10—Approximate net farm income

Item 9 (*approximate net farm income*) is similar to your net farm income, the bottom line number on an income statement. Net farm income is one common way of measuring the profitability of your farm and the approximate net farm income is a fairly accurate measure of the returns to the family labor, management effort, and equity (owned capital) that is employed on your farm. In order to get the exact net farm income, two additional adjustments would be required: an accrual interest adjustment and an accrued deferred tax adjustment.

Conclusion

This chapter provides an overview of how the FEPAC program can be used to assess financial risks associated with alternative farm plans before you actually try them out. We encourage you to use FEPAC to analyze multiple possible variations of your farm plans including possible variations in prices, yields, enterprise organization and expenses. This is the only way to really get a feel for potential financial risk inherent in your plan. The real advantage of using FEPAC for these kinds of analyses is that computing results of alternative scenarios is quite easy once you've entered your initial plan.

Integrated Financial Statement (IFS) Program

Jeff Connor and Bart Eleveld

System requirements

IBM PC compatible computer
Window 95 or Windows 98 operating system
Microsoft Excel 97 or higher

Overview

The Integrated Financial Statements (IFS) software is a modified Microsoft Excel workbook (collection of worksheets). If you are familiar with Excel you will notice that IFS toolbar at the top of the screen is different than the standard Excel toolbar. It has been simplified to include only a subset of Excel functions and a few specialized functions.

The IFS workbook consists of worksheets for the four basic financial statements, a financial ratios analysis, and eight supporting schedules. The table of contents button on the IFS toolbar will bring a menu to the screen with the fourteen IFS worksheets listed below.

1. Users guide
2. Balance sheet
3. Income statement
4. Financial ratios
5. Statement of owner equity
6. Statement of cash flow
7. Schedule 1-Real estate
8. Schedule 2-Machinery
9. Schedule 3-Breeding and dairy livestock
10. Schedule 4-Non-current liabilities
11. Schedule 5-Personal net worth
12. Schedule 6-Deferred taxes
13. Schedule 7-Cash operating expenses
14. Schedules 8-Accrual adjustments

IFS workbook uses

1. You can use IFS.xls to print blank financial statements or schedules.
2. You can follow the Profit Farm case study found in chapter 8 of the RME manual on the workbook IFS-EXAMPLE.xls.
3. You can do a full set of financial statement using IFS.xls.

Getting started

1. To start the IFS workbook, insert the RME CD-ROM, select the CD-ROM as the active drive then click on IFS.xls.

2. The first worksheet, *Users guide* explains the workbook menu bar used for functions like printing and saving files and updating linked financial statements.

IFS toolbar buttons

The table of contents button brings a menu to the screen with a listing of all fourteen IFS worksheets. You can use the menu to move between sheets.

The update button is designed to minimize the required data entry involved in completing financial statements. Clicking the update button updates each worksheet with information you've already entered on other worksheets.

Doing a complete set of financial statements

You can use IFS.xls to do a complete set of financial statements with or without the IFS worksheet schedules. The steps involved in completing financial statements with and without IFS schedules are outlined in table 1.

Table 1. The steps involved in completing financial statement with IFS.xls

	With IFS schedules	**Without IFS schedules**
1.	Complete Schedules for the balance sheet: 1-Real estate 2-Machinery 3-Breeding and dairy livestock 4-Non-current Liabilities 5-Personal net worth 6-Deferred taxes	
2.a	Update the balance sheet using the IFS update function	1. Fill in the balance sheet
2.b	Fill in the remaining required balance sheet items	
3.	Complete Schedules for income statement: 7-Cash operating expenses 8-Accrual adjustments	
4.a	Update the income statement from schedule 7 and 8 and from balance sheet entries using the IFS update function.	2.a Update the income statement from balance sheet entries using the IFS update function.
4.b	Fill in the remaining required income statement item.	2.b Fill in the remaining required income statement items
5.	Examine your financial ratios.	3. Examine your financial ratios
6.a	Update the statement of owner equity from previously completed sheet items using the IFS update function.	4.a Update the statement of owner equity from previously completed sheet items using the IFS update function.
6.b	Fill in remaining required statement of owner equity items	4.b Fill in remaining required statement of owner equity items
7.a	Update the statement of cash flow from previously completed sheet items using the IFS update function.	5.a Update the statement of cash flow from previously completed sheet items using the IFS update function.
7.b	Fill in remaining required statement of cash flow items	5.b Fill in remaining required statement of cash flow items

Profit Planner and Performance Analyzer Program(3PA)

Bill Looney

System requirements

IBM PC compatible computer
Window 95 or Windows 98 operating system
Microsoft Excel 97 or higher

Introduction

The Profit Planner and Performance Analyzer Program (3PA) is a modified Microsoft Excel workbook. 3PA enables you to:

- Make decisions for your production and marketing plan and from it, your cash flow budget.
- Track your change in cash position by following probable yields and prices through the year.
- Compare your actual performance against your original plan.

The 3PA workbook consists of six worksheets:

Directions—Provides an introduction and general tips followed by specific directions for completing the planning, tracking, and comparing performance.

Plan—This worksheet page is used in all three stages: planning, tracking, and comparing performance. You begin here by listing possible enterprises, their probable yields, prices, variable costs, and acres. You also use this page for entering yield and price changes to track your situation. When performance data is available, you compare it to your plan.

Market—This page is used to estimate farm use and its value, show methods of marketing and prices, show premiums, options, and other add-ons or discounts to price. Cash flow impact is estimated from the value of accounts receivable and inventory to be held over to future business years. Performance data is added when available to calculate actual yields and prices.

Var cost—This page is for estimating variable costs per acre for each of your possible enterprises. Cash flow impact is adjusted by subtracting any estimated expenses paid before or after the cash flow year, and adding those paid for future crop years.

Fixed—Fixed income (such as flex payments) and fixed cash outflows such as overhead, term payments, and living draws are estimated year. At business year end, the actuals can be added for comparison to plan.

Cashflow—Prepare your cash flow budget by spreading the cash inflows and outflows into the appropriate months. Keep cash accounts level and determine loan and savings funds needed by adding or withdrawing funds.

You do 3PA in three steps:
1. Plan (prepare for the next farming year)-estimate enterprises, yields, prices, costs, acres
2. Track your situation.
3. Compare your actual performance to your plan; analyze to make future decisions and planning more profitable.

The Case Farm

The example inputs are from the Case Farm. After scanning the directions page to see how the program operates, look at the entries, results, and formulas used with the example farm on each of the pages from *plan* to *cashflow*. If you wish to keep the Case Farm example, save it as a separate file before deleting the inputs and entering your own data.

Planning

Your objective will be to maximize your increase in working capital (cash position). Based on profitability, risk management, and feasibility, you decide what to grow, estimate yields and income, choose inputs, and how much to grow. This phase allows you to test different combinations of choices to assess which one will work best for your operation in the coming year.

1. Go to the *plan* page. After entering the *harvest year* and *date* of the plan:
   - List the *enterprises* (crops or type of livestock or custom work) you consider doing.
   - Use estimated *yields* for each enterprise that are based on your production history and present conditions.
   - Show your crop share for each enterprise.

2. Go to the *market* page to build your marketing plan. This will determine the average price for each enterprise which will appear back on the *plan* page.

3. Go to the *Var cost* page to estimate variable costs per acre (or head) for each enterprise. These will appear back on the *plan* page.

4. **This may be your most critical step:** Carefully study the return over variable costs per acre. Before you decide how many acres (or head) for each enterprise, consider the following for each enterprise in addition to return over variable costs per acre:
   - Timing and requirements for operator time, hired labor, equipment
   - Rotations, chemical, weed and pest control, and environmental considerations
   - Production risk, market risk, and other risk factors

Try different combinations of enterprises, probable yields, and prices. Check your variable cost estimates. When you have your best estimate at this point, make your first estimate of acres for each enterprise.

5. Acres times ROVC (return over variable cost per acre) will show the total ROVC impact for each enterprise. The total impact of all enterprises at acres you have selected will now show on the *estimated change of cash position* (change of working capital) line. Note how changing the acres for each enterprise changes the amount on this line. Make any changes to acres that you think are best at this time. This total ROVC is what the enterprises are providing to "feed the wolf" (fixed cash need).

6. Move to the *fixed* page to estimate fixed cash need. Fixed cash need consists of:

Fixed cash *inflows:* flex payments, cash from capital sales, and other non-enterprise income.
Subtracted from: fixed cash *outflows:* overhead expenses and property taxes, term loan principal and interest payments, cash for capital investment, family and non-farm draws

These are amounts that do not vary in proportion to the scope of enterprises, but remain relatively unchanged no matter what enterprises or how much of each is grown or produced.

7. Move back to the *plan* page. Note that the *fixed cash need* (you just "fed the wolf") has been subtracted from the *total ROVC* of all your enterprises. This, with step 4 (above), may be the most critical. The question you must ask now is, *"how can I improve my bottom line for this coming year?"* In addition to any other opportunities you find, at least consider the following:

- Make adjustments to enterprises and acres (head) for each as in step 4.
- Adjust yields and variable costs, being careful not to cut income (yield x price) more than you cut expenses. Utilize crop insurance when feasible to cut production and income risk.
- Use the marketing plan on the market page to increase average price. Utilize contracts to reduce market risks when appropriate.
- Check each overhead cost for savings that do not hurt income or increase risk.
- Sell lazy assets that do not provide reasonable profit for the farm.
- Structure debt for payments that retire debt fast enough to not outlive the underlying asset, but slow enough to conserve working capital for more expedient demands.
- Ensure that your living draw is sufficient to maintain family morale, but practice delayed gratification.

Sleep on your decisions, rather than rushing them. Talk it over with the family, especially those active in farming. Give this sufficient time. You have to live with the results of this plan for years.

Remember your objective—the plan with the best possible working capital change balancing profitability with risk and feasibility.

8. The most critical part of your plan, building in profitability, is completed. Preparing the *cash flow budget* now becomes a mechanical process following from your profitability decisions:

On the *cashflow* page, enter the estimated *cash inflow from previous years' crops*. These should be from the *accounts receivable* and *market inventory* just before the cash flow year begins.

Go to the *market* page. Move down to the *production value and cash flow planning* area and complete inputs. This will require you to decide *accounts receivable* and *market inventory* will be held over into the future cash flow year.

Go to the *Var cost* page. Complete the *cash flow planning* section:

- Expenses paid before the cash flow year: seed, fertilizer, and other pre-paid expenses.
- Expenses for this harvest year that will be delayed (as accounts payable) into the future cash flow years.
- Expenses for future harvest year crops that will be paid this cash flow year: seed, fertilizer.

On the *cashflow* page:

- Follow the directions for spreading annual items over the months. Note that the comparison column is a result of the plan you have completed. Any further changes in the plan, will give you a changed comparison which can easily be used to adjust your plan.
- In the checking account area, simply start with the first month and add funds from savings or operating loan or deposit to savings and repay operating loan to maintain an even monthly balance.

Note the following:

- the month and the amount of your highest operating loan balance.
- the estimated operating loan interest total for the year.
- the difference between beginning and ending balances for *operating loan* and *savings*.

Your plan is still adjustable. Study it again following the above steps 1 through 8.

9. When you take this to your lender (which you may be yourself, if you provide your own operating funds), this becomes your plan. Leave the last date on the plan as is. Your next step will be tracking your situation through the year. This should be done at least monthly, but at any time that financial decisions are being considered.

Printing—At any time you want to print, see the *directions* page.

Tracking your situation

Periodically evaluating your situation allows you to focus on the factors and possible decisions that affect your profitability. You can minimize the effect of emotions and instead, use your energy in finding opportunities and solving problems.

Assume that your original estimates for variable costs and fixed cash need still apply. The former do not usually fluctuate nearly as much as yield and markets. The latter do not impact your enterprise choices. This enables you to focus on what has changed and decide what to do about it.

On the plan page, insert the date of your present situation. Insert the probable yield and probable average price as of the situation date. Focus on:

- Opportunities to enhance yield and reduce production risk. partial budget to choose actions that will increase income (yield x price) more than any added costs.
- Opportunities to enhance average price. decide for contract sales or other methods to get target price; use call options or other appropriate methods to reduce risk of a runaway price. Track receivables to ensure timely payment.
- Trim fixed cash need when trimming does not endanger income or increase risk more than the savings.

Analyze your performance

Making sure you check your report card is a proven way to enhance your farm's survival and prosperity (See note in the *directions* page).

1. On the *market* page, complete the *marketing performance* area.
   - This uses your actual production to calculate your true yield per acre for each enterprise.
   - This uses your actual value of production to calculate your true average price per unit for each enterprise.

2. On the *fixed* page, enter from your accounting records the actual cash outflows in the *actual* columns provided.

- This provides the actual fixed cash need for computing your actual working capital change.

3. On the *plan* page, move down to the *compare your performance* area.

- Note that the yield and price appear for each enterprise.
- Calculate the actual variable costs using the list on the Var cost page and your accounting records.
- For accuracy in this analysis contact your cooperative extension specialist in farm management and consider enrolling in the farm management program in your area. To obtain the phone and address of the program nearest you, contact your extension specialist or call (509) 762-6275.

An additional analysis can be obtained by using your estimated operator time input to estimate and compare how enterprises paid you for your time.

Compare your actual performance to your plan

Yield per acre for each enterprise

- what were the critical factors in your yield?
- what can you change?

Price per unit for each enterprise

- what did you learn?
- what can you change?

Variable costs for each enterprise

- what will be critical for future planning?

Fixed cash need

- what can be changed in overhead costs, debt structure and meeting capital investment needs, living and non-farm cash demands?

Return over variable costs per acre (or head) for each enterprise

- ROVC as a per cent of variable costs per acre(or head) for each enterprise

Estimated return per hour for operator time for each enterprise

Fixed cash need required per average acre

Working capital change (cash position change) as a per cent of farm income

Use the Profit Planning and Performance Analyzer Program (3PA) each year with your accounting system along with financial analysis tools such as FINPAK and others based on the Farm Financial Standards Committee recommendations.

The Pacific Northwest Grain Marketing Database User's Guide

Gary Hofer

The Pacific Northwest Grain Marketing Database is a collection of historical price series covering key historical cash and futures grain prices for the major grains produced and marketed in the Pacific Northwest. The database is contained in a set of five Microsoft Excel worksheets consisting of the *abstract and user's guide,* a hyper-linked *table of contents, cash price histories, futures price histories* and *Pacific Northwest cash price basis table.* Relationships between various prices, such as corn versus barley or soft white wheat versus soft red winter, can be studied by using the Excel spreadsheet formulae to calculate and chart the patterns. A basic understanding of the use of the Microsoft Excel spreadsheet is required to use the data to its maximum effectiveness.

The table of contents has been hyper-linked to ease travel to and from a chosen data series; click on the highlighted item next to its description to go to that location. To return to the table of contents, just click on the *back* button in the upper left-hand corner of the worksheet.

Each price series has a brief description of its location within the spreadsheet, quantity (hundredweight, bushel, or ton), time period available, and in some cases various quality measures (e.g. protein levels.) The data itself is protected against accidental modification or erasure, but this does not preclude adding any desired formula that reads the price data.

The *Pacific Northwest cash price basis table* consists of the amounts taken off the coast price for locations in Washington, Oregon, and Idaho. The figures are commonly accepted adjustments from Portland and were received from merchandisers trading in each location in an early summer time frame. They are nominal-only for the purposes of estimating local net flat price and checking current price relationships in comparison to the normal price. While, in the past, it has not been common practice in the Pacific Northwest to adjust the basis very often, *the basis figures in this table are subject to constant change without notice,* according to local supply and demand conditions, freight rates, and so forth. As a result, the table is hard price information.

Cash price histories

- Corn cash delivered Portland daily spot price, prices in hundred weight (cwt), 60# bushels and 2000# ton; July 1987 through March 1999.

- Barley cash delivered Portland daily spot price, prices in hundred weight (cwt), 48# bushels and 2000# ton; July 1987 through March 1999.
- Soft White wheat cash delivered Portland daily spot price in 60# bushels; January 1980 through July 1999.
- Hard Red Spring (HRS)/Dark Northern Spring (DNS) wheat cash delivered Portland daily spot price for 13%, 14% and 15% protein grades in 60# bushels; January 1980 through July 1999.
- Hard Red Winter (HRW) wheat cash delivered Portland daily spot price for 11% protein grade in 60# bushels; January 1980 through July 1999.
- Soft White wheat cash delivered Walla Walla, Washington daily spot price in 60# bushels; January 1989 through April 1999.

Futures price histories

- Chicago Board of Trade Soft Red Winter (SRW) wheat futures daily perpetual
- Kansas City Board of Trade Hard Red Winter (HRW) wheat futures daily perpetual
- Minneapolis Grain Exchange Hard Red Spring (HRS)/Dark Northern Spring (DNS) wheat futures daily perpetual, January 1987 through July 1999.
- Soft White Wheat futures daily "perpetual" (continuous nearest futures contract) traded at Minneapolis Grain Exchange based on Portland, Oregon delivery specifications; January 1987 throughJuly 1999.
- Winnipeg Commodity Exchange Western Barley futures daily "perpetual" quoted in Canadian dollars per metric tonne based on delivery to Winnipeg, Canada elevators, October 1990 through July 1999.
- Chicago Mercantile Exchange Canadian Dollar Cash Index daily continuous quoted in U.S. dollars ($US) per Canadian dollar ($C) for conversion of barley and canola quotes into $US; January 1987 through July 1999.
- Chicago Board of Trade corn futures daily perpetual; January 1987 through July 1999.

The Pacific Northwest cash price basis table

This is the commonly accepted amount per location taken off the coast price per bushel of soft white wheat and per hundredweight (cwt) of barley. These prices are subject to change without notice.

All of the data collected in this table are derived from sources believed to be reliable, but there can be no assurance that the table is accurate or

complete. It is intended to be of value in the identification of tendencies and relationships and not for the calculation of actual prices. There are certain gaps in some of the data series that are due to gaps in the original sources or to the technical adjustments that were necessary in the creation of the present form of this database.